



# Satellites galiléens de Jupiter : phénomènes et configurations pour 2001, suivis d'une méthode permettant de calculer les phénomènes pour 2002

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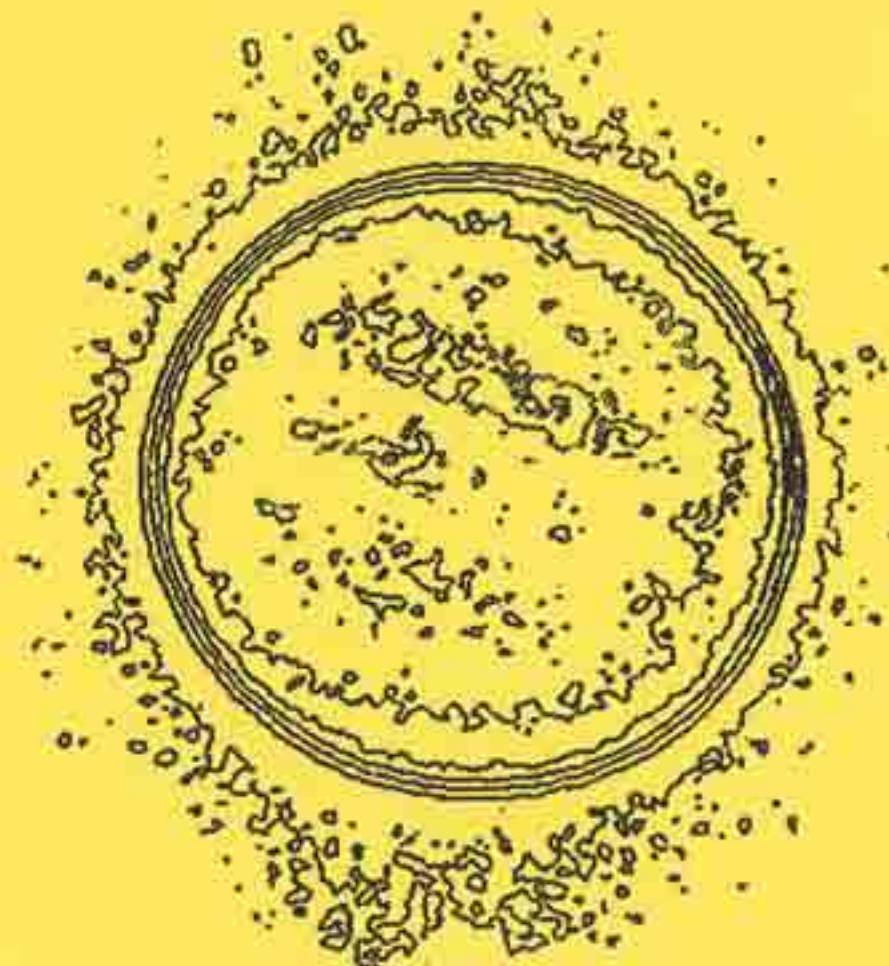
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SATELLITES GALILÉENS DE JUPITER  
PHÉNOMÈNES ET CONFIGURATIONS POUR 2001  
SUIVIS D'UNE MÉTHODE PERMETTANT DE CALCULER LES  
PHÉNOMÈNES POUR 2002



Supplément à la CONNAISSANCE DES TEMPS  
à l'usage des observateurs



Institut de mécanique céleste et de calcul des éphémérides  
UMR 8028 du CNRS – Observatoire de Paris



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## GALILEAN SATELLITES OF JUPITER

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MÉTHODE PERMETTANT DE CALCULER LES PHÉNOMÈNES POUR 2002

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METHOD FOR THE CALCULATION OF THE PHENOMENA FOR 2002

Supplément à la CONNAISSANCE DES TEMPS  
à l'usage des observateurs



Institut de mécanique céleste et de calcul des éphémérides  
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**PUBLICATIONS DE L'INSTITUT DE MÉCANIQUE CÉLESTE**  
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**Publications éditées par EDP Sciences,**  
7, avenue du Hoggar, Z.I. de Courtabœuf, B.P. 112, F-91944 Les Ulis Cedex A  
*Connaissance des Temps 2001.*  
*Introduction aux Éphémérides astronomiques. Supplément explicatif à la Connaissance des Temps.*  
*Les éclipses de Soleil. L'éclipse totale du 11 août 1999.*

**Publications éditées par Edinautic,**  
13, rue du Vieux Colombier, F-75006 Paris  
*Éphémérides nautiques 2001.*

**Publications éditées par Dunod-Masson,**  
5, rue Laromiguière, F-75006 Paris  
*Annuaire du Bureau des longitudes. Éphémérides astronomiques 2000.*  
*Cahiers des sciences de l'univers*, publiés sous l'égide du Bureau des longitudes.

1. Les profondeurs de la Terre par J.-P. Poirier (1991).
2. Stratosphère et couche d'ozone par G. Mégie (1992).
3. Chronique de l'espace temps – Du vide quantique à l'expansion cosmique par A. Mazure, G. Mathez, Y. Mellier (1994).
4. Les fondements de la mesure du temps par Cl. Audouin, B. Guinot (1998).

**Publications éditées par l'Institut de mécanique céleste,**  
CNRS – Bureau des longitudes, Service des ventes, 77, avenue Denfert-Rochereau, F-75014 Paris  
*Suppléments à la Connaissance des Temps.*

Éphémérides des satellites faibles de Jupiter (VI, VII, VIII, IX, X, XI, XII et XIII) et de Saturne (IX) pour 2001.  
Satellites galiléens de Jupiter. Phénomènes et configurations pour 2001.  
Satellites de Saturne I à VIII. Configurations pour 2001.

*Le calendrier républicain* (réédition, 1994).  
*Notes scientifiques et techniques du Bureau des longitudes.*  
*Encyclopédie scientifique de l'univers.*

La physique (1981).  
La Terre, les eaux, l'atmosphère (réédition, 1984), épuisé.  
Les étoiles, le système solaire (réédition, 1986).  
La galaxie, l'univers extragalactique (réédition, 1988).

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## Avertissement

À partir de 1996, des éphémérides des satellites naturels ont été publiées dans la *Connaisance des Temps*. Une disquette pour micro-ordinateur accompagne cet ouvrage. Ces éphémérides donnent les positions des satellites de Mars, des satellites galiléens de Jupiter, des huit premiers satellites de Saturne et des cinq satellites d'Uranus sous forme de fonctions mixtes avec une précision proche de celle des théories originales.

Cependant, des observateurs ont souhaité continuer à disposer d'un ouvrage permettant d'identifier les satellites galiléens et de connaître les instants des phénomènes présentés par ces satellites et calculés à une seconde de temps près. En particulier, les configurations précises permettent très facilement de situer les satellites avec une précision de 10" par rapport à Jupiter.

On trouvera aussi des renseignements généraux sur les satellites galiléens en début d'ouvrage ainsi qu'une méthode de calcul des phénomènes pour l'année suivante en fin d'ouvrage.

## Foreword

*Starting from 1996, ephemerides of natural Satellites have been published in the Connaisance des Temps. A floppy disk is available. These ephemerides give the positions of the satellite of Mars, of the Galilean satellites of Jupiter, of the first eight satellites of Saturn and of the five satellites of Uranus under a mixed form of representation, involving secular and periodic terms and depending directly on time. The accuracy is near that of the original theories.*

*However, observers wish to keep ephemerides allowing to identify immediately the Galilean satellites and to know the dates of the phenomena which are calculated to the nearest second of time. This is given by the present booklet, particularly the configurations giving positions with an accuracy of 10" relatively to Jupiter.*

*Besides these informations, the present booklet gives various data concerning the Galilean Satellites. We also present a method which permits the calculation of the phenomena for the next year.*

J.-E. Arlot

W. Thuillot

Responsables de la publication

Rédaction et calculs : Th. Derouazi, S. Lemaître, Ch. Ruatti.

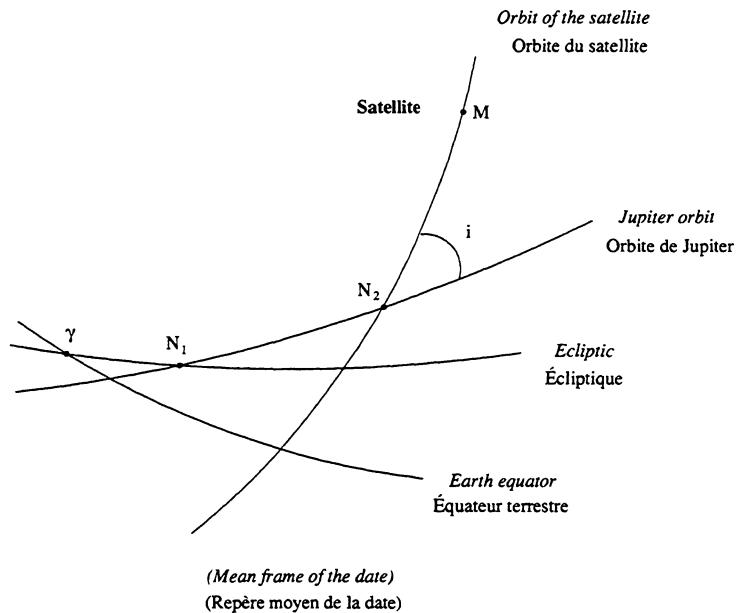


DONNÉES SUR LES SATELLITES GALILÉENS  
*DATA ON THE GALILEAN SATELLITES*

|   | IO<br>( I )     | EUROPE<br>( II ) | GANYMÈDE<br>( III ) | CALLISTO<br>( IV ) |
|---|-----------------|------------------|---------------------|--------------------|
| <i>Masses</i> ( $10^{-5}$ masse de Jupiter)   |                 |                  |                     |                    |
| Sampson (1921)  | 4.50            | 2.54             | 7.99                | 4.50               |
| De Sitter (1931)  | 3.81            | 2.48             | 8.17                | 5.09               |
| Pioneer 11 (1976)   | 4.68            | 2.52             | 7.80                | 5.66               |
| Fukushima (1990)  | 4.705           | 2.525            | 7.803               | 5.667              |
| <i>Rayons</i> (km)  |                 |                  |                     |                    |
| Danjon (1954)   | 1650            | 1400             | 2450                | 2300               |
| Dollfus (1961)  | 1775            | 1550             | 2800                | 2525               |
| Pioneer 11 (1976)   | 1840            | 1552             | 2650                | 2420               |
| Davies et al. (1996)  | 1821            | 1565             | 2634                | 2403               |
| <i>Magnitudes visuelles</i><br>à l'opposition de Jupiter  |                 |                  |                     |                    |
| Harris (1961)   | 4.8             | 5.2              | 4.5                 | 5.5                |
| <i>Albédos géométriques</i> (Harris, 1961)  |                 |                  |                     |                    |
| U : 353 nm  | 0.19            | 0.47             | 0.29                | 0.14               |
| B : 448 nm  | 0.56            | 0.67             | 0.41                | 0.21               |
| V : 554 nm  | 0.92            | 0.83             | 0.49                | 0.26               |
| R : 690 nm  | 1.12            | 0.93             | 0.56                | 0.30               |
| I : 820 nm  | 1.15            | 0.95             | 0.57                | 0.31               |
| <i>Albédo de Bond</i> (visuel)  |                 |                  |                     |                    |
|   | 0.54            | 0.49             | 0.29                | 0.15               |
| <i>Demi-grand axe</i> (Sampson, 1921)   |                 |                  |                     |                    |
| en UA   | 0.002 820       | 0.004 486        | 0.007 155           | 0.012 586          |
| en rayons de Jupiter  | 5.87            | 9.34             | 14.91               | 26.22              |
| en kilomètres   | 421 810         | 671 140          | 1 070 500           | 1 882 900          |
| <i>Plus grande élongation</i><br>à l'opposition de Jupiter<br>(minutes et secondes de degré)          |                 |                  |                     |                    |
| Sampson (1921)  | 2°17"           | 3'40"            | 5'48"               | 10'13"             |
| <i>Période synodique</i> (jours)  |                 |                  |                     |                    |
| Sampson (1921)  | 1.769 860 488 3 | 3.554 094 174 2  | 7.166 387 229 2     | 16.753 552 300 7   |
| <i>Inclinaison moyenne sur</i><br>l'équateur de Jupiter pour 2001.5<br>(minutes et secondes de degré) |                 |                  |                     |                    |
| Sampson (1921)  | 2°10"           | 28'26"           | 7'23"               | 23'53"             |
| <i>Valeur moyenne de l'excentricité</i><br>pour 2001.5  |                 |                  |                     |                    |
| Sampson (1921)  | 0.004           | 0.009            | 0.001               | 0.007              |
| <i>Partie séculaire du mouvement</i><br>(degré par an)  |                 |                  |                     |                    |
| nœud  | -48.5           | -11.9            | -2.6                | -0.6               |
| périjove  | 57.0            | 14.6             | 2.7                 | 0.7                |
| Sampson (1921)  |                 |                  |                     |                    |

## THÉORIE DU MOUVEMENT DES SATELLITES GALILÉENS

## THEORY OF THE MOTION OF THE GALILEAN SATELLITES



Du fait de la complexité du mouvement des satellites galiléens, il est difficile de donner des valeurs précises pour les noeuds et les périodes. En effet, les excentricités et les inclinaisons sont faibles (cf. tableau précédent) et tous ces éléments sont soumis à de grandes variations (Thuillot, Vu, 1985).

On donne ci-après les longitudes moyennes (d'après Sampson, 1921) dans le plan des orbites, ce plan étant confondu avec l'équateur de Jupiter.

Si  $\tau$  est le temps en jours moyens compté à partir de 1900,0 on a :

*Because of the complexity of the motion of the Galilean Satellites of Jupiter it is difficult to provide precise values for nodes and perijoves. Indeed, eccentricities and inclinations are small (see the preceding table) and all these elements undergo large variations (Thuillot, Vu, 1985).*

*The mean longitudes (Sampson, 1921) in the orbital planes identified with Jupiter's equator are given below.*

*If  $\tau$  is the time in days which has elapsed from 1900.0, one gets:*

| $\gamma N_1 N_2 = 316^\circ.051 + 0.000\,035\,59 \tau, i = 3^\circ.103\,50$ |                                  |   |                 |  |
|---|----------------------------------|---|-----------------|--|
|   |                                  |   |                 | Période sidérale en jours<br>Sidereal period in days |
|   | $\gamma N_1 + N_1 N_2 + N_2 M =$ |   |                 |  |
| Io  | 42°.599 87                       | + | 203.488 992 435 | $\tau$ 1.769 137 463 9                               |
| Europe  | 99°.550 81                       | + | 101.374 761 672 | $\tau$ 3.551 179 742 0                               |
| Ganymede  | 168°.026 28                      | + | 50.317 646 290  | $\tau$ 7.154 547 689 4                               |
| Callisto  | 234°.407 90                      | + | 21.571 109 630  | $\tau$ 16.688 988 474 6                              |

## PRÉSENTATION DES ÉPHÉMÉRIDES

### *PRESNTATION OF THE EPHEMERIDES*

#### ÉCHELLES DE TEMPS

L'argument "temps" des éphémérides publiées ici est le TT (temps terrestre) proche du TE (temps des éphémérides) et réalisé physiquement par la mesure du TAI (temps atomique international). On a :

$$TT = TAI + 32,184 \text{ s}$$

Les événements astronomiques étant mesurés dans l'échelle UTC (temps universel coordonné), le tableau ci-dessous donne la relation entre TT et UTC (d'après la relation entre TAI et UTC publiée par l'IERS).

|  | TT – UTC |
|--|----------|
| du 1 juillet 1994 au<br>1 janvier 1996 ..... | 61,184 s |
| du 1 janvier 1996 au<br>1 juillet 1997 ..... | 62,184 s |
| du 1 juillet 1997 au<br>1 janvier 1999 ..... | 63,184 s |
| à partir du 1 janvier 1999                   | 64,184 s |

#### PHÉNOMÈNES DES SATELLITES GALILÉENS

Les hypothèses utilisées pour le calcul des époques des phénomènes (Thuillot, 1989) sont les suivantes :

- Jupiter est un ellipsoïde dont l'aplatissement a pour valeur 1/15,4 et dont le rayon équatorial est 71 492 km.

- Les satellites sont des sphères de rayon : 1821 km pour Io, 1565 km pour Europe, 2634 km pour Ganymède, 2403 km pour Callisto (Davies et al., 1996).

- Le Soleil est une sphère de rayon 695 980 km.

- Les dates sont données pour tout observatoire terrestre puisqu'on peut négliger l'effet de parallaxe dont la grandeur est plus faible que la précision des prédictions.

#### TIME-SCALES

*The time argument of the ephemerides is TT (terrestrial time) close to the former definition of ET (ephemeris time) and physically made by measuring TAI (international atomic time), so that:*

$$TT = TAI + 32.184 \text{ s}$$

*Astronomical events are measured in the time-scale UTC (coordinate universal time). The table below gives the correspondence between TTT and UTC (using the relationship between TAI and UTC published by IERS).*

|   | TT – UTC |
|---|----------|
| From July 1, 1994<br>to January 1, 1996 ...   | 61,184 s |
| From January 1, 1996<br>to July 1, 1997 ..... | 62,184 s |
| From July 1, 1997<br>to January 1, 1999 ...   | 63,184 s |
| From January 1, 1999                          | 64,184 s |

#### PHENOMENA OF THE GALILEAN SATELLITES

*The hypothesis made for the calculations of the dates of the phenomena (Thuillot, 1989) are:*

- Jupiter is an ellipsoid the flatness of which is 1/15,4 and the equatorial radius of which is 71 492 km.

- The satellites are spheres the radius of which are: 1821 km for Io, 1565 km for Europe, 2634 km for Ganymede and 2403 km for Callisto (Davies et al., 1996).

- The Sun is a sphere the radius of which is 695 980 km.

- The dates are given for everywhere on Earth since no parallax effect has to be taken into account.

L'effet de phase est négligé pour les satellites, mais pris en compte pour la planète.

Les pages paires fournissent les dates des phénomènes que présentent ces satellites :

- les débuts et fins des passages des satellites devant la planète :

PA.D.INT et PA.D.EXT  
PA.F.INT et PA.F.EXT

- les débuts et fins de leurs occultations (anciennement appelées immersions et émersions) :

OC.D.INT et OC.D.EXT  
OC.F.INT et OC.F.EXT

- les débuts et fins des passages de leur ombre sur Jupiter :

OM.D.INT et OM.D.EXT  
OM.F.INT et OM.F.EXT

- les débuts et fins des éclipses des satellites par Jupiter :

EC.D.INT, EC.D.EXT, EC.D.PEN  
EC.F.INT, EC.F.EXT, EC.F.PEN

Les notations utilisées sont les suivantes :

- .D et .F désignent le début et la fin.
- .INT désigne les contacts intérieurs des satellites avec le cône d'ombre pour les éclipses et les passages des ombres sur Jupiter, et désigne les mêmes contacts avec le cône de visibilité pour les occultations et les passages devant la planète.
- .EXT désigne les contacts extérieurs des satellites avec le cône d'ombre pour les éclipses et les passages des ombres sur Jupiter, et désigne les mêmes contacts avec le cône de visibilité pour les occultations et les passages devant la planète.
- .PEN désigne uniquement pour les éclipses, le contact extérieur des satellites avec le cône de pénombre.

*The phase defect is neglected on the satellites but taken into account for Jupiter.*

*Even pages give the dates of the phenomena:*

- the beginnings and the ends of the transits of the satellites in front of Jupiter:*

*PA.D.INT and PA.D.EXT  
PA.F.INT and PA.F.EXT*

- the beginnings and the ends of the occultations of the satellites by Jupiter:*

*OC.D.INT and OC.D.EXT  
OC.F.INT and OC.F.EXT*

- the beginnings and the ends of the transits of the umbra of the satellites on the disk of Jupiter:*

*OM.D.INT and OM.D.EXT  
OM.F.INT and OM.F.EXT*

- the beginnings and the ends of the eclipses of the satellites by Jupiter:*

*EC.D.INT, EC.D.EXT, EC.D.PEN  
EC.F.INT, EC.F.EXT, EC.F.PEN*

*The notations means:*

- .D and .F mean beginning and end.*

- .INT means:*

- interior contact satellite/shadow cone for the eclipses and transits of shadows on Jupiter,*
- interior contact satellite/cone of visibility for the occultations and the transits.*

- .EXT means:*

- exterior contact satellite/shadow cone for the eclipses and transits of shadows on Jupiter,*
- exterior contact satellite/cone of visibility for the occultations and the transits.*

- .PEN means exterior contact satellite/penumbra cone for the eclipses.*

### EXEMPLE

Le déroulement d'un début d'éclipse se fait ainsi :

- EC.D.PEN : contact extérieur du satellite avec le cône de pénombre (début de l'assombrissement).
- EC.D. EXT: contact extérieur avec le cône d'ombre.
- EC.D.INT: contact extérieur avec le cône d'ombre (assombrissement total).

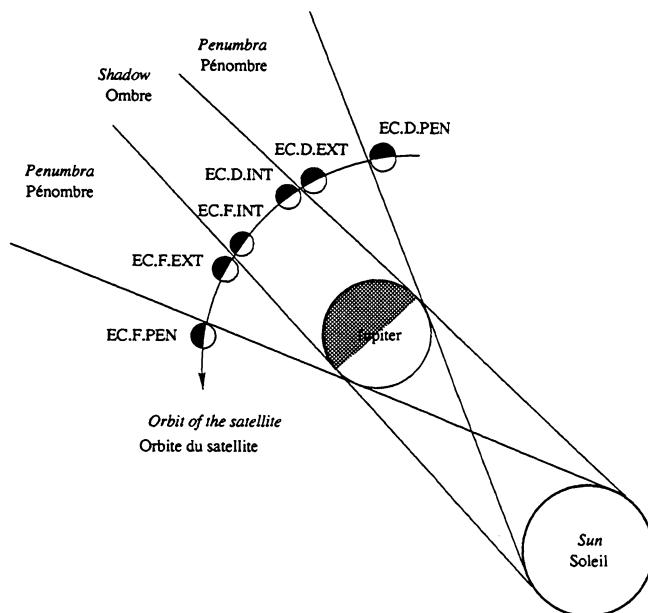
On observera que les éclipses se produisent à l'ouest ou à l'est de la planète, suivant que l'on est avant ou après l'opposition. En général pour le premier et le deuxième satellite, on ne peut, avant l'opposition, observer que le début des éclipses suivi de la fin des occultations. Après l'opposition on ne peut observer que le début des occultations suivi de la fin des éclipses. Il est possible, d'autre part, que, en raison de l'inclinaison de l'équateur de Jupiter sur l'écliptique et de l'éloignement du satellite IV Callisto par rapport à la planète, aucun phénomène de ce satellite ne se produise.

### EXAMPLE

*A beginning of an eclipse occurs as follows:*

- *EC.D.PEN: external contact of the satellite with the cone of penumbra (beginning of the penumbra).*
- *EC.D.EXT: external contact with the shadow cone.*
- *EC.D.INT: internal contact with the shadow cone (the satellite has disappeared in the umbra).*

*Note that the eclipses occur west of the planet before the opposition. Most of time for the first and the second satellite, only the beginning of the eclipse followed by the end of the occultation are observable. On the other hand, it may happened that no phenomenon occurs for satellite IV because it is far from Jupiter and because of the inclination of the equator of Jupiter above the ecliptic.*



## LES CONFIGURATIONS

Les configurations permettent d'identifier les satellites, et également de déterminer leur position en coordonnées tangentielles équatoriales relatives à Jupiter avec la précision suivante (pour une lecture des courbes à 0,5 mm près) :

- Satellite 1: de 5'' à 20'' selon la vitesse apparente
- Satellite 2: de 5'' à 10'' selon la vitesse apparente
- Satellites 3 et 4: 5''

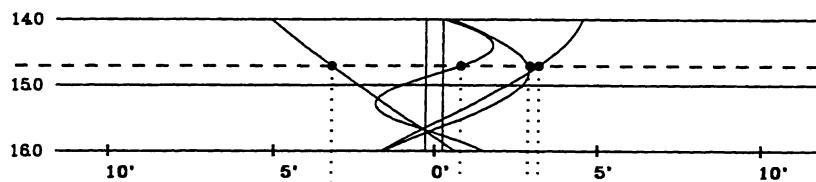
L'exemple suivant montre comment déterminer les positions des satellites. On reporte en abscisse sur l'axe ouest-est les distances  $\Delta\alpha \cos \delta$  mesurées pour une date voulue, sur les courbes. L'ordonnée est donnée par les orbites apparentes. L'indétermination avant/arrière est levée grâce au sens de rotation des satellites.

## THE CONFIGURATIONS

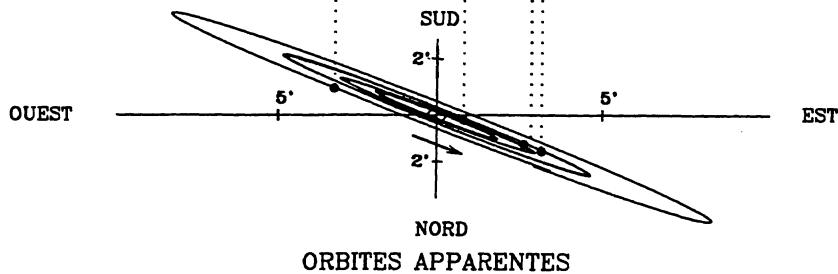
*The configurations permit to identify the satellites and to approach their positions relative to Jupiter in an equatorial tangential frame with the following precision (corresponding to a measure on the curves with an accuracy of 0,5 millimeter):*

- *Satellite 1: from 5'' to 20'' depending on the apparent velocity*
- *Satellite 2: from 5'' to 10'' depending on the apparent velocity*
- *Satellites 3 and 4: 5''*

*The following example shows how to determine the positions of the satellites. For the abscissae, we have to project the differential coordinate  $\Delta\alpha \cos \delta$  measured on the curves for a determined date on the East-West axis. For the ordinates, we have to project these abscissae on the apparent orbits as indicated on the figure. The front/back indetermination is removed thanks to the direction of the rotation of the satellites.*



Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter



## CALCULS DES PHÉNOMÈNES POUR 2001

Les prédictions des phénomènes des satellites galiléens sont données suivant une représentation polynomiale en fonction d'une variable temporelle. La méthode (Thuillot, 1983) permet une représentation compacte puisque moins de 13 coefficients suffisent à représenter chaque type de phénomène (passages, occultations, éclipses, passages d'ombre, débuts ou fins) de chaque satellite pour une année entière avec une précision de l'ordre de la minute de temps.

Des explications sur cette méthode, le formulaire et les tables de coefficients sont données pages 69 à 73.

## CALCULATIONS OF THE DATES OF THE PHENOMENA FOR 2001

*The predictions of the phenomena of the Galilean Satellites are given as a polynomial representation which depends directly on time. The method (Thuillot, 1983) allows a compact representation as less than 13 coefficients are sufficient to represent each type of phenomenon (transits, occultations, eclipses, shadow transits, beginnings or ends) for each satellite for a complete year with an accuracy of about one minute of time.*

*Some explanations about the method, the formulae and the tables of coefficients are given on pages 69 to 73.*

## RÉFÉRENCES

- Arlot, J.-E.: 1982, *Astron. Astrophys.* **107**, 305.  
 Davies, M.E., Abalakin, V.K., Bursa, M., Lieske, J.H., Morando, B., Morrison, D., Seidelmann, P.K., Sinclair, A.T., Yallop, B., Tjuflin, Y.S.: 1996, Report of the IAU/IAG/COSPAR working group on cartographic coordinates and rotational elements of the planets and satellites : 1994, *Celest. Mech. Dyn. Astron.* **63**, 127.  
 Lieske, J.H.: 1977, *Astron. Astrophys.* **56**, 333.  
 Sampson, R.A.: 1921, *Mem. Roy. Astron. Soc.* **63**.  
 Thuillot, W.: 1983, *Astron. Astrophys.* **127**, 63.  
 Thuillot, W., Vu, D.T.: 1985, *Note Scientifique et Technique du Bureau des Longitudes S009*.  
 Thuillot, W.: 1989, *Note Scientifique et Technique du Bureau des Longitudes S015*.



**ÉPHÉMÉRIDES**

**PHÉNOMÈNES ET CONFIGURATIONS**

**POUR 2001**

**EPHEMERIDES**

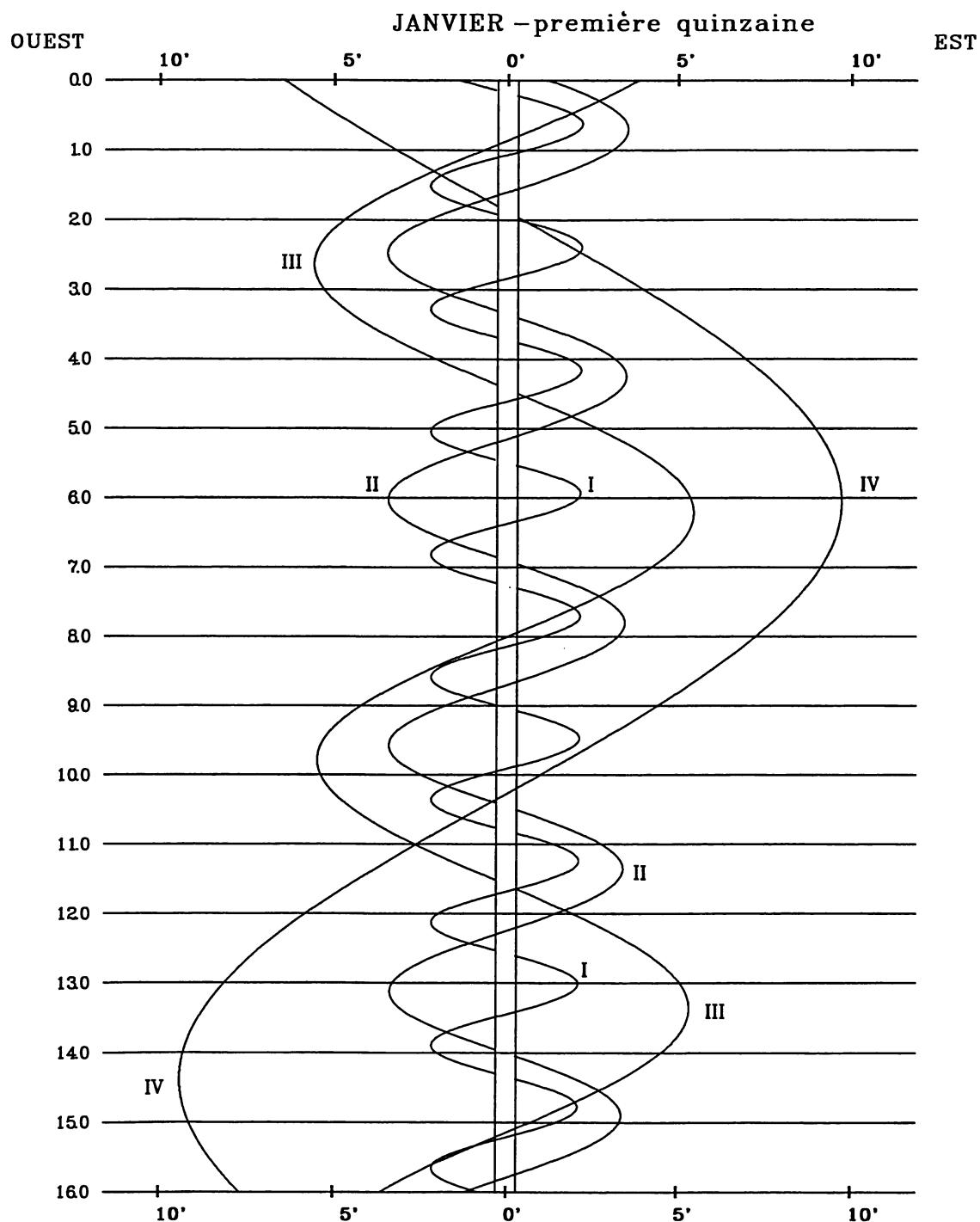
**PHENOMENA AND CONFIGURATIONS**

**FOR 2001**

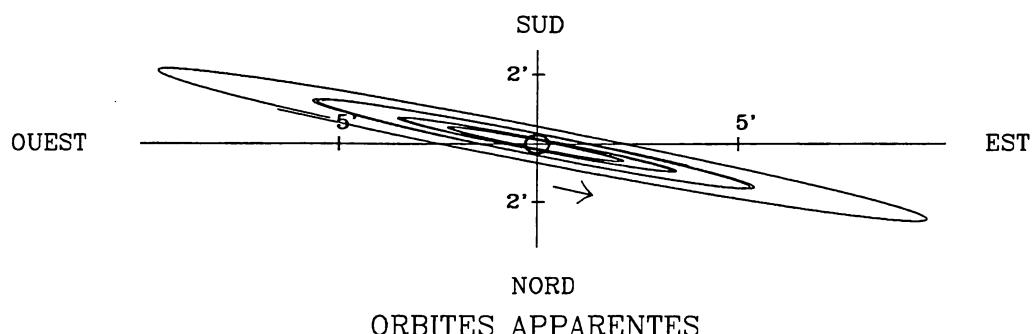
**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
 (Temps Terrestre)

| JANVIER - PREMIÈRE QUINZAINE |    |    |    |      |          |      |    |    |     |          |          |      |    |    |    |      |          |          |
|------------------------------|----|----|----|------|----------|------|----|----|-----|----------|----------|------|----|----|----|------|----------|----------|
| jour                         | h  | m  | s  | SAT. | TYPE     | jour | h  | m  | s   | SAT.     | TYPE     | jour | h  | m  | s  | SAT. | TYPE     |          |
| 0                            | 3  | 20 | 23 | I    | OC.D.EXT | 4    | 43 | 56 | II  | PA.F.INT |          | 11   | 12 | 23 | 54 | III  | OC.D.EXT |          |
|                              | 3  | 24 | 9  | I    | OC.D.INT | 4    | 48 | 14 | II  | PA.F.EXT |          |      | 12 | 38 | 46 | III  | OC.D.INT |          |
|                              | 6  | 19 | 8  | I    | EC.F.INT | 6    | 32 | 50 | II  | OM.F.INT |          |      | 14 | 28 | 49 | III  | OC.F.INT |          |
|                              | 6  | 22 | 54 | I    | EC.F.EXT | 6    | 37 | 4  | II  | OM.F.EXT |          |      | 14 | 43 | 42 | III  | OC.F.EXT |          |
|                              | 6  | 23 | 41 | I    | EC.F.PEN | 10   | 40 | 38 | I   | OC.D.EXT |          |      | 15 | 9  | 32 | I    | PA.D.EXT |          |
|                              | 19 | 13 | 44 | III  | PA.D.EXT | 10   | 44 | 24 | I   | OC.D.INT |          |      | 15 | 13 | 19 | I    | PA.D.INT |          |
|                              | 19 | 29 | 6  | III  | PA.D.INT | 13   | 45 | 32 | I   | EC.F.INT |          |      | 16 | 9  | 10 | I    | OM.D.EXT |          |
|                              | 21 | 12 | 36 | III  | PA.F.INT | 13   | 49 | 17 | I   | EC.F.EXT |          |      | 16 | 12 | 56 | I    | OM.D.INT |          |
|                              | 21 | 28 | 3  | III  | PA.F.EXT | 13   | 50 | 4  | I   | EC.F.PEN |          |      | 16 | 25 | 17 | III  | EC.D.PEN |          |
|                              | 22 | 25 | 26 | III  | OM.D.EXT |      |    |    |     |          |          |      | 16 | 30 | 16 | III  | EC.D.EXT |          |
|                              | 22 | 39 | 25 | III  | OM.D.INT | 6    | 7  | 48 | 16  | I        | PA.D.EXT |      |    | 16 | 44 | 58   | III      | EC.D.INT |
|                              |    |    |    |      |          | 7    | 52 | 3  | I   | PA.D.INT |          |      | 17 | 19 | 44 | I    | PA.F.INT |          |
| 1                            | 0  | 27 | 44 | I    | PA.D.EXT | 8    | 42 | 33 | I   | OM.D.EXT |          |      | 17 | 23 | 31 | I    | PA.F.EXT |          |
|                              | 0  | 31 | 31 | I    | PA.D.INT | 8    | 46 | 19 | I   | OM.D.INT |          |      | 18 | 20 | 48 | I    | OM.F.INT |          |
|                              | 0  | 38 | 54 | III  | OM.F.INT | 9    | 58 | 26 | I   | PA.F.INT |          |      | 18 | 24 | 34 | I    | OM.F.EXT |          |
|                              | 0  | 52 | 48 | III  | OM.F.EXT | 10   | 2  | 13 | I   | PA.F.EXT |          |      | 18 | 35 | 28 | III  | EC.F.INT |          |
|                              | 1  | 16 | 2  | I    | OM.D.EXT | 10   | 54 | 13 | I   | OM.F.INT |          |      | 18 | 50 | 10 | III  | EC.F.EXT |          |
|                              | 1  | 19 | 49 | I    | OM.D.INT | 10   | 57 | 59 | I   | OM.F.EXT |          |      | 18 | 55 | 9  | III  | EC.F.PEN |          |
|                              | 2  | 37 | 52 | I    | PA.F.INT | 20   | 14 | 23 | II  | OC.D.EXT |          |      |    |    |    |      |          |          |
|                              | 2  | 41 | 40 | I    | PA.F.EXT | 20   | 18 | 43 | II  | OC.D.INT |          |      |    |    |    |      |          |          |
|                              | 3  | 27 | 45 | I    | OM.F.INT |      |    |    |     |          |          |      | 12 | 4  | 31 | 45   | II       | PA.D.EXT |
|                              | 3  | 31 | 31 | I    | OM.F.EXT |      |    |    |     |          |          |      | 4  | 36 | 1  | II   | PA.D.INT |          |
|                              | 12 | 59 | 27 | II   | PA.D.EXT | 7    | 0  | 44 | 7   | II       | EC.F.INT |      | 6  | 31 | 21 | II   | OM.D.EXT |          |
|                              | 13 | 3  | 45 | II   | PA.D.INT | 7    | 0  | 48 | 26  | II       | EC.F.EXT |      | 6  | 35 | 35 | II   | OM.D.INT |          |
|                              | 14 | 36 | 52 | II   | OM.D.EXT | 7    | 0  | 50 | 7   | II       | EC.F.PEN |      | 7  | 6  | 9  | II   | PA.F.INT |          |
|                              | 14 | 41 | 6  | II   | OM.D.INT | 5    | 7  | 29 | I   | OC.D.EXT |          |      | 7  | 10 | 26 | II   | PA.F.EXT |          |
|                              | 15 | 33 | 33 | II   | PA.F.INT | 5    | 11 | 16 | I   | OC.D.INT |          |      | 9  | 8  | 59 | II   | OM.F.INT |          |
|                              | 15 | 37 | 52 | II   | PA.F.EXT | 8    | 14 | 18 | I   | EC.F.INT |          |      | 9  | 13 | 12 | II   | OM.F.EXT |          |
|                              | 17 | 14 | 40 | II   | OM.F.INT | 8    | 18 | 4  | I   | EC.F.EXT |          |      | 12 | 28 | 38 | I    | OC.D.EXT |          |
|                              | 17 | 18 | 54 | II   | OM.F.EXT | 8    | 18 | 51 | I   | EC.F.PEN |          |      | 12 | 32 | 24 | I    | OC.D.INT |          |
|                              | 21 | 47 | 6  | I    | OC.D.EXT | 22   | 41 | 30 | III | PA.D.EXT |          |      | 15 | 40 | 44 | I    | EC.F.INT |          |
|                              | 21 | 50 | 52 | I    | OC.D.INT | 22   | 56 | 29 | III | PA.D.INT |          |      | 15 | 44 | 29 | I    | EC.F.EXT |          |
|                              |    |    |    |      |          | 8    | 0  | 43 | 13  | III      | PA.F.INT |      | 15 | 45 | 16 | I    | EC.F.PEN |          |
| 2                            | 0  | 47 | 58 | I    | EC.F.INT | 0    | 58 | 18 | III | PA.F.EXT |          |      |    |    |    |      |          |          |
|                              | 0  | 51 | 44 | I    | EC.F.EXT | 2    | 15 | 18 | I   | PA.D.EXT |          |      | 13 | 9  | 36 | 45   | I        | PA.D.EXT |
|                              | 0  | 52 | 31 | I    | EC.F.PEN | 2    | 19 | 4  | I   | PA.D.INT |          |      | 9  | 40 | 31 | I    | PA.D.INT |          |
|                              | 18 | 54 | 28 | I    | PA.D.EXT | 2    | 26 | 25 | III | OM.D.EXT |          |      | 10 | 38 | 1  | I    | OM.D.EXT |          |
|                              | 18 | 58 | 15 | I    | PA.D.INT | 2    | 40 | 20 | III | OM.D.INT |          |      | 10 | 41 | 47 | I    | OM.D.INT |          |
|                              | 19 | 44 | 50 | I    | OM.D.EXT | 3    | 11 | 26 | I   | OM.D.EXT |          |      | 11 | 46 | 57 | I    | PA.F.INT |          |
|                              | 19 | 48 | 36 | I    | OM.D.INT | 3    | 15 | 12 | I   | OM.D.INT |          |      | 11 | 50 | 44 | I    | PA.F.EXT |          |
|                              | 21 | 4  | 36 | I    | PA.F.INT | 4    | 25 | 28 | I   | PA.F.EXT |          |      | 12 | 49 | 38 | I    | OM.F.INT |          |
|                              | 21 | 8  | 24 | I    | PA.F.EXT | 4    | 29 | 15 | I   | PA.F.INT |          |      | 12 | 53 | 24 | I    | OM.F.EXT |          |
|                              | 21 | 56 | 32 | I    | OM.F.INT | 4    | 40 | 34 | III | OM.F.EXT |          |      | 22 | 37 | 39 | II   | OC.D.EXT |          |
|                              | 22 | 0  | 18 | I    | OM.F.EXT | 4    | 54 | 22 | III | OM.F.EXT |          |      | 22 | 41 | 59 | II   | OC.D.INT |          |
|                              |    |    |    |      |          | 5    | 23 | 6  | I   | OM.F.INT |          |      |    |    |    |      |          |          |
| 3                            | 7  | 3  | 56 | II   | OC.D.EXT | 5    | 26 | 52 | I   | OM.F.EXT |          |      | 14 | 3  | 22 | 10   | II       | EC.F.INT |
|                              | 7  | 8  | 17 | II   | OC.D.INT | 15   | 20 | 22 | II  | PA.D.EXT |          |      | 3  | 26 | 28 | II   | EC.F.EXT |          |
|                              | 11 | 25 | 30 | II   | EC.F.INT | 15   | 24 | 40 | II  | PA.D.INT |          |      | 3  | 28 | 9  | II   | EC.F.PEN |          |
|                              | 11 | 29 | 48 | II   | EC.F.EXT | 17   | 13 | 11 | II  | OM.D.EXT |          |      | 6  | 55 | 48 | I    | OC.D.EXT |          |
|                              | 11 | 31 | 29 | II   | EC.F.PEN | 17   | 17 | 25 | II  | OM.D.INT |          |      | 6  | 59 | 34 | I    | OC.D.INT |          |
|                              | 16 | 13 | 48 | I    | OC.D.EXT | 17   | 54 | 42 | II  | PA.F.INT |          |      | 10 | 9  | 31 | I    | EC.F.INT |          |
|                              | 16 | 17 | 35 | I    | OC.D.INT | 17   | 58 | 59 | II  | PA.F.EXT |          |      | 10 | 13 | 16 | I    | EC.F.EXT |          |
|                              | 19 | 16 | 44 | I    | EC.F.INT | 19   | 50 | 53 | II  | OM.F.INT |          |      | 10 | 14 | 4  | I    | EC.F.PEN |          |
|                              | 19 | 20 | 29 | I    | EC.F.EXT | 19   | 55 | 6  | II  | OM.F.EXT |          |      |    |    |    |      |          |          |
|                              | 19 | 21 | 17 | I    | EC.F.PEN | 23   | 34 | 30 | I   | OC.D.EXT |          |      | 15 | 2  | 14 | 9    | III      | PA.D.EXT |
|                              |    |    |    |      |          | 23   | 38 | 16 | I   | OC.D.INT |          |      | 2  | 28 | 45 | III  | PA.D.INT |          |
| 4                            | 8  | 53 | 57 | III  | OC.D.EXT |      |    |    |     |          |          |      | 4  | 4  | 5  | 5    | I        | PA.D.EXT |
|                              | 9  | 9  | 12 | III  | OC.D.INT | 9    | 2  | 43 | 8   | I        | EC.F.INT |      | 4  | 7  | 52 | I    | PA.D.INT |          |
|                              | 10 | 55 | 51 | III  | OC.F.INT | 2    | 46 | 54 | I   | EC.F.EXT |          |      | 4  | 18 | 36 | III  | PA.F.INT |          |
|                              | 11 | 11 | 6  | III  | OC.F.EXT | 2    | 47 | 41 | I   | EC.F.PEN |          |      | 4  | 33 | 20 | III  | PA.F.EXT |          |
|                              | 12 | 24 | 23 | III  | EC.D.PEN | 20   | 42 | 20 | I   | PA.D.EXT |          |      | 5  | 6  | 56 | I    | OM.D.EXT |          |
|                              | 12 | 29 | 23 | III  | EC.D.EXT | 20   | 46 | 6  | I   | PA.D.INT |          |      | 5  | 10 | 42 | I    | OM.D.INT |          |
|                              | 12 | 44 | 13 | III  | EC.D.INT | 21   | 40 | 15 | I   | OM.D.EXT |          |      | 6  | 14 | 19 | I    | PA.F.INT |          |
|                              | 13 | 21 | 22 | I    | PA.D.EXT | 21   | 44 | 1  | I   | OM.D.INT |          |      | 6  | 18 | 6  | I    | PA.F.EXT |          |
|                              | 13 | 25 | 9  | I    | PA.D.INT | 22   | 52 | 31 | I   | PA.F.EXT |          |      | 6  | 27 | 29 | III  | OM.D.EXT |          |
|                              | 14 | 13 | 43 | I    | OM.D.EXT | 22   | 56 | 18 | I   | PA.F.EXT |          |      | 6  | 41 | 19 | III  | OM.D.INT |          |
|                              | 14 | 17 | 30 | I    | OM.D.INT | 23   | 51 | 53 | I   | OM.F.INT |          |      | 7  | 18 | 32 | I    | OM.F.EXT |          |
|                              | 14 | 33 | 36 | III  | EC.F.INT | 23   | 55 | 39 | I   | OM.F.EXT |          |      | 7  | 22 | 18 | I    | OM.F.EXT |          |
|                              | 14 | 48 | 26 | III  | EC.F.EXT |      |    |    |     |          |          |      | 8  | 42 | 21 | III  | OM.F.INT |          |
|                              | 14 | 53 | 27 | III  | EC.F.PEN | 10   | 9  | 25 | 57  | II       | OC.D.EXT |      | 8  | 56 | 2  | III  | OM.F.EXT |          |
|                              | 15 | 31 | 31 | I    | PA.F.INT | 9    | 30 | 16 | II  | OC.D.INT |          |      | 17 | 43 | 34 | II   | PA.D.EXT |          |
|                              | 15 | 35 | 19 | I    | PA.F.EXT | 14   | 3  | 25 | II  | EC.F.INT |          |      | 17 | 47 | 50 | II   | PA.D.INT |          |
|                              | 16 | 25 | 25 | I    | OM.F.INT | 14   | 7  | 43 | II  | EC.F.EXT |          |      | 19 | 49 | 25 | II   | OM.D.EXT |          |
|                              | 16 | 29 | 11 | I    | OM.F.EXT | 14   | 9  | 24 | II  | EC.F.PEN |          |      | 19 | 53 | 39 | II   | OM.D.INT |          |
|                              |    |    |    |      |          | 18   | 1  | 30 | I   | OC.D.EXT |          |      | 20 | 18 | 5  | II   | PA.F.EXT |          |
| 5                            | 2  | 9  | 44 | II   | PA.D.EXT | 18   | 5  | 16 | I   | OC.D.INT |          |      | 20 | 22 | 22 | II   | PA.F.EXT |          |
|                              | 2  | 14 | 1  | II   | PA.D.INT | 21   | 11 | 55 | I   | EC.F.INT |          |      | 22 | 27 | 1  | II   | OM.F.INT |          |
|                              | 3  | 55 | 6  | II   | OM.D.EXT | 21   | 15 | 41 | I   | EC.F.EXT |          |      | 22 | 31 | 14 | II   | OM.F.EXT |          |
|                              | 3  | 59 | 20 | II   | OM.D.INT | 21   | 16 | 28 | I   | EC.F.PEN |          |      |    |    |    |      |          |          |

## 2001 - CONFIGURATIONS DES SATELLITES GALILÉENS DE JUPITER



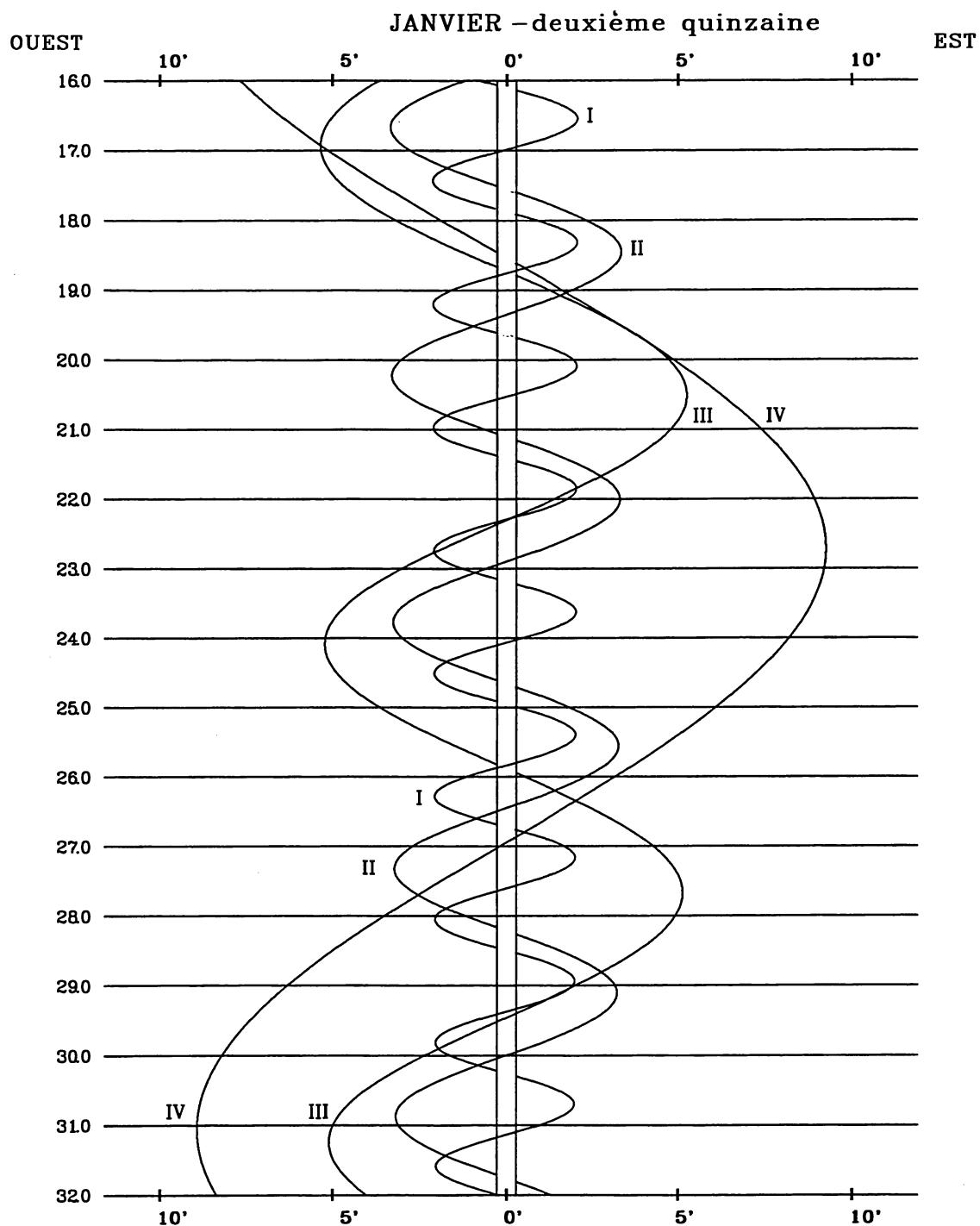
Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter



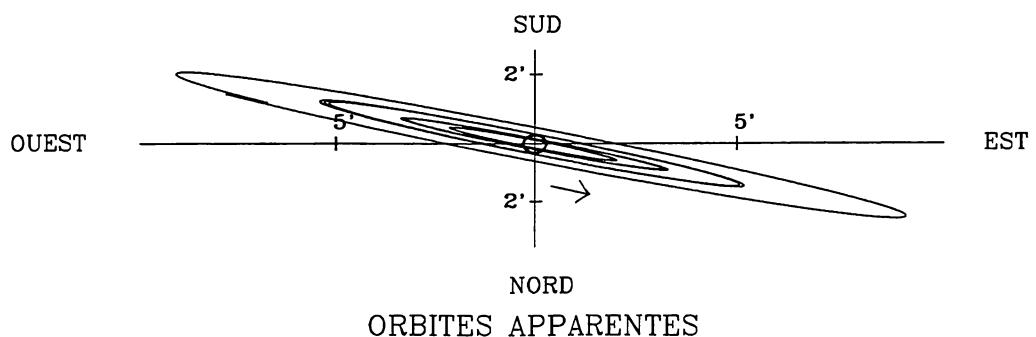
**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
 (Temps Terrestre)

| JANVIER - DEUXIÈME QUINZAINE |    |    |    |      |          |          |          |    |     |          |          |          |    |     |          |          |          |
|------------------------------|----|----|----|------|----------|----------|----------|----|-----|----------|----------|----------|----|-----|----------|----------|----------|
| jour                         | h  | m  | s  | SAT. | TYPE     | jour     | h        | m  | s   | SAT.     | TYPE     | jour     | h  | m   | s        | SAT.     | TYPE     |
| 16                           | 1  | 23 | 6  | I    | OC.D.EXT | 22       | 12       | 9  | 18  | I        | EC.F.PEN | 27       | 12 | 1   | 56       | II       | PA.F.EXT |
|                              | 1  | 26 | 52 | I    | OC.D.INT |          | 5        | 52 | 41  | III      | PA.D.EXT |          | 13 | 21  | 12       | II       | OM.F.INT |
|                              | 4  | 38 | 22 | I    | EC.F.INT |          | 5        | 54 | 10  | I        | PA.D.EXT |          | 14 | 25  | 23       | II       | OM.F.EXT |
|                              | 4  | 42 | 7  | I    | EC.F.EXT |          | 5        | 57 | 56  | I        | PA.D.INT |          | 16 | 8   | 20       | I        | OC.D.EXT |
|                              | 4  | 42 | 54 | I    | EC.F.PEN |          | 6        | 6  | 57  | III      | PA.D.INT |          | 16 | 12  | 5        | I        | OC.D.INT |
|                              | 22 | 31 | 26 | I    | PA.D.EXT |          | 7        | 2  | 32  | I        | OM.D.EXT |          | 19 | 31  | 15       | I        | EC.F.INT |
|                              | 22 | 35 | 13 | I    | PA.D.INT |          | 7        | 6  | 18  | I        | OM.D.EXT |          | 19 | 35  | 0        | I        | EC.F.EXT |
|                              | 23 | 35 | 46 | I    | OM.D.EXT |          | 7        | 59 | 43  | III      | PA.F.EXT |          | 19 | 35  | 47       | I        | EC.F.PEN |
|                              | 23 | 39 | 32 | I    | OM.D.INT |          | 8        | 4  | 27  | I        | PA.F.EXT |          | 27 | 13  | 17       | 32       | I        |
|                              | 17 | 0  | 41 | 40   | I        | PA.F.INT | 8        | 8  | 14  | I        | PA.F.EXT | 13       | 21 | 18  | I        | PA.D.INT |          |
| 17                           | 0  | 45 | 27 | I    | PA.F.EXT | 8        | 14       | 8  | III | PA.F.EXT | 14       | 29       | 15 | I   | OM.D.INT |          |          |
|                              | 1  | 47 | 22 | I    | OM.F.INT | 9        | 14       | 6  | I   | OM.F.INT | 14       | 33       | 1  | I   | OM.D.INT |          |          |
|                              | 1  | 51 | 8  | I    | OM.F.EXT | 9        | 17       | 52 | I   | OM.F.EXT | 15       | 27       | 52 | I   | PA.F.INT |          |          |
|                              | 11 | 50 | 29 | II   | OC.D.EXT | 10       | 29       | 26 | III | OM.D.EXT | 15       | 31       | 39 | I   | PA.F.EXT |          |          |
|                              | 11 | 54 | 48 | II   | OC.D.INT | 10       | 43       | 9  | III | OM.D.INT | 16       | 40       | 48 | I   | OM.F.INT |          |          |
|                              | 16 | 41 | 33 | II   | EC.F.INT | 12       | 45       | 2  | III | OM.F.INT | 16       | 44       | 34 | I   | OM.F.EXT |          |          |
|                              | 16 | 45 | 51 | II   | EC.F.EXT | 12       | 58       | 37 | III | OM.F.EXT | 16       | 47       | 33 | II  | OC.D.EXT |          |          |
|                              | 16 | 47 | 33 | II   | EC.F.PEN | 20       | 9        | 8  | II  | PA.D.EXT | 28       | 3        | 31 | 59  | II       | OC.D.EXT |          |
|                              | 19 | 50 | 25 | I    | OC.D.EXT | 20       | 13       | 23 | II  | PA.D.INT | 3        | 36       | 18 | II  | OC.D.INT |          |          |
|                              | 19 | 54 | 11 | I    | OC.D.INT | 22       | 25       | 38 | II  | OM.D.EXT | 8        | 38       | 46 | II  | EC.F.INT |          |          |
| 18                           | 23 | 7  | 10 | I    | EC.F.INT | 22       | 29       | 51 | I   | OM.D.EXT | 8        | 43       | 3  | II  | EC.F.EXT |          |          |
|                              | 23 | 10 | 55 | I    | EC.F.EXT | 22       | 43       | 53 | II  | PA.F.INT | 8        | 44       | 45 | II  | EC.F.PEN |          |          |
|                              | 23 | 11 | 42 | I    | EC.F.PEN | 22       | 48       | 9  | II  | PA.F.EXT | 10       | 36       | 8  | I   | OC.D.EXT |          |          |
|                              | 18 | 15 | 58 | 16   | III      | OC.D.EXT | 23       | 1  | 3   | 10       | II       | OM.F.INT | 10 | 39  | 53       | I        | OC.D.INT |
|                              | 16 | 12 | 48 | III  | OC.D.INT | 1        | 7        | 22 | II  | OM.F.EXT | 14       | 0        | 4  | I   | EC.F.INT |          |          |
|                              | 16 | 58 | 58 | I    | PA.D.EXT | 3        | 12       | 57 | I   | OC.D.EXT | 14       | 3        | 48 | I   | EC.F.EXT |          |          |
|                              | 17 | 2  | 45 | I    | PA.D.INT | 3        | 16       | 43 | I   | OC.D.INT | 14       | 4        | 35 | I   | EC.F.PEN |          |          |
|                              | 18 | 4  | 43 | I    | OM.D.EXT | 6        | 33       | 37 | I   | EC.F.INT | 29       | 7        | 45 | 32  | I        | PA.D.EXT |          |
|                              | 18 | 6  | 2  | III  | OC.F.INT | 6        | 37       | 22 | I   | EC.F.EXT | 7        | 49       | 18 | I   | PA.D.INT |          |          |
|                              | 18 | 8  | 29 | I    | OM.D.INT | 6        | 38       | 9  | I   | EC.F.PEN | 8        | 58       | 13 | I   | OM.D.EXT |          |          |
| 19                           | 18 | 20 | 34 | III  | OC.F.EXT | 9        | 1        | 59 | I   | OM.D.INT | 9        | 1        | 59 | I   | OM.D.INT |          |          |
|                              | 19 | 9  | 13 | I    | PA.F.INT | 24       | 0        | 21 | 50  | I        | PA.D.EXT | 9        | 35 | 36  | III      | PA.D.EXT |          |
|                              | 19 | 13 | 0  | I    | PA.F.EXT | 0        | 25       | 36 | I   | PA.D.INT | 9        | 49       | 35 | III | PA.D.INT |          |          |
|                              | 20 | 16 | 18 | I    | OM.F.INT | 1        | 31       | 23 | II  | OM.D.EXT | 9        | 55       | 53 | I   | PA.F.INT |          |          |
|                              | 20 | 20 | 4  | I    | OM.F.EXT | 1        | 35       | 9  | I   | OM.D.INT | 9        | 59       | 40 | I   | PA.F.EXT |          |          |
|                              | 20 | 25 | 46 | III  | EC.D.PEN | 2        | 32       | 8  | I   | PA.F.INT | 11       | 9        | 46 | I   | OM.F.INT |          |          |
|                              | 20 | 30 | 42 | III  | EC.D.EXT | 2        | 35       | 55 | I   | PA.F.EXT | 11       | 13       | 31 | I   | OM.F.EXT |          |          |
|                              | 20 | 45 | 17 | III  | EC.D.INT | 3        | 42       | 57 | I   | OM.F.INT | 11       | 45       | 2  | III | PA.F.INT |          |          |
|                              | 22 | 36 | 53 | III  | EC.F.INT | 3        | 46       | 43 | I   | OM.F.EXT | 11       | 59       | 11 | III | PA.F.EXT |          |          |
|                              | 22 | 51 | 28 | III  | EC.F.EXT | 14       | 17       | 40 | II  | OC.D.EXT | 14       | 30       | 35 | III | OM.D.EXT |          |          |
| 19                           | 22 | 56 | 24 | III  | EC.F.PEN | 14       | 21       | 58 | II  | OC.D.INT | 14       | 44       | 13 | III | OM.D.EXT |          |          |
|                              | 19 | 30 | 44 | II   | PA.F.INT | 19       | 19       | 52 | II  | EC.F.EXT | 16       | 46       | 59 | III | OM.F.EXT |          |          |
|                              | 19 | 35 | 0  | II   | PA.F.EXT | 19       | 24       | 10 | II  | EC.F.EXT | 17       | 0        | 28 | III | OM.F.EXT |          |          |
|                              | 11 | 45 | 7  | II   | OM.F.INT | 19       | 25       | 52 | II  | EC.F.PEN | 22       | 37       | 3  | II  | PA.D.EXT |          |          |
|                              | 11 | 49 | 19 | II   | OM.F.EXT | 21       | 40       | 35 | I   | OC.D.EXT | 22       | 41       | 17 | II  | PA.D.INT |          |          |
|                              | 14 | 17 | 51 | I    | OC.D.EXT | 21       | 44       | 21 | I   | OC.D.INT | 30       | 1        | 1  | 44  | II       | OM.D.EXT |          |
|                              | 14 | 21 | 37 | I    | OC.D.INT | 1        | 6        | 11 | I   | EC.F.EXT | 1        | 5        | 56 | II  | OM.D.INT |          |          |
|                              | 17 | 35 | 59 | I    | EC.F.INT | 1        | 6        | 58 | I   | EC.F.PEN | 1        | 12       | 2  | II  | PA.F.INT |          |          |
|                              | 17 | 39 | 44 | I    | EC.F.EXT | 18       | 49       | 41 | I   | PA.D.EXT | 1        | 16       | 17 | II  | PA.F.EXT |          |          |
|                              | 17 | 40 | 31 | I    | EC.F.PEN | 18       | 53       | 28 | I   | PA.D.INT | 3        | 39       | 14 | II  | OM.F.INT |          |          |
| 20                           | 20 | 11 | 26 | 30   | I        | PA.D.EXT | 19       | 37 | 48  | III      | OC.D.EXT | 3        | 43 | 25  | II       | OM.F.EXT |          |
|                              | 20 | 12 | 33 | 35   | I        | OM.D.EXT | 19       | 52 | 2   | III      | OC.F.EXT | 5        | 4  | 3   | I        | OC.D.EXT |          |
|                              | 20 | 13 | 36 | 46   | I        | PA.F.INT | 22       | 11 | 55  | I        | OM.F.INT | 5        | 7  | 49  | I        | OC.D.INT |          |
|                              | 20 | 13 | 40 | 32   | I        | PA.F.EXT | 22       | 15 | 41  | I        | OM.F.EXT | 8        | 28 | 55  | I        | EC.F.EXT |          |
|                              | 20 | 14 | 45 | 10   | I        | OM.F.INT | 20       | 0  | 22  | I        | OM.D.EXT | 8        | 32 | 40  | I        | EC.F.EXT |          |
|                              | 20 | 14 | 48 | 56   | I        | OM.F.EXT | 20       | 4  | 8   | I        | OM.D.INT | 8        | 33 | 27  | I        | EC.F.PEN |          |
|                              | 21 | 1  | 1  | 26   | 30       | I        | PA.D.EXT | 21 | 0   | 0        | I        | PA.F.INT | 2  | 13  | 31       | I        | PA.D.EXT |
|                              | 21 | 1  | 7  | 34   | II       | OM.D.EXT | 21       | 3  | 47  | I        | PA.F.EXT | 2        | 17 | 17  | I        | PA.D.INT |          |
|                              | 21 | 6  | 0  | 21   | II       | EC.F.INT | 21       | 48 | 12  | III      | OC.F.EXT | 3        | 27 | 5   | I        | OM.D.EXT |          |
|                              | 21 | 6  | 4  | 39   | II       | EC.F.EXT | 22       | 2  | 27  | III      | OC.F.EXT | 3        | 30 | 51  | I        | OM.D.INT |          |
| 21                           | 6  | 6  | 6  | 21   | II       | EC.F.PEN | 22       | 11 | 55  | I        | OM.F.INT | 4        | 23 | 54  | I        | PA.F.EXT |          |
|                              | 8  | 45 | 20 | I    | OC.D.EXT | 22       | 15       | 41 | I   | OM.F.EXT | 4        | 27       | 40 | I   | PA.F.EXT |          |          |
|                              | 8  | 49 | 6  | I    | OC.D.INT | 11       | 43       | 41 | II  | OM.D.EXT | 5        | 38       | 38 | I   | OM.F.EXT |          |          |
|                              | 12 | 4  | 46 | I    | EC.F.INT | 11       | 47       | 54 | II  | OM.D.INT | 5        | 42       | 23 | I   | OM.F.EXT |          |          |
|                              | 12 | 8  | 31 | I    | EC.F.EXT | 11       | 57       | 41 | II  | PA.F.INT | 16       | 47       | 33 | II  | OC.D.EXT |          |          |
|                              | 12 | 8  | 31 | I    | EC.F.EXT | 11       | 57       | 41 | II  | PA.F.INT | 21       | 58       | 24 | II  | EC.F.INT |          |          |

## 2001 - CONFIGURATIONS DES SATELLITES GALILÉENS DE JUPITER



Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter

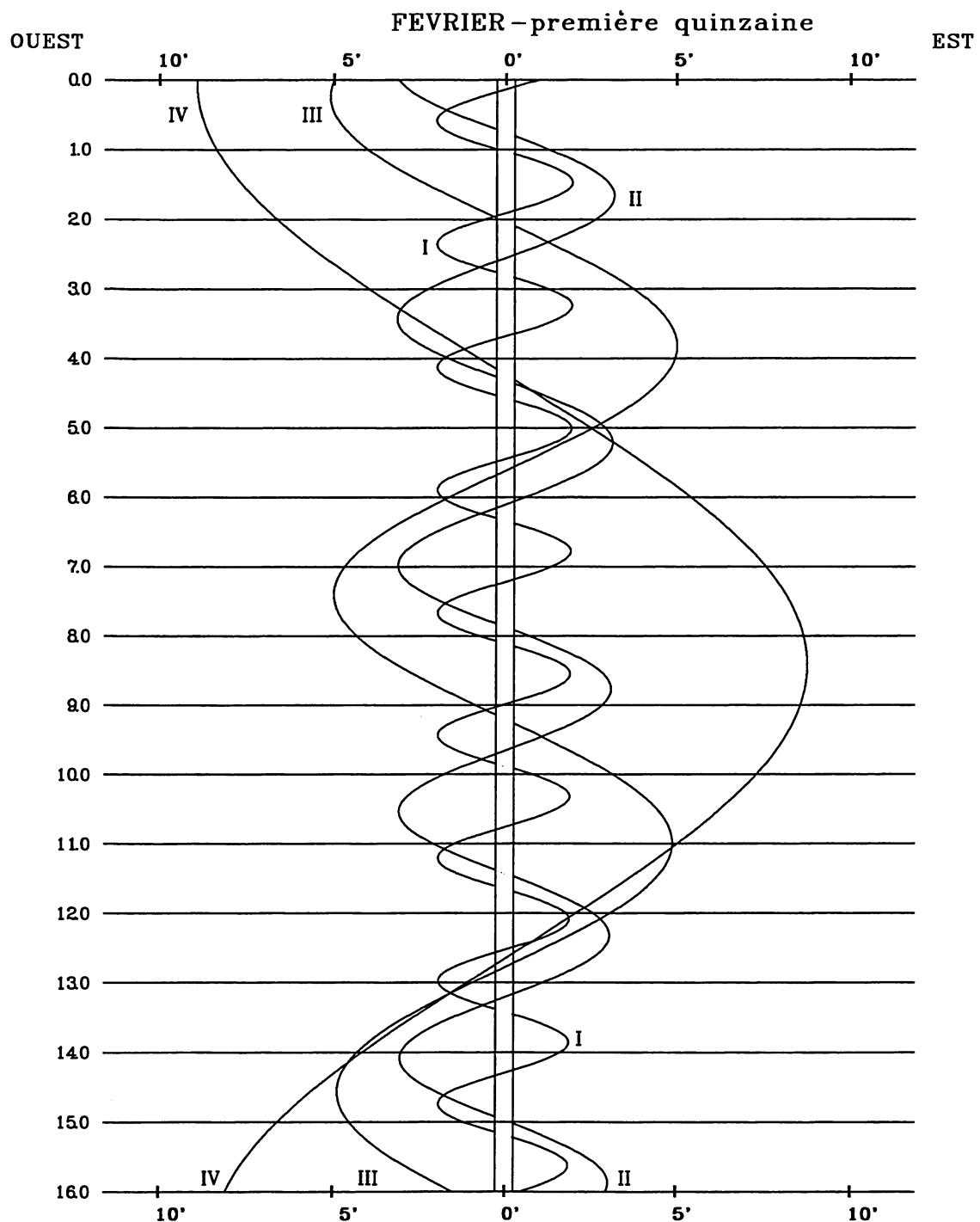


**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
 (Temps Terrestre)

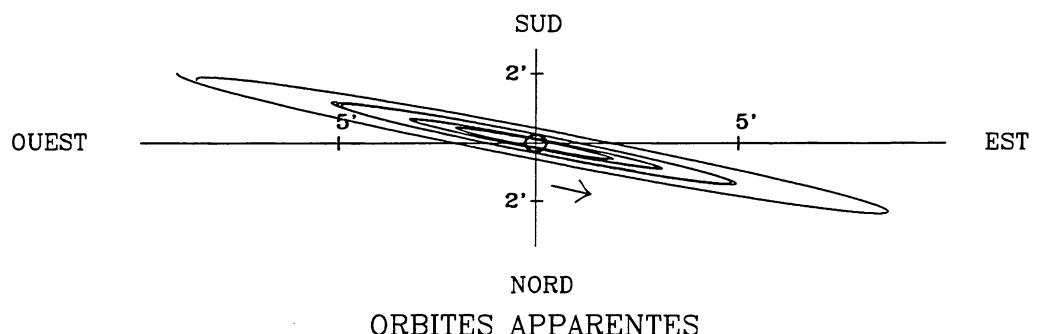
**FÉVRIER - PREMIÈRE QUINZAINE**

| jour | h  | m  | s  | SAT. | TYPE     | jour | h  | m  | s   | SAT.     | TYPE     | jour | h  | m  | s   | SAT.     | TYPE |
|------|----|----|----|------|----------|------|----|----|-----|----------|----------|------|----|----|-----|----------|------|
| 1    | 2  | 57 | 44 | I    | EC.F.INT | 3    | 37 | 46 | II  | OM.D.EXT |          | 20   | 36 | 6  | I   | OM.F.EXT |      |
|      | 3  | 1  | 28 | I    | EC.F.EXT | 3    | 41 | 58 | II  | OM.D.INT |          |      |    |    | II  | OC.D.EXT |      |
|      | 3  | 2  | 15 | I    | EC.F.PEN | 3    | 42 | 34 | II  | PA.F.INT | 11       | 8    | 36 | 50 | II  | OC.D.INT |      |
|      | 20 | 41 | 41 | I    | PA.D.EXT | 3    | 46 | 48 | II  | PA.F.EXT |          | 8    | 41 | 8  | II  | OC.F.INT |      |
|      | 20 | 45 | 27 | I    | PA.D.INT | 6    | 15 | 17 | II  | OM.F.INT |          | 11   | 15 | 50 | II  | EC.D.PEN |      |
|      | 21 | 56 | 4  | I    | OM.D.EXT | 6    | 19 | 28 | II  | OM.F.EXT |          | 11   | 16 | 11 | II  | EC.D.INT |      |
|      | 21 | 59 | 50 | I    | OM.D.INT | 6    | 56 | 23 | I   | OC.D.EXT |          | 11   | 17 | 52 | II  | EC.F.EXT |      |
|      | 22 | 52 | 5  | I    | PA.F.INT | 7    | 0  | 8  | I   | OC.D.INT |          | 11   | 20 | 7  | II  | OC.F.EXT |      |
|      | 22 | 55 | 52 | I    | PA.F.EXT | 10   | 24 | 13 | I   | EC.F.INT |          | 11   | 22 | 9  | II  | EC.D.INT |      |
|      | 23 | 22 | 57 | III  | OC.D.EXT | 10   | 27 | 57 | I   | EC.F.EXT |          | 13   | 55 | 57 | II  | EC.F.INT |      |
|      | 23 | 36 | 56 | III  | OC.D.INT | 10   | 28 | 44 | I   | EC.F.PEN |          | 14   | 0  | 15 | II  | EC.F.EXT |      |
|      |    |    |    |      |          |      |    |    |     |          |          | 14   | 1  | 56 | II  | EC.F.PEN |      |
| 2    | 0  | 7  | 37 | I    | OM.F.INT | 7    | 4  | 6  | 26  | I        | PA.D.EXT | 14   | 21 | 21 | I   | OC.D.EXT |      |
|      | 0  | 11 | 23 | I    | OM.F.EXT | 4    | 10 | 12 | I   | PA.D.INT |          | 14   | 25 | 6  | I   | OC.D.INT |      |
|      | 1  | 35 | 46 | III  | OC.F.INT | 5    | 22 | 50 | I   | OM.D.EXT |          | 17   | 50 | 40 | I   | EC.F.INT |      |
|      | 1  | 49 | 45 | III  | OC.F.EXT | 5    | 26 | 36 | I   | OM.D.INT |          | 17   | 54 | 24 | I   | EC.F.EXT |      |
|      | 4  | 27 | 26 | III  | EC.D.PEN | 6    | 16 | 55 | I   | PA.F.INT |          | 17   | 55 | 11 | I   | EC.F.PEN |      |
|      | 4  | 32 | 18 | III  | EC.D.INT | 6    | 20 | 42 | I   | PA.F.EXT |          |      |    |    |     |          |      |
|      | 4  | 46 | 39 | III  | EC.D.INT | 7    | 34 | 24 | I   | OM.F.INT | 12       | 11   | 31 | 58 | I   | PA.D.EXT |      |
|      | 6  | 40 | 28 | III  | EC.F.INT | 7    | 38 | 10 | I   | OM.F.EXT |          | 11   | 35 | 44 | I   | PA.D.INT |      |
|      | 6  | 54 | 50 | III  | EC.F.EXT | 19   | 20 | 1  | II  | OC.D.EXT |          | 12   | 49 | 44 | I   | OM.D.EXT |      |
|      | 6  | 59 | 43 | III  | EC.F.PEN | 19   | 24 | 18 | II  | OC.D.INT |          | 12   | 53 | 30 | I   | OM.D.INT |      |
|      | 11 | 51 | 54 | II   | PA.D.EXT | 21   | 58 | 46 | II  | OC.F.INT |          | 13   | 42 | 33 | I   | PA.F.INT |      |
|      | 11 | 56 | 7  | II   | PA.D.INT | 21   | 59 | 3  | II  | EC.D.EXT |          | 13   | 46 | 19 | I   | PA.F.EXT |      |
|      | 14 | 19 | 44 | II   | OM.D.EXT | 22   | 3  | 4  | II  | OC.F.EXT |          | 15   | 1  | 21 | I   | OM.F.INT |      |
|      | 14 | 23 | 56 | II   | OM.D.INT | 22   | 3  | 21 | II  | EC.D.INT |          | 15   | 5  | 6  | I   | OM.F.EXT |      |
|      | 14 | 27 | 0  | II   | PA.F.INT |      |    |    |     |          |          | 17   | 16 | 17 | III | PA.D.EXT |      |
|      | 14 | 31 | 14 | II   | PA.F.EXT | 8    | 0  | 37 | 1   | II       | EC.F.INT | 17   | 29 | 48 | III | PA.D.INT |      |
|      | 16 | 57 | 14 | II   | OM.F.INT | 0    | 41 | 19 | II  | EC.F.EXT |          | 19   | 29 | 59 | III | PA.F.INT |      |
|      | 17 | 1  | 25 | II   | OM.F.EXT | 0    | 43 | 0  | II  | EC.F.PEN |          | 19   | 43 | 40 | III | PA.F.EXT |      |
|      | 18 | 0  | 3  | I    | OC.D.EXT | 1    | 24 | 37 | I   | OC.D.EXT |          | 22   | 32 | 33 | III | OM.D.EXT |      |
|      | 18 | 3  | 48 | I    | OC.D.INT | 1    | 28 | 22 | I   | OC.D.INT |          | 22   | 45 | 59 | III | OM.D.INT |      |
|      | 21 | 26 | 33 | I    | EC.F.INT | 4    | 53 | 2  | I   | EC.F.INT |          |      |    |    |     |          |      |
|      | 21 | 30 | 18 | I    | EC.F.EXT | 4    | 56 | 47 | I   | EC.F.EXT | 13       | 0    | 50 | 42 | III | OM.F.INT |      |
|      | 21 | 31 | 5  | I    | EC.F.PEN | 4    | 57 | 33 | I   | EC.F.PEN |          | 1    | 3  | 57 | III | OM.F.EXT |      |
| 3    | 15 | 9  | 51 | I    | PA.D.EXT | 22   | 34 | 55 | I   | PA.D.EXT |          | 3    | 39 | 46 | II  | PA.D.INT |      |
|      | 15 | 13 | 37 | I    | PA.D.INT | 23   | 51 | 50 | I   | OM.D.EXT |          | 6    | 13 | 42 | II  | OM.D.EXT |      |
|      | 16 | 24 | 58 | I    | OM.D.EXT | 23   | 55 | 36 | I   | OM.D.INT |          | 6    | 15 | 17 | II  | PA.F.INT |      |
|      | 16 | 28 | 44 | I    | OM.D.INT |      |    |    |     |          |          | 6    | 17 | 53 | II  | OM.D.INT |      |
|      | 17 | 20 | 16 | I    | PA.F.EXT | 9    | 0  | 45 | 26  | I        | PA.F.INT | 6    | 19 | 30 | II  | PA.F.EXT |      |
|      | 17 | 24 | 3  | I    | PA.F.EXT | 0    | 49 | 12 | I   | PA.F.EXT |          | 8    | 49 | 52 | I   | OC.D.EXT |      |
|      | 18 | 36 | 32 | I    | OM.F.INT | 2    | 3  | 25 | I   | OM.F.INT |          | 8    | 51 | 17 | II  | OM.F.INT |      |
|      | 18 | 40 | 17 | I    | OM.F.EXT | 2    | 7  | 10 | I   | OM.F.EXT |          | 8    | 53 | 36 | I   | OC.D.INT |      |
|      |    |    |    |      |          | 3    | 13 | 8  | III | OC.D.EXT |          | 8    | 55 | 27 | II  | OM.F.EXT |      |
| 4    | 6  | 3  | 8  | II   | OC.D.EXT | 3    | 26 | 53 | III | OC.D.INT | 14       | 6    | 0  | 32 | I   | PA.D.EXT |      |
|      | 6  | 7  | 26 | II   | OC.D.INT | 5    | 28 | 8  | III | OC.F.INT |          | 12   | 23 | 15 | I   | EC.F.EXT |      |
|      | 11 | 17 | 18 | I    | EC.F.INT | 5    | 41 | 54 | III | OC.F.EXT |          | 12   | 24 | 2  | I   | EC.F.PEN |      |
|      | 11 | 21 | 35 | II   | EC.F.EXT | 8    | 28 | 25 | III | EC.D.PEN |          |      |    |    |     |          |      |
|      | 11 | 23 | 17 | II   | EC.F.PEN | 8    | 33 | 16 | III | EC.D.EXT | 14       | 6    | 4  | 18 | I   | PA.D.INT |      |
|      | 12 | 28 | 9  | I    | OC.D.EXT | 8    | 47 | 30 | III | EC.D.INT |          | 6    | 18 | 38 | I   | OM.D.EXT |      |
|      | 12 | 31 | 54 | I    | OC.D.INT | 10   | 42 | 27 | III | EC.F.INT |          | 7    | 22 | 24 | I   | OM.D.INT |      |
|      | 15 | 55 | 22 | I    | EC.F.INT | 10   | 56 | 42 | III | EC.F.EXT |          | 8    | 11 | 9  | I   | PA.F.INT |      |
|      | 15 | 59 | 6  | I    | EC.F.EXT | 11   | 1  | 33 | III | EC.F.PEN |          | 8    | 14 | 55 | I   | PA.F.EXT |      |
|      | 15 | 59 | 53 | I    | EC.F.PEN | 14   | 23 | 17 | I   | PA.D.EXT |          | 9    | 30 | 15 | I   | OM.F.INT |      |
|      |    |    |    |      |          | 14   | 27 | 29 | II  | PA.D.INT |          | 9    | 34 | 0  | I   | OM.F.EXT |      |
| 5    | 9  | 38 | 9  | I    | PA.D.EXT | 16   | 55 | 44 | II  | OM.D.EXT |          | 21   | 55 | 1  | II  | OC.D.EXT |      |
|      | 9  | 41 | 55 | I    | PA.D.INT | 16   | 58 | 39 | II  | PA.F.INT |          | 21   | 59 | 18 | II  | OC.D.INT |      |
|      | 10 | 53 | 57 | I    | OM.D.EXT | 16   | 59 | 55 | II  | OM.D.INT |          |      |    |    |     |          |      |
|      | 10 | 57 | 43 | I    | OM.D.INT | 17   | 2  | 52 | II  | PA.F.EXT |          |      |    |    |     |          |      |
|      | 11 | 48 | 37 | I    | PA.F.INT | 19   | 33 | 16 | II  | OM.F.INT | 15       | 0    | 34 | 17 | II  | OC.F.INT |      |
|      | 11 | 52 | 23 | I    | PA.F.EXT | 19   | 37 | 27 | II  | OM.F.EXT |          | 0    | 35 | 51 | II  | EC.D.PEN |      |
|      | 13 | 5  | 31 | I    | OM.F.INT | 19   | 52 | 58 | I   | OC.D.EXT |          | 0    | 37 | 32 | II  | EC.D.EXT |      |
|      | 13 | 9  | 16 | I    | OM.F.EXT | 19   | 56 | 43 | I   | OC.D.INT |          | 0    | 38 | 34 | II  | OC.F.EXT |      |
|      | 13 | 23 | 46 | III  | PA.D.EXT | 23   | 21 | 51 | I   | EC.F.INT |          | 0    | 41 | 49 | II  | EC.D.INT |      |
|      | 13 | 37 | 29 | III  | PA.D.INT | 23   | 25 | 36 | I   | EC.F.EXT |          | 3    | 15 | 47 | II  | EC.F.INT |      |
|      | 15 | 35 | 26 | III  | PA.F.INT | 23   | 26 | 23 | I   | EC.F.PEN |          | 3    | 18 | 23 | I   | OC.D.EXT |      |
|      | 15 | 49 | 19 | III  | PA.F.EXT |      |    |    |     |          |          | 3    | 20 | 4  | II  | EC.F.EXT |      |
|      | 18 | 31 | 47 | III  | OM.D.EXT | 10   | 17 | 3  | 22  | I        | PA.D.EXT | 3    | 21 | 45 | II  | EC.F.PEN |      |
|      | 18 | 45 | 18 | III  | OM.D.INT | 17   | 7  | 8  | I   | PA.D.INT |          | 3    | 22 | 8  | I   | OC.D.INT |      |
|      | 20 | 49 | 3  | III  | OM.F.INT | 18   | 20 | 45 | I   | OM.D.EXT |          | 6    | 48 | 20 | I   | EC.F.INT |      |
|      | 21 | 2  | 24 | III  | OM.F.EXT | 18   | 24 | 31 | I   | OM.D.INT |          | 6    | 52 | 5  | I   | EC.F.EXT |      |
|      |    |    |    |      |          | 19   | 13 | 55 | I   | PA.F.INT |          | 6    | 52 | 52 | I   | EC.F.PEN |      |
| 6    | 1  | 7  | 20 | II   | PA.D.EXT | 19   | 17 | 41 | I   | PA.F.EXT |          |      |    |    |     |          |      |
|      | 1  | 11 | 33 | II   | PA.D.INT | 20   | 32 | 20 | I   | OM.F.INT |          |      |    |    |     |          |      |

## 2001 - CONFIGURATIONS DES SATELLITES GALILIENS DE JUPITER



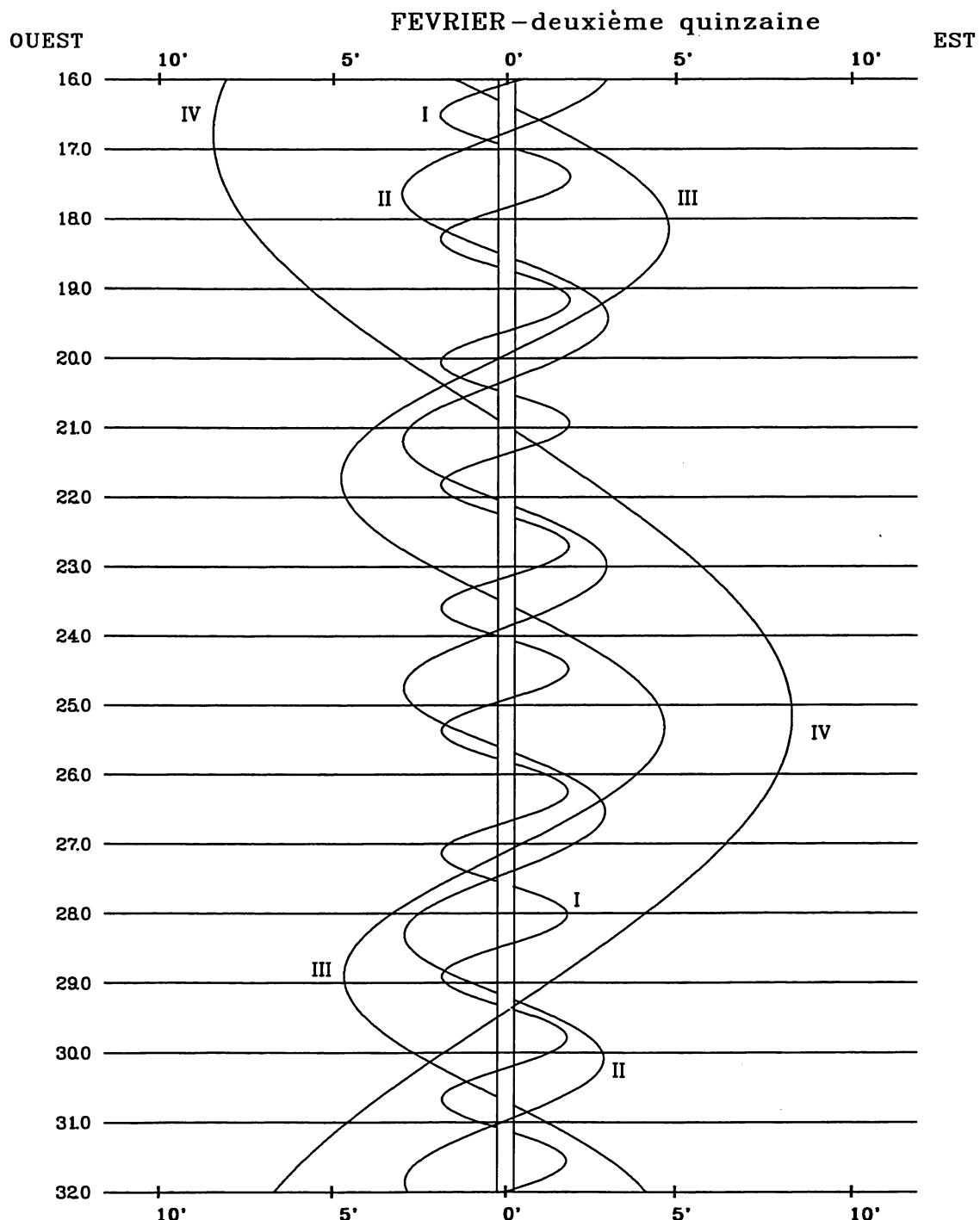
Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter



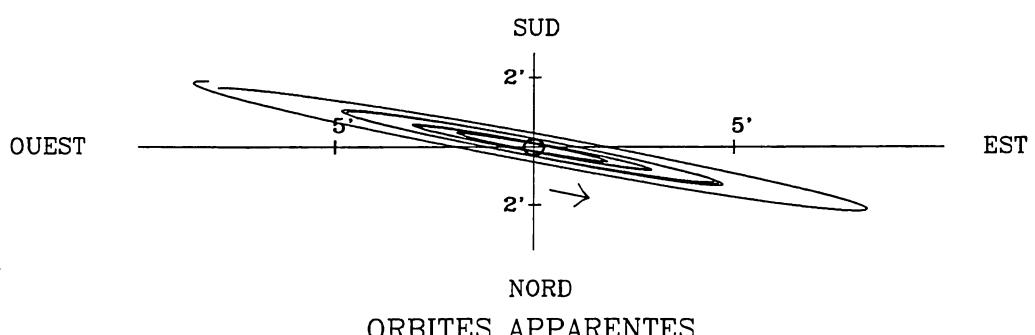
**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
 (Temps Terrestre)

| FÉVRIER - DEUXIÈME QUINZAINE |    |    |    |      |          |          |    |    |     |          |          |          |    |     |          |          |          |
|------------------------------|----|----|----|------|----------|----------|----|----|-----|----------|----------|----------|----|-----|----------|----------|----------|
| jour                         | h  | m  | s  | SAT. | TYPE     | jour     | h  | m  | s   | SAT.     | TYPE     | jour     | h  | m   | s        | SAT.     | TYPE     |
| 16                           | 0  | 29 | 18 | I    | PA.D.EXT | 20       | 2  | 33 | 19  | III      | OM.D.EXT | 24       | 0  | 45  | 14       | II       | OM.F.INT |
|                              | 0  | 33 | 3  | I    | PA.D.INT |          | 2  | 46 | 40  | III      | OM.D.INT |          | 0  | 49  | 24       | II       | OM.F.EXT |
|                              | 1  | 47 | 38 | I    | OM.D.EXT |          | 4  | 52 | 24  | III      | OM.F.INT |          | 3  | 12  | 27       | I        | EC.F.INT |
|                              | 1  | 51 | 24 | I    | OM.D.INT |          | 5  | 5  | 34  | III      | OM.F.EXT |          | 3  | 16  | 11       | I        | EC.F.EXT |
|                              | 2  | 39 | 56 | I    | PA.F.INT |          | 6  | 14 | 19  | II       | PA.D.EXT |          | 3  | 16  | 58       | I        | EC.F.PEN |
|                              | 2  | 43 | 43 | I    | PA.F.EXT |          | 6  | 18 | 30  | II       | PA.D.INT |          | 20 | 53  | 46       | I        | PA.D.EXT |
|                              | 3  | 59 | 16 | I    | OM.F.INT |          | 8  | 49 | 33  | II       | OM.D.EXT |          | 20 | 57  | 31       | I        | PA.D.INT |
|                              | 4  | 3  | 2  | I    | OM.F.EXT |          | 8  | 50 | 7   | II       | PA.F.INT |          | 22 | 12  | 23       | I        | OM.D.EXT |
|                              | 7  | 8  | 57 | III  | OC.D.EXT |          | 8  | 53 | 44  | II       | OM.D.INT |          | 22 | 16  | 9        | I        | OM.D.INT |
|                              | 7  | 22 | 30 | III  | OC.D.INT |          | 8  | 54 | 19  | II       | PA.F.EXT |          | 23 | 4   | 37       | I        | PA.F.INT |
|                              | 9  | 25 | 56 | III  | OC.F.INT |          | 10 | 44 | 26  | I        | OC.D.EXT |          | 23 | 8   | 22       | I        | PA.F.EXT |
|                              | 9  | 39 | 30 | III  | OC.F.EXT |          | 10 | 48 | 10  | I        | OC.D.INT | 25       | 0  | 24  | 8        | I        | OM.F.INT |
|                              | 12 | 30 | 10 | III  | EC.D.PEN |          | 11 | 27 | 15  | II       | OM.F.INT |          | 0  | 27  | 54       | I        | OM.F.EXT |
|                              | 12 | 34 | 59 | III  | EC.D.EXT |          | 11 | 31 | 25  | II       | OM.F.EXT |          | 13 | 51  | 26       | II       | OC.D.EXT |
|                              | 12 | 49 | 5  | III  | EC.D.INT |          | 14 | 14 | 49  | I        | EC.F.INT |          | 13 | 55  | 43       | II       | OC.D.INT |
|                              | 14 | 45 | 13 | III  | EC.F.INT |          | 14 | 18 | 33  | I        | EC.F.EXT |          | 16 | 31  | 25       | II       | OC.F.INT |
|                              | 14 | 59 | 20 | III  | EC.F.EXT |          | 14 | 19 | 20  | I        | EC.F.PEN |          | 16 | 33  | 14       | II       | EC.F.PEN |
|                              | 15 | 4  | 9  | III  | EC.F.PEN | 21       | 7  | 55 | 45  | I        | PA.D.EXT |          | 16 | 34  | 55       | II       | EC.D.EXT |
|                              | 16 | 56 | 46 | II   | PA.D.EXT |          | 7  | 59 | 30  | I        | PA.D.INT |          | 16 | 35  | 41       | II       | OC.F.EXT |
|                              | 17 | 0  | 58 | II   | PA.D.INT |          | 9  | 14 | 27  | I        | OM.D.INT |          | 16 | 39  | 12       | II       | EC.D.INT |
|                              | 19 | 31 | 37 | II   | OM.D.EXT |          | 9  | 18 | 13  | I        | OM.D.INT |          | 18 | 11  | 0        | I        | OC.D.EXT |
|                              | 19 | 32 | 26 | II   | PA.F.INT |          | 10 | 6  | 30  | I        | PA.F.INT |          | 18 | 14  | 44       | I        | OC.D.INT |
|                              | 19 | 35 | 48 | II   | OM.D.INT |          | 10 | 10 | 16  | I        | PA.F.EXT |          | 19 | 13  | 34       | II       | EC.F.INT |
|                              | 19 | 36 | 38 | II   | PA.F.EXT |          | 11 | 26 | 9   | I        | OM.F.INT |          | 19 | 17  | 51       | II       | EC.F.EXT |
|                              | 21 | 47 | 0  | I    | OC.D.EXT |          | 11 | 29 | 54  | I        | OM.F.EXT |          | 19 | 19  | 32       | II       | EC.F.PEN |
|                              | 22 | 9  | 15 | II   | OM.F.INT | 22       | 0  | 32 | 20  | II       | OC.D.EXT |          | 21 | 41  | 15       | I        | EC.F.INT |
|                              | 22 | 13 | 25 | II   | OM.F.EXT |          | 0  | 36 | 37  | II       | OC.D.INT |          | 21 | 44  | 59       | I        | EC.F.EXT |
|                              | 17 | 1  | 17 | 10   | I        | EC.F.INT | 3  | 12 | 6   | II       | OC.F.INT | 26       | 15 | 22  | 54       | I        | PA.D.EXT |
|                              | 1  | 20 | 54 | I    | EC.F.EXT | 3        | 14 | 23 | II  | EC.D.PEN | 15       | 26       | 39 | I   | PA.D.INT |          |          |
|                              | 1  | 21 | 41 | I    | EC.F.PEN | 3        | 16 | 4  | II  | EC.D.EXT | 16       | 41       | 24 | I   | OM.D.EXT |          |          |
|                              | 18 | 58 | 2  | I    | PA.D.EXT | 3        | 16 | 22 | II  | OC.F.EXT | 16       | 45       | 9  | I   | OM.D.INT |          |          |
|                              | 19 | 1  | 47 | I    | PA.D.INT | 3        | 20 | 21 | II  | EC.D.INT | 17       | 33       | 47 | I   | PA.F.INT |          |          |
|                              | 20 | 16 | 33 | I    | OM.D.EXT | 5        | 13 | 14 | I   | OC.D.EXT | 17       | 37       | 33 | I   | PA.F.EXT |          |          |
|                              | 20 | 20 | 19 | I    | OM.D.INT | 5        | 16 | 58 | I   | OC.D.INT | 18       | 53       | 10 | I   | OM.F.INT |          |          |
|                              | 21 | 8  | 43 | I    | PA.F.INT | 5        | 54 | 36 | II  | EC.F.INT | 18       | 56       | 56 | I   | OM.F.EXT |          |          |
|                              | 22 | 28 | 13 | I    | OM.F.INT | 6        | 0  | 34 | II  | EC.F.PEN | 27       | 1        | 15 | 23  | III      | PA.D.EXT |          |
|                              | 22 | 31 | 58 | I    | OM.F.EXT | 8        | 43 | 38 | I   | EC.F.INT | 1        | 28       | 34 | III | PA.D.INT |          |          |
|                              | 18 | 11 | 13 | 0    | II       | OC.D.EXT | 8  | 48 | 9   | I        | EC.F.PEN | 3        | 32 | 38  | III      | PA.F.INT |          |
|                              | 11 | 17 | 17 | II   | OC.D.INT | 23       | 2  | 24 | 46  | I        | PA.D.EXT | 3        | 45 | 58  | III      | PA.F.EXT |          |
|                              | 13 | 52 | 30 | II   | OC.F.INT |          | 2  | 28 | 32  | I        | PA.D.INT | 6        | 34 | 38  | III      | OM.D.EXT |          |
|                              | 13 | 54 | 41 | II   | EC.D.PEN |          | 3  | 43 | 28  | I        | OM.D.EXT | 6        | 47 | 52  | III      | OM.D.INT |          |
|                              | 13 | 56 | 22 | II   | EC.D.EXT |          | 3  | 47 | 14  | I        | OM.D.INT | 8        | 50 | 49  | II       | PA.D.EXT |          |
|                              | 13 | 56 | 47 | II   | OC.F.EXT |          | 4  | 35 | 34  | I        | PA.F.INT | 8        | 54 | 40  | III      | OM.F.INT |          |
|                              | 14 | 0  | 39 | II   | EC.D.INT |          | 4  | 39 | 20  | I        | PA.F.EXT | 8        | 55 | 0   | II       | PA.D.INT |          |
|                              | 16 | 15 | 40 | I    | OC.D.EXT |          | 5  | 55 | 11  | I        | OM.F.INT | 9        | 7  | 45  | III      | OM.F.EXT |          |
|                              | 16 | 19 | 24 | I    | OC.D.INT |          | 5  | 58 | 57  | I        | OM.F.EXT | 11       | 25 | 20  | II       | OM.D.EXT |          |
|                              | 16 | 34 | 45 | II   | EC.F.INT |          | 11 | 8  | 34  | III      | OC.D.EXT | 11       | 26 | 56  | II       | PA.F.INT |          |
|                              | 16 | 39 | 2  | II   | EC.F.EXT |          | 11 | 21 | 57  | III      | OC.D.INT | 11       | 31 | 7   | II       | PA.F.EXT |          |
|                              | 16 | 40 | 43 | II   | EC.F.PEN |          | 13 | 27 | 20  | III      | OC.F.INT | 12       | 40 | 1   | I        | OC.D.EXT |          |
|                              | 19 | 45 | 58 | I    | EC.F.INT |          | 13 | 40 | 43  | III      | OC.F.EXT | 12       | 43 | 45  | I        | OC.D.INT |          |
|                              | 19 | 49 | 42 | I    | EC.F.EXT |          | 16 | 31 | 6   | III      | EC.D.PEN | 14       | 3  | 12  | II       | OM.F.INT |          |
|                              | 19 | 50 | 29 | I    | EC.F.PEN |          | 16 | 35 | 52  | III      | EC.D.EXT | 14       | 7  | 21  | II       | OM.F.EXT |          |
|                              | 19 | 13 | 26 | 54   | I        | PA.D.EXT | 28 | 16 | 49  | 52       | III      | EC.D.INT | 16 | 10  | 6        | I        | EC.F.INT |
|                              | 13 | 30 | 40 | I    | PA.D.INT | 18       | 47 | 10 | III | EC.F.INT | 16       | 13       | 50 | I   | EC.F.EXT |          |          |
|                              | 14 | 45 | 33 | I    | OM.D.EXT | 19       | 1  | 10 | III | EC.F.EXT | 16       | 14       | 36 | I   | EC.F.PEN |          |          |
|                              | 14 | 49 | 19 | I    | OM.D.INT | 19       | 5  | 57 | III | EC.F.PEN |          |          |    |     |          |          |          |
|                              | 15 | 37 | 38 | I    | PA.F.INT | 19       | 32 | 20 | II  | PA.D.EXT | 9        | 51       | 59 | I   | PA.D.EXT |          |          |
|                              | 15 | 41 | 24 | I    | PA.F.EXT | 19       | 36 | 31 | II  | PA.D.INT | 9        | 55       | 44 | I   | PA.D.INT |          |          |
|                              | 16 | 57 | 14 | I    | OM.F.INT | 22       | 7  | 27 | II  | OM.D.EXT | 11       | 10       | 17 | I   | OM.D.EXT |          |          |
|                              | 17 | 0  | 59 | I    | OM.F.EXT | 22       | 8  | 17 | II  | PA.F.INT | 11       | 14       | 3  | I   | OM.D.INT |          |          |
|                              | 21 | 13 | 25 | III  | PA.D.EXT | 22       | 11 | 38 | II  | OM.D.INT | 12       | 2        | 55 | I   | PA.F.INT |          |          |
|                              | 21 | 26 | 45 | III  | PA.D.INT | 22       | 12 | 29 | II  | PA.F.EXT | 12       | 6        | 41 | I   | PA.F.EXT |          |          |
|                              | 23 | 28 | 58 | III  | PA.F.INT | 23       | 42 | 6  | I   | OC.D.EXT | 13       | 22       | 6  | I   | OM.F.INT |          |          |
|                              | 23 | 42 | 27 | III  | PA.F.EXT | 23       | 45 | 50 | I   | OC.D.INT | 13       | 25       | 51 | I   | OM.F.EXT |          |          |

## 2001 - CONFIGURATIONS DES SATELLITES GALILÉENS DE JUPITER



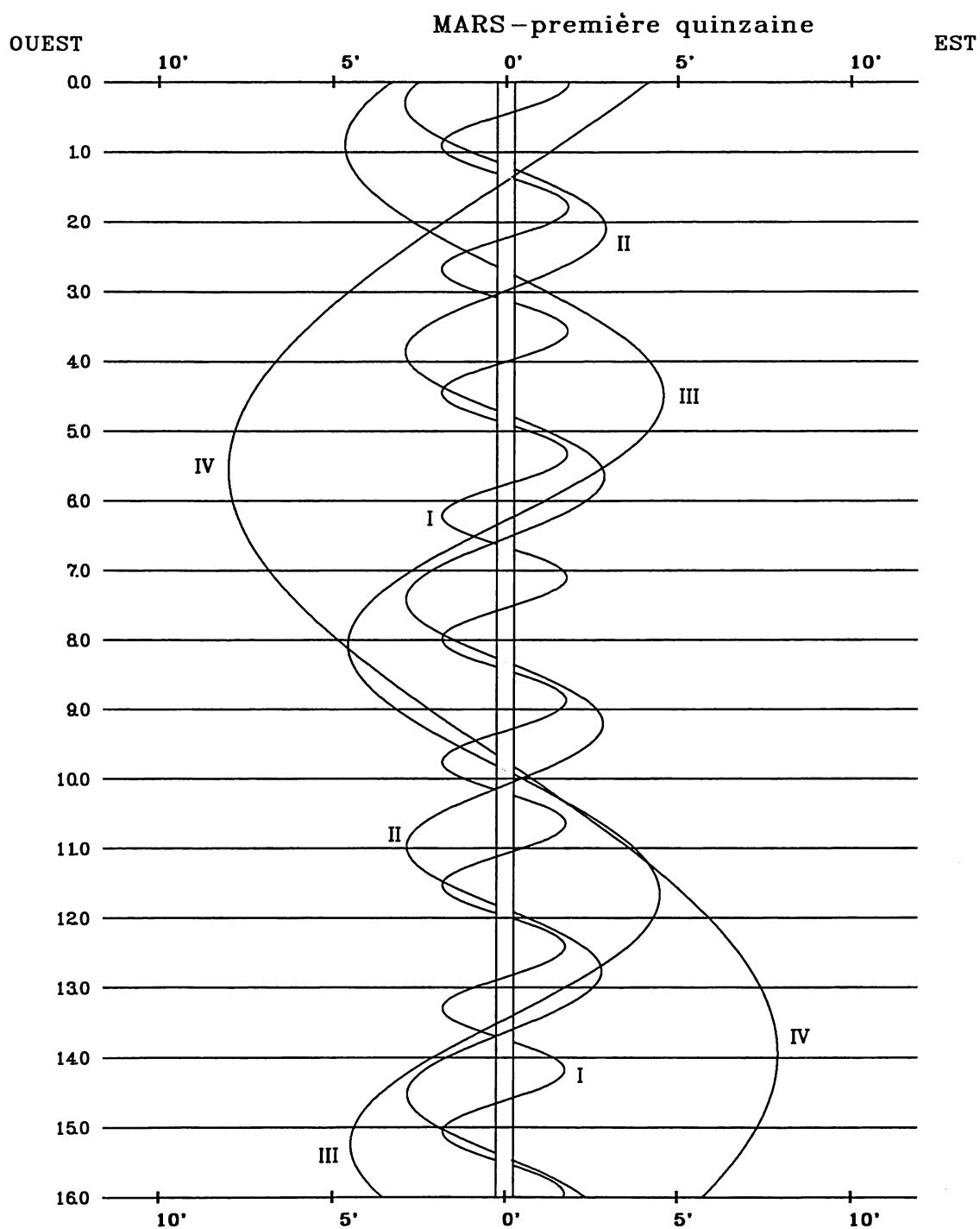
Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter



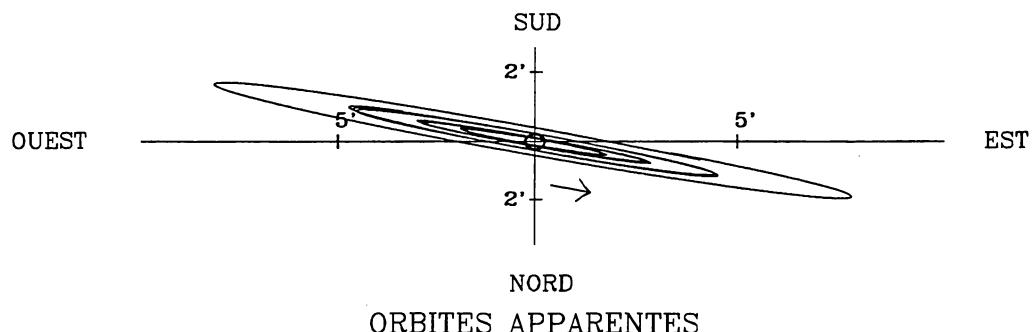
**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
 (Temps Terrestre)

| MARS - PREMIÈRE QUINZAINE |    |    |    |      |          |      |    |    |     |          |          |          |    |    |     |          |          |          |
|---------------------------|----|----|----|------|----------|------|----|----|-----|----------|----------|----------|----|----|-----|----------|----------|----------|
| jour                      | h  | m  | s  | SAT. | TYPE     | jour | h  | m  | s   | SAT.     | TYPE     | jour     | h  | m  | s   | SAT.     | TYPE     |          |
| 1                         | 3  | 11 | 54 | II   | OC.D.EXT | 18   | 40 | 59 | I   | OM.D.INT |          | 5        | 57 | 3  | II  | OM.F.INT |          |          |
|                           | 3  | 16 | 10 | II   | OC.D.INT | 19   | 30 | 56 | I   | PA.F.INT |          | 6        | 1  | 11 | II  | OM.F.EXT |          |          |
|                           | 5  | 52 | 6  | II   | OC.F.INT | 19   | 34 | 41 | I   | PA.F.EXT |          | 7        | 2  | 58 | I   | EC.F.INT |          |          |
|                           | 5  | 53 | 0  | II   | EC.D.PEN | 20   | 49 | 8  | I   | OM.F.INT |          | 7        | 6  | 42 | I   | EC.F.EXT |          |          |
|                           | 5  | 54 | 40 | II   | EC.D.EXT | 20   | 52 | 53 | I   | OM.F.EXT |          | 7        | 7  | 28 | I   | EC.F.PEN |          |          |
|                           | 5  | 56 | 22 | II   | OC.F.EXT |      |    |    |     |          |          |          |    |    |     |          |          |          |
|                           | 5  | 58 | 57 | II   | EC.D.INT | 6    | 5  | 21 | 28  | III      | PA.D.EXT | 11       | 0  | 48 | 6   | I        | PA.D.EXT |          |
|                           | 7  | 9  | 4  | I    | OC.D.EXT |      | 5  | 34 | 31  | III      | PA.D.INT |          | 0  | 51 | 51  | I        | PA.D.INT |          |
|                           | 7  | 12 | 48 | I    | OC.D.INT |      | 7  | 40 | 17  | III      | PA.F.INT |          | 2  | 4  | 3   | I        | OM.D.EXT |          |
|                           | 8  | 33 | 28 | II   | EC.F.INT |      | 7  | 53 | 28  | III      | PA.F.EXT |          | 2  | 7  | 48  | I        | OM.D.INT |          |
|                           | 8  | 37 | 44 | II   | EC.F.EXT | 10   | 35 | 52 | III | OM.D.EXT |          | 2        | 59 | 19 | I   | PA.F.INT |          |          |
|                           | 8  | 39 | 25 | II   | EC.F.PEN | 10   | 49 | 1  | III | OM.D.INT |          | 3        | 3  | 5  | I   | PA.F.EXT |          |          |
|                           | 10 | 38 | 55 | I    | EC.F.INT | 11   | 29 | 5  | II  | PA.D.EXT |          | 4        | 16 | 4  | I   | OM.F.INT |          |          |
|                           | 10 | 42 | 39 | I    | EC.F.EXT | 11   | 33 | 15 | II  | PA.D.INT |          | 4        | 19 | 49 | I   | OM.F.EXT |          |          |
|                           | 10 | 43 | 25 | I    | EC.F.PEN |      | 12 | 56 | 56  | III      | OM.F.INT |          | 19 | 14 | 33  | II       | OC.D.EXT |          |
|                           |    |    |    |      |          |      |    | 13 | 9   | 56       | III      | OM.F.EXT |    | 19 | 18  | 48       | II       | OC.D.INT |
| 2                         | 4  | 21 | 15 | I    | PA.D.EXT |      | 14 | 1  | 1   | II       | OM.D.EXT |          | 22 | 4  | 27  | I        | OC.D.EXT |          |
|                           | 4  | 25 | 0  | I    | PA.D.INT |      | 14 | 5  | 11  | II       | OM.D.INT |          | 22 | 8  | 11  | I        | OC.D.INT |          |
|                           | 5  | 39 | 18 | I    | OM.D.EXT |      | 14 | 5  | 33  | II       | PA.F.INT |          |    |    |     |          |          |          |
|                           | 5  | 43 | 4  | I    | OM.D.INT |      | 14 | 9  | 43  | II       | PA.F.EXT | 12       | 0  | 31 | 22  | II       | EC.F.INT |          |
|                           | 6  | 32 | 14 | I    | PA.F.INT |      | 14 | 36 | 32  | I        | OC.D.EXT |          | 0  | 35 | 38  | II       | EC.F.EXT |          |
|                           | 6  | 36 | 0  | I    | PA.F.EXT |      | 14 | 40 | 16  | I        | OC.D.INT |          | 0  | 37 | 19  | II       | EC.F.PEN |          |
|                           | 7  | 51 | 8  | I    | OM.F.INT |      | 16 | 39 | 6   | II       | OM.F.INT |          | 1  | 31 | 45  | I        | EC.F.INT |          |
|                           | 7  | 54 | 54 | I    | OM.F.EXT |      | 16 | 43 | 15  | II       | OM.F.EXT |          | 1  | 35 | 29  | I        | EC.F.EXT |          |
|                           | 15 | 12 | 31 | III  | OC.D.EXT |      | 18 | 5  | 21  | I        | EC.F.INT |          | 1  | 36 | 16  | I        | EC.F.PEN |          |
|                           | 15 | 25 | 45 | III  | OC.D.INT |      | 18 | 9  | 5   | I        | EC.F.EXT |          | 19 | 17 | 40  | I        | PA.D.EXT |          |
|                           | 17 | 32 | 53 | III  | OC.F.INT |      | 18 | 9  | 51  | I        | EC.F.PEN |          | 19 | 21 | 25  | I        | PA.D.INT |          |
|                           | 17 | 46 | 7  | III  | OC.F.EXT |      |    |    |     |          |          |          | 20 | 33 | 3   | I        | OM.D.EXT |          |
|                           | 20 | 31 | 58 | III  | EC.D.PEN | 7    | 11 | 49 | 10  | I        | PA.D.EXT |          | 20 | 36 | 48  | I        | OM.D.INT |          |
|                           | 20 | 36 | 42 | III  | EC.D.EXT |      | 11 | 52 | 55  | I        | PA.D.INT |          | 21 | 28 | 57  | I        | PA.F.INT |          |
|                           | 20 | 50 | 34 | III  | EC.D.INT |      | 13 | 6  | 7   | I        | OM.D.EXT |          | 21 | 32 | 43  | I        | PA.F.EXT |          |
|                           | 22 | 9  | 44 | II   | PA.D.EXT |      | 13 | 9  | 53  | I        | OM.D.INT |          | 22 | 45 | 7   | I        | OM.F.INT |          |
|                           | 22 | 13 | 54 | II   | PA.D.INT |      | 14 | 0  | 17  | I        | PA.F.INT |          | 22 | 48 | 52  | I        | OM.F.EXT |          |
|                           | 22 | 49 | 5  | III  | EC.F.INT |      | 14 | 4  | 3   | I        | PA.F.EXT |          |    |    |     |          |          |          |
|                           | 23 | 2  | 57 | III  | EC.F.EXT |      | 15 | 18 | 4   | I        | OM.F.INT | 13       | 9  | 32 | 3   | III      | PA.D.EXT |          |
|                           | 23 | 7  | 42 | III  | EC.F.PEN |      | 15 | 21 | 49  | I        | OM.F.EXT |          | 9  | 44 | 59  | III      | PA.D.INT |          |
|                           |    |    |    |      |          |      |    |    |     |          |          | 11       | 52 | 19 | III | PA.F.INT |          |          |
| 3                         | 0  | 43 | 11 | II   | OM.D.EXT | 8    | 5  | 53 | 29  | II       | OC.D.EXT |          | 12 | 5  | 23  | III      | PA.F.EXT |          |
|                           | 0  | 46 | 1  | II   | PA.F.INT |      | 5  | 57 | 45  | II       | OC.D.INT |          | 14 | 9  | 1   | II       | PA.D.EXT |          |
|                           | 0  | 47 | 21 | II   | OM.D.INT |      | 9  | 5  | 48  | I        | OC.D.EXT |          | 14 | 13 | 10  | II       | PA.D.INT |          |
|                           | 0  | 50 | 12 | II   | PA.F.EXT |      | 9  | 9  | 31  | I        | OC.D.INT |          | 14 | 37 | 52  | III      | OM.D.EXT |          |
|                           | 1  | 38 | 10 | I    | OC.D.EXT |      | 11 | 12 | 22  | II       | EC.F.INT |          | 14 | 50 | 55  | III      | OM.D.INT |          |
|                           | 1  | 41 | 54 | I    | OC.D.INT |      | 11 | 16 | 39  | II       | EC.F.EXT |          | 16 | 33 | 53  | I        | OC.D.EXT |          |
|                           | 3  | 21 | 9  | II   | OM.F.INT |      | 11 | 18 | 19  | I        | EC.F.PEN |          | 16 | 36 | 40  | II       | OM.D.INT |          |
|                           | 3  | 25 | 18 | II   | OM.F.EXT |      | 12 | 34 | 10  | I        | EC.F.INT |          | 16 | 37 | 36  | I        | OC.D.INT |          |
|                           | 5  | 7  | 43 | I    | EC.F.INT |      | 12 | 37 | 54  | I        | EC.F.EXT |          | 16 | 40 | 49  | II       | OM.D.INT |          |
|                           | 5  | 11 | 27 | I    | EC.F.EXT |      | 12 | 38 | 40  | I        | EC.F.PEN |          | 16 | 45 | 50  | II       | PA.F.INT |          |
|                           | 5  | 12 | 14 | I    | EC.F.PEN |      |    |    |     |          |          |          | 16 | 50 | 0   | II       | PA.F.EXT |          |
|                           | 22 | 50 | 29 | I    | PA.D.EXT | 9    | 6  | 18 | 39  | I        | PA.D.EXT |          | 17 | 0  | 0   | III      | OM.F.INT |          |
|                           | 22 | 54 | 14 | I    | PA.D.INT |      | 6  | 22 | 24  | I        | PA.D.INT |          | 17 | 12 | 54  | III      | OM.F.EXT |          |
|                           |    |    |    |      |          |      | 7  | 35 | 8   | I        | OM.D.EXT |          | 19 | 15 | 0   | II       | OM.F.INT |          |
| 4                         | 0  | 8  | 13 | I    | OM.D.EXT |      | 7  | 38 | 53  | I        | OM.D.INT |          | 19 | 19 | 9   | II       | OM.F.EXT |          |
|                           | 0  | 11 | 59 | I    | OM.D.INT |      | 8  | 29 | 49  | I        | PA.F.INT |          | 20 | 0  | 34  | I        | EC.F.INT |          |
|                           | 1  | 1  | 31 | I    | PA.F.INT |      | 8  | 33 | 35  | I        | PA.F.EXT |          | 20 | 4  | 18  | I        | EC.F.EXT |          |
|                           | 1  | 5  | 16 | I    | PA.F.EXT |      | 9  | 47 | 6   | I        | OM.F.INT |          | 20 | 5  | 4   | I        | EC.F.PEN |          |
|                           | 2  | 20 | 6  | I    | OM.F.INT |      | 9  | 50 | 52  | I        | OM.F.EXT |          |    |    |     |          |          |          |
|                           | 2  | 23 | 51 | I    | OM.F.EXT |      | 19 | 19 | 47  | III      | OC.D.EXT | 14       | 13 | 47 | 11  | I        | PA.D.EXT |          |
|                           | 16 | 32 | 3  | II   | OC.D.EXT |      | 19 | 32 | 53  | III      | OC.D.INT |          | 13 | 50 | 56  | I        | PA.D.INT |          |
|                           | 16 | 36 | 19 | II   | OC.D.INT |      | 21 | 41 | 36  | III      | OC.F.INT |          | 15 | 1  | 56  | I        | OM.D.EXT |          |
|                           | 19 | 12 | 27 | II   | OC.F.INT |      | 21 | 54 | 42  | III      | OC.F.EXT |          | 15 | 5  | 41  | I        | OM.D.INT |          |
|                           | 19 | 13 | 34 | II   | EC.D.EXT |      |    |    |     |          |          |          | 15 | 58 | 31  | I        | PA.F.EXT |          |
|                           | 19 | 16 | 44 | II   | OC.F.EXT | 10   | 0  | 32 | 20  | III      | EC.D.PEN |          | 16 | 2  | 16  | I        | PA.F.EXT |          |
|                           | 19 | 17 | 51 | II   | EC.D.INT |      | 0  | 37 | 2   | III      | EC.D.EXT |          | 17 | 14 | 2   | I        | OM.F.INT |          |
|                           | 20 | 7  | 18 | I    | OC.D.EXT |      | 0  | 48 | 50  | II       | PA.D.EXT |          | 17 | 17 | 47  | I        | OM.F.EXT |          |
|                           | 20 | 11 | 2  | I    | OC.D.INT |      | 0  | 50 | 46  | III      | EC.D.INT |          |    |    |     |          |          |          |
|                           | 21 | 52 | 29 | II   | EC.F.INT |      | 0  | 53 | 0   | II       | PA.D.INT | 15       | 8  | 36 | 53  | II       | OC.D.EXT |          |
|                           | 21 | 56 | 46 | II   | EC.F.EXT |      | 2  | 50 | 30  | III      | EC.F.INT |          | 8  | 41 | 8   | II       | OC.D.INT |          |
|                           | 21 | 58 | 26 | II   | EC.F.PEN |      | 3  | 4  | 15  | III      | EC.F.EXT |          | 11 | 3  | 20  | I        | OC.D.EXT |          |
|                           | 23 | 36 | 31 | I    | EC.F.INT |      | 3  | 8  | 57  | III      | EC.F.PEN |          | 11 | 7  | 4   | I        | OC.D.INT |          |
|                           | 23 | 40 | 15 | I    | EC.F.EXT |      | 3  | 18 | 50  | II       | OM.D.EXT |          | 13 | 51 | 15  | II       | EC.F.INT |          |
|                           | 23 | 41 | 2  | I    | EC.F.PEN |      | 3  | 23 | 0   | II       | OM.D.INT |          | 13 | 55 | 31  | II       | EC.F.EXT |          |
|                           |    |    |    |      |          |      | 3  | 25 | 29  | II       | PA.F.INT |          | 13 | 57 | 12  | II       | EC.F.PEN |          |
| 5                         | 17 | 19 | 51 | I    | PA.D.EXT |      | 3  | 29 | 39  | II       | PA.F.EXT |          | 14 | 29 | 23  | I        | EC.F.INT |          |
|                           | 17 | 23 | 36 | I    | PA.D.INT |      | 3  | 35 | 6   | I        | OC.D.EXT |          | 14 | 33 | 6   | I        | EC.F.EXT |          |
|                           | 18 | 37 | 14 | I    | OM.D.EXT |      | 3  | 38 | 50  | I        | OC.D.INT |          | 14 | 33 | 53  | I        | EC.F.PEN |          |

## 2001 - CONFIGURATIONS DES SATELLITES GALILIENS DE JUPITER



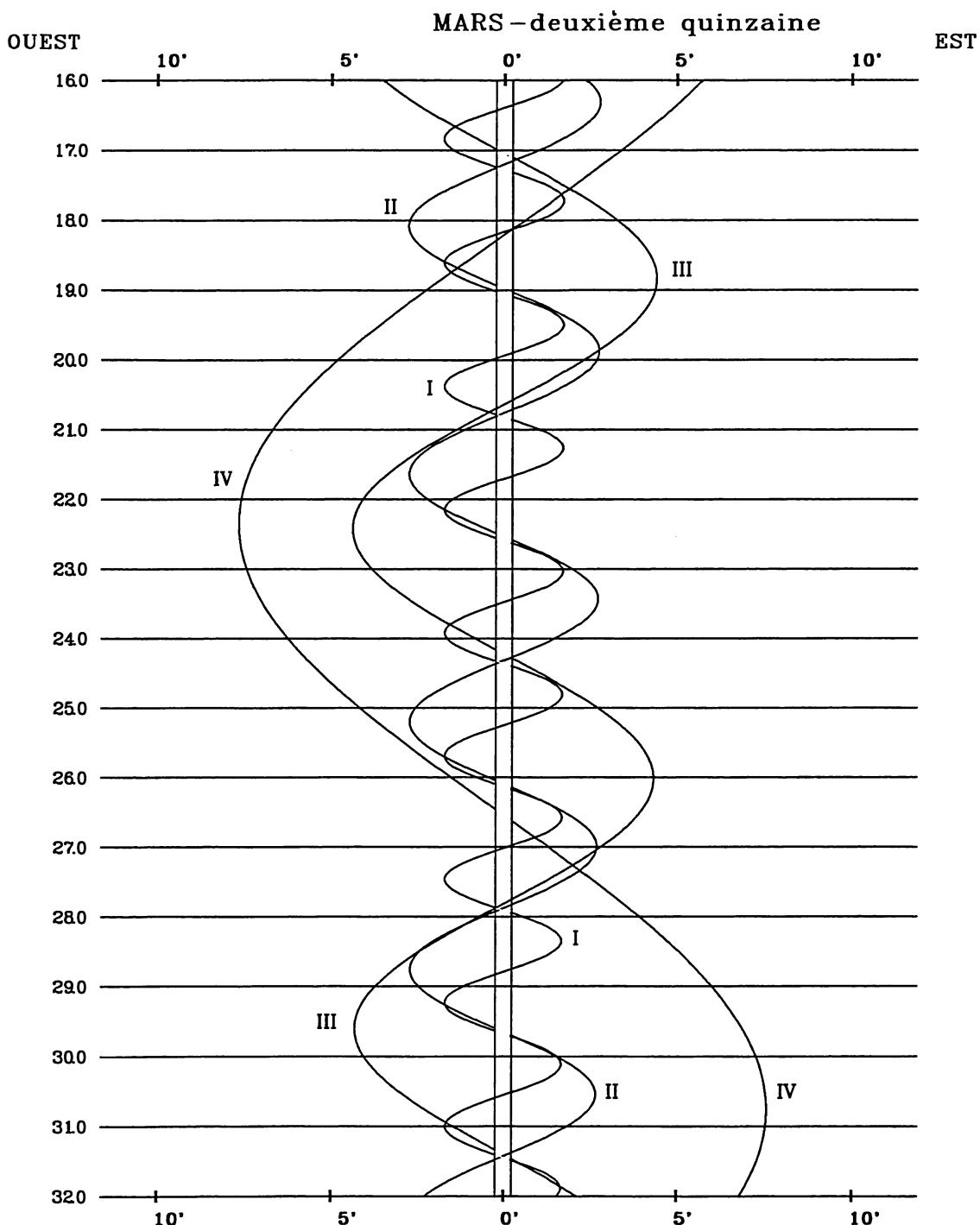
Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter



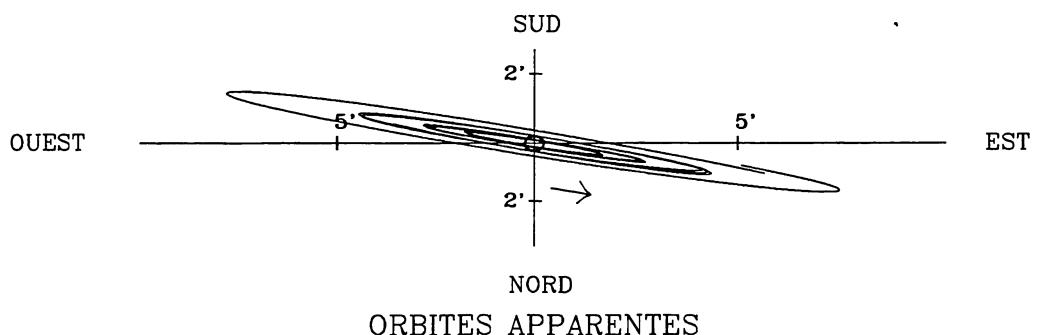
**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
 (Temps Terrestre)

| MARS - DEUXIÈME QUINZAINE |    |    |    |      |          |      |    |    |    |      |          |      |    |    |     |          |          |
|---------------------------|----|----|----|------|----------|------|----|----|----|------|----------|------|----|----|-----|----------|----------|
| jour                      | h  | m  | s  | SAT. | TYPE     | jour | h  | m  | s  | SAT. | TYPE     | jour | h  | m  | s   | SAT.     | TYPE     |
| 16                        | 8  | 16 | 52 | I    | PA.D.EXT | 21   | 21 | 59 | 29 | I    | EC.F.EXT | 1    | 27 | 16 | I   | PA.F.INT |          |
|                           | 8  | 20 | 37 | I    | PA.D.INT |      | 22 | 0  | 15 | I    | EC.F.PEN |      | 31 | 2  | I   | PA.F.EXT |          |
|                           | 9  | 30 | 56 | I    | OM.D.EXT |      |    |    |    |      |          |      | 37 | 1  | I   | OM.F.INT |          |
|                           | 9  | 34 | 42 | I    | OM.D.INT |      | 15 | 45 | 57 | I    | PA.D.EXT |      | 40 | 45 | I   | OM.F.EXT |          |
|                           | 10 | 28 | 15 | I    | PA.F.INT |      | 15 | 49 | 43 | I    | PA.D.INT |      | 1  | 16 | III | PA.D.EXT |          |
|                           | 10 | 32 | 1  | I    | PA.F.EXT |      | 16 | 57 | 43 | I    | OM.D.INT |      | 14 | 0  | III | PA.D.INT |          |
|                           | 11 | 43 | 5  | I    | OM.F.INT |      | 17 | 1  | 28 | I    | OM.D.INT |      | 33 | 4  | II  | PA.D.EXT |          |
|                           | 11 | 46 | 50 | I    | OM.F.EXT |      | 17 | 57 | 30 | I    | PA.F.INT |      | 37 | 13 | II  | PA.D.INT |          |
|                           | 23 | 30 | 35 | III  | OC.D.EXT |      | 18 | 1  | 16 | I    | PA.F.EXT |      | 24 | 14 | III | PA.F.INT |          |
|                           | 23 | 43 | 33 | III  | OC.D.INT |      | 19 | 9  | 59 | I    | OM.F.INT |      | 30 | 43 | I   | OC.D.EXT |          |
|                           |    |    |    |      |          |      | 19 | 13 | 44 | I    | OM.F.EXT |      | 34 | 27 | I   | OC.D.INT |          |
| 17                        | 1  | 53 | 42 | III  | OC.F.INT | 22   | 11 | 21 | 58 | II   | OC.D.EXT | 20   | 37 | 4  | III | PA.F.EXT |          |
|                           | 2  | 6  | 40 | III  | OC.F.EXT |      | 11 | 26 | 13 | II   | OC.D.INT |      | 47 | 41 | II  | OM.D.EXT |          |
|                           | 3  | 29 | 29 | II   | PA.D.EXT |      | 13 | 1  | 36 | I    | OC.D.EXT |      | 51 | 50 | II  | OM.D.INT |          |
|                           | 3  | 33 | 38 | II   | PA.D.INT |      | 13 | 5  | 20 | I    | OC.D.INT |      | 10 | 40 | II  | PA.F.INT |          |
|                           | 4  | 32 | 43 | III  | EC.D.PEN |      | 16 | 24 | 34 | I    | EC.F.INT |      | 14 | 49 | II  | PA.F.EXT |          |
|                           | 4  | 37 | 23 | III  | EC.D.EXT |      | 16 | 28 | 17 | I    | EC.F.EXT |      | 39 | 58 | III | OM.D.EXT |          |
|                           | 4  | 51 | 1  | III  | EC.D.INT |      | 16 | 29 | 4  | I    | EC.F.PEN |      | 52 | 49 | III | OM.D.INT |          |
|                           | 5  | 32 | 50 | I    | OC.D.EXT |      | 16 | 30 | 9  | II   | EC.F.INT |      | 50 | 54 | I   | EC.F.INT |          |
|                           | 5  | 36 | 33 | I    | OC.D.INT |      | 16 | 34 | 24 | II   | EC.F.EXT |      | 54 | 37 | I   | EC.F.EXT |          |
|                           | 5  | 54 | 25 | II   | OM.D.EXT |      | 16 | 36 | 5  | II   | EC.F.PEN |      | 55 | 24 | I   | EC.F.PEN |          |
|                           |    |    |    |      |          |      |    |    |    |      |          | 28   | 0  | 26 | 39  | II       | OM.F.INT |
| 18                        | 6  | 6  | 30 | II   | PA.F.INT | 23   | 10 | 15 | 49 | I    | PA.D.EXT |      | 30 | 47 | II  | OM.F.EXT |          |
|                           | 6  | 10 | 40 | II   | PA.F.EXT |      | 10 | 19 | 34 | I    | PA.D.INT |      | 4  | 19 | III | OM.F.INT |          |
|                           | 6  | 51 | 57 | III  | EC.F.INT |      | 11 | 26 | 43 | I    | OM.D.EXT |      | 17 | 3  | III | OM.F.EXT |          |
|                           | 7  | 5  | 35 | III  | EC.F.EXT |      | 11 | 30 | 28 | I    | OM.D.INT |      | 45 | 25 | I   | PA.D.EXT |          |
|                           | 8  | 32 | 54 | II   | OM.F.INT |      | 12 | 27 | 25 | I    | PA.F.INT |      | 49 | 9  | I   | PA.D.INT |          |
|                           | 8  | 37 | 3  | II   | OM.F.EXT |      | 12 | 31 | 10 | I    | PA.F.EXT |      | 53 | 28 | I   | OM.D.EXT |          |
|                           | 8  | 58 | 10 | I    | EC.F.INT |      | 13 | 39 | 2  | I    | OM.F.INT |      | 57 | 13 | I   | OM.D.EXT |          |
|                           | 9  | 1  | 54 | I    | EC.F.EXT |      | 13 | 42 | 47 | I    | OM.F.EXT |      | 57 | 11 | I   | PA.F.EXT |          |
|                           | 9  | 2  | 40 | I    | EC.F.PEN |      |    |    |    |      |          |      | 0  | 56 | I   | PA.F.EXT |          |
|                           |    |    |    |      |          |      |    |    |    |      |          |      | 9  | 40 | I   | OM.F.EXT |          |
| 19                        | 2  | 46 | 30 | I    | PA.D.EXT | 24   | 3  | 45 | 2  | III  | OC.D.EXT | 21   | 5  | 55 | I   | OM.F.EXT |          |
|                           | 2  | 50 | 15 | I    | PA.D.INT |      | 3  | 57 | 54 | III  | OC.D.INT |      | 9  | 40 | I   | OM.F.EXT |          |
|                           | 3  | 59 | 51 | I    | OM.D.EXT |      | 6  | 9  | 21 | III  | OC.F.INT |      | 12 | 27 | II  | OC.D.EXT |          |
|                           | 4  | 3  | 36 | I    | OM.D.INT |      | 6  | 11 | 31 | II   | PA.D.EXT |      | 12 | 42 | II  | OC.D.INT |          |
|                           | 4  | 57 | 56 | I    | PA.F.INT |      | 6  | 15 | 40 | II   | PA.D.INT |      | 0  | 31 | I   | OC.D.EXT |          |
|                           | 5  | 1  | 42 | I    | PA.F.EXT |      | 7  | 31 | 16 | I    | OC.D.EXT |      | 4  | 14 | I   | OC.D.EXT |          |
|                           | 6  | 12 | 2  | I    | OM.F.INT |      | 7  | 34 | 59 | I    | OC.D.INT |      | 19 | 42 | I   | EC.F.INT |          |
|                           | 6  | 15 | 47 | I    | OM.F.EXT |      | 8  | 29 | 55 | II   | OM.D.EXT |      | 23 | 25 | I   | EC.F.EXT |          |
|                           | 21 | 58 | 48 | II   | OC.D.EXT |      | 8  | 33 | 38 | III  | EC.D.PEN |      | 24 | 11 | I   | EC.F.PEN |          |
|                           | 22 | 3  | 3  | II   | OC.D.INT |      | 8  | 34 | 4  | II   | OM.D.EXT |      | 8  | 56 | II  | EC.F.INT |          |
|                           |    |    |    |      |          |      | 8  | 38 | 17 | III  | EC.D.EXT |      | 13 | 11 | II  | EC.F.EXT |          |
| 19                        | 0  | 2  | 22 | I    | OC.D.EXT | 25   | 8  | 48 | 56 | II   | PA.F.INT | 19   | 14 | 51 | II  | EC.F.PEN |          |
|                           | 0  | 6  | 5  | I    | OC.D.INT |      | 8  | 51 | 48 | III  | EC.D.INT |      | 12 | 15 | 25  | I        | PA.D.EXT |
|                           | 3  | 10 | 15 | II   | EC.F.INT |      | 8  | 53 | 5  | II   | PA.F.EXT |      | 19 | 10 | I   | PA.D.INT |          |
|                           | 3  | 14 | 31 | II   | EC.F.EXT |      | 10 | 53 | 20 | I    | EC.F.INT |      | 22 | 27 | I   | OM.D.EXT |          |
|                           | 3  | 16 | 11 | II   | EC.F.PEN |      | 10 | 53 | 56 | III  | EC.F.INT |      | 26 | 12 | I   | OM.D.INT |          |
|                           | 3  | 26 | 57 | I    | EC.F.INT |      | 10 | 57 | 4  | I    | EC.F.EXT |      | 27 | 15 | I   | PA.F.INT |          |
|                           | 3  | 30 | 41 | I    | EC.F.EXT |      | 10 | 57 | 50 | I    | EC.F.PEN |      | 31 | 0  | I   | PA.F.EXT |          |
|                           | 3  | 31 | 27 | I    | EC.F.PEN |      | 11 | 7  | 27 | III  | EC.F.EXT |      | 34 | 57 | I   | OM.F.INT |          |
|                           | 21 | 16 | 16 | I    | PA.D.EXT |      | 11 | 8  | 43 | II   | OM.F.INT |      | 34 | 57 | I   | OM.F.EXT |          |
|                           | 21 | 20 | 1  | I    | PA.D.INT |      | 11 | 12 | 6  | III  | EC.F.PEN |      | 38 | 42 | I   | OM.F.EXT |          |
|                           |    |    |    |      |          |      | 11 | 12 | 52 | II   | OM.F.EXT |      |    |    |     |          |          |
| 20                        | 0  | 41 | 4  | I    | OM.F.INT | 26   | 5  | 59 | 22 | I    | OM.D.EXT | 31   | 8  | 2  | 16  | III      | OC.D.EXT |
|                           | 0  | 44 | 49 | I    | OM.F.EXT |      | 6  | 57 | 17 | I    | PA.F.EXT |      | 15 | 2  | 1   | I        | OC.D.EXT |
|                           | 13 | 45 | 8  | III  | PA.D.EXT |      | 7  | 1  | 2  | I    | PA.F.EXT |      | 27 | 42 | III | OC.F.INT |          |
|                           | 13 | 57 | 57 | III  | PA.D.INT |      | 8  | 7  | 58 | I    | OM.F.INT |      | 40 | 29 | III | OC.F.EXT |          |
|                           | 16 | 6  | 47 | III  | PA.F.EXT |      | 8  | 11 | 43 | I    | OM.F.EXT |      | 5  | 24 | II  | OM.D.EXT |          |
|                           | 16 | 19 | 44 | III  | PA.F.EXT |      | 5  | 59 | 22 | I    | OM.D.EXT |      | 9  | 30 | 19  | I        | OC.D.EXT |
|                           | 16 | 50 | 22 | II   | PA.D.EXT |      | 6  | 57 | 45 | II   | OC.D.EXT |      | 34 | 2  | I   | OC.D.EXT |          |
|                           | 16 | 54 | 31 | II   | PA.D.INT |      | 0  | 48 | 50 | II   | OC.D.INT |      | 27 | 40 | 20  | III      | EC.D.PEN |
|                           | 18 | 31 | 58 | I    | OC.D.EXT |      | 2  | 0  | 58 | I    | OC.D.EXT |      | 34 | 20 | 11  | I        | EC.F.EXT |
|                           | 18 | 35 | 42 | I    | OC.D.INT |      | 2  | 4  | 41 | I    | OC.D.EXT |      | 38 | 57 | III | EC.D.EXT |          |
|                           |    |    |    |      |          |      | 5  | 22 | 7  | I    | EC.F.INT |      | 48 | 27 | I   | EC.F.INT |          |
| 20                        | 18 | 38 | 57 | III  | OM.D.EXT | 27   | 5  | 25 | 50 | I    | EC.F.EXT | 12   | 52 | 11 | I   | EC.F.EXT |          |
|                           | 18 | 51 | 54 | III  | OM.D.INT |      | 5  | 26 | 37 | I    | EC.F.PEN |      | 52 | 21 | III | EC.D.INT |          |
|                           | 19 | 12 | 12 | II   | OM.D.EXT |      | 5  | 49 | 5  | II   | EC.F.INT |      | 52 | 57 | I   | EC.F.PEN |          |
|                           | 19 | 16 | 21 | I    | OM.D.INT |      | 5  | 53 | 20 | II   | EC.F.EXT |      | 44 | 33 | II  | OM.F.INT |          |
|                           | 19 | 27 | 34 | II   | PA.F.EXT |      | 5  | 55 | 1  | II   | EC.F.PEN |      | 48 | 41 | II  | OM.F.EXT |          |
|                           | 19 | 31 | 43 | II   | PA.F.EXT |      | 5  | 55 | 33 | I    | PA.D.EXT |      | 55 | 42 | III | EC.F.INT |          |
|                           | 21 | 2  | 11 | III  | OM.F.INT |      | 23 | 15 | 18 | I    | PA.D.EXT |      | 55 | 42 | III | EC.F.EXT |          |
|                           | 21 | 15 | 0  | III  | OM.F.EXT |      | 23 | 19 | 18 | I    | PA.D.EXT |      | 9  | 7  | III | EC.F.EXT |          |
|                           | 21 | 50 | 50 | II   | OM.F.EXT |      |    |    |    |      |          |      | 13 | 44 | III | EC.F.PEN |          |
|                           | 21 | 54 | 58 | II   | OM.F.EXT |      | 0  | 24 | 36 | I    | OM.D.EXT |      |    |    |     |          |          |
|                           |    |    |    |      |          |      | 0  | 28 | 21 | I    | OM.D.INT |      |    |    |     |          |          |

## 2001 - CONFIGURATIONS DES SATELLITES GALILIENS DE JUPITER



Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter

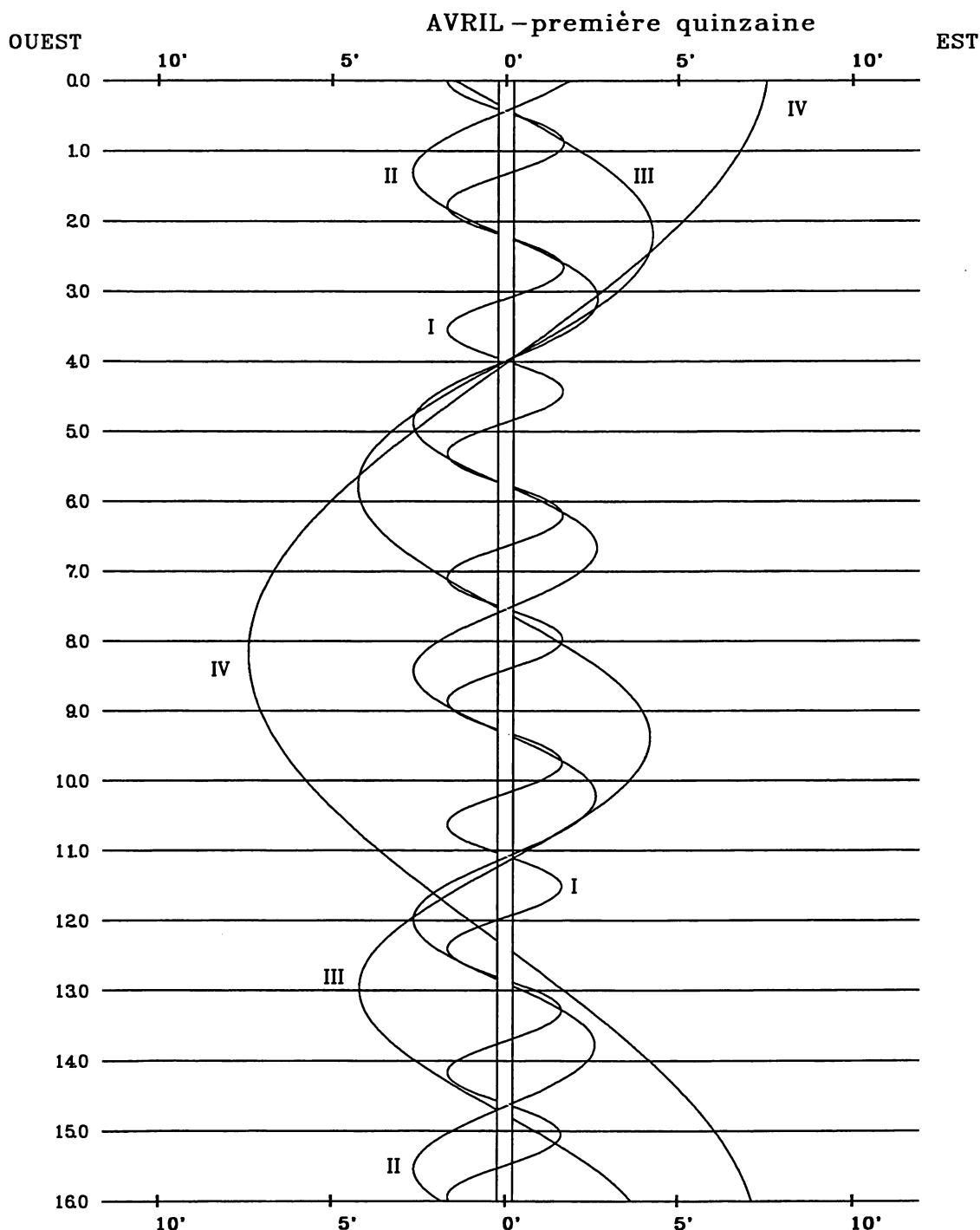


**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
 (Temps Terrestre)

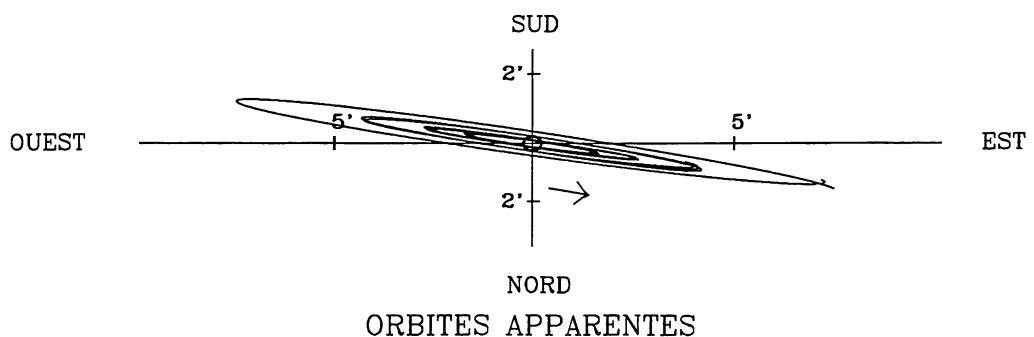
**AVRIL - PREMIÈRE QUINZAINE**

| jour | h  | m  | s  | SAT. | TYPE     | jour | h  | m  | s   | SAT.     | TYPE     | jour | h  | m   | s        | SAT.     | TYPE     |
|------|----|----|----|------|----------|------|----|----|-----|----------|----------|------|----|-----|----------|----------|----------|
| 1    | 6  | 45 | 22 | I    | PA.D.EXT | 15   | 18 | 7  | I   | OM.D.EXT | 3        | 45   | 32 | I   | EC.F.PEN |          |          |
|      | 6  | 49 | 7  | I    | PA.D.INT |      | 21 | 52 | I   | OM.D.INT |          | 5    | 5  | 27  | III      | PA.F.INT |          |
|      | 7  | 51 | 20 | I    | OM.D.EXT |      | 27 | 38 | I   | PA.F.INT |          | 5    | 18 | 6   | III      | PA.F.EXT |          |
|      | 7  | 55 | 5  | I    | OM.D.INT |      | 31 | 23 | I   | PA.F.EXT |          | 5    | 38 | 9   | II       | OM.F.INT |          |
|      | 8  | 57 | 15 | I    | PA.F.INT |      | 30 | 49 | I   | OM.F.INT |          | 5    | 42 | 17  | II       | OM.F.EXT |          |
|      | 9  | 1  | 1  | I    | PA.F.EXT |      | 34 | 34 | I   | OM.F.EXT |          | 6    | 40 | 58  | III      | OM.D.EXT |          |
|      | 10 | 3  | 53 | I    | OM.F.INT |      |    |    |     |          |          | 6    | 53 | 37  | III      | OM.D.EXT |          |
|      | 10 | 7  | 38 | I    | OM.F.EXT |      | 11 | 29 | 55  | I        | OC.D.EXT | 7    | 37 | III | OM.F.INT |          |          |
|      |    |    |    |      |          |      | 33 | 38 | I   | OC.D.INT | 9        | 20   | 11 | III | OM.F.EXT |          |          |
|      |    |    |    |      |          |      |    |    |     |          | 21       | 45   | 58 | I   | PA.D.EXT |          |          |
| 2    | 3  | 31 | 43 | II   | OC.D.EXT | 11   | 39 | 15 | II  | PA.D.EXT | 12       | 0    | 1  | 56  | I        | PA.F.EXT |          |
|      | 3  | 35 | 58 | II   | OC.D.INT |      | 43 | 23 | II  | PA.D.INT |          | 0    | 57 | 38  | I        | OM.F.INT |          |
|      | 4  | 0  | 10 | I    | OC.D.EXT |      | 22 | 22 | 45  | III      | OC.D.EXT | 1    | 1  | 22  | I        | OM.D.EXT |          |
|      | 4  | 3  | 53 | I    | OC.D.INT |      | 35 | 26 | III | OC.D.INT | 22       | 48   | 32 | I   | OM.D.INT |          |          |
|      | 7  | 17 | 13 | I    | EC.F.INT |      | 40 | 48 | II  | OM.D.EXT | 23       | 58   | 11 | I   | PA.F.INT |          |          |
|      | 7  | 20 | 57 | I    | EC.F.EXT |      | 44 | 56 | II  | OM.D.INT | 19       | 3    | 39 | I   | OC.D.INT |          |          |
|      | 7  | 21 | 43 | I    | EC.F.PEN |      | 17 | 29 | II  | PA.F.INT | 19       | 45   | 3  | II  | OC.D.EXT |          |          |
|      | 8  | 27 | 50 | II   | EC.F.INT |      | 21 | 38 | II  | PA.F.EXT | 19       | 49   | 16 | II  | OC.D.INT |          |          |
| 3    | 8  | 32 | 5  | II   | EC.F.EXT | 14   | 43 | 32 | I   | EC.F.INT | 22       | 9    | 49 | I   | EC.F.INT |          |          |
|      | 8  | 33 | 45 | II   | EC.F.PEN |      | 47 | 15 | I   | EC.F.EXT |          | 13   | 13 | 32  | I        | EC.F.EXT |          |
|      |    |    |    |      |          |      | 48 | 1  | I   | EC.F.PEN |          | 18   | 59 | 56  | I        | OC.D.EXT |          |
|      |    |    |    |      |          |      |    |    |     |          |          | 19   | 3  | 39  | I        | OC.D.INT |          |
|      | 1  | 15 | 27 | I    | PA.D.EXT |      | 49 | 17 | III | OC.F.INT |          | 19   | 45 | 3   | II       | OC.D.EXT |          |
|      | 1  | 19 | 12 | I    | PA.D.INT |      | 1  | 59 | III | OC.F.EXT |          | 19   | 49 | 16  | II       | OC.D.INT |          |
|      | 2  | 20 | 18 | I    | OM.D.EXT |      | 20 | 18 | II  | OM.F.INT |          | 22   | 9  | 49  | I        | EC.F.INT |          |
|      | 2  | 24 | 3  | I    | OM.D.INT |      | 24 | 26 | II  | OM.F.EXT |          | 22   | 13 | 32  | I        | EC.F.EXT |          |
|      | 3  | 27 | 24 | I    | PA.F.INT |      | 35 | 43 | III | EC.D.PEN |          | 22   | 14 | 18  | I        | EC.F.PEN |          |
|      | 3  | 31 | 9  | I    | PA.F.EXT |      | 40 | 18 | III | EC.D.EXT |          | 13   | 0  | 26  | 16       | II       | EC.F.INT |
| 4    | 4  | 32 | 54 | I    | OM.F.INT | 16   | 53 | 35 | III | EC.D.INT | 14       | 0    | 30 | 30  | II       | EC.F.EXT |          |
|      | 4  | 36 | 39 | I    | OM.F.EXT |      | 58 | 11 | III | EC.F.INT |          | 0    | 32 | 10  | II       | EC.F.PEN |          |
|      | 22 | 16 | 56 | II   | PA.D.EXT |      | 11 | 29 | III | EC.F.EXT |          | 16   | 16 | 13  | I        | PA.D.EXT |          |
|      | 22 | 19 | 31 | III  | PA.D.EXT |      | 16 | 16 | 4   | III      | EC.F.PEN | 16   | 19 | 58  | I        | PA.D.INT |          |
|      | 22 | 21 | 4  | II   | PA.D.INT |      |    |    |     |          | 17       | 13   | 44 | I   | OM.D.EXT |          |          |
|      | 22 | 30 | 3  | I    | OC.D.EXT |      | 8  | 45 | 40  | I        | PA.D.EXT | 17   | 17 | 29  | I        | OM.D.INT |          |
|      | 22 | 32 | 9  | III  | PA.D.INT |      | 49 | 25 | I   | PA.D.INT | 18       | 28   | 30 | I   | PA.F.INT |          |          |
|      | 22 | 33 | 47 | I    | OC.D.INT |      | 46 | 59 | I   | OM.D.EXT | 18       | 32   | 15 | I   | PA.F.EXT |          |          |
| 5    | 0  | 23 | 6  | II   | OM.D.EXT | 10   | 57 | 46 | I   | PA.F.INT | 14       | 26   | 37 | I   | OM.F.INT |          |          |
|      | 0  | 27 | 14 | I    | OM.D.INT |      | 1  | 31 | I   | PA.F.EXT |          | 19   | 30 | 22  | I        | OM.F.EXT |          |
|      | 0  | 43 | 45 | III  | PA.F.INT |      | 59 | 44 | I   | OM.F.INT |          | 13   | 29 | 58  | I        | OC.D.INT |          |
|      | 0  | 54 | 57 | II   | PA.F.INT |      | 3  | 29 | I   | OM.F.EXT |          | 13   | 33 | 41  | I        | OC.D.INT |          |
|      | 0  | 56 | 28 | III  | PA.F.EXT |      |    |    |     |          |          | 14   | 24 | 40  | II       | PA.D.EXT |          |
|      | 0  | 59 | 5  | II   | PA.F.EXT |      | 5  | 59 | 53  | I        | OC.D.EXT | 14   | 28 | 48  | II       | PA.D.INT |          |
|      | 1  | 46 | 0  | I    | EC.F.INT |      | 3  | 36 | I   | OC.D.INT | 16       | 16   | 10 | II  | OM.D.EXT |          |          |
|      | 1  | 49 | 43 | I    | EC.F.EXT |      | 20 | 3  | II  | OC.D.EXT | 16       | 20   | 18 | II  | OM.D.INT |          |          |
|      | 1  | 50 | 29 | I    | EC.F.PEN |      | 24 | 17 | II  | OC.D.INT | 16       | 38   | 33 | I   | EC.F.INT |          |          |
|      | 2  | 40 | 30 | III  | OM.D.EXT |      | 12 | 17 | I   | EC.F.INT | 16       | 42   | 16 | I   | EC.F.EXT |          |          |
| 6    | 2  | 53 | 15 | III  | OM.D.INT | 9    | 16 | 0  | I   | EC.F.EXT | 14       | 43   | 2  | I   | EC.F.PEN |          |          |
|      | 2  | 25 | 2  | II   | OM.F.INT |      | 16 | 47 | I   | EC.F.PEN |          | 16   | 44 | 36  | III      | OC.D.EXT |          |
|      | 3  | 6  | 33 | II   | OM.F.EXT |      | 6  | 32 | II  | EC.F.INT |          | 16   | 57 | 12  | III      | OC.D.INT |          |
|      | 5  | 6  | 0  | III  | OM.F.INT |      | 10 | 47 | II  | EC.F.EXT |          | 17   | 3  | 20  | II       | PA.F.INT |          |
|      | 5  | 18 | 39 | III  | OM.F.EXT |      | 12 | 27 | II  | EC.F.PEN |          | 17   | 7  | 28  | II       | PA.F.EXT |          |
|      | 19 | 45 | 26 | I    | PA.D.EXT |      |    |    |     |          |          | 18   | 56 | 4   | II       | OM.F.INT |          |
|      | 19 | 49 | 11 | I    | PA.D.INT |      | 3  | 19 | 37  | I        | PA.D.EXT | 19   | 0  | 11  | II       | OM.F.EXT |          |
|      | 20 | 49 | 9  | I    | OM.D.EXT |      | 4  | 15 | 57  | I        | OM.D.EXT | 19   | 12 | 12  | III      | OC.F.INT |          |
|      | 20 | 52 | 54 | I    | OM.D.INT |      | 19 | 42 | I   | OM.D.INT | 19       | 24   | 48 | III | OC.F.EXT |          |          |
|      | 21 | 57 | 26 | I    | PA.F.INT |      | 19 | 28 | 2   | I        | PA.F.INT | 20   | 36 | 14  | III      | EC.D.PEN |          |
| 5    | 22 | 1  | 11 | I    | PA.F.EXT |      | 31 | 47 | I   | PA.F.EXT | 20       | 40   | 47 | III | EC.D.EXT |          |          |
|      | 23 | 1  | 48 | I    | OM.F.INT |      | 28 | 45 | I   | OM.F.INT | 20       | 53   | 57 | III | EC.D.INT |          |          |
|      | 23 | 5  | 33 | I    | OM.F.EXT |      | 32 | 29 | I   | OM.F.EXT | 22       | 59   | 48 | III | EC.F.INT |          |          |
|      | 16 | 56 | 14 | II   | OC.D.EXT | 11   | 29 | 53 | I   | OC.D.EXT | 15       | 12   | 58 | III | EC.F.EXT |          |          |
|      | 16 | 59 | 59 | I    | OC.D.INT |      | 33 | 36 | I   | OC.D.INT |          | 23   | 17 | 31  | III      | EC.F.PEN |          |
| 5    | 17 | 0  | 28 | II   | OC.D.INT |      | 1  | 50 | II  | PA.D.EXT |          | 10   | 46 | 25  | I        | PA.D.EXT |          |
|      | 20 | 14 | 47 | I    | EC.F.INT |      | 5  | 58 | II  | PA.D.EXT |          | 10   | 50 | 9   | I        | PA.D.INT |          |
|      | 20 | 18 | 30 | I    | EC.F.EXT |      | 40 | 0  | III | PA.D.EXT |          | 11   | 42 | 35  | I        | OM.D.EXT |          |
|      | 20 | 19 | 16 | I    | EC.F.PEN |      | 52 | 34 | III | PA.D.EXT |          | 11   | 46 | 20  | I        | OM.D.INT |          |
|      | 21 | 47 | 40 | II   | EC.F.INT |      | 58 | 28 | II  | OM.D.EXT |          | 12   | 58 | 44  | I        | PA.F.INT |          |
| 6    | 21 | 51 | 55 | II   | EC.F.EXT | 3    | 2  | 36 | II  | OM.D.INT | 13       | 2    | 29 | I   | PA.F.EXT |          |          |
|      | 21 | 53 | 35 | II   | EC.F.PEN |      | 40 | 16 | II  | PA.F.EXT |          | 13   | 55 | 31  | I        | OM.F.INT |          |
|      | 14 | 15 | 35 | I    | PA.D.EXT |      | 44 | 25 | II  | PA.F.EXT |          | 13   | 59 | 16  | I        | OM.F.EXT |          |
| 6    | 14 | 19 | 20 | I    | PA.D.INT |      | 44 | 46 | I   | EC.F.EXT |          |      |    |     |          |          |          |

## 2001 - CONFIGURATIONS DES SATELLITES GALIÉENS DE JUPITER



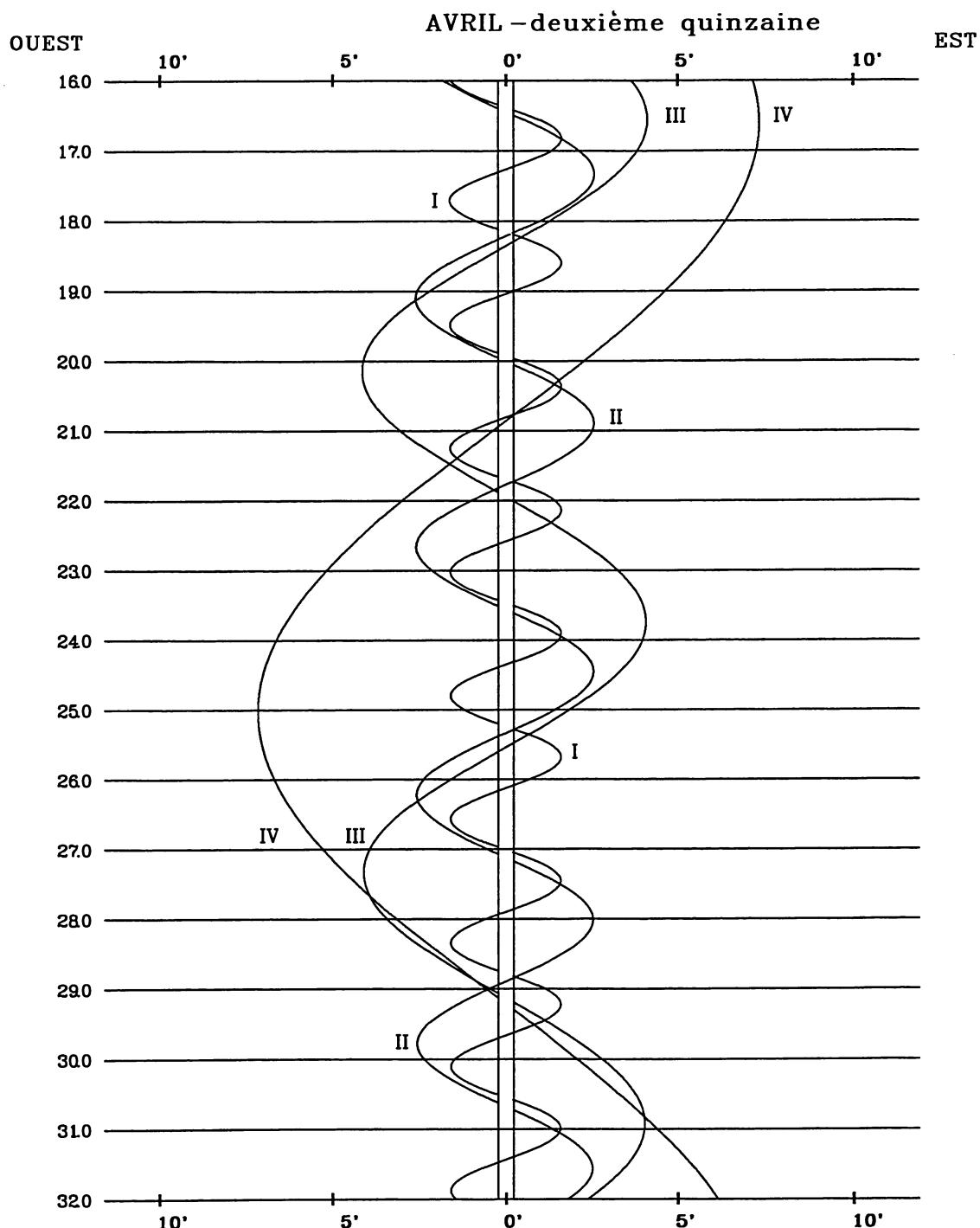
Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter



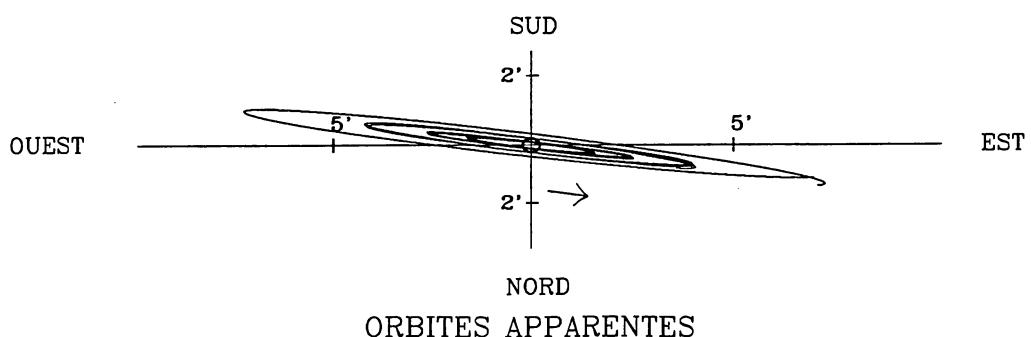
**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
 (Temps Terrestre)

| AVRIL - DEUXIÈME QUINZAINE |    |    |          |          |          |      |    |          |          |          |      |      |    |          |          |          |      |
|----------------------------|----|----|----------|----------|----------|------|----|----------|----------|----------|------|------|----|----------|----------|----------|------|
| jour                       | h  | m  | s        | SAT.     | TYPE     | jour | h  | m        | s        | SAT.     | TYPE | jour | h  | m        | s        | SAT.     | TYPE |
| 16                         | 8  | 0  | 2        | I        | OC.D.EXT | 17   | 10 | 55       | II       | PA.D.EXT |      |      |    |          |          |          |      |
|                            | 8  | 3  | 45       | I        | OC.D.INT | 17   | 15 | 2        | II       | PA.D.INT | 26   | 1    | 48 | 14       | I        | PA.D.EXT |      |
| 9                          | 9  | 20 | 11       | II       | OC.D.EXT | 18   | 33 | 31       | I        | EC.F.INT |      | 1    | 51 | 58       | I        | PA.D.INT |      |
| 9                          | 13 | 33 | II       | OC.D.INT | 18       | 37   | 14 | I        | EC.F.EXT |          | 2    | 35   | 49 | I        | OM.D.EXT |          |      |
| 11                         | 7  | 18 | I        | EC.F.INT | 18       | 38   | 1  | I        | EC.F.PEN |          | 2    | 39   | 34 | I        | OM.D.INT |          |      |
| 11                         | 11 | 1  | I        | EC.F.EXT | 18       | 51   | 29 | II       | OM.D.EXT |          | 4    | 0    | 52 | I        | PA.F.INT |          |      |
| 11                         | 11 | 47 | I        | EC.F.PEN | 18       | 55   | 36 | II       | OM.D.INT |          | 4    | 4    | 37 | I        | PA.F.EXT |          |      |
| 13                         | 45 | 5  | II       | EC.F.INT | 19       | 50   | 2  | II       | PA.F.INT |          | 4    | 49   | 2  | I        | OM.F.INT |          |      |
| 13                         | 49 | 19 | II       | EC.F.EXT | 19       | 54   | 10 | II       | PA.F.EXT |          | 4    | 52   | 46 | I        | OM.F.EXT |          |      |
| 13                         | 50 | 59 | II       | EC.F.PEN | 21       | 8    | 19 | III      | OC.D.EXT |          | 23   | 1    | 0  | I        | OC.D.EXT |          |      |
|                            |    |    |          |          |          | 21   | 20 | 48       | III      | OC.D.INT |      | 23   | 4  | 42       | I        | OC.D.INT |      |
| 17                         | 5  | 16 | 43       | I        | PA.D.EXT | 21   | 31 | 46       | II       | OM.F.INT |      |      |    |          |          |          |      |
|                            | 5  | 20 | 28       | I        | PA.D.INT | 21   | 35 | 54       | II       | OM.F.EXT | 27   | 1    | 25 | 12       | II       | OC.D.EXT |      |
| 6                          | 11 | 32 | I        | OM.D.EXT | 23       | 36   | 59 | III      | OC.F.INT |          | 1    | 29   | 25 | II       | OC.D.INT |          |      |
| 6                          | 15 | 17 | I        | OM.D.INT | 23       | 49   | 29 | III      | OC.F.EXT |          | 1    | 59   | 44 | I        | EC.F.INT |          |      |
| 7                          | 29 | 6  | I        | PA.F.INT |          |      |    |          |          |          | 2    | 3    | 27 | I        | EC.F.EXT |          |      |
| 7                          | 32 | 51 | I        | PA.F.EXT | 22       | 0    | 36 | 37       | III      | EC.D.PEN |      | 2    | 4  | 13       | I        | EC.F.PEN |      |
| 8                          | 24 | 31 | I        | OM.F.INT |          | 0    | 41 | 7        | III      | EC.D.EXT |      | 5    | 43 | 5        | II       | EC.F.INT |      |
| 8                          | 28 | 15 | I        | OM.F.EXT |          | 0    | 54 | 10       | III      | EC.D.INT |      | 5    | 47 | 18       | II       | EC.F.EXT |      |
|                            |    |    |          |          |          | 3    | 1  | 18       | III      | EC.F.INT |      | 5    | 48 | 57       | II       | EC.F.PEN |      |
| 18                         | 2  | 30 | 9        | I        | OC.D.EXT | 3    | 14 | 21       | III      | EC.F.EXT |      | 20   | 18 | 39       | I        | PA.D.EXT |      |
| 2                          | 33 | 52 | I        | OC.D.INT | 3        | 18   | 52 | III      | EC.F.PEN |          | 20   | 22   | 24 | I        | PA.D.INT |          |      |
| 3                          | 47 | 41 | II       | PA.D.EXT | 12       | 47   | 33 | I        | PA.D.EXT |          | 21   | 4    | 44 | I        | OM.D.EXT |          |      |
| 3                          | 51 | 48 | II       | PA.D.INT | 12       | 51   | 17 | I        | PA.D.INT |          | 21   | 8    | 28 | I        | OM.D.INT |          |      |
| 5                          | 33 | 49 | II       | OM.D.EXT | 13       | 38   | 6  | I        | OM.D.EXT |          | 22   | 31   | 20 | I        | PA.F.INT |          |      |
| 36                         | 2  | 1  | EC.F.INT | 13       | 41       | 51   | I  | OM.D.INT |          | 22       | 35   | 5    | I  | PA.F.EXT |          |          |      |
| 55                         | 37 | 57 | II       | OM.D.INT | 15       | 0    | 5  | I        | PA.F.INT |          | 23   | 17   | 58 | I        | OM.F.INT |          |      |
| 55                         | 39 | 45 | I        | EC.F.EXT | 15       | 3    | 50 | I        | PA.F.EXT |          | 23   | 21   | 43 | I        | OM.F.EXT |          |      |
| 40                         | 31 | 1  | EC.F.PEN | 15       | 51       | 13   | I  | OM.F.INT |          |          |      |      |    |          |          |          |      |
| 6                          | 26 | 34 | II       | PA.F.INT | 15       | 54   | 58 | I        | OM.F.EXT | 28       | 17   | 31   | 12 | I        | OC.D.EXT |          |      |
| 6                          | 30 | 42 | II       | PA.F.EXT |          |      |    |          |          |          | 17   | 34   | 55 | I        | OC.D.INT |          |      |
| 7                          | 2  | 58 | III      | PA.D.EXT | 23       | 10   | 0  | 35       | I        | OC.D.EXT |      | 19   | 57 | 57       | II       | PA.D.EXT |      |
| 7                          | 15 | 28 | III      | PA.D.INT |          | 10   | 4  | 18       | I        | OC.D.INT |      | 20   | 2  | 4        | II       | PA.D.INT |      |
| 8                          | 13 | 54 | II       | OM.F.INT |          | 11   | 59 | 28       | II       | OC.D.EXT |      | 20   | 28 | 26       | I        | EC.F.INT |      |
| 8                          | 18 | 1  | I        | OM.F.EXT |          | 12   | 3  | 41       | II       | OC.D.INT |      | 20   | 32 | 9        | I        | EC.F.EXT |      |
| 9                          | 29 | 38 | III      | PA.F.INT |          | 13   | 2  | 15       | I        | EC.F.INT |      | 20   | 32 | 55       | I        | EC.F.PEN |      |
| 9                          | 42 | 11 | III      | PA.F.EXT |          | 13   | 5  | 58       | I        | EC.F.EXT |      | 21   | 26 | 46       | II       | OM.D.EXT |      |
| 10                         | 41 | 54 | III      | OM.D.EXT |          | 13   | 6  | 44       | I        | EC.F.PEN |      | 21   | 30 | 54       | II       | OM.D.INT |      |
| 10                         | 54 | 29 | III      | OM.D.INT |          | 16   | 23 | 32       | II       | EC.F.INT |      | 22   | 37 | 31       | II       | PA.F.INT |      |
| 13                         | 9  | 44 | III      | OM.F.INT |          | 16   | 27 | 45       | II       | EC.F.EXT |      | 22   | 41 | 39       | II       | PA.F.EXT |      |
| 13                         | 22 | 13 | III      | OM.F.EXT |          | 16   | 29 | 25       | II       | EC.F.PEN |      |      |    |          |          |          |      |
| 23                         | 46 | 55 | I        | PA.D.EXT |          |      |    |          |          |          | 29   | 0    | 7  | 28       | II       | OM.F.INT |      |
| 23                         | 50 | 40 | I        | PA.D.INT | 24       | 7    | 17 | 57       | I        | PA.D.EXT |      | 0    | 11 | 35       | II       | OM.F.EXT |      |
|                            |    |    |          |          |          | 7    | 21 | 41       | I        | PA.D.INT |      | 1    | 33 | 6        | III      | OC.D.EXT |      |
| 19                         | 0  | 40 | 21       | I        | OM.D.EXT | 8    | 7  | 2        | I        | OM.D.EXT |      | 1    | 45 | 30       | III      | OC.D.INT |      |
| 0                          | 44 | 5  | I        | OM.D.INT | 8        | 10   | 46 | I        | OM.D.INT |          | 4    | 2    | 50 | III      | OC.F.INT |          |      |
| 1                          | 59 | 21 | I        | PA.F.INT | 9        | 30   | 32 | I        | PA.F.INT |          | 4    | 15   | 15 | III      | OC.F.EXT |          |      |
| 2                          | 3  | 6  | I        | PA.F.EXT | 9        | 34   | 16 | I        | PA.F.EXT |          | 4    | 36   | 30 | III      | EC.D.PEN |          |      |
| 2                          | 53 | 22 | I        | OM.F.INT | 10       | 20   | 11 | I        | OM.F.INT |          | 4    | 40   | 59 | III      | EC.D.EXT |          |      |
| 2                          | 57 | 7  | I        | OM.F.EXT | 10       | 23   | 56 | I        | OM.F.EXT |          | 4    | 53   | 55 | III      | EC.D.INT |          |      |
| 21                         | 0  | 17 | I        | OC.D.EXT |          |      |    |          |          |          | 7    | 2    | 18 | III      | EC.F.INT |          |      |
| 21                         | 4  | 0  | I        | OC.D.INT | 25       | 4    | 30 | 46       | I        | OC.D.EXT |      | 7    | 15 | 15       | III      | EC.F.EXT |      |
| 22                         | 34 | 45 | II       | OC.D.EXT |          | 4    | 34 | 29       | I        | OC.D.INT |      | 7    | 19 | 44       | III      | EC.F.PEN |      |
| 22                         | 38 | 58 | II       | OC.D.INT |          | 6    | 34 | 19       | I        | PA.D.EXT |      | 14   | 49 | 0        | I        | PA.D.EXT |      |
|                            |    |    |          |          |          | 6    | 38 | 26       | II       | PA.D.EXT |      | 14   | 52 | 45       | I        | PA.D.INT |      |
| 20                         | 0  | 4  | 48       | I        | EC.F.INT | 7    | 30 | 59       | I        | EC.F.INT |      | 15   | 33 | 32       | I        | OM.D.EXT |      |
| 0                          | 8  | 31 | I        | EC.F.EXT | 7        | 34   | 42 | I        | EC.F.EXT |          | 15   | 37   | 17 | I        | OM.D.INT |          |      |
| 0                          | 9  | 17 | I        | EC.F.PEN | 7        | 35   | 28 | I        | EC.F.PEN |          | 17   | 1    | 44 | I        | PA.F.INT |          |      |
| 3                          | 4  | 44 | II       | EC.F.EXT | 8        | 9    | 7  | II       | OM.D.EXT |          | 17   | 5    | 29 | I        | PA.F.EXT |          |      |
| 3                          | 8  | 58 | II       | EC.F.EXT | 8        | 13   | 14 | II       | OM.D.INT |          | 17   | 46   | 50 | I        | OM.F.INT |          |      |
| 3                          | 10 | 38 | II       | EC.F.PEN | 9        | 13   | 40 | II       | PA.F.INT |          | 17   | 50   | 34 | I        | OM.F.EXT |          |      |
| 18                         | 17 | 16 | I        | PA.D.EXT | 9        | 17   | 47 | II       | PA.F.EXT |          |      |      |    |          |          |          |      |
| 18                         | 21 | 1  | I        | PA.D.INT | 10       | 49   | 36 | II       | OM.F.INT | 30       | 12   | 1    | 26 | I        | OC.D.EXT |          |      |
| 19                         | 9  | 16 | I        | OM.D.EXT | 10       | 53   | 43 | II       | OM.F.EXT |          | 12   | 5    | 9  | I        | OC.D.INT |          |      |
| 19                         | 13 | 1  | I        | OM.D.INT | 11       | 27   | 39 | III      | PA.D.EXT |          | 14   | 50   | 13 | II       | OC.D.EXT |          |      |
| 20                         | 29 | 45 | I        | PA.F.INT | 11       | 40   | 3  | III      | PA.D.INT |          | 14   | 54   | 25 | II       | OC.D.INT |          |      |
| 20                         | 33 | 30 | I        | PA.F.EXT | 13       | 55   | 31 | III      | PA.F.INT |          | 14   | 57   | 9  | I        | EC.F.INT |          |      |
| 21                         | 22 | 21 | I        | OM.F.INT | 14       | 7    | 59 | III      | PA.F.EXT |          | 15   | 0    | 52 | I        | EC.F.EXT |          |      |
| 21                         | 26 | 5  | I        | OM.F.EXT | 14       | 42   | 40 | III      | OM.D.EXT |          | 15   | 1    | 38 | I        | EC.F.PEN |          |      |
|                            |    |    |          |          |          | 14   | 55 | 9        | III      | OM.D.INT |      | 19   | 1  | 47       | II       | EC.F.EXT |      |
| 21                         | 15 | 30 | 25       | I        | OC.D.EXT | 17   | 11 | 40       | III      | OM.F.INT |      | 19   | 6  | 0        | II       | EC.F.EXT |      |
| 15                         | 34 | 8  | I        | OC.D.INT | 17       | 24   | 5  | III      | OM.F.EXT |          | 19   | 7    | 39 | II       | EC.F.PEN |          |      |

## 2001 - CONFIGURATIONS DES SATELLITES GALILIENS DE JUPITER



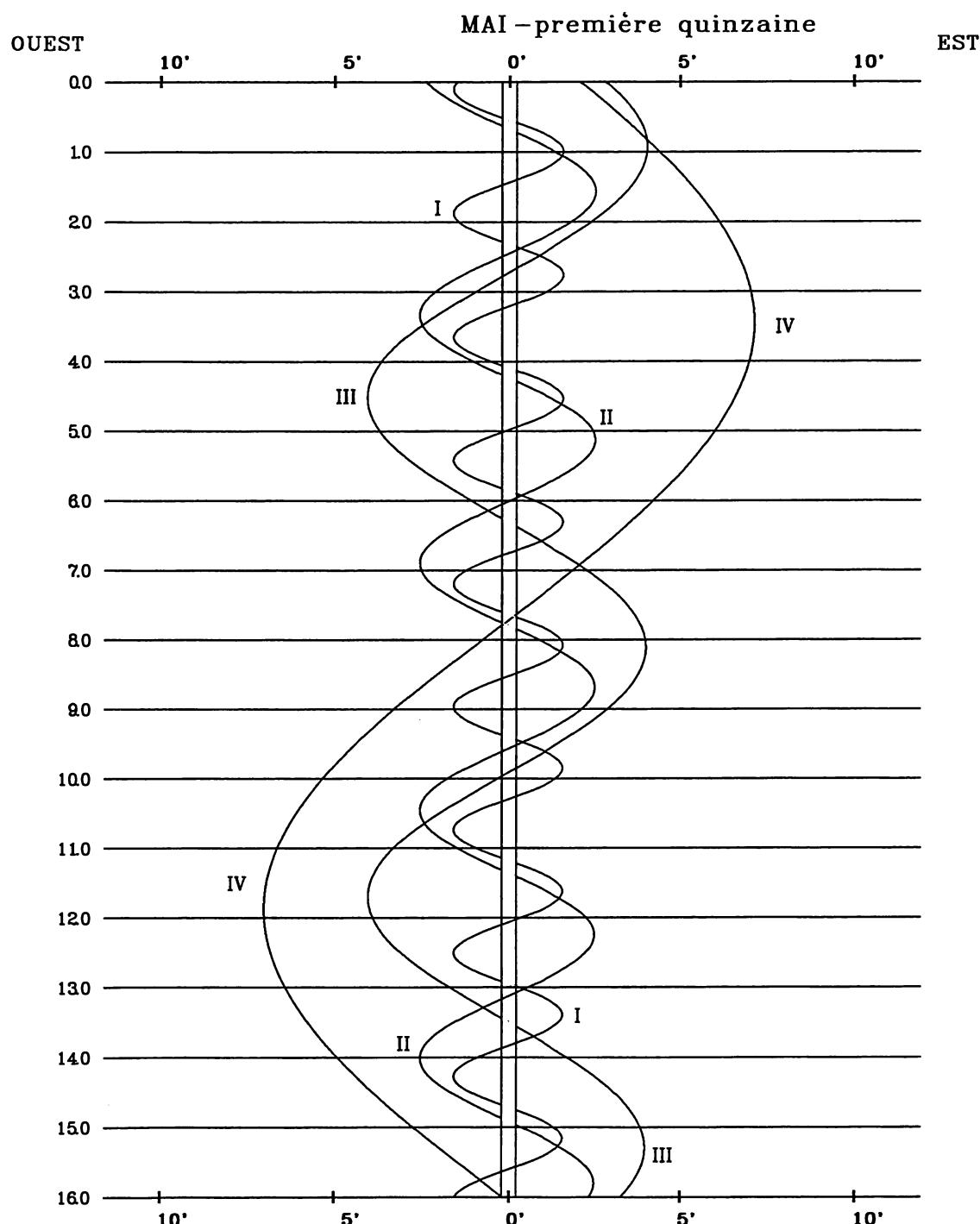
Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter



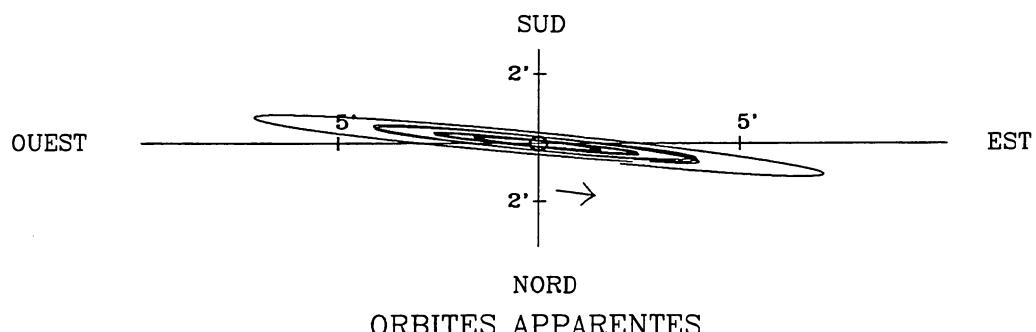
**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
 (Temps Terrestre)

| MAI - PREMIÈRE QUINZAINE |    |    |     |          |          |      |    |     |          |          |      |      |    |     |          |          |      |
|--------------------------|----|----|-----|----------|----------|------|----|-----|----------|----------|------|------|----|-----|----------|----------|------|
| jour                     | h  | m  | s   | SAT.     | TYPE     | jour | h  | m   | s        | SAT.     | TYPE | jour | h  | m   | s        | SAT.     | TYPE |
| 1                        | 9  | 19 | 28  | I        | PA.D.EXT | 1    | 29 | 47  | II       | PA.F.EXT |      | 8    | 40 | 2   | I        | OM.F.INT |      |
|                          | 9  | 23 | 12  | I        | PA.D.INT | 2    | 43 | 9   | II       | OM.F.INT |      | 8    | 43 | 46  | I        | OM.F.EXT |      |
| 10                       | 2  | 26 | I   | OM.D.EXT | 2        | 47   | 16 | II  | OM.F.EXT |          |      |      |    |     | I        | OC.D.EXT |      |
| 10                       | 6  | 11 | I   | OM.D.INT | 5        | 59   | 14 | III | OC.D.EXT | 11       | 3    | 3    | 13 | I   | OC.D.INT |          |      |
| 11                       | 32 | 15 | I   | PA.F.INT | 6        | 11   | 33 | III | OC.D.INT |          | 3    | 6    | 55 | I   | EC.F.INT |          |      |
| 11                       | 35 | 59 | I   | PA.F.EXT | 8        | 36   | 24 | III | EC.D.PEN |          | 5    | 49   | 25 | I   | EC.F.EXT |          |      |
| 12                       | 15 | 46 | I   | OM.F.INT | 8        | 40   | 51 | III | EC.D.EXT |          | 5    | 53   | 8  | I   | EC.F.EXT |          |      |
| 12                       | 19 | 31 | I   | OM.F.EXT | 8        | 30   | 4  | III | OC.F.INT |          | 5    | 53   | 54 | I   | EC.F.PEN |          |      |
|                          |    |    |     |          | 8        | 42   | 23 | III | OC.F.EXT |          | 7    | 7    | 37 | II  | OC.D.EXT |          |      |
| 2                        | 6  | 31 | 42  | I        | OC.D.EXT | 8    | 53 | 41  | III      | EC.D.INT |      | 7    | 11 | 49  | II       | OC.D.INT |      |
|                          | 6  | 35 | 24  | I        | OC.D.INT | 11   | 3  | 19  | III      | EC.F.INT |      | 10   | 59 | 13  | II       | EC.F.INT |      |
| 9                        | 21 | 43 | II  | PA.D.EXT | 11       | 16   | 9  | III | EC.F.EXT |          | 11   | 3    | 25 | II  | EC.F.EXT |          |      |
| 9                        | 25 | 50 | II  | PA.D.INT | 11       | 20   | 36 | III | EC.F.PEN |          | 11   | 5    | 4  | II  | EC.F.PEN |          |      |
| 9                        | 25 | 52 | I   | EC.F.INT | 16       | 50   | 42 | I   | PA.D.EXT |          |      |      |    |     |          |          |      |
| 9                        | 29 | 34 | I   | EC.F.EXT | 16       | 54   | 26 | I   | PA.D.INT | 12       | 0    | 22   | 8  | I   | PA.D.EXT |          |      |
| 9                        | 30 | 21 | I   | EC.F.PEN | 17       | 28   | 53 | I   | OM.D.EXT |          | 0    | 25   | 52 | I   | PA.D.INT |          |      |
| 10                       | 44 | 25 | II  | OM.D.EXT | 17       | 32   | 37 | I   | OM.D.INT |          | 0    | 55   | 22 | I   | OM.D.EXT |          |      |
| 10                       | 48 | 33 | II  | OM.D.INT | 19       | 3    | 38 | I   | PA.F.INT |          | 0    | 59   | 6  | I   | OM.D.INT |          |      |
| 12                       | 1  | 31 | II  | PA.F.INT | 19       | 7    | 22 | I   | PA.F.EXT |          | 2    | 35   | 11 | I   | PA.F.INT |          |      |
| 12                       | 5  | 39 | II  | PA.F.EXT | 19       | 42   | 20 | I   | OM.F.INT |          | 2    | 38   | 55 | I   | PA.F.EXT |          |      |
| 13                       | 25 | 19 | II  | OM.F.INT | 19       | 46   | 4  | I   | OM.F.EXT |          | 3    | 8    | 55 | I   | OM.F.INT |          |      |
| 13                       | 29 | 26 | II  | OM.F.EXT |          |      |    |     |          |          | 3    | 12   | 39 | I   | OM.F.EXT |          |      |
| 15                       | 54 | 32 | III | PA.D.EXT | 7        | 14   | 2  | 33  | I        | OC.D.EXT | 21   | 33   | 31 | I   | OC.D.EXT |          |      |
| 16                       | 6  | 52 | III | PA.D.INT | 14       | 6    | 16 | I   | OC.D.INT |          | 21   | 37   | 14 | I   | OC.D.INT |          |      |
| 18                       | 23 | 38 | III | PA.F.INT | 16       | 52   | 0  | I   | EC.F.INT |          |      |      |    |     |          |          |      |
| 18                       | 35 | 59 | III | PA.F.EXT | 16       | 55   | 43 | I   | EC.F.EXT | 13       | 0    | 18   | 6  | I   | EC.F.INT |          |      |
| 18                       | 44 | 6  | III | OM.D.EXT | 16       | 56   | 29 | I   | EC.F.PEN |          | 0    | 21   | 48 | I   | EC.F.EXT |          |      |
| 18                       | 56 | 29 | III | OM.D.INT | 17       | 41   | 27 | II  | OC.D.EXT |          | 0    | 22   | 35 | I   | EC.F.PEN |          |      |
| 21                       | 14 | 17 | III | OM.F.INT | 17       | 45   | 39 | II  | OC.D.INT |          | 1    | 33   | 52 | II  | PA.D.EXT |          |      |
| 21                       | 26 | 36 | III | OM.F.EXT | 21       | 39   | 52 | II  | EC.F.INT |          | 1    | 37   | 59 | II  | PA.D.INT |          |      |
|                          |    |    |     |          | 21       | 44   | 4  | II  | EC.F.EXT |          | 2    | 37   | 19 | II  | OM.D.EXT |          |      |
| 3                        | 3  | 49 | 49  | I        | PA.D.EXT | 21   | 45 | 43  | II       | EC.F.PEN |      | 2    | 41 | 26  | II       | OM.D.INT |      |
| 3                        | 53 | 33 | I   | PA.D.INT |          |      |    |     |          |          | 4    | 14   | 22 | II  | PA.F.INT |          |      |
| 4                        | 31 | 13 | I   | OM.D.EXT | 8        | 11   | 21 | 13  | I        | PA.D.EXT | 4    | 18   | 29 | II  | PA.F.EXT |          |      |
| 4                        | 34 | 57 | I   | OM.D.INT | 11       | 24   | 57 | I   | PA.D.INT |          | 5    | 18   | 49 | II  | OM.F.INT |          |      |
| 6                        | 2  | 39 | I   | PA.F.INT | 11       | 57   | 46 | I   | OM.D.EXT |          | 5    | 22   | 55 | II  | OM.F.EXT |          |      |
| 6                        | 6  | 23 | I   | PA.F.EXT | 12       | 1    | 30 | I   | OM.D.INT |          | 10   | 26   | 59 | III | OC.D.EXT |          |      |
| 6                        | 44 | 35 | I   | OM.F.INT | 13       | 34   | 11 | I   | PA.F.INT |          | 10   | 39   | 13 | III | OC.D.INT |          |      |
| 6                        | 48 | 20 | I   | OM.F.EXT | 13       | 37   | 55 | I   | PA.F.EXT |          | 15   | 4    | 53 | III | EC.F.INT |          |      |
|                          |    |    |     |          | 14       | 11   | 15 | I   | OM.F.INT |          | 15   | 17   | 37 | III | EC.F.EXT |          |      |
| 4                        | 1  | 1  | 59  | I        | OC.D.EXT | 14   | 14 | 59  | I        | OM.F.EXT |      | 15   | 22 | 2   | III      | EC.F.PEN |      |
| 1                        | 5  | 42 | I   | OC.D.INT |          |      |    |     |          |          | 18   | 52   | 35 | I   | PA.D.EXT |          |      |
| 3                        | 54 | 36 | I   | EC.F.INT | 9        | 8    | 32 | 52  | I        | OC.D.EXT | 18   | 56   | 19 | I   | PA.D.INT |          |      |
| 3                        | 58 | 19 | I   | EC.F.EXT |          | 8    | 36 | 34  | I        | OC.D.INT | 19   | 24   | 8  | I   | OM.D.EXT |          |      |
| 3                        | 59 | 5  | I   | EC.F.PEN | 11       | 20   | 41 | I   | EC.F.INT |          | 19   | 27   | 52 | I   | OM.D.INT |          |      |
| 4                        | 16 | 11 | II  | OC.D.EXT | 11       | 24   | 24 | I   | EC.F.EXT |          | 21   | 5    | 40 | I   | PA.F.INT |          |      |
| 4                        | 20 | 23 | II  | OC.D.INT | 11       | 25   | 10 | I   | EC.F.PEN |          | 21   | 9    | 24 | I   | PA.F.EXT |          |      |
| 8                        | 21 | 13 | II  | EC.F.INT | 12       | 9    | 41 | II  | PA.D.EXT |          | 21   | 37   | 43 | I   | OM.F.INT |          |      |
| 8                        | 25 | 26 | II  | EC.F.EXT | 12       | 13   | 48 | II  | PA.D.INT |          | 21   | 41   | 27 | I   | OM.F.EXT |          |      |
| 8                        | 27 | 5  | II  | EC.F.PEN | 13       | 19   | 41 | II  | OM.D.EXT |          |      |      |    |     |          |          |      |
| 22                       | 20 | 18 | I   | PA.D.EXT | 13       | 23   | 48 | II  | OM.D.INT | 14       | 16   | 3    | 52 | I   | OC.D.EXT |          |      |
| 22                       | 24 | 2  | I   | PA.D.INT | 14       | 49   | 57 | II  | PA.F.INT |          | 16   | 7    | 34 | I   | OC.D.INT |          |      |
| 23                       | 0  | 6  | I   | OM.D.EXT | 14       | 54   | 4  | II  | PA.F.EXT |          | 18   | 46   | 47 | I   | EC.F.INT |          |      |
| 23                       | 3  | 50 | I   | OM.D.INT | 16       | 0    | 59 | II  | OM.F.INT |          | 18   | 50   | 30 | I   | EC.F.EXT |          |      |
|                          |    |    |     |          | 16       | 5    | 6  | II  | OM.F.EXT |          | 18   | 51   | 16 | I   | EC.F.PEN |          |      |
| 5                        | 0  | 33 | 10  | I        | PA.F.INT | 20   | 21 | 41  | III      | PA.D.EXT |      | 20   | 33 | 1   | II       | OC.D.EXT |      |
| 0                        | 36 | 55 | I   | PA.F.EXT | 20       | 33   | 55 | III | PA.D.INT |          | 20   | 37   | 12 | II  | OC.D.INT |          |      |
| 1                        | 13 | 30 | I   | OM.F.INT | 22       | 44   | 33 | III | OM.D.EXT |          |      |      |    |     |          |          |      |
| 1                        | 17 | 14 | I   | OM.F.EXT | 22       | 52   | 1  | III | PA.F.INT | 15       | 0    | 17   | 45 | II  | EC.F.INT |          |      |
| 19                       | 32 | 16 | I   | OC.D.EXT | 22       | 56   | 50 | III | OM.D.INT |          | 0    | 21   | 57 | II  | EC.F.EXT |          |      |
| 19                       | 35 | 58 | I   | OC.D.INT | 23       | 4    | 17 | III | PA.F.EXT |          | 0    | 23   | 35 | II  | EC.F.PEN |          |      |
| 22                       | 23 | 18 | I   | EC.F.INT |          |      |    |     |          |          | 13   | 23   | 8  | I   | PA.D.EXT |          |      |
| 22                       | 27 | 0  | I   | EC.F.EXT | 10       | 1    | 15 | 54  | III      | OM.F.EXT | 13   | 26   | 52 | I   | PA.D.INT |          |      |
| 22                       | 27 | 47 | I   | EC.F.PEN |          | 1    | 28 | 8   | III      | OM.F.EXT | 13   | 52   | 59 | I   | OM.D.EXT |          |      |
| 22                       | 45 | 38 | II  | PA.D.EXT | 5        | 51   | 37 | I   | PA.D.EXT |          | 13   | 56   | 43 | I   | OM.D.INT |          |      |
| 22                       | 49 | 45 | II  | PA.D.INT | 5        | 55   | 21 | I   | PA.D.INT |          | 15   | 36   | 16 | I   | PA.F.INT |          |      |
|                          |    |    |     |          | 6        | 26   | 31 | I   | OM.D.EXT |          | 15   | 39   | 59 | I   | PA.F.EXT |          |      |
| 6                        | 0  | 2  | 3   | II       | OM.D.EXT | 6    | 30 | 15  | I        | OM.D.INT |      | 16   | 6  | 37  | I        | OM.F.INT |      |
| 0                        | 6  | 11 | II  | OM.D.INT | 8        | 4    | 37 | I   | PA.F.INT |          | 16   | 10   | 20 | I   | OM.F.EXT |          |      |
| 1                        | 25 | 40 | II  | PA.F.INT | 8        | 8    | 22 | I   | PA.F.EXT |          |      |      |    |     |          |          |      |

## 2001 - CONFIGURATIONS DES SATELLITES GALILIENS DE JUPITER



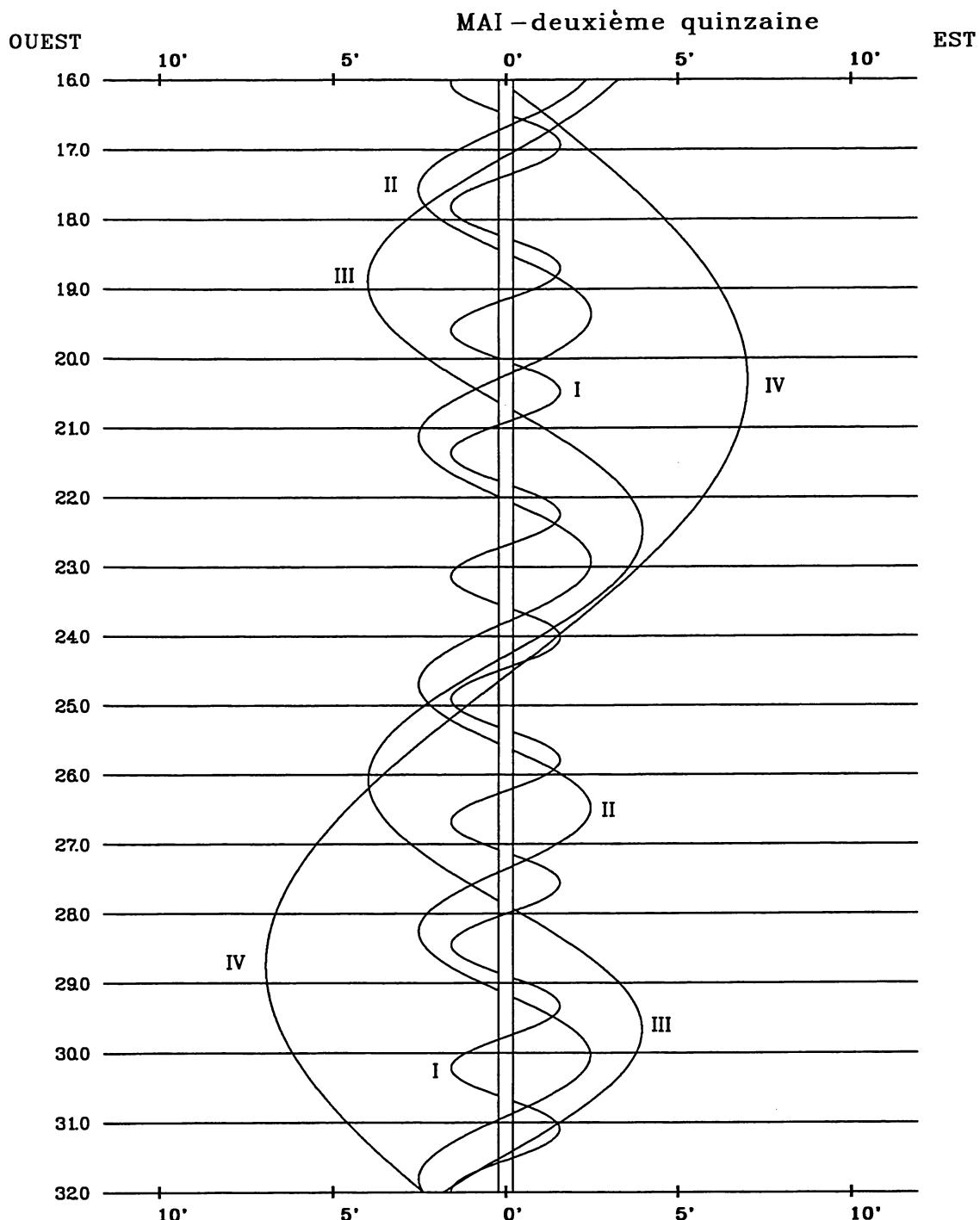
Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter



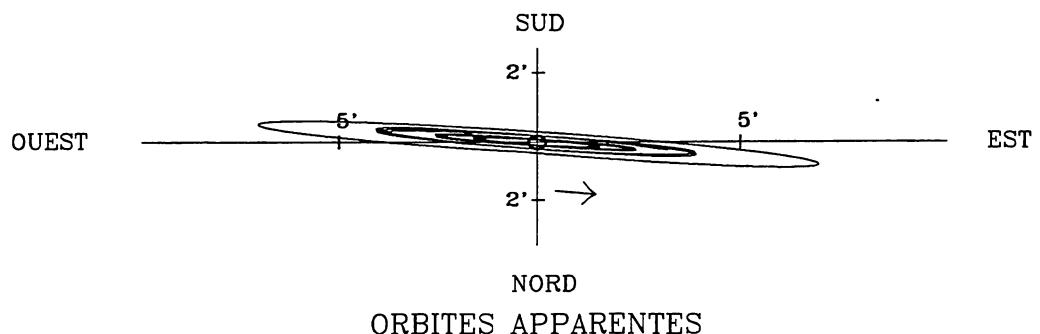
**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
**(Temps Terrestre)**

| MAI - DEUXIÈME QUINZAINE |    |    |     |          |          |      |    |    |     |          |          |      |    |     |          |          |          |
|--------------------------|----|----|-----|----------|----------|------|----|----|-----|----------|----------|------|----|-----|----------|----------|----------|
| jour                     | h  | m  | s   | SAT.     | TYPE     | jour | h  | m  | s   | SAT.     | TYPE     | jour | h  | m   | s        | SAT.     | TYPE     |
| 16                       | 10 | 34 | 13  | I        | OC.D.EXT | 23   | 36 | 43 | I   | OM.F.EXT |          | 4    | 11 | 15  | I        | EC.F.EXT |          |
|                          | 10 | 37 | 55  | I        | OC.D.INT |      |    |    |     |          |          | 4    | 12 | 1   | I        | EC.F.PEN |          |
| 13                       | 15 | 28 | I   | EC.F.INT | 21       | 18   | 5  | 20 | I   | OC.D.EXT | 7        | 11   | 45 | II  | PA.D.EXT |          |          |
| 13                       | 19 | 10 | I   | EC.F.EXT |          | 18   | 9  | 2  | I   | OC.D.INT | 7        | 15   | 51 | II  | PA.D.INT |          |          |
| 13                       | 19 | 57 | I   | EC.F.PEN |          | 20   | 41 | 31 | I   | EC.F.INT | 7        | 47   | 54 | II  | OM.D.EXT |          |          |
| 14                       | 58 | 11 | II  | PA.D.EXT |          | 20   | 45 | 14 | I   | EC.F.EXT | 7        | 52   | 1  | II  | OM.D.INT |          |          |
| 15                       | 2  | 18 | II  | PA.D.INT |          | 20   | 46 | 0  | I   | EC.F.PEN | 9        | 53   | 10 | II  | PA.F.INT |          |          |
| 15                       | 54 | 58 | II  | OM.D.EXT |          | 23   | 24 | 47 | II  | OC.D.EXT | 9        | 57   | 16 | II  | PA.F.EXT |          |          |
| 15                       | 59 | 5  | II  | OM.D.INT |          | 23   | 28 | 57 | II  | OC.D.INT | 10       | 30   | 10 | II  | OM.F.EXT |          |          |
| 17                       | 38 | 55 | II  | PA.F.INT |          |      |    |    |     |          | 10       | 34   | 16 | III | OM.F.EXT |          |          |
| 17                       | 43 | 2  | II  | PA.F.EXT | 22       | 2    | 55 | 25 | II  | EC.F.INT | 19       | 25   | 14 | III | OC.D.EXT |          |          |
| 18                       | 36 | 40 | II  | OM.F.INT |          | 2    | 59 | 36 | II  | EC.F.EXT | 19       | 37   | 16 | III | OC.D.INT |          |          |
| 18                       | 40 | 47 | II  | OM.F.EXT |          | 3    | 1  | 14 | II  | EC.F.PEN | 22       | 56   | 40 | I   | PA.D.EXT |          |          |
| 17                       | 0  | 49 | 43  | III      | PA.D.EXT |      | 15 | 25 | 10  | I        | PA.D.EXT | 23   | 8  | 8   | III      | EC.F.INT |          |
| 17                       | 1  | 51 | III | PA.D.INT |          | 15   | 28 | 53 | I   | PA.D.INT | 23       | 14   | 18 | I   | OM.D.EXT |          |          |
| 2                        | 44 | 51 | III | OM.D.EXT |          | 15   | 48 | 6  | I   | OM.D.INT | 23       | 18   | 2  | I   | OM.D.INT |          |          |
| 2                        | 57 | 1  | III | OM.D.INT |          | 15   | 51 | 50 | I   | OM.D.INT | 23       | 20   | 39 | III | EC.F.EXT |          |          |
| 3                        | 21 | 18 | III | PA.F.INT |          | 17   | 38 | 26 | I   | PA.F.INT | 23       | 25   | 1  | III | EC.F.PEN |          |          |
| 3                        | 33 | 28 | III | PA.F.EXT |          | 17   | 42 | 9  | I   | PA.F.EXT |          |      |    |     |          |          |          |
| 5                        | 17 | 21 | III | OM.F.INT |          | 18   | 1  | 51 | I   | OM.F.INT |          |      |    |     |          |          |          |
| 5                        | 29 | 30 | III | OM.F.EXT |          | 18   | 5  | 34 | I   | OM.F.EXT | 28       | 1    | 10 | 2   | I        | PA.F.INT |          |
| 7                        | 53 | 34 | I   | PA.D.EXT | 23       | 12   | 35 | 42 | I   | OC.D.EXT | 1        | 28   | 8  | I   | OM.F.INT |          |          |
| 7                        | 57 | 18 | I   | PA.D.INT |          | 12   | 39 | 24 | I   | OC.D.INT | 1        | 31   | 51 | I   | OM.F.EXT |          |          |
| 8                        | 21 | 43 | I   | OM.D.EXT |          | 15   | 10 | 11 | I   | EC.F.INT | 20       | 6    | 54 | I   | OC.D.EXT |          |          |
| 8                        | 25 | 26 | I   | OM.D.INT |          | 15   | 13 | 53 | I   | EC.F.EXT | 20       | 10   | 36 | I   | OC.D.INT |          |          |
| 10                       | 6  | 44 | I   | PA.F.INT |          | 15   | 14 | 40 | I   | EC.F.PEN | 22       | 36   | 12 | I   | EC.F.INT |          |          |
| 10                       | 10 | 28 | I   | PA.F.EXT |          | 17   | 47 | 8  | II  | PA.D.EXT | 22       | 39   | 55 | I   | EC.F.EXT |          |          |
| 10                       | 35 | 22 | I   | OM.F.INT |          | 17   | 51 | 14 | II  | PA.D.INT | 22       | 40   | 41 | I   | EC.F.PEN |          |          |
| 10                       | 39 | 6  | I   | OM.F.EXT |          | 18   | 30 | 15 | II  | OM.D.EXT |          |      |    |     |          |          |          |
| 18                       | 5  | 4  | 36  | I        | OC.D.EXT |      | 18 | 34 | 22  | II       | OM.D.INT | 29   | 2  | 16  | 39       | II       | OC.D.EXT |
| 5                        | 8  | 18 | I   | OC.D.INT |          | 20   | 28 | 20 | II  | PA.F.INT | 29       | 2    | 20 | 49  | II       | OC.D.INT |          |
| 7                        | 44 | 11 | I   | EC.F.INT |          | 20   | 32 | 26 | II  | PA.F.EXT | 5        | 32   | 54 | II  | EC.F.INT |          |          |
| 7                        | 47 | 53 | I   | EC.F.EXT |          | 21   | 12 | 20 | II  | OM.F.INT | 5        | 37   | 5  | II  | EC.F.EXT |          |          |
| 7                        | 48 | 40 | I   | EC.F.PEN |          | 21   | 16 | 27 | II  | OM.F.EXT | 5        | 38   | 42 | II  | EC.F.PEN |          |          |
| 9                        | 59 | 16 | II  | OC.D.EXT | 24       | 5    | 17 | 59 | III | PA.D.EXT | 17       | 27   | 15 | I   | PA.D.EXT |          |          |
| 10                       | 3  | 27 | II  | OC.D.INT |          | 5    | 30 | 1  | III | PA.D.INT | 17       | 30   | 58 | I   | PA.D.INT |          |          |
| 13                       | 36 | 58 | II  | EC.F.EXT |          | 6    | 44 | 39 | III | OM.D.EXT | 17       | 43   | 6  | I   | OM.D.EXT |          |          |
| 13                       | 41 | 9  | II  | EC.F.INT |          | 6    | 56 | 44 | III | OM.D.INT | 17       | 46   | 50 | I   | OM.D.INT |          |          |
| 13                       | 42 | 47 | II  | EC.F.PEN |          | 7    | 50 | 52 | III | PA.F.INT | 19       | 44   | 21 | I   | PA.F.EXT |          |          |
| 13                       | 34 | 57 | I   | OC.D.EXT |          | 8    | 2  | 55 | III | PA.F.EXT | 19       | 56   | 57 | I   | OM.F.EXT |          |          |
| 19                       | 2  | 24 | 7   | I        | PA.D.EXT |      | 9  | 18 | 18  | III      | OM.F.INT | 20   | 0  | 40  | I        | OM.F.EXT |          |
| 2                        | 27 | 51 | I   | PA.D.INT |          | 9    | 30 | 22 | III | OM.F.EXT |          |      |    |     |          |          |          |
| 2                        | 50 | 32 | I   | OM.D.EXT |          | 9    | 55 | 37 | I   | PA.D.EXT | 30       | 14   | 37 | 17  | I        | OC.D.EXT |          |
| 2                        | 54 | 16 | I   | OM.D.INT |          | 9    | 59 | 21 | I   | PA.D.INT | 14       | 40   | 59 | I   | OC.D.INT |          |          |
| 4                        | 37 | 19 | I   | PA.F.INT |          | 10   | 16 | 48 | I   | OM.D.EXT | 17       | 4    | 51 | I   | EC.F.INT |          |          |
| 4                        | 41 | 3  | I   | PA.F.EXT |          | 10   | 20 | 32 | I   | OM.D.INT | 17       | 8    | 33 | I   | EC.F.EXT |          |          |
| 5                        | 4  | 13 | I   | OM.F.INT |          | 12   | 8  | 55 | I   | PA.F.INT | 17       | 9    | 19 | I   | EC.F.PEN |          |          |
| 5                        | 7  | 57 | I   | OM.F.EXT |          | 12   | 12 | 39 | I   | PA.F.EXT | 20       | 36   | 26 | II  | PA.D.EXT |          |          |
| 23                       | 34 | 57 | I   | OC.D.EXT |          | 12   | 30 | 35 | I   | OM.F.INT | 20       | 40   | 32 | II  | PA.D.INT |          |          |
| 23                       | 38 | 39 | I   | OC.D.INT |          | 12   | 34 | 18 | I   | OM.F.EXT | 21       | 5    | 33 | II  | OM.D.EXT |          |          |
| 20                       | 2  | 12 | 51  | I        | EC.F.INT | 25   | 7  | 6  | 7   | I        | OC.D.EXT | 21   | 9  | 40  | II       | OM.D.EXT |          |
| 2                        | 16 | 33 | I   | EC.F.EXT |          | 7    | 9  | 49 | I   | OC.D.INT | 23       | 22   | 11 | II  | PA.F.EXT |          |          |
| 2                        | 17 | 19 | I   | EC.F.PEN |          | 9    | 38 | 53 | I   | EC.F.INT | 23       | 48   | 1  | II  | OM.F.INT |          |          |
| 4                        | 22 | 37 | II  | PA.D.EXT |          | 9    | 42 | 36 | I   | EC.F.EXT | 23       | 52   | 7  | II  | OM.F.EXT |          |          |
| 4                        | 26 | 44 | I   | PA.D.INT |          | 9    | 43 | 22 | I   | EC.F.PEN |          |      |    |     |          |          |          |
| 5                        | 12 | 37 | II  | OM.D.EXT |          | 12   | 51 | 5  | II  | OC.D.EXT |          |      |    |     |          |          |          |
| 5                        | 16 | 44 | II  | OM.D.INT |          | 12   | 55 | 15 | II  | OC.D.INT | 31       | 9    | 46 | 43  | III      | PA.D.EXT |          |
| 7                        | 3  | 35 | II  | PA.F.EXT |          | 16   | 14 | 31 | II  | EC.F.INT | 9        | 58   | 40 | III | PA.D.INT |          |          |
| 7                        | 7  | 42 | II  | PA.F.INT |          | 16   | 18 | 42 | II  | EC.F.EXT | 10       | 44   | 22 | III | OM.D.EXT |          |          |
| 7                        | 7  | 54 | 30  | II       | OM.F.EXT |      | 16 | 20 | 19  | II       | EC.F.PEN | 10   | 56 | 21  | III      | OM.D.INT |          |
| 7                        | 58 | 37 | II  | OM.F.INT |          |      |    |    |     |          | 11       | 57   | 43 | I   | PA.D.EXT |          |          |
| 14                       | 55 | 26 | III | OC.D.EXT | 26       | 4    | 26 | 11 | I   | PA.D.EXT | 12       | 11   | 47 | I   | OM.D.EXT |          |          |
| 15                       | 7  | 34 | III | OC.D.INT |          | 4    | 29 | 54 | I   | PA.D.INT | 12       | 15   | 30 | I   | OM.D.INT |          |          |
| 19                       | 6  | 11 | III | EC.F.INT |          | 4    | 45 | 36 | I   | OM.D.EXT | 12       | 20   | 55 | III | PA.F.INT |          |          |
| 19                       | 18 | 49 | III | EC.F.EXT |          | 4    | 49 | 19 | I   | OM.D.INT | 12       | 32   | 53 | III | PA.F.EXT |          |          |
| 19                       | 23 | 12 | III | EC.F.PEN |          | 6    | 39 | 31 | I   | PA.F.INT | 13       | 19   | 9  | III | OM.F.INT |          |          |
| 20                       | 54 | 36 | I   | PA.D.EXT |          | 6    | 43 | 14 | I   | PA.F.EXT | 13       | 31   | 8  | III | OM.F.EXT |          |          |
| 20                       | 58 | 19 | I   | PA.D.INT |          | 6    | 59 | 24 | I   | OM.F.INT | 14       | 11   | 7  | I   | PA.F.INT |          |          |
| 21                       | 19 | 16 | I   | OM.D.EXT |          | 7    | 3  | 7  | I   | OM.F.EXT | 14       | 14   | 51 | I   | PA.F.EXT |          |          |
| 21                       | 23 | 0  | I   | OM.D.INT |          |      |    |    |     |          | 14       | 25   | 39 | I   | OM.F.INT |          |          |
| 23                       | 7  | 50 | I   | PA.F.INT | 27       | 1    | 36 | 30 | I   | OC.D.EXT | 14       | 29   | 22 | I   | OM.F.EXT |          |          |
| 23                       | 11 | 33 | I   | PA.F.EXT |          | 1    | 40 | 12 | I   | OC.D.INT |          |      |    |     |          |          |          |
| 23                       | 33 | 0  | I   | OM.F.INT |          | 4    | 7  | 32 | I   | EC.F.INT |          |      |    |     |          |          |          |

## 2001 - CONFIGURATIONS DES SATELLITES GALILIENS DE JUPITER



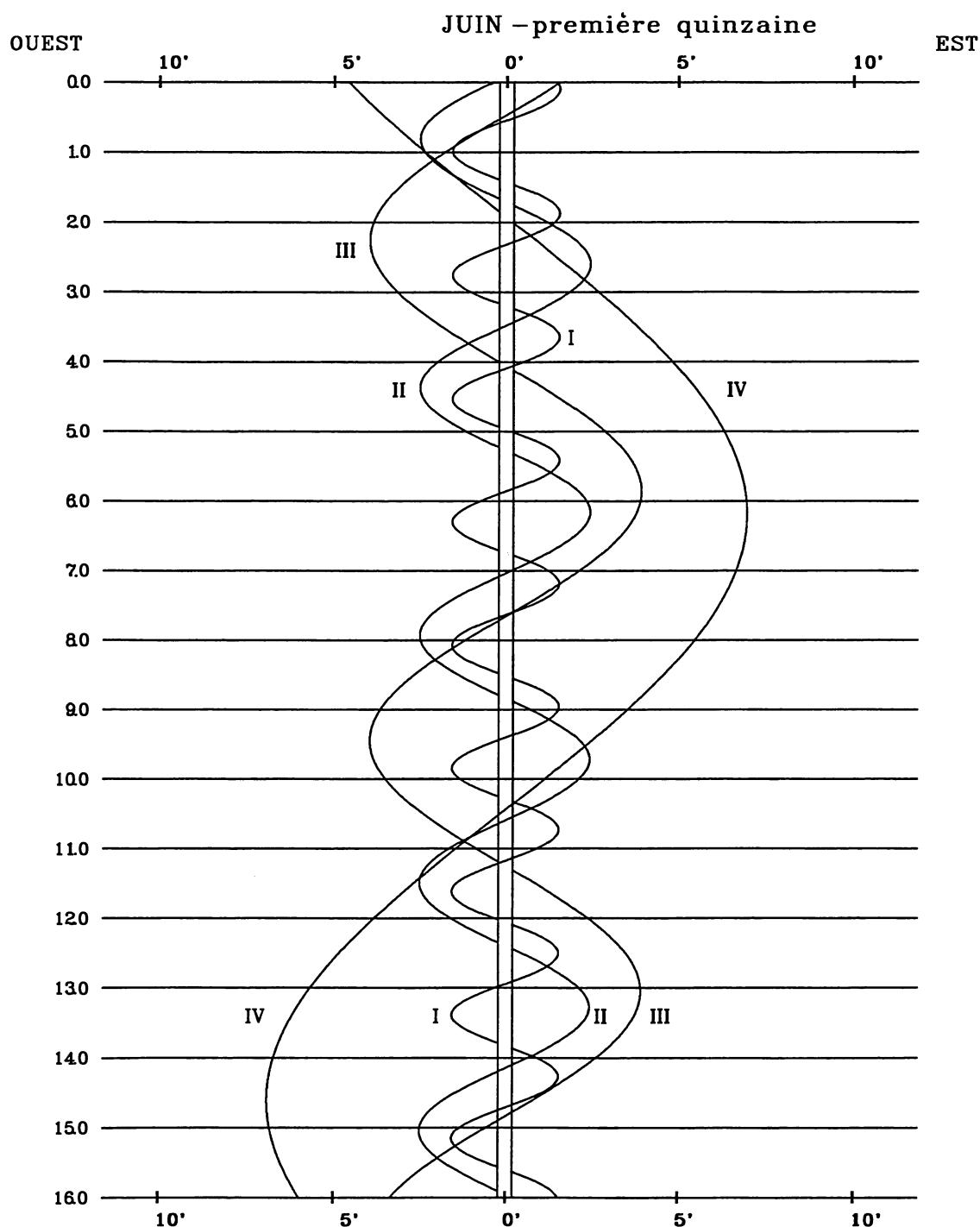
Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter



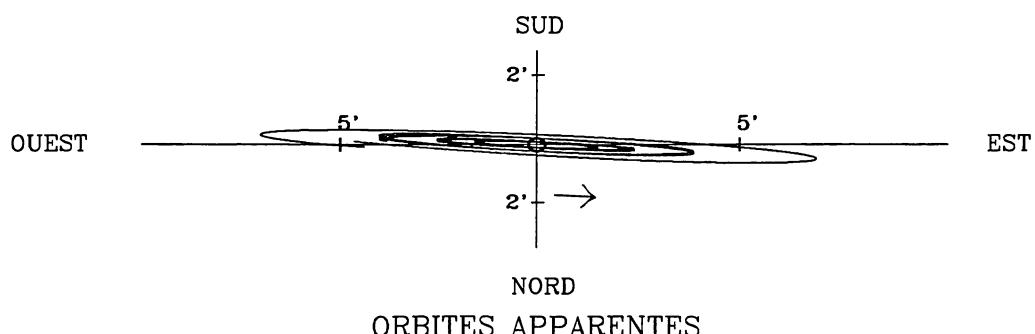
**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
 (Temps Terrestre)

| JUIN - PREMIÈRE QUINZAINE |    |    |     |          |          |      |    |    |     |          |          |      |    |    |          |          |          |
|---------------------------|----|----|-----|----------|----------|------|----|----|-----|----------|----------|------|----|----|----------|----------|----------|
| jour                      | h  | m  | s   | SAT.     | TYPE     | jour | h  | m  | s   | SAT.     | TYPE     | jour | h  | m  | s        | SAT.     | TYPE     |
| 1                         | 9  | 7  | 43  | I        | OC.D.EXT | 16   | 42 | 36 | I   | OC.D.INT |          | 4    | 24 | 0  | III      | OC.D.EXT |          |
|                           | 9  | 11 | 25  | I        | OC.D.INT | 18   | 59 | 27 | I   | EC.F.INT |          | 4    | 35 | 49 | III      | OC.D.INT |          |
| 11                        | 33 | 32 | I   | EC.F.INT |          | 19   | 3  | 9  | I   | EC.F.EXT |          | 5    | 14 | 20 | I        | PA.F.INT |          |
| 11                        | 37 | 15 | I   | EC.F.EXT |          | 19   | 3  | 56 | I   | EC.F.PEN |          | 5    | 18 | 0  | I        | OM.F.INT |          |
| 11                        | 38 | 1  | I   | EC.F.PEN |          | 23   | 26 | 2  | II  | PA.D.EXT |          | 5    | 18 | 3  | I        | PA.F.EXT |          |
| 15                        | 42 | 53 | II  | OC.D.EXT |          | 23   | 30 | 8  | II  | PA.D.INT |          | 5    | 21 | 43 | I        | OM.F.EXT |          |
| 15                        | 47 | 2  | II  | OC.D.INT |          | 23   | 40 | 55 | II  | OM.D.EXT |          | 7    | 10 | 7  | III      | EC.F.INT |          |
| 18                        | 51 | 49 | II  | EC.F.INT |          | 23   | 45 | 1  | II  | OM.D.INT |          | 7    | 22 | 25 | III      | EC.F.EXT |          |
| 18                        | 55 | 59 | II  | EC.F.EXT |          |      |    |    |     |          |          | 7    | 26 | 43 | III      | EC.F.PEN |          |
| 18                        | 57 | 37 | II  | EC.F.PEN | 7        | 2    | 8  | 7  | II  | PA.F.INT |          |      |    |    |          |          |          |
|                           |    |    |     |          |          | 2    | 12 | 13 | II  | PA.F.EXT | 12       | 0    | 10 | 8  | I        | OC.D.EXT |          |
| 2                         | 6  | 28 | 16  | I        | PA.D.EXT | 2    | 23 | 44 | II  | OM.F.INT |          | 0    | 13 | 50 | I        | OC.D.INT |          |
|                           | 6  | 31 | 59  | I        | PA.D.INT | 2    | 27 | 51 | II  | OM.F.EXT |          | 2    | 25 | 24 | I        | EC.F.INT |          |
| 6                         | 40 | 33 | I   | OM.D.EXT |          | 13   | 59 | 47 | I   | PA.D.EXT |          | 2    | 29 | 6  | I        | EC.F.EXT |          |
| 6                         | 44 | 16 | I   | OM.D.INT |          | 14   | 3  | 30 | I   | PA.D.INT |          | 2    | 29 | 52 | I        | EC.F.PEN |          |
| 8                         | 41 | 42 | I   | PA.F.INT |          | 14   | 6  | 39 | I   | OM.D.EXT |          | 8    | 0  | 3  | II       | OC.D.EXT |          |
| 8                         | 45 | 25 | I   | PA.F.EXT |          | 14   | 10 | 22 | I   | OM.D.INT |          | 8    | 4  | 11 | II       | OC.D.INT |          |
| 8                         | 54 | 26 | I   | OM.F.INT |          | 14   | 16 | 16 | III | PA.D.EXT |          | 10   | 47 | 6  | II       | EC.F.INT |          |
| 8                         | 58 | 9  | I   | OM.F.EXT |          | 14   | 28 | 7  | III | PA.D.INT |          | 10   | 51 | 16 | II       | EC.F.EXT |          |
|                           |    |    |     |          |          | 14   | 44 | 33 | III | OM.D.EXT |          | 10   | 52 | 53 | II       | EC.F.PEN |          |
| 3                         | 3  | 38 | 6   | I        | OC.D.EXT | 14   | 56 | 28 | III | OM.D.INT |          | 21   | 31 | 20 | I        | PA.D.EXT |          |
| 3                         | 41 | 48 | I   | OC.D.INT |          | 16   | 13 | 17 | I   | PA.F.INT |          | 21   | 32 | 47 | I        | OM.D.EXT |          |
| 6                         | 2  | 10 | I   | EC.F.INT |          | 16   | 17 | 0  | I   | PA.F.EXT |          | 21   | 35 | 3  | I        | PA.D.INT |          |
| 6                         | 5  | 53 | I   | EC.F.EXT |          | 16   | 20 | 36 | I   | OM.F.INT |          | 21   | 36 | 30 | I        | OM.D.INT |          |
| 6                         | 6  | 39 | I   | EC.F.PEN |          | 16   | 24 | 19 | I   | OM.F.EXT |          | 23   | 44 | 54 | I        | PA.F.INT |          |
| 10                        | 1  | 12 | II  | PA.D.EXT |          | 16   | 51 | 50 | III | PA.F.INT |          | 23   | 46 | 45 | I        | OM.F.INT |          |
| 10                        | 5  | 18 | I   | PA.D.INT |          | 17   | 3  | 41 | III | PA.F.EXT |          | 23   | 48 | 36 | I        | PA.F.EXT |          |
| 10                        | 23 | 14 | II  | OM.D.EXT |          | 17   | 20 | 28 | III | OM.F.INT |          | 23   | 50 | 28 | I        | OM.F.EXT |          |
| 10                        | 27 | 20 | II  | OM.D.INT |          | 17   | 32 | 22 | III | OM.F.EXT |          |      |    |    |          |          |          |
| 12                        | 43 | 4  | II  | PA.F.INT |          |      |    |    |     |          | 13       | 18   | 40 | 31 | I        | OC.D.EXT |          |
| 12                        | 47 | 10 | II  | PA.F.EXT | 8        | 11   | 9  | 20 | I   | OC.D.EXT |          | 18   | 44 | 13 | I        | OC.D.INT |          |
| 13                        | 5  | 51 | II  | OM.F.INT |          | 11   | 13 | 2  | I   | OC.D.INT |          | 20   | 54 | 0  | I        | EC.F.INT |          |
| 13                        | 9  | 58 | II  | OM.F.EXT |          | 13   | 28 | 8  | I   | EC.F.INT |          | 20   | 57 | 43 | I        | EC.F.EXT |          |
| 23                        | 54 | 35 | III | OC.D.EXT |          | 13   | 31 | 50 | I   | EC.F.EXT |          | 20   | 58 | 29 | I        | EC.F.PEN |          |
|                           |    |    |     |          |          | 13   | 32 | 37 | I   | EC.F.PEN |          |      |    |    |          |          |          |
| 4                         | 0  | 6  | 30  | III      | OC.D.INT | 18   | 34 | 32 | II  | OC.D.EXT | 14       | 2    | 15 | 47 | II       | PA.D.EXT |          |
| 0                         | 58 | 45 | I   | PA.D.EXT |          | 18   | 38 | 41 | II  | OC.D.INT |          | 2    | 16 | 17 | II       | OM.D.EXT |          |
| 1                         | 2  | 28 | I   | PA.D.INT |          | 21   | 28 | 53 | II  | EC.F.INT |          | 2    | 19 | 53 | II       | PA.D.INT |          |
| 1                         | 9  | 14 | I   | OM.D.EXT |          | 21   | 33 | 2  | II  | EC.F.EXT |          | 2    | 20 | 23 | II       | OM.D.INT |          |
| 1                         | 12 | 57 | I   | OM.D.INT |          | 21   | 34 | 39 | II  | EC.F.PEN |          | 4    | 58 | 19 | II       | PA.F.INT |          |
| 3                         | 9  | 12 | III | EC.F.INT |          |      |    |    |     |          | 4        | 59   | 27 | II | OM.F.INT |          |          |
| 3                         | 12 | 13 | I   | PA.F.INT | 9        | 8    | 30 | 19 | I   | PA.D.EXT |          | 5    | 2  | 25 | II       | PA.F.EXT |          |
| 3                         | 15 | 56 | I   | PA.F.EXT |          | 8    | 34 | 2  | I   | PA.D.INT |          | 5    | 3  | 33 | II       | OM.F.EXT |          |
| 3                         | 21 | 37 | III | EC.F.EXT |          | 8    | 35 | 23 | I   | OM.D.EXT |          | 16   | 1  | 24 | I        | OM.D.EXT |          |
| 3                         | 23 | 8  | I   | OM.F.INT |          | 8    | 39 | 6  | I   | OM.D.INT |          | 16   | 1  | 47 | I        | PA.D.EXT |          |
| 3                         | 25 | 57 | III | EC.F.PEN |          | 10   | 43 | 51 | I   | PA.F.INT |          | 16   | 5  | 7  | I        | OM.D.INT |          |
| 3                         | 26 | 51 | I   | OM.F.EXT |          | 10   | 47 | 33 | I   | PA.F.EXT |          | 16   | 5  | 29 | I        | PA.D.INT |          |
| 22                        | 8  | 31 | I   | OC.D.EXT |          | 10   | 49 | 20 | I   | OM.F.INT |          | 18   | 15 | 21 | I        | PA.F.INT |          |
| 22                        | 12 | 13 | I   | OC.D.INT |          | 10   | 53 | 3  | I   | OM.F.EXT |          | 18   | 15 | 23 | I        | OM.F.INT |          |
|                           |    |    |     |          |          |      |    |    |     |          |          | 18   | 19 | 4  | I        | PA.F.EXT |          |
| 5                         | 0  | 30 | 50  | I        | EC.F.INT | 10   | 5  | 39 | 43  | I        | OC.D.EXT |      | 18 | 19 | 6        | I        | OM.F.EXT |
| 0                         | 34 | 32 | I   | EC.F.EXT |          | 5    | 43 | 25 | I   | OC.D.INT |          | 18   | 44 | 31 | III      | OM.D.EXT |          |
| 0                         | 35 | 18 | I   | EC.F.PEN |          | 7    | 56 | 45 | I   | EC.F.INT |          | 18   | 45 | 46 | III      | PA.D.EXT |          |
| 5                         | 8  | 25 | II  | OC.D.EXT |          | 8    | 0  | 27 | I   | EC.F.EXT |          | 18   | 56 | 20 | III      | OM.D.INT |          |
| 5                         | 12 | 34 | I   | OC.D.INT |          | 8    | 1  | 14 | I   | EC.F.PEN |          | 18   | 57 | 30 | III      | PA.D.EXT |          |
| 8                         | 10 | 6  | I   | EC.F.INT |          | 12   | 50 | 51 | II  | PA.D.EXT |          | 21   | 21 | 26 | III      | OM.F.INT |          |
| 8                         | 14 | 16 | II  | EC.F.EXT |          | 12   | 54 | 57 | II  | PA.D.INT |          | 21   | 22 | 43 | III      | PA.F.EXT |          |
| 8                         | 15 | 54 | II  | EC.F.PEN |          | 12   | 58 | 34 | II  | OM.D.EXT |          | 21   | 33 | 16 | III      | OM.F.EXT |          |
| 19                        | 29 | 19 | I   | PA.D.EXT |          | 13   | 2  | 40 | II  | OM.D.INT |          | 21   | 34 | 27 | III      | PA.F.EXT |          |
| 19                        | 33 | 2  | I   | PA.D.INT |          | 15   | 33 | 9  | II  | PA.F.INT |          |      |    |    |          |          |          |
| 19                        | 38 | 0  | I   | OM.D.EXT |          | 15   | 37 | 15 | II  | PA.F.EXT | 15       | 13   | 9  | 40 | I        | EC.D.PEN |          |
| 19                        | 41 | 43 | I   | OM.D.INT |          | 15   | 41 | 32 | II  | OM.F.INT |          | 13   | 10 | 27 | I        | EC.D.EXT |          |
| 21                        | 42 | 48 | I   | PA.F.INT |          | 15   | 45 | 39 | II  | OM.F.EXT |          | 13   | 14 | 9  | I        | EC.D.INT |          |
| 21                        | 46 | 31 | I   | PA.F.EXT |          |      |    |    |     |          | 15       | 24   | 18 | I  | OC.F.INT |          |          |
| 21                        | 51 | 55 | I   | OM.F.INT | 11       | 3    | 0  | 47 | I   | PA.D.EXT |          | 15   | 28 | 0  | I        | OC.F.EXT |          |
| 21                        | 55 | 38 | I   | OM.F.EXT |          | 3    | 4  | 3  | I   | OM.D.EXT |          | 21   | 22 | 46 | II       | EC.D.PEN |          |
|                           |    |    |     |          |          | 3    | 4  | 30 | I   | PA.D.INT |          | 21   | 24 | 23 | II       | EC.D.EXT |          |
| 6                         | 16 | 38 | 54  | I        | OC.D.EXT |      | 3  | 7  | 46  | I        | OM.D.INT |      | 21 | 28 | 32       | II       | EC.D.INT |

## 2001 - CONFIGURATIONS DES SATELLITES GALIÉENS DE JUPITER



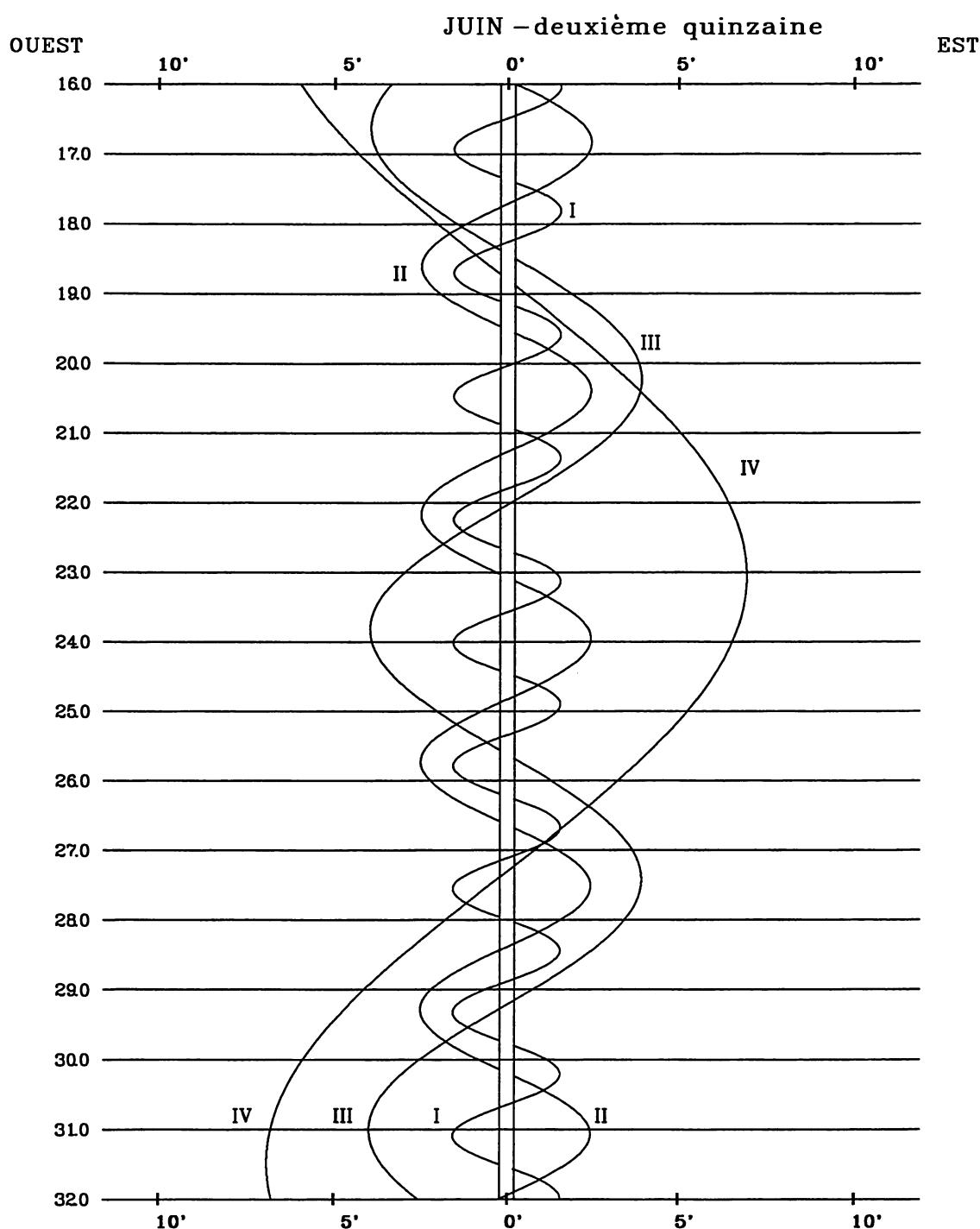
Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter



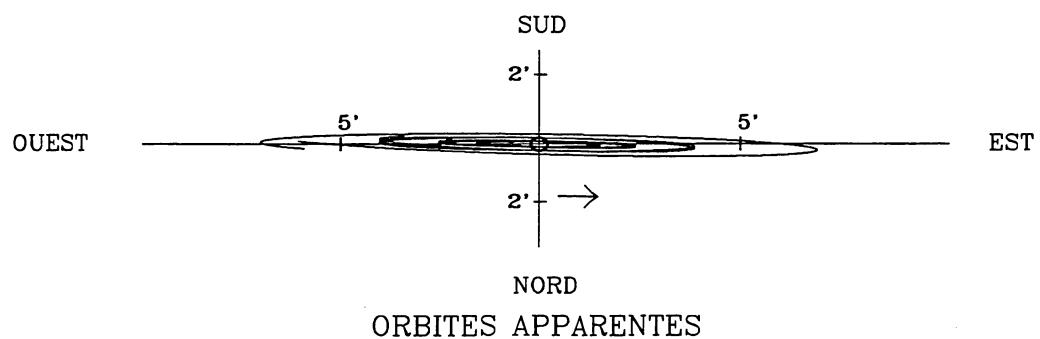
**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
 (Temps Terrestre)

| JUIN - DEUXIÈME QUINZAINE |    |    |     |          |          |      |    |     |          |          |          |      |    |     |          |          |          |
|---------------------------|----|----|-----|----------|----------|------|----|-----|----------|----------|----------|------|----|-----|----------|----------|----------|
| jour                      | h  | m  | s   | SAT.     | TYPE     | jour | h  | m   | s        | SAT.     | TYPE     | jour | h  | m   | s        | SAT.     | TYPE     |
| 16                        | 0  | 9  | 55  | II       | OC.F.INT | 7    | 39 | 20  | II       | OM.F.EXT |          | 4    | 1  | 57  | I        | EC.D.EXT |          |
|                           | 0  | 14 | 3   | II       | OC.F.EXT | 7    | 48 | 39  | II       | PA.F.INT |          | 4    | 5  | 39  | I        | EC.D.INT |          |
| 10                        | 30 | 7  | I   | OM.D.EXT | 7        | 52   | 45 | II  | PA.F.EXT |          | 6        | 26   | 51 | I   | OC.F.INT |          |          |
| 10                        | 32 | 17 | I   | PA.D.EXT | 17       | 56   | 4  | I   | OM.D.EXT |          | 6        | 30   | 33 | I   | OC.F.EXT |          |          |
| 10                        | 33 | 49 | I   | OM.D.INT | 17       | 59   | 46 | I   | OM.D.INT |          | 13       | 17   | 11 | II  | EC.D.PEN |          |          |
| 10                        | 36 | 0  | I   | PA.D.INT | 18       | 3    | 39 | I   | PA.D.EXT |          | 13       | 18   | 47 | II  | EC.D.EXT |          |          |
| 12                        | 44 | 6  | I   | OM.F.INT | 18       | 7    | 22 | I   | PA.D.INT |          | 13       | 22   | 55 | II  | EC.D.INT |          |          |
| 12                        | 45 | 53 | I   | PA.F.INT | 20       | 10   | 4  | I   | OM.F.INT |          | 16       | 26   | 27 | II  | OC.F.INT |          |          |
| 12                        | 47 | 48 | I   | OM.F.EXT | 20       | 13   | 46 | I   | OM.F.EXT |          | 16       | 30   | 33 | II  | OC.F.EXT |          |          |
| 12                        | 49 | 35 | I   | PA.F.EXT | 20       | 17   | 17 | I   | PA.F.EXT |          | 20       | 20   | 59 | I   | PA.F.EXT |          |          |
|                           |    |    |     |          |          |      |    |     |          |          |          | 27   | 1  | 22  | 2        | I        | OM.D.EXT |
| 17                        | 7  | 38 | 15  | I        | EC.D.PEN | 22   | 45 | 3   | III      | OM.D.EXT |          | 1    | 25 | 44  | I        | OM.D.INT |          |
|                           | 7  | 39 | 1   | I        | EC.D.EXT | 22   | 56 | 46  | III      | OM.D.INT |          | 1    | 34 | 59  | I        | PA.D.EXT |          |
| 7                         | 42 | 43 | I   | EC.D.INT | 23       | 15   | 51 | III | PA.D.EXT |          | 1        | 38   | 41 | I   | PA.D.INT |          |          |
| 9                         | 54 | 43 | I   | OC.F.INT | 23       | 27   | 28 | III | PA.D.INT |          | 3        | 36   | 2  | I   | OM.F.INT |          |          |
| 9                         | 58 | 25 | I   | OC.F.EXT |          |      |    |     |          |          | 3        | 39   | 44 | I   | OM.F.EXT |          |          |
| 15                        | 33 | 56 | II  | OM.D.EXT | 22       | 1    | 23 | 7   | III      | OM.F.INT |          | 3    | 48 | 38  | I        | PA.F.INT |          |
| 15                        | 38 | 2  | II  | OM.D.INT | 1        | 34   | 51 | III | OM.F.EXT |          | 3        | 52   | 20 | I   | PA.F.EXT |          |          |
| 15                        | 40 | 40 | II  | PA.D.EXT | 1        | 54   | 12 | III | PA.F.INT |          | 22       | 29   | 44 | I   | EC.D.PEN |          |          |
| 15                        | 44 | 46 | II  | PA.D.INT | 2        | 5    | 49 | III | PA.F.EXT |          | 22       | 30   | 30 | I   | EC.D.EXT |          |          |
| 18                        | 17 | 14 | II  | OM.F.INT | 15       | 4    | 2  | I   | EC.D.PEN |          | 22       | 34   | 12 | I   | EC.D.INT |          |          |
| 18                        | 21 | 20 | II  | OM.F.EXT | 15       | 4    | 48 | I   | EC.D.EXT |          | 28       | 0    | 57 | 13  | I        | OC.F.INT |          |
| 18                        | 23 | 24 | II  | PA.F.INT | 15       | 8    | 30 | I   | EC.D.INT |          | 1        | 0    | 55 | I   | OC.F.EXT |          |          |
| 18                        | 27 | 29 | II  | PA.F.EXT | 17       | 26   | 2  | I   | OC.F.INT |          | 7        | 27   | 14 | II  | OM.D.EXT |          |          |
|                           |    |    |     |          |          | 17   | 29 | 44  | I        | OC.F.EXT |          | 7    | 31 | 20  | II       | OM.D.INT |          |
| 18                        | 4  | 58 | 45  | I        | OM.D.EXT | 23   | 59 | 14  | II       | EC.D.PEN |          | 7    | 55 | 34  | II       | PA.D.EXT |          |
| 5                         | 2  | 27 | I   | OM.D.INT |          |      |    |     |          |          | 7        | 59   | 40 | II  | PA.D.INT |          |          |
| 5                         | 2  | 44 | I   | PA.D.EXT | 23       | 0    | 0  | 51  | II       | EC.D.EXT |          | 10   | 11 | 1   | II       | OM.F.INT |          |
| 5                         | 6  | 26 | I   | PA.D.INT | 0        | 4    | 59 | II  | EC.D.INT |          | 10       | 15   | 7  | II  | OM.F.EXT |          |          |
| 7                         | 12 | 44 | I   | OM.F.INT | 3        | 1    | 9  | II  | OC.F.INT |          | 10       | 38   | 56 | II  | PA.F.INT |          |          |
| 7                         | 16 | 20 | I   | PA.F.INT | 3        | 5    | 16 | II  | OC.F.EXT |          | 10       | 43   | 1  | II  | PA.F.EXT |          |          |
| 7                         | 16 | 27 | I   | OM.F.EXT | 12       | 24   | 44 | I   | OM.D.EXT |          | 19       | 50   | 37 | I   | OM.D.INT |          |          |
| 7                         | 20 | 3  | I   | PA.F.EXT | 12       | 28   | 26 | I   | OM.D.INT |          | 19       | 54   | 19 | I   | OM.D.EXT |          |          |
| 8                         | 36 | 51 | III | EC.D.PEN | 12       | 34   | 7  | I   | PA.D.EXT |          | 20       | 5    | 20 | I   | PA.D.EXT |          |          |
| 8                         | 41 | 7  | III | EC.D.EXT | 12       | 37   | 50 | I   | PA.D.INT |          | 20       | 9    | 2  | I   | PA.D.INT |          |          |
| 8                         | 53 | 19 | III | EC.D.INT | 14       | 38   | 44 | I   | OM.F.INT |          | 22       | 4    | 37 | I   | OM.F.INT |          |          |
| 11                        | 31 | 24 | III | OC.F.INT | 14       | 42   | 27 | I   | OM.F.EXT |          | 22       | 8    | 19 | I   | OM.F.EXT |          |          |
| 11                        | 43 | 6  | III | OC.F.EXT | 14       | 47   | 45 | I   | PA.F.INT |          | 22       | 18   | 59 | I   | PA.F.INT |          |          |
|                           |    |    |     |          |          | 14   | 51 | 27  | I        | PA.F.EXT |          | 22   | 22 | 41  | I        | PA.F.EXT |          |
| 19                        | 2  | 6  | 51  | I        | EC.D.PEN | 24   | 9  | 32  | 35       | I        | EC.D.PEN | 29   | 2  | 44  | 40       | III      | OM.D.EXT |
| 2                         | 7  | 37 | I   | EC.D.EXT | 9        | 33   | 21 | I   | EC.D.EXT |          | 2        | 56   | 17 | III | OM.D.INT |          |          |
| 2                         | 11 | 19 | I   | EC.D.INT | 9        | 37   | 4  | I   | EC.D.INT |          | 3        | 44   | 39 | III | PA.D.EXT |          |          |
| 4                         | 25 | 10 | I   | OC.F.INT | 11       | 56   | 25 | I   | OC.F.INT |          | 3        | 56   | 9  | III | PA.D.INT |          |          |
| 4                         | 28 | 52 | I   | OC.F.EXT | 12       | 0    | 7  | I   | OC.F.EXT |          | 5        | 23   | 47 | III | OM.F.INT |          |          |
| 10                        | 40 | 48 | II  | EC.D.PEN | 18       | 9    | 23 | II  | OM.D.EXT |          | 5        | 35   | 26 | III | OM.F.EXT |          |          |
| 10                        | 42 | 24 | II  | EC.D.EXT | 18       | 13   | 29 | II  | OM.D.INT |          | 6        | 24   | 25 | III | PA.F.INT |          |          |
| 10                        | 46 | 33 | II  | EC.D.INT | 18       | 30   | 33 | II  | PA.D.EXT |          | 6        | 35   | 55 | III | PA.F.EXT |          |          |
| 13                        | 35 | 23 | II  | OC.F.INT | 18       | 34   | 38 | II  | PA.D.INT |          | 16       | 58   | 20 | I   | EC.D.PEN |          |          |
| 13                        | 39 | 30 | II  | OC.F.EXT | 20       | 53   | 1  | II  | OM.F.INT |          | 16       | 59   | 6  | I   | EC.D.EXT |          |          |
| 23                        | 27 | 27 | I   | OM.D.EXT | 20       | 57   | 7  | II  | OM.F.EXT |          | 17       | 2    | 49 | I   | EC.D.INT |          |          |
| 23                        | 31 | 10 | I   | OM.D.INT | 21       | 13   | 41 | II  | PA.F.INT |          | 19       | 27   | 40 | I   | OC.F.INT |          |          |
| 23                        | 33 | 15 | I   | PA.D.EXT | 21       | 17   | 47 | II  | PA.F.EXT |          | 19       | 31   | 21 | I   | OC.F.EXT |          |          |
|                           |    |    |     |          |          |      |    |     |          |          |          |      |    |     |          |          |          |
| 20                        | 1  | 41 | 27  | I        | OM.F.INT | 25   | 6  | 53  | 21       | I        | OM.D.EXT | 30   | 2  | 35  | 30       | II       | EC.D.PEN |
| 1                         | 45 | 10 | I   | OM.F.EXT | 6        | 57   | 3  | I   | OM.D.INT |          | 2        | 37   | 6  | II  | EC.D.EXT |          |          |
| 1                         | 46 | 52 | I   | PA.F.INT | 7        | 4    | 31 | I   | PA.D.EXT |          | 2        | 41   | 14 | II  | EC.D.INT |          |          |
| 1                         | 50 | 34 | I   | PA.F.EXT | 7        | 8    | 13 | I   | PA.D.INT |          | 5        | 51   | 59 | II  | OC.F.INT |          |          |
| 20                        | 35 | 24 | I   | EC.D.PEN | 9        | 7    | 21 | I   | OM.F.EXT |          | 5        | 56   | 5  | II  | OC.F.EXT |          |          |
| 20                        | 36 | 10 | I   | EC.D.EXT | 9        | 11   | 3  | I   | OM.F.EXT |          | 14       | 19   | 15 | I   | OM.D.EXT |          |          |
| 20                        | 39 | 53 | I   | EC.D.INT | 9        | 18   | 10 | I   | PA.F.INT |          | 14       | 22   | 58 | I   | OM.D.INT |          |          |
| 22                        | 55 | 34 | I   | OC.F.INT | 9        | 21   | 52 | I   | PA.F.EXT |          | 14       | 35   | 45 | I   | PA.D.EXT |          |          |
| 22                        | 59 | 16 | I   | OC.F.EXT | 12       | 36   | 10 | III | EC.D.PEN |          | 14       | 39   | 27 | I   | PA.D.INT |          |          |
|                           |    |    |     |          |          | 12   | 40 | 25  | III      | EC.D.EXT |          | 16   | 33 | 15  | I        | OM.F.INT |          |
| 21                        | 4  | 51 | 44  | II       | OM.D.EXT | 12   | 52 | 31  | III      | EC.D.INT |          | 16   | 36 | 57  | I        | OM.F.EXT |          |
| 4                         | 55 | 50 | II  | OM.D.INT | 16       | 1    | 43 | III | OC.F.INT |          | 16       | 49   | 24 | I   | PA.F.INT |          |          |
| 5                         | 5  | 42 | II  | PA.D.EXT | 16       | 13   | 19 | III | OC.F.EXT |          | 16       | 53   | 6  | I   | PA.F.EXT |          |          |
| 5                         | 9  | 47 | II  | PA.D.INT | 26       | 4    | 1  | 11  | I        | EC.D.PEN |          |      |    |     |          |          |          |

## 2001 - CONFIGURATIONS DES SATELLITES GALIÉENS DE JUPITER



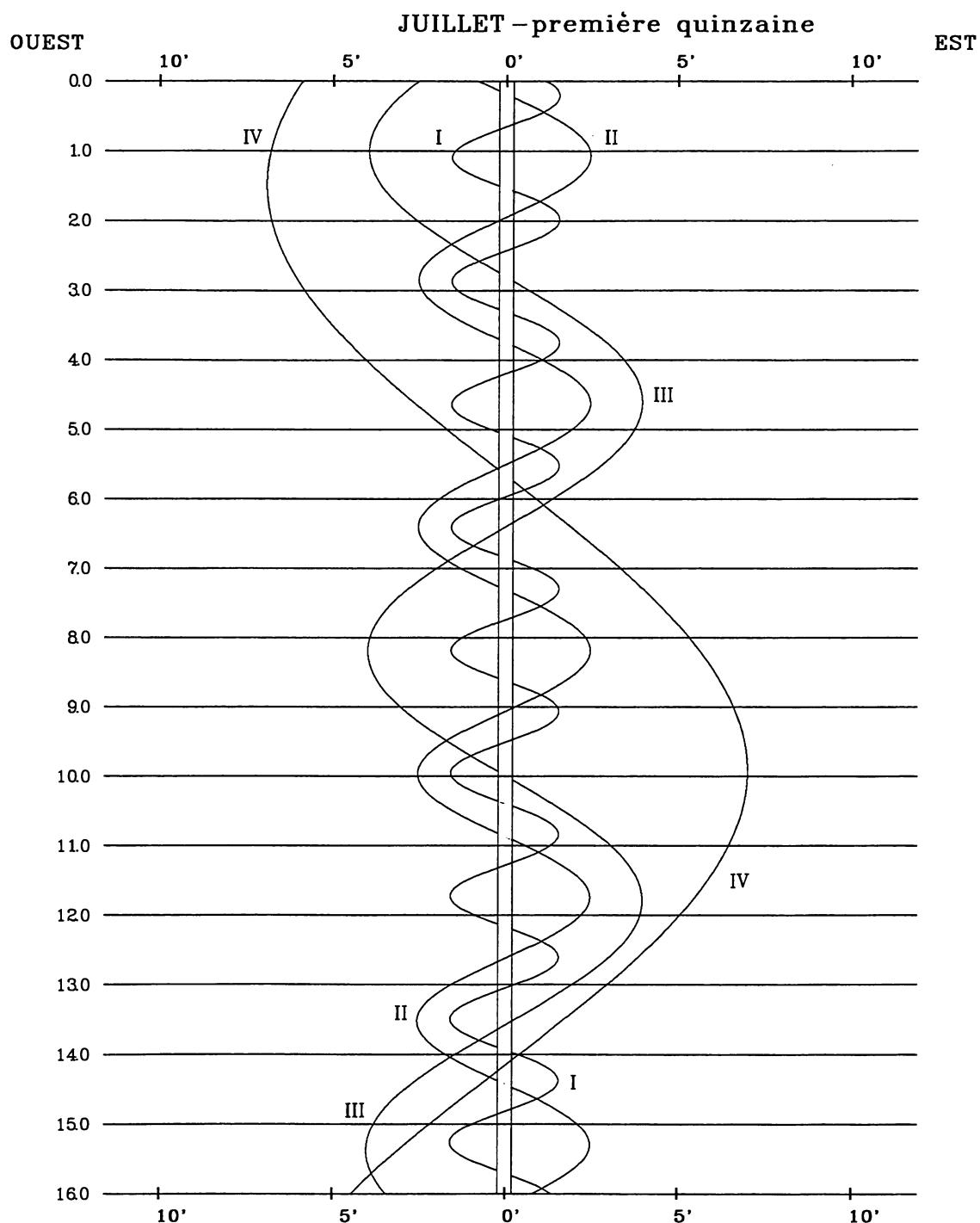
Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter



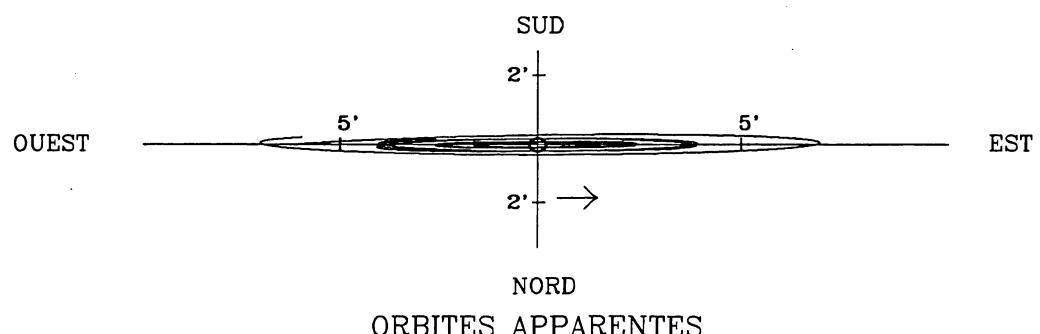
**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
 (Temps Terrestre)

| JUILLET - PREMIÈRE QUINZAINE |    |    |    |      |          |      |    |    |    |      |          |          |    |    |     |          |          |          |
|------------------------------|----|----|----|------|----------|------|----|----|----|------|----------|----------|----|----|-----|----------|----------|----------|
| jour                         | h  | m  | s  | SAT. | TYPE     | jour | h  | m  | s  | SAT. | TYPE     | jour     | h  | m  | s   | SAT.     | TYPE     |          |
| 1                            | 11 | 26 | 53 | I    | EC.D.PEN | 6    | 0  | 2  | 45 | I    | OM.F.EXT | 11       | 5  | 10 | 53  | II       | OC.F.INT |          |
|                              | 11 | 27 | 39 | I    | EC.D.EXT |      | 0  | 20 | 27 | I    | PA.F.INT |          | 22 | 11 | 4   | II       | OC.F.EXT |          |
|                              | 11 | 31 | 21 | I    | EC.D.INT |      | 0  | 24 | 8  | I    | PA.F.EXT |          |    |    |     |          |          |          |
|                              | 13 | 58 | 1  | I    | OC.F.INT |      | 6  | 44 | 7  | III  | OM.D.EXT |          |    |    |     |          |          |          |
|                              | 14 | 1  | 43 | I    | OC.F.EXT |      | 6  | 55 | 39 | III  | OM.D.INT |          |    |    |     |          |          |          |
|                              | 20 | 44 | 54 | II   | OM.D.EXT |      | 8  | 12 | 45 | III  | PA.D.EXT |          |    |    |     |          |          |          |
|                              | 20 | 49 | 0  | II   | OM.D.INT |      | 8  | 24 | 7  | III  | PA.D.INT |          |    |    |     |          |          |          |
|                              | 21 | 20 | 21 | II   | PA.D.EXT |      | 9  | 24 | 16 | III  | OM.F.INT |          |    |    |     |          |          |          |
|                              | 21 | 24 | 27 | II   | PA.D.INT |      | 9  | 35 | 50 | III  | OM.F.EXT |          |    |    |     |          |          |          |
|                              | 23 | 28 | 49 | II   | OM.F.INT |      | 10 | 53 | 56 | III  | PA.F.INT |          |    |    |     |          |          |          |
|                              | 23 | 32 | 55 | II   | OM.F.EXT |      | 11 | 5  | 18 | III  | PA.F.EXT |          |    |    |     |          |          |          |
|                              |    |    |    |      |          |      | 18 | 52 | 36 | I    | EC.D.PEN |          |    |    |     |          |          |          |
|                              |    |    |    |      |          |      | 18 | 53 | 22 | I    | EC.D.EXT |          |    |    |     |          |          |          |
| 2                            | 0  | 3  | 53 | II   | PA.F.INT |      | 18 | 57 | 4  | I    | EC.D.INT |          | 12 | 2  | 18  | 13       | I        | EC.D.PEN |
|                              | 0  | 7  | 58 | II   | PA.F.EXT |      | 18 | 57 | 4  | I    | EC.D.INT |          | 12 | 2  | 18  | 59       | I        | EC.D.EXT |
|                              | 8  | 47 | 51 | I    | OM.D.EXT |      | 21 | 29 | 8  | I    | OC.F.INT |          | 12 | 22 | 41  | I        | EC.D.INT |          |
|                              | 8  | 51 | 33 | I    | OM.D.INT |      | 21 | 32 | 50 | I    | OC.F.EXT |          | 12 | 5  | 0   | 5        | I        | OC.F.INT |
|                              | 9  | 6  | 5  | I    | PA.D.EXT |      |    |    |    |      |          |          | 12 | 5  | 3   | 46       | I        | OC.F.EXT |
|                              | 9  | 9  | 47 | I    | PA.D.INT |      | 7  | 5  | 11 | 28   | II       | EC.D.PEN | 12 | 38 | 30  | II       | OM.D.EXT |          |
|                              | 11 | 1  | 50 | I    | OM.F.INT |      | 5  | 13 | 4  | II   | EC.D.EXT | 12       | 42 | 36 | II  | OM.D.INT |          |          |
|                              | 11 | 5  | 32 | I    | OM.F.EXT |      | 5  | 17 | 11 | II   | EC.D.INT | 13       | 34 | 58 | II  | PA.D.EXT |          |          |
|                              | 11 | 19 | 45 | I    | PA.F.INT |      | 8  | 42 | 13 | II   | OC.F.INT | 13       | 39 | 3  | II  | PA.D.INT |          |          |
|                              | 11 | 23 | 26 | I    | PA.F.EXT |      | 8  | 46 | 18 | II   | OC.F.EXT | 15       | 22 | 50 | II  | OM.F.INT |          |          |
|                              | 16 | 36 | 5  | III  | EC.D.PEN |      | 16 | 13 | 41 | I    | OM.D.EXT | 15       | 26 | 56 | II  | OM.F.EXT |          |          |
|                              | 16 | 40 | 17 | III  | EC.D.EXT |      | 16 | 17 | 23 | I    | OM.D.INT | 16       | 19 | 4  | II  | PA.F.INT |          |          |
| 3                            | 16 | 52 | 18 | III  | EC.D.INT |      | 16 | 37 | 8  | I    | PA.D.EXT | 16       | 23 | 9  | II  | PA.F.EXT |          |          |
|                              | 20 | 32 | 19 | III  | OC.F.INT |      | 16 | 40 | 49 | I    | PA.D.INT | 23       | 39 | 25 | I   | OM.D.EXT |          |          |
|                              | 20 | 43 | 48 | III  | OC.F.EXT |      | 18 | 27 | 39 | I    | OM.F.INT | 23       | 43 | 7  | I   | OM.D.INT |          |          |
|                              |    |    |    |      |          |      | 18 | 31 | 21 | I    | OM.F.EXT |          |    |    |     |          |          |          |
|                              | 5  | 55 | 28 | I    | EC.D.PEN |      | 18 | 50 | 47 | I    | PA.F.INT | 13       | 0  | 7  | 57  | I        | PA.D.EXT |          |
|                              | 5  | 56 | 14 | I    | EC.D.EXT |      | 18 | 54 | 28 | I    | PA.F.EXT | 13       | 0  | 11 | 38  | I        | PA.D.INT |          |
|                              | 5  | 59 | 56 | I    | EC.D.INT |      |    |    |    |      |          | 1        | 53 | 21 | I   | OM.F.INT |          |          |
|                              | 8  | 28 | 25 | I    | OC.F.INT |      | 8  | 13 | 21 | 7    | I        | EC.D.PEN | 1  | 57 | 3   | I        | OM.F.EXT |          |
|                              | 8  | 32 | 6  | I    | OC.F.EXT |      | 13 | 21 | 53 | I    | EC.D.EXT | 2        | 21 | 36 | I   | PA.F.INT |          |          |
|                              | 15 | 53 | 20 | II   | EC.D.PEN |      | 13 | 25 | 36 | I    | EC.D.INT | 2        | 25 | 17 | I   | PA.F.EXT |          |          |
|                              | 15 | 54 | 56 | II   | EC.D.EXT |      | 15 | 59 | 27 | I    | OC.F.INT | 10       | 43 | 10 | III | OM.D.EXT |          |          |
|                              | 15 | 59 | 3  | II   | EC.D.INT |      | 16 | 3  | 9  | I    | OC.F.EXT | 10       | 54 | 36 | III | OM.D.INT |          |          |
|                              | 19 | 17 | 1  | II   | OC.F.INT |      | 23 | 20 | 32 | II   | OM.D.EXT | 12       | 39 | 45 | III | PA.D.EXT |          |          |
|                              | 19 | 21 | 7  | II   | OC.F.EXT |      | 23 | 24 | 38 | II   | OM.D.INT | 12       | 51 | 1  | III | PA.D.INT |          |          |
| 4                            | 3  | 16 | 30 | I    | OM.D.EXT |      | 9  | 0  | 10 | 4    | II       | PA.D.EXT | 13 | 35 | 47  | III      | OM.F.EXT |          |
|                              | 3  | 20 | 12 | I    | OM.D.INT |      | 0  | 14 | 9  | II   | PA.D.INT | 15       | 22 | 22 | III | PA.F.INT |          |          |
|                              | 3  | 36 | 30 | I    | PA.D.EXT |      | 2  | 4  | 43 | II   | OM.F.INT | 15       | 33 | 37 | III | PA.F.EXT |          |          |
|                              | 3  | 40 | 11 | I    | PA.D.INT |      | 2  | 8  | 49 | II   | OM.F.EXT | 20       | 46 | 48 | I   | EC.D.PEN |          |          |
|                              | 5  | 30 | 29 | I    | OM.F.INT |      | 2  | 53 | 58 | II   | PA.F.INT | 20       | 47 | 34 | I   | EC.D.EXT |          |          |
|                              | 5  | 34 | 11 | I    | OM.F.EXT |      | 2  | 58 | 3  | II   | PA.F.EXT | 20       | 51 | 16 | I   | EC.D.INT |          |          |
|                              | 5  | 50 | 9  | I    | PA.F.INT |      | 10 | 42 | 15 | I    | OM.D.EXT | 23       | 30 | 26 | I   | OC.F.EXT |          |          |
|                              | 5  | 53 | 50 | I    | PA.F.EXT |      | 10 | 45 | 57 | I    | OM.D.INT | 23       | 34 | 7  | I   | OC.F.EXT |          |          |
|                              |    |    |    |      |          |      | 11 | 7  | 24 | I    | PA.D.EXT |          |    |    |     |          |          |          |
|                              | 0  | 23 | 59 | I    | EC.D.PEN |      | 11 | 11 | 5  | I    | PA.D.INT | 14       | 7  | 47 | 13  | II       | EC.D.PEN |          |
|                              | 0  | 24 | 46 | I    | EC.D.EXT |      | 12 | 56 | 12 | I    | OM.F.INT | 14       | 7  | 48 | 48  | II       | EC.D.EXT |          |
|                              | 0  | 28 | 28 | I    | EC.D.INT |      | 12 | 59 | 54 | I    | OM.F.EXT | 14       | 7  | 52 | 55  | II       | EC.D.INT |          |
| 5                            | 2  | 58 | 44 | I    | OC.F.INT |      | 13 | 21 | 3  | I    | PA.F.INT | 15       | 31 | 50 | II  | OC.F.INT |          |          |
|                              | 3  | 2  | 26 | I    | OC.F.EXT |      | 13 | 24 | 44 | I    | PA.F.EXT | 15       | 35 | 55 | II  | OC.F.EXT |          |          |
|                              | 10 | 2  | 49 | II   | OM.D.EXT |      | 20 | 35 | 40 | III  | EC.D.PEN | 18       | 8  | 1  | I   | OM.D.EXT |          |          |
|                              | 10 | 6  | 55 | II   | OM.D.INT |      | 20 | 39 | 51 | III  | EC.D.EXT | 18       | 11 | 42 | I   | OM.D.INT |          |          |
|                              | 10 | 45 | 21 | II   | PA.D.EXT |      | 20 | 51 | 46 | III  | EC.D.INT | 18       | 38 | 13 | I   | PA.D.EXT |          |          |
|                              | 10 | 49 | 27 | II   | PA.D.INT |      |    |    |    |      |          | 18       | 41 | 54 | I   | PA.D.EXT |          |          |
|                              | 12 | 46 | 54 | II   | OM.F.INT |      | 10 | 1  | 2  | 4    | III      | OC.F.INT | 20 | 21 | 56  | I        | OM.F.INT |          |
|                              | 12 | 51 | 0  | II   | OM.F.EXT |      | 1  | 13 | 26 | III  | OC.F.EXT | 20       | 25 | 38 | I   | OM.F.EXT |          |          |
|                              | 13 | 29 | 6  | II   | PA.F.INT |      | 7  | 49 | 42 | I    | EC.D.PEN | 20       | 51 | 51 | I   | PA.F.EXT |          |          |
|                              | 13 | 33 | 11 | II   | PA.F.EXT |      | 7  | 50 | 28 | I    | EC.D.EXT | 20       | 55 | 32 | I   | PA.F.EXT |          |          |
|                              | 21 | 45 | 4  | I    | OM.D.EXT |      | 7  | 54 | 10 | I    | EC.D.INT |          |    |    |     |          |          |          |
|                              | 21 | 48 | 46 | I    | OM.D.INT |      | 10 | 29 | 48 | I    | OC.F.INT | 15       | 15 | 19 | I   | EC.D.PEN |          |          |
|                              | 22 | 6  | 47 | I    | PA.D.EXT |      | 10 | 33 | 30 | I    | OC.F.EXT | 15       | 16 | 5  | I   | EC.D.EXT |          |          |
|                              | 22 | 10 | 29 | I    | PA.D.INT |      | 18 | 29 | 12 | II   | EC.D.PEN | 15       | 19 | 47 | I   | EC.D.INT |          |          |
|                              | 23 | 59 | 3  | I    | OM.F.INT |      | 18 | 30 | 48 | II   | EC.D.EXT | 18       | 0  | 41 | I   | OC.F.INT |          |          |
|                              |    |    |    |      |          |      | 18 | 34 | 55 | II   | EC.D.INT | 18       | 4  | 23 | I   | OC.F.EXT |          |          |

## 2001 - CONFIGURATIONS DES SATELLITES GALILIENS DE JUPITER



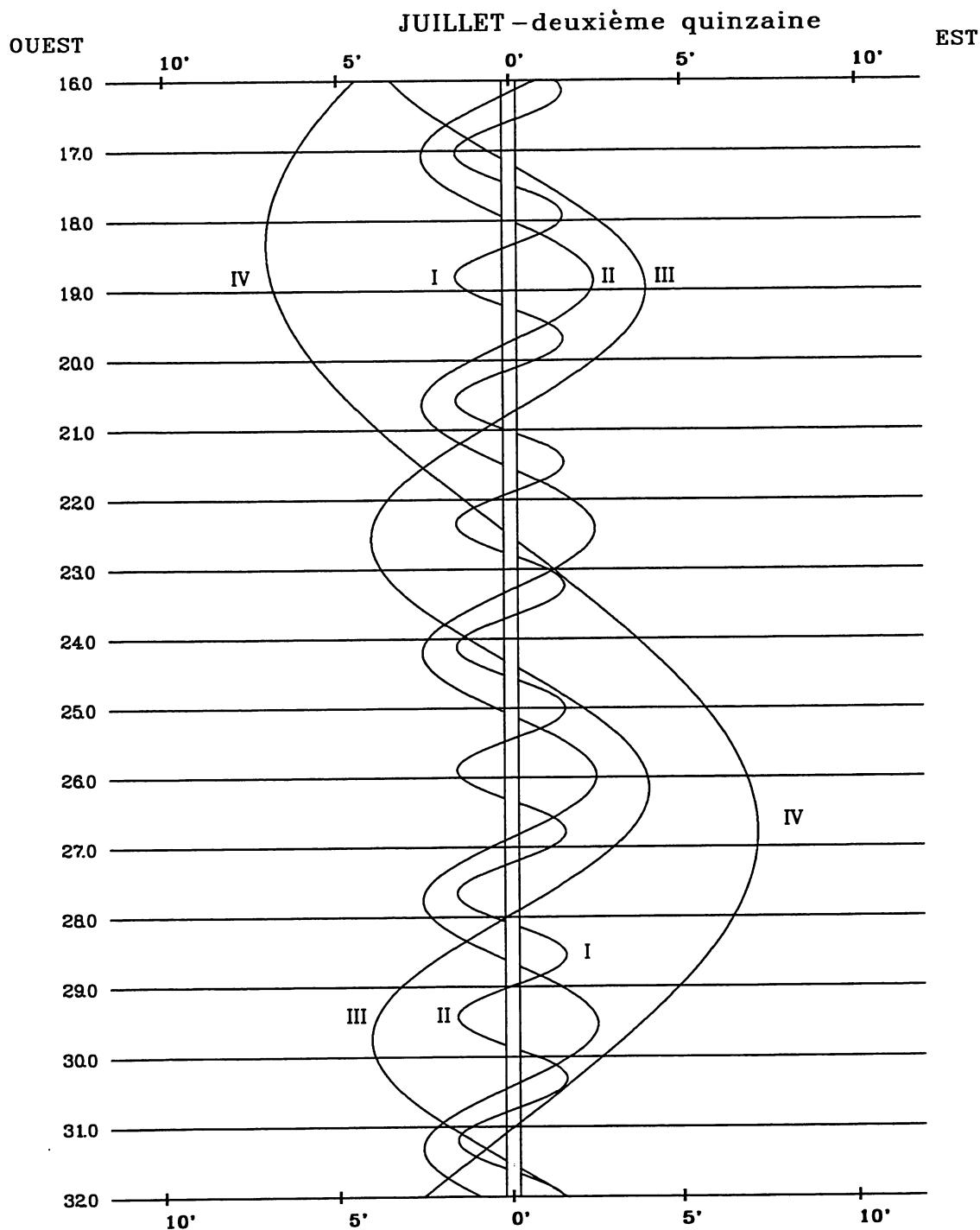
Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter



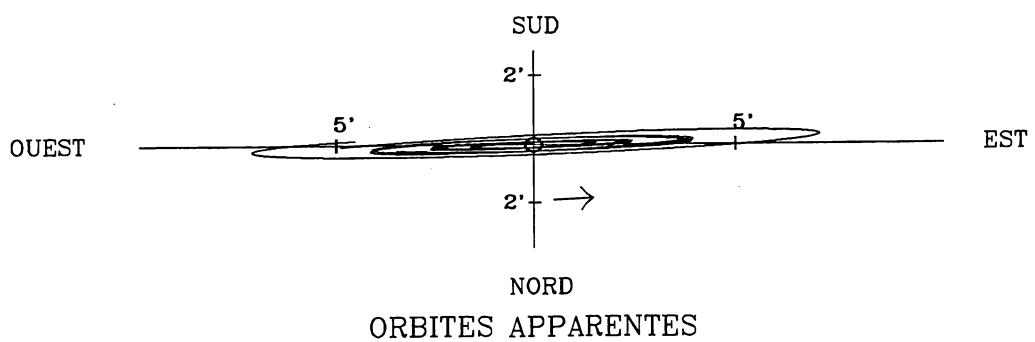
**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
 (Temps Terrestre)

| JUILLET - DEUXIÈME QUINZAINE |    |    |     |          |          |          |    |    |     |          |          |      |    |    |     |          |          |
|------------------------------|----|----|-----|----------|----------|----------|----|----|-----|----------|----------|------|----|----|-----|----------|----------|
| jour                         | h  | m  | s   | SAT.     | TYPE     | jour     | h  | m  | s   | SAT.     | TYPE     | jour | h  | m  | s   | SAT.     | TYPE     |
| 16                           | 1  | 56 | 13  | II       | OM.D.EXT | 21       | 1  | 31 | 29  | I        | OC.F.INT | 22   | 2  | 2  | 7   | II       | PA.F.EXT |
|                              | 2  | 0  | 19  | II       | OM.D.INT |          | 1  | 35 | 10  | I        | OC.F.EXT |      | 3  | 27 | 50  | I        | OM.D.EXT |
|                              | 2  | 59 | 31  | II       | PA.D.EXT |          | 10 | 22 | 42  | II       | EC.D.PEN |      | 3  | 31 | 31  | I        | OM.D.INT |
|                              | 3  | 3  | 35  | II       | PA.D.INT |          | 10 | 24 | 17  | II       | EC.D.EXT |      | 4  | 9  | 15  | I        | PA.D.EXT |
|                              | 4  | 40 | 39  | II       | OM.F.INT |          | 10 | 28 | 22  | II       | EC.D.INT |      | 4  | 12 | 56  | I        | PA.D.INT |
|                              | 4  | 44 | 45  | II       | OM.F.EXT |          | 14 | 20 | 44  | II       | OC.F.INT |      | 5  | 41 | 38  | I        | OM.F.INT |
|                              | 5  | 43 | 46  | II       | PA.F.INT |          | 14 | 24 | 47  | II       | OC.F.EXT |      | 5  | 45 | 20  | I        | OM.F.EXT |
|                              | 5  | 47 | 50  | II       | PA.F.EXT |          | 20 | 2  | 14  | I        | OM.D.EXT |      | 6  | 22 | 50  | I        | PA.F.INT |
|                              | 12 | 36 | 33  | I        | OM.D.EXT |          | 20 | 5  | 56  | I        | OM.D.INT |      | 6  | 26 | 30  | I        | PA.F.EXT |
|                              | 12 | 40 | 15  | I        | OM.D.INT |          | 20 | 38 | 58  | I        | PA.D.EXT |      | 18 | 41 | 41  | III      | OM.D.EXT |
|                              | 13 | 8  | 24  | I        | PA.D.EXT |          | 20 | 42 | 38  | I        | PA.D.INT |      | 18 | 52 | 58  | III      | OM.D.INT |
|                              | 13 | 12 | 5   | I        | PA.D.INT |          | 22 | 16 | 6   | I        | OM.F.INT |      | 21 | 24 | 49  | III      | OM.F.INT |
|                              | 14 | 50 | 27  | I        | OM.F.INT |          | 22 | 19 | 47  | I        | OM.F.EXT |      | 21 | 31 | 30  | III      | PA.D.EXT |
|                              | 14 | 54 | 9   | I        | OM.F.EXT |          | 22 | 52 | 34  | I        | PA.F.INT |      | 21 | 36 | 7   | III      | OM.F.EXT |
|                              | 15 | 22 | 2   | I        | PA.F.INT |          | 22 | 56 | 14  | I        | PA.F.EXT |      | 21 | 42 | 32  | III      | PA.D.INT |
|                              | 15 | 25 | 43  | I        | PA.F.EXT | 22       | 17 | 9  | 28  | I        | EC.D.PEN | 28   | 0  | 16 | 59  | III      | PA.F.INT |
| 17                           | 0  | 35 | 53  | III      | EC.D.PEN |          | 17 | 10 | 14  | I        | EC.D.EXT |      | 0  | 28 | 0   | III      | PA.F.EXT |
|                              | 0  | 40 | 2   | III      | EC.D.EXT |          | 17 | 13 | 56  | I        | EC.D.INT |      | 0  | 35 | 5   | I        | EC.D.PEN |
|                              | 0  | 51 | 52  | III      | EC.D.INT |          | 20 | 1  | 40  | I        | OC.F.INT |      | 0  | 35 | 51  | I        | EC.D.EXT |
|                              | 5  | 31 | 42  | III      | OC.F.INT |          | 20 | 5  | 21  | I        | OC.F.EXT |      | 0  | 39 | 33  | I        | EC.D.INT |
|                              | 42 | 57 | III | OC.F.EXT | 23       | 4        | 32 | 0  | II  | OM.D.EXT | 3        |      | 32 | 14 | I   | OC.F.INT |          |
|                              | 9  | 43 | 53  | I        |          | EC.D.PEN | 4  | 36 | 6   | II       | OM.D.INT |      | 3  | 35 | 55  | I        | OC.F.EXT |
|                              | 9  | 44 | 39  | I        |          | EC.D.EXT | 5  | 48 | 39  | II       | PA.D.EXT |      | 12 | 57 | 55  | II       | EC.D.PEN |
|                              | 9  | 48 | 21  | I        |          | EC.D.INT | 5  | 52 | 43  | II       | PA.D.INT |      | 12 | 59 | 30  | II       | EC.D.EXT |
|                              | 12 | 30 | 59  | I        |          | OC.F.INT | 7  | 16 | 40  | II       | OM.F.INT |      | 13 | 3  | 35  | II       | EC.D.INT |
|                              | 12 | 34 | 40  | I        |          | OC.F.EXT | 7  | 20 | 46  | II       | OM.F.EXT |      | 17 | 8  | 47  | II       | OC.F.INT |
|                              | 21 | 4  | 52  | II       |          | EC.D.PEN | 8  | 33 | 13  | II       | PA.F.INT |      | 17 | 12 | 50  | II       | OC.F.EXT |
|                              | 21 | 6  | 28  | I        |          | EC.D.EXT | 8  | 37 | 18  | II       | PA.F.EXT |      | 21 | 56 | 22  | I        | OM.D.EXT |
|                              | 21 | 10 | 34  | I        |          | EC.D.INT | 14 | 30 | 45  | I        | OM.D.EXT |      | 22 | 0  | 3   | I        | OM.D.INT |
|                              | 18 | 0  | 56  | 19       | II       | OC.F.INT | 14 | 34 | 27  | I        | OM.D.INT | 29   | 22 | 39 | 19  | I        | PA.D.EXT |
|                              | 1  | 0  | 23  | II       | OC.F.EXT | 15       | 9  | 4  | I   | PA.D.EXT | 22       |      | 42 | 59 | I   | PA.D.INT |          |
|                              | 7  | 5  | 9   | I        | OM.D.EXT | 15       | 12 | 44 | I   | PA.D.INT | 0        |      | 10 | 9  | I   | OM.F.INT |          |
|                              | 7  | 8  | 51  | I        | OM.D.INT | 16       | 44 | 36 | I   | OM.F.INT | 0        |      | 13 | 50 | I   | OM.F.EXT |          |
|                              | 7  | 38 | 39  | I        | PA.D.EXT | 16       | 48 | 17 | I   | OM.F.EXT | 0        |      | 52 | 52 | I   | PA.F.INT |          |
|                              | 7  | 42 | 20  | I        | PA.D.INT | 17       | 22 | 39 | I   | PA.F.INT | 0        |      | 56 | 33 | I   | PA.F.EXT |          |
|                              | 9  | 19 | 3   | I        | OM.F.INT | 17       | 26 | 20 | I   | PA.F.EXT | 19       |      | 3  | 34 | I   | EC.D.PEN |          |
|                              | 9  | 22 | 44  | I        | OM.F.EXT | 4        | 51 | 4  | III | EC.D.INT | 19       |      | 4  | 20 | I   | EC.D.EXT |          |
|                              | 9  | 52 | 16  | I        | PA.F.INT | 4        | 39 | 21 | III | EC.D.EXT | 19       |      | 8  | 2  | I   | EC.D.INT |          |
|                              | 9  | 55 | 57  | I        | PA.F.EXT | 4        | 51 | 4  | III | EC.D.INT | 22       |      | 2  | 20 | I   | OC.F.INT |          |
| 19                           | 4  | 12 | 23  | I        | EC.D.PEN | 9        | 59 | 29 | III | OC.F.INT | 22       |      | 6  | 1  | I   | OC.F.EXT |          |
|                              | 4  | 13 | 9   | I        | EC.D.EXT | 10       | 10 | 37 | III | OC.F.EXT | 7        |      | 7  | 51 | II  | OM.D.EXT |          |
|                              | 4  | 16 | 51  | I        | EC.D.INT | 11       | 38 | 1  | I   | EC.D.PEN | 7        |      | 11 | 57 | II  | OM.D.INT |          |
|                              | 7  | 1  | 12  | I        | OC.F.INT | 11       | 38 | 47 | I   | EC.D.EXT | 8        |      | 37 | 19 | II  | PA.D.EXT |          |
|                              | 7  | 4  | 53  | I        | OC.F.EXT | 11       | 42 | 29 | I   | EC.D.INT | 8        |      | 41 | 23 | II  | PA.D.INT |          |
|                              | 15 | 14 | 15  | II       | OM.D.EXT | 14       | 31 | 54 | I   | OC.F.INT | 9        |      | 52 | 44 | II  | OM.F.INT |          |
|                              | 15 | 18 | 20  | II       | OM.D.INT | 14       | 35 | 35 | I   | OC.F.EXT | 9        |      | 56 | 50 | II  | OM.F.EXT |          |
|                              | 16 | 24 | 18  | II       | PA.D.EXT | 23       | 40 | 15 | II  | EC.D.PEN | 11       |      | 22 | 12 | II  | PA.F.EXT |          |
|                              | 16 | 28 | 22  | II       | PA.D.INT | 23       | 41 | 50 | II  | EC.D.EXT | 11       |      | 26 | 16 | II  | PA.F.EXT |          |
|                              | 17 | 58 | 49  | II       | OM.F.INT | 23       | 45 | 55 | II  | EC.D.INT | 16       |      | 24 | 51 | I   | OM.D.EXT |          |
|                              | 18 | 2  | 55  | II       | OM.F.EXT | 8        | 59 | 20 | I   | OM.D.EXT | 16       |      | 28 | 32 | I   | OM.D.INT |          |
|                              | 19 | 8  | 44  | II       | PA.F.INT | 3        | 48 | 53 | II  | OC.F.EXT | 17       |      | 9  | 19 | I   | PA.D.EXT |          |
|                              | 19 | 12 | 49  | II       | PA.F.EXT | 3        | 44 | 50 | II  | OC.F.INT | 17       |      | 12 | 59 | I   | PA.D.INT |          |
| 20                           | 1  | 33 | 40  | I        | OM.D.EXT | 9        | 3  | 1  | I   | OM.D.INT | 18       |      | 38 | 38 | I   | OM.F.INT |          |
|                              | 1  | 37 | 22  | I        | OM.D.INT | 9        | 39 | 12 | I   | PA.D.EXT | 18       |      | 42 | 19 | I   | OM.F.EXT |          |
|                              | 2  | 8  | 47  | I        | PA.D.EXT | 9        | 42 | 53 | I   | PA.D.INT | 19       |      | 22 | 51 | I   | PA.F.INT |          |
|                              | 2  | 12 | 28  | I        | PA.D.INT | 11       | 13 | 10 | I   | OM.F.INT | 19       |      | 26 | 32 | I   | PA.F.EXT |          |
|                              | 3  | 47 | 33  | I        | OM.F.INT | 11       | 16 | 51 | I   | OM.F.EXT | 31       |      | 8  | 34 | III | EC.D.PEN |          |
|                              | 3  | 51 | 15  | I        | OM.F.EXT | 11       | 52 | 47 | I   | PA.F.INT | 8        |      | 38 | 29 | III | EC.D.EXT |          |
|                              | 4  | 22 | 24  | I        | PA.F.INT | 11       | 56 | 28 | I   | PA.F.EXT | 8        |      | 50 | 7  | III | EC.D.INT |          |
|                              | 4  | 26 | 5   | I        | PA.F.EXT | 26       | 6  | 6  | 30  | I        | EC.D.PEN |      | 11 | 14 | 54  | III      | EC.F.INT |
|                              | 14 | 42 | 10  | III      | OM.D.EXT |          | 6  | 7  | 16  | I        | EC.D.EXT |      | 11 | 26 | 32  | III      | EC.F.EXT |
|                              | 14 | 53 | 31  | III      | OM.D.INT |          | 6  | 10 | 58  | I        | EC.D.INT |      | 11 | 30 | 38  | III      | EC.F.PEN |
|                              | 17 | 5  | 53  | III      | PA.D.EXT |          | 9  | 2  | 1   | I        | OC.F.INT |      | 11 | 38 | 19  | III      | OC.D.EXT |
|                              | 17 | 17 | 2   | III      | PA.D.INT |          | 9  | 5  | 43  | I        | OC.F.EXT |      | 11 | 49 | 20  | III      | OC.D.INT |
|                              | 17 | 24 | 18  | III      | OM.F.INT |          | 17 | 50 | 7   | II       | OM.D.EXT |      | 13 | 32 | 7   | I        | EC.D.PEN |
|                              | 17 | 35 | 42  | III      | OM.F.EXT |          | 17 | 54 | 13  | II       | OM.D.INT |      | 13 | 32 | 53  | I        | EC.D.EXT |
|                              | 19 | 49 | 57  | III      | PA.F.INT |          | 19 | 13 | 16  | II       | PA.D.EXT |      | 13 | 36 | 35  | I        | EC.D.INT |
|                              | 20 | 1  | 4   | III      | PA.F.EXT |          | 19 | 17 | 21  | II       | PA.D.INT |      | 14 | 25 | 51  | III      | OC.F.INT |
|                              | 22 | 40 | 58  | I        | EC.D.PEN |          | 20 | 34 | 55  | II       | OM.F.INT |      | 14 | 36 | 52  | III      | OC.F.EXT |
|                              | 22 | 41 | 44  | I        | EC.D.EXT |          | 20 | 39 | 1   | II       | OM.F.EXT |      | 16 | 32 | 29  | I        | OC.F.INT |
|                              | 22 | 45 | 26  | I        | EC.D.INT |          | 20 | 58 | 2   | II       | PA.F.INT |      | 16 | 36 | 10  | I        | OC.F.EXT |

2001—CONFIGURATIONS DES SATELLITES GALILÉENS DE JUPITER



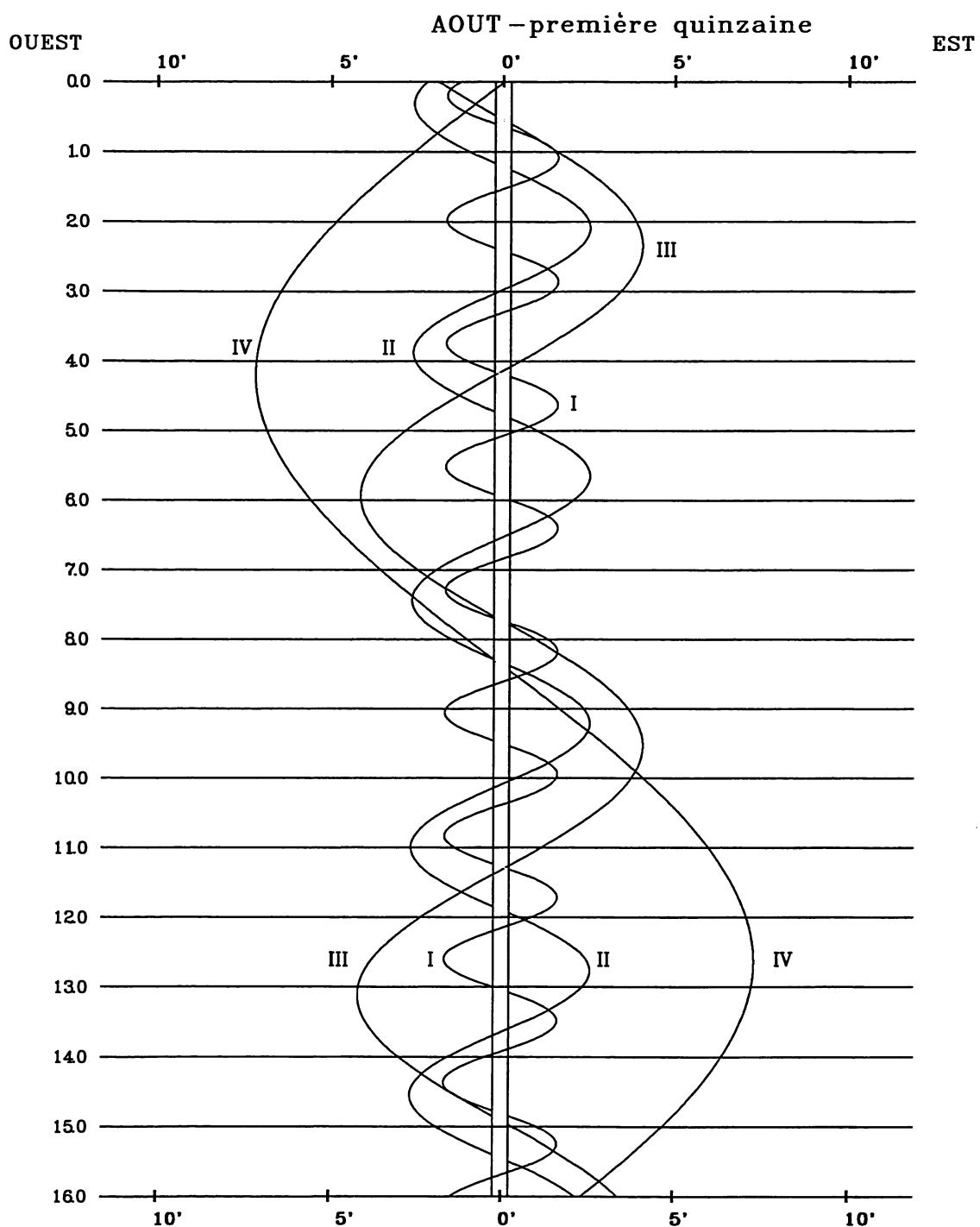
Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter



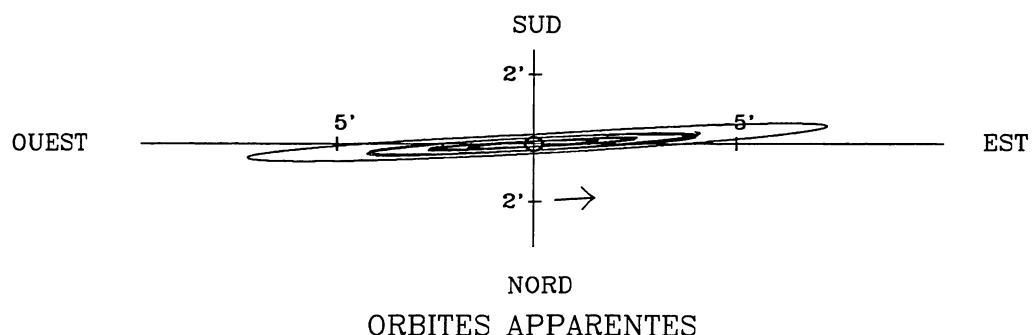
**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
 (Temps Terrestre)

| AOÛT - PREMIÈRE QUINZAINE |    |    |    |      |          |      |    |    |    |          |          |      |    |     |          |          |          |          |
|---------------------------|----|----|----|------|----------|------|----|----|----|----------|----------|------|----|-----|----------|----------|----------|----------|
| jour                      | h  | m  | s  | SAT. | TYPE     | jour | h  | m  | s  | SAT.     | TYPE     | jour | h  | m   | s        | SAT.     | TYPE     |          |
| 1                         | 2  | 15 | 25 | II   | EC.D.PEN | 12   | 32 | 58 | II | OM.F.EXT | 5        | 37   | 4  | III | OM.F.EXT |          |          |          |
|                           | 2  | 16 | 59 | II   | EC.D.EXT |      | 14 | 10 | 35 | II       | PA.F.INT | 6    | 18 | 33  | III      | PA.D.EXT |          |          |
|                           | 2  | 21 | 4  | II   | EC.D.INT |      | 14 | 14 | 39 | II       | PA.F.EXT | 6    | 29 | 21  | III      | PA.D.INT |          |          |
|                           | 6  | 32 | 29 | II   | OC.F.INT |      | 18 | 18 | 52 | I        | OM.D.EXT | 7    | 32 | 39  | I        | OC.F.INT |          |          |
|                           | 6  | 36 | 31 | II   | OC.F.EXT |      | 18 | 22 | 32 | I        | OM.D.INT | 7    | 36 | 19  | I        | OC.F.EXT |          |          |
|                           | 10 | 53 | 25 | I    | OM.D.EXT |      | 19 | 9  | 7  | I        | PA.D.EXT | 9    | 6  | 47  | III      | PA.F.INT |          |          |
|                           | 10 | 57 | 6  | I    | OM.D.INT |      | 19 | 12 | 47 | I        | PA.D.INT | 9    | 17 | 33  | III      | PA.F.EXT |          |          |
|                           | 11 | 39 | 21 | I    | PA.D.EXT |      | 20 | 32 | 33 | I        | OM.F.INT | 18   | 7  | 43  | II       | EC.D.PEN |          |          |
|                           | 11 | 43 | 1  | I    | PA.D.INT |      | 20 | 36 | 14 | I        | OM.F.EXT | 18   | 9  | 16  | II       | EC.D.EXT |          |          |
|                           | 13 | 7  | 9  | I    | OM.F.INT |      | 21 | 22 | 36 | I        | PA.F.INT | 18   | 13 | 21  | II       | EC.D.INT |          |          |
|                           | 13 | 10 | 50 | I    | OM.F.EXT |      | 21 | 26 | 16 | I        | PA.F.EXT | 22   | 42 | 5   | II       | OC.F.INT |          |          |
|                           | 13 | 52 | 53 | I    | PA.F.INT | 7    | 12 | 33 | 8  | III      | EC.D.PEN | 22   | 46 | 7   | II       | OC.F.EXT |          |          |
|                           | 13 | 56 | 33 | I    | PA.F.EXT |      | 12 | 37 | 12 | III      | EC.D.EXT | 12   | 1  | 44  | 20       | I        | OM.D.EXT |          |
| 2                         | 8  | 0  | 35 | I    | EC.D.PEN |      | 12 | 48 | 44 | III      | EC.D.INT |      | 1  | 48  | 0        | I        | OM.D.INT |          |
|                           | 8  | 1  | 21 | I    | EC.D.EXT |      | 15 | 14 | 47 | III      | EC.F.INT |      | 2  | 38  | 40       | I        | PA.D.EXT |          |
|                           | 8  | 5  | 3  | I    | EC.D.INT |      | 15 | 26 | 11 | I        | EC.D.PEN |      | 2  | 42  | 19       | I        | PA.D.INT |          |
|                           | 11 | 2  | 31 | I    | OC.F.INT |      | 15 | 26 | 19 | III      | EC.F.EXT |      | 3  | 57  | 57       | I        | OM.F.INT |          |
|                           | 11 | 6  | 12 | I    | OC.F.EXT |      | 15 | 26 | 56 | I        | EC.D.EXT |      | 4  | 1   | 37       | I        | OM.F.EXT |          |
|                           | 20 | 26 | 2  | II   | OM.D.EXT |      | 15 | 30 | 23 | III      | EC.F.PEN |      | 4  | 52  | 6        | I        | PA.F.INT |          |
|                           | 20 | 30 | 7  | II   | OM.D.INT |      | 15 | 30 | 38 | I        | EC.D.INT |      | 4  | 55  | 46       | I        | PA.F.EXT |          |
|                           | 22 | 1  | 42 | II   | PA.D.EXT |      | 16 | 1  | 22 | III      | OC.D.EXT |      | 22 | 51  | 40       | I        | EC.D.PEN |          |
|                           | 22 | 5  | 47 | II   | PA.D.INT |      | 16 | 12 | 16 | III      | OC.D.INT |      | 22 | 52  | 26       | I        | EC.D.EXT |          |
|                           | 23 | 11 | 3  | II   | OM.F.INT |      | 18 | 32 | 42 | I        | OC.F.INT |      | 22 | 56  | 8        | I        | EC.D.INT |          |
|                           | 23 | 15 | 8  | II   | OM.F.EXT |      | 18 | 36 | 23 | I        | OC.F.EXT |      | 18 | 50  | 27       | III      | OC.F.INT |          |
|                           |    |    |    |      |          |      | 19 | 1  | 21 | III      | OC.F.EXT |      | 13 | 2   | 2        | 32       | I        | OC.F.INT |
| 3                         | 0  | 46 | 46 | II   | PA.F.INT | 8    | 4  | 50 | 19 | II       | EC.D.PEN |      | 2  | 6   | 13       | I        | OC.F.EXT |          |
|                           | 0  | 50 | 50 | II   | PA.F.EXT |      | 4  | 51 | 53 | II       | EC.D.EXT |      | 12 | 19  | 49       | II       | OM.D.EXT |          |
|                           | 5  | 21 | 53 | I    | OM.D.EXT |      | 4  | 55 | 57 | II       | EC.D.INT |      | 12 | 23  | 54       | II       | OM.D.INT |          |
|                           | 5  | 25 | 34 | I    | OM.D.INT |      | 6  | 22 | 37 | IV       | OC.F.INT |      | 14 | 12  | 53       | II       | PA.D.EXT |          |
|                           | 6  | 9  | 17 | I    | PA.D.EXT |      | 8  | 14 | 15 | IV       | OC.D.EXT |      | 14 | 16  | 57       | II       | PA.D.INT |          |
|                           | 6  | 12 | 57 | I    | PA.D.INT |      | 9  | 19 | 9  | II       | OC.F.INT |      | 15 | 5   | 5        | II       | OM.F.INT |          |
|                           | 7  | 35 | 37 | I    | OM.F.INT |      | 9  | 23 | 10 | II       | OC.F.EXT |      | 15 | 9   | 11       | II       | OM.F.EXT |          |
|                           | 7  | 39 | 18 | I    | OM.F.EXT |      | 9  | 40 | 48 | IV       | OC.F.EXT |      | 16 | 58  | 19       | II       | PA.F.INT |          |
|                           | 8  | 22 | 48 | I    | PA.F.INT |      | 11 | 32 | 26 | IV       | OC.D.INT |      | 17 | 2   | 23       | II       | PA.F.EXT |          |
|                           | 22 | 40 | 59 | III  | OM.D.EXT |      | 12 | 47 | 23 | I        | OM.D.EXT |      | 20 | 12  | 46       | I        | OM.D.EXT |          |
|                           | 22 | 52 | 10 | III  | OM.D.INT |      | 12 | 51 | 4  | I        | OM.D.INT |      | 20 | 16  | 27       | I        | OM.D.INT |          |
|                           |    |    |    |      |          |      | 15 | 56 | 10 | I        | PA.F.EXT |      | 21 | 8   | 25       | I        | PA.D.EXT |          |
| 4                         | 1  | 25 | 3  | III  | OM.F.INT | 9    | 9  | 54 | 38 | I        | EC.D.PEN |      | 14 | 16  | 31       | 56       | III      | EC.D.PEN |
|                           | 1  | 36 | 17 | III  | OM.F.EXT |      | 9  | 55 | 24 | I        | EC.D.EXT |      | 16 | 35  | 59       | III      | EC.D.EXT |          |
|                           | 1  | 55 | 30 | III  | PA.D.EXT |      | 9  | 59 | 6  | I        | EC.D.INT |      | 17 | 20  | 12       | I        | EC.D.PEN |          |
|                           | 2  | 6  | 25 | III  | PA.D.INT |      | 13 | 2  | 38 | I        | OC.F.INT |      | 17 | 20  | 58       | I        | EC.D.EXT |          |
|                           | 2  | 29 | 9  | I    | EC.D.PEN |      | 13 | 6  | 18 | I        | OC.F.EXT |      | 17 | 24  | 39       | I        | EC.D.INT |          |
|                           | 2  | 29 | 55 | I    | EC.D.EXT |      | 23 | 2  | 4  | II       | OM.D.EXT |      | 19 | 14  | 43       | III      | EC.F.INT |          |
|                           | 2  | 33 | 37 | I    | EC.D.INT |      | 23 | 6  | 9  | II       | OM.D.INT |      | 19 | 30  | 13       | III      | EC.F.PEN |          |
|                           | 4  | 42 | 22 | III  | PA.F.INT |      | 1  | 51 | 22 | II       | OM.F.EXT |      | 20 | 22  | 52       | III      | OC.D.EXT |          |
|                           | 4  | 53 | 16 | III  | PA.F.EXT |      | 1  | 51 | 58 | I        | PA.F.EXT |      | 20 | 32  | 29       | I        | OC.F.INT |          |
|                           | 5  | 32 | 38 | I    | OC.F.INT |      | 1  | 53 | 37 | II       | PA.D.EXT |      | 20 | 33  | 40       | III      | OC.D.INT |          |
|                           | 5  | 36 | 19 | I    | OC.F.EXT |      | 1  | 47 | 16 | II       | OM.F.INT |      | 20 | 36  | 9        | I        | OC.F.EXT |          |
|                           | 15 | 32 | 57 | II   | EC.D.PEN |      | 9  | 29 | 29 | I        | OM.F.INT |      | 23 | 13  | 30       | III      | OC.F.INT |          |
| 5                         | 15 | 34 | 31 | II   | EC.D.EXT | 10   | 9  | 33 | 10 | I        | OM.F.EXT |      | 15 | 38  | 12       | I        | PA.D.EXT |          |
|                           | 15 | 38 | 36 | II   | EC.D.INT |      | 10 | 22 | 18 | I        | PA.F.INT |      | 15 | 41  | 51       | I        | PA.D.INT |          |
|                           | 19 | 55 | 57 | II   | OC.F.INT |      | 10 | 25 | 58 | I        | PA.F.EXT |      | 16 | 54  | 50       | I        | OM.F.INT |          |
|                           | 20 | 0  | 0  | II   | OC.F.EXT |      | 0  | 53 | 37 | II       | PA.D.EXT |      | 16 | 58  | 31       | I        | OM.F.EXT |          |
|                           | 23 | 50 | 24 | I    | OM.D.EXT |      | 1  | 47 | 16 | II       | OM.F.INT |      | 17 | 51  | 36       | I        | PA.F.EXT |          |
|                           | 23 | 54 | 4  | I    | OM.D.INT |      | 1  | 51 | 58 | II       | OM.F.EXT |      | 17 | 55  | 16       | I        | PA.F.EXT |          |
|                           |    |    |    |      |          |      | 3  | 34 | 53 | II       | PA.F.INT |      | 23 | 24  | 18       | III      | OC.F.EXT |          |
| 6                         | 0  | 2  | 39 | I    | OC.F.INT | 11   | 2  | 40 | 55 | III      | OM.D.EXT |      | 15 | 7   | 24       | 59       | II       | EC.D.PEN |
|                           | 0  | 6  | 20 | I    | OC.F.EXT |      | 2  | 52 | 0  | III      | OM.D.INT |      | 15 | 7   | 26       | 33       | II       | EC.D.EXT |
|                           | 9  | 43 | 47 | II   | OM.D.EXT |      | 4  | 23 | 11 | I        | EC.D.PEN |      | 15 | 7   | 30       | 37       | II       | EC.D.INT |
|                           | 9  | 47 | 52 | II   | OM.D.INT |      | 4  | 23 | 57 | I        | EC.D.EXT |      | 16 | 4   | 45       | II       | OC.F.INT |          |
|                           | 11 | 25 | 25 | II   | PA.D.EXT |      | 4  | 23 | 57 | I        | EC.D.EXT |      | 16 | 8   | 46       | II       | OC.F.EXT |          |
|                           | 11 | 29 | 30 | II   | PA.D.INT |      | 4  | 27 | 39 | I        | EC.D.INT |      | 17 | 41  | 16       | I        | OM.D.EXT |          |
|                           | 12 | 28 | 52 | II   | OM.F.INT |      | 5  | 25 | 55 | III      | OM.F.INT |      | 17 | 38  | 12       | I        | PA.D.EXT |          |

## 2001 - CONFIGURATIONS DES SATELLITES GALILIENS DE JUPITER



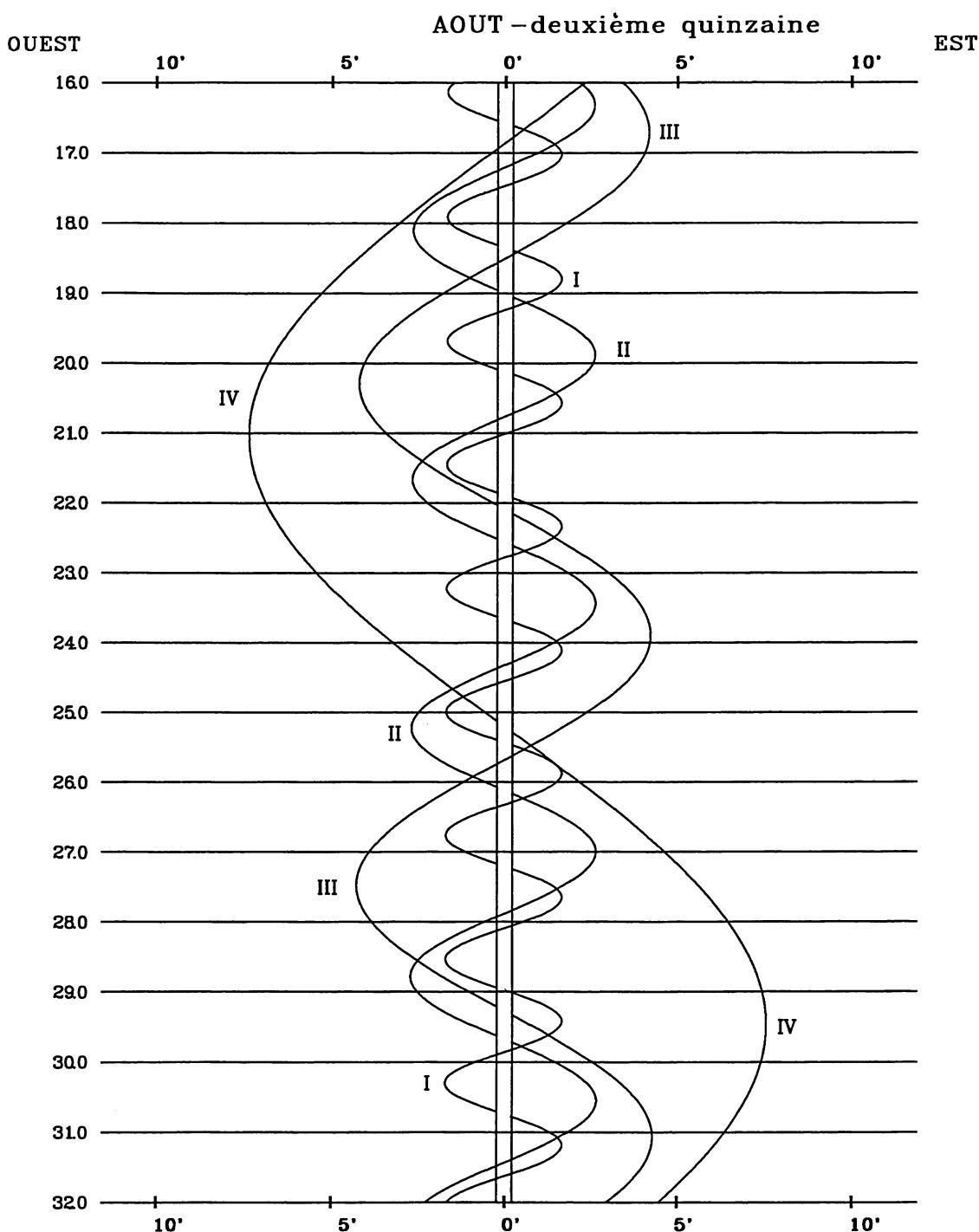
Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter



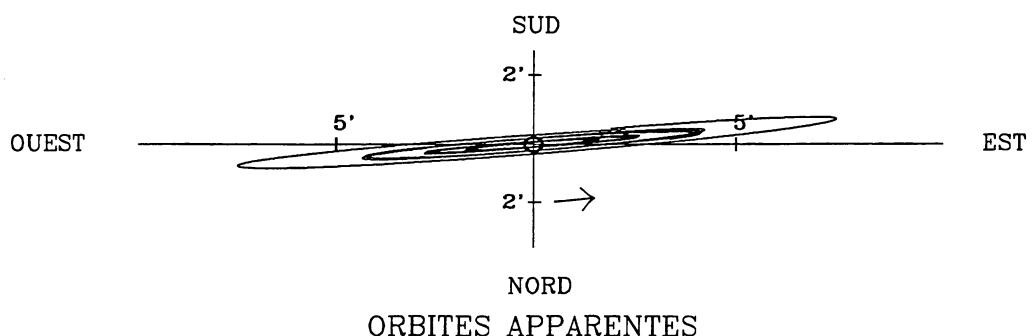
**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
 (Temps Terrestre)

| AOÛT - DEUXIÈME QUINZAINE |    |    |    |      |          |      |    |    |     |          |          |      |    |    |    |          |          |
|---------------------------|----|----|----|------|----------|------|----|----|-----|----------|----------|------|----|----|----|----------|----------|
| jour                      | h  | m  | s  | SAT. | TYPE     | jour | h  | m  | s   | SAT.     | TYPE     | jour | h  | m  | s  | SAT.     | TYPE     |
| 16                        | 11 | 48 | 39 | I    | EC.D.PEN | 19   | 18 | 39 | I   | EC.D.INT |          | 7    | 49 | 1  | I  | OM.F.EXT |          |
|                           | 11 | 49 | 25 | I    | EC.D.EXT | 20   | 31 | 22 | III | EC.D.PEN |          | 8    | 49 | 11 | I  | PA.F.INT |          |
|                           | 11 | 53 | 6  | I    | EC.D.INT | 20   | 35 | 23 | III | EC.D.EXT |          | 8    | 52 | 50 | I  | PA.F.EXT |          |
|                           | 15 | 2  | 17 | I    | OC.F.INT | 20   | 46 | 45 | III | EC.D.INT |          |      |    |    |    |          |          |
|                           | 15 | 5  | 58 | I    | OC.F.EXT | 22   | 31 | 46 | I   | OC.F.INT | 27       | 2    | 39 | 37 | I  | EC.D.PEN |          |
|                           | 15 | 40 | 17 | IV   | PA.F.INT | 22   | 35 | 27 | I   | OC.F.EXT |          | 2    | 40 | 23 | I  | EC.D.EXT |          |
|                           | 20 | 0  | 59 | IV   | PA.D.EXT | 23   | 15 | 17 | III | EC.F.INT |          | 2    | 44 | 5  | I  | EC.D.INT |          |
|                           | 21 | 42 | 20 | IV   | PA.F.EXT | 23   | 26 | 39 | III | EC.F.EXT |          | 6    | 0  | 50 | I  | OC.F.INT |          |
|                           |    |    |    |      |          | 23   | 30 | 40 | III | EC.F.PEN |          | 6    | 4  | 30 | I  | OC.F.EXT |          |
|                           |    |    |    |      |          |      |    |    |     |          |          |      |    |    |    |          |          |
| 17                        | 1  | 38 | 8  | II   | OM.D.EXT |      |    |    |     |          |          | 17   | 32 | 4  | II | OM.D.EXT |          |
|                           | 1  | 42 | 13 | II   | OM.D.INT | 22   | 0  | 43 | 10  | III      | OC.D.EXT |      | 17 | 36 | 9  | II       | OM.D.INT |
|                           | 2  | 3  | 13 | IV   | PA.D.INT |      | 0  | 53 | 52  | III      | OC.D.INT |      | 19 | 45 | 12 | II       | PA.D.EXT |
|                           | 3  | 36 | 38 | II   | PA.D.EXT |      | 3  | 35 | 20  | III      | OC.F.INT |      | 19 | 49 | 16 | II       | PA.D.INT |
|                           | 3  | 40 | 42 | II   | PA.D.INT |      | 3  | 46 | 2   | III      | OC.F.EXT |      | 20 | 17 | 42 | II       | OM.F.INT |
|                           | 4  | 23 | 31 | II   | OM.F.INT |      | 9  | 59 | 28  | II       | EC.D.PEN |      | 20 | 21 | 48 | II       | OM.F.EXT |
|                           | 4  | 27 | 37 | II   | OM.F.EXT |      | 10 | 1  | 2   | II       | EC.D.INT |      | 22 | 31 | 5  | II       | PA.F.INT |
|                           | 6  | 22 | 12 | II   | PA.F.INT |      | 10 | 5  | 5   | II       | EC.D.INT |      | 22 | 35 | 8  | II       | PA.F.EXT |
|                           | 6  | 26 | 16 | II   | PA.F.EXT |      | 14 | 49 | 14  | II       | OC.F.INT |      |    |    |    |          |          |
|                           | 9  | 9  | 42 | I    | OM.D.EXT |      | 14 | 53 | 14  | II       | OC.F.EXT | 28   | 0  | 0  | 18 | I        | OM.D.EXT |
|                           | 9  | 13 | 22 | I    | OM.D.INT |      | 16 | 35 | 3   | I        | OM.D.EXT |      | 0  | 3  | 58 | I        | OM.D.INT |
|                           | 10 | 7  | 53 | I    | PA.D.EXT |      | 16 | 38 | 43  | I        | OM.D.INT |      | 1  | 5  | 19 | I        | PA.D.EXT |
| 18                        | 10 | 11 | 33 | I    | PA.D.INT |      | 17 | 36 | 48  | I        | PA.D.EXT |      | 1  | 8  | 58 | I        | PA.D.INT |
|                           | 11 | 23 | 15 | I    | OM.F.INT |      | 17 | 40 | 27  | I        | PA.D.INT |      | 2  | 13 | 43 | I        | OM.F.INT |
|                           | 11 | 26 | 56 | I    | OM.F.EXT |      | 18 | 48 | 32  | I        | OM.F.INT |      | 2  | 17 | 24 | I        | OM.F.EXT |
|                           | 12 | 21 | 17 | I    | PA.F.INT |      | 18 | 52 | 13  | I        | OM.F.EXT |      | 3  | 18 | 38 | I        | PA.F.INT |
|                           | 12 | 24 | 56 | I    | PA.F.EXT |      | 19 | 50 | 9   | I        | PA.F.INT |      | 3  | 22 | 17 | I        | PA.F.EXT |
|                           |    |    |    |      |          | 19   | 53 | 48 | I   | PA.F.EXT |          | 21   | 8  | 8  | I  | EC.D.PEN |          |
|                           |    |    |    |      |          |      |    |    |     |          |          | 21   | 12 | 36 | I  | EC.D.INT |          |
|                           | 6  | 17 | 12 | I    | EC.D.PEN |      |    |    |     |          |          |      |    |    |    |          |          |
|                           | 6  | 17 | 58 | I    | EC.D.EXT | 23   | 13 | 42 | 37  | I        | EC.D.PEN |      |    |    |    |          |          |
|                           | 6  | 21 | 39 | I    | EC.D.INT |      | 13 | 43 | 23  | I        | EC.D.EXT |      |    |    |    |          |          |
| 19                        | 6  | 39 | 52 | III  | OM.D.EXT |      | 13 | 47 | 5   | I        | EC.D.INT | 29   | 0  | 30 | 28 | III      | EC.D.PEN |
|                           | 6  | 50 | 52 | III  | OM.D.INT |      | 17 | 1  | 27  | I        | OC.F.INT |      | 0  | 30 | 30 | I        | OC.F.INT |
|                           | 9  | 25 | 47 | III  | OM.F.INT |      | 17 | 5  | 7   | I        | OC.F.EXT |      | 0  | 34 | 10 | I        | OC.F.EXT |
|                           | 9  | 32 | 11 | I    | OC.F.INT |      |    |    |     |          |          |      | 0  | 34 | 27 | III      | EC.D.INT |
|                           | 9  | 35 | 52 | I    | OC.F.EXT | 24   | 4  | 14 | 16  | II       | OM.D.INT |      | 0  | 45 | 44 | III      | EC.D.INT |
|                           | 9  | 36 | 51 | III  | OM.F.EXT |      | 4  | 18 | 21  | II       | OM.D.INT |      | 3  | 15 | 31 | III      | EC.F.INT |
|                           | 10 | 38 | 51 | III  | PA.D.EXT |      | 6  | 22 | 49  | II       | PA.D.EXT |      | 3  | 26 | 48 | III      | EC.F.EXT |
|                           | 10 | 49 | 33 | III  | PA.D.INT |      | 6  | 26 | 53  | II       | PA.D.INT |      | 3  | 30 | 47 | III      | EC.F.PEN |
|                           | 13 | 28 | 24 | III  | PA.F.INT |      | 6  | 59 | 50  | II       | OM.F.INT |      | 5  | 0  | 53 | III      | OC.D.INT |
|                           | 13 | 39 | 4  | III  | PA.F.EXT |      | 7  | 3  | 56  | II       | OM.F.EXT |      | 5  | 11 | 29 | III      | OC.D.INT |
|                           | 20 | 42 | 18 | II   | EC.D.PEN |      | 9  | 8  | 37  | II       | PA.F.INT |      | 7  | 54 | 30 | III      | OC.F.INT |
|                           | 20 | 43 | 51 | II   | EC.D.EXT |      | 9  | 12 | 40  | II       | PA.F.EXT |      | 8  | 5  | 6  | III      | OC.F.EXT |
| 20                        | 20 | 47 | 55 | II   | EC.D.INT |      | 11 | 3  | 28  | I        | OM.D.INT |      | 12 | 33 | 44 | II       | EC.D.PEN |
|                           |    |    |    |      |          |      | 11 | 7  | 8   | I        | OM.D.EXT |      | 12 | 35 | 17 | II       | EC.D.INT |
|                           | 1  | 27 | 9  | II   | OC.F.INT |      | 12 | 6  | 21  | I        | PA.D.EXT |      | 12 | 39 | 19 | II       | EC.D.INT |
|                           | 1  | 31 | 10 | II   | OC.F.EXT |      | 12 | 10 | 1   | I        | PA.D.INT |      | 17 | 32 | 24 | II       | OC.F.INT |
|                           | 3  | 38 | 9  | I    | OM.D.INT |      | 13 | 16 | 56  | I        | OM.F.INT |      | 17 | 36 | 24 | II       | OC.F.EXT |
|                           | 3  | 41 | 50 | I    | OM.D.EXT |      | 13 | 20 | 36  | I        | OM.F.EXT |      | 18 | 28 | 45 | I        | OM.D.INT |
|                           | 4  | 37 | 34 | I    | PA.D.EXT |      | 14 | 19 | 41  | I        | PA.F.INT |      | 18 | 32 | 25 | I        | OM.D.INT |
|                           | 4  | 41 | 13 | I    | PA.D.INT |      | 14 | 23 | 20  | I        | PA.F.EXT |      | 19 | 34 | 47 | I        | PA.D.EXT |
|                           | 5  | 51 | 41 | I    | OM.F.INT |      |    |    |     |          |          |      | 19 | 38 | 26 | I        | PA.D.INT |
|                           | 5  | 55 | 22 | I    | OM.F.EXT | 25   | 4  | 2  | 34  | IV       | OC.D.EXT |      | 20 | 42 | 9  | I        | OM.F.INT |
| 21                        | 6  | 50 | 56 | I    | PA.F.INT |      | 4  | 42 | 30  | IV       | OC.D.INT |      | 20 | 45 | 49 | I        | OM.F.EXT |
|                           | 6  | 54 | 36 | I    | PA.F.EXT |      | 5  | 19 | 51  | IV       | OC.F.INT |      | 21 | 48 | 5  | I        | PA.F.EXT |
|                           |    |    |    |      |          |      | 5  | 59 | 48  | IV       | OC.F.EXT |      | 21 | 51 | 44 | I        | PA.F.EXT |
|                           | 0  | 45 | 39 | I    | EC.D.PEN |      | 8  | 11 | 10  | I        | EC.D.PEN |      |    |    |    |          |          |
|                           | 0  | 46 | 25 | I    | EC.D.EXT |      | 8  | 11 | 56  | I        | EC.D.EXT | 30   | 15 | 36 | 34 | I        | EC.D.PEN |
|                           | 0  | 50 | 7  | I    | EC.D.INT |      | 8  | 15 | 37  | I        | EC.D.INT |      | 15 | 37 | 20 | I        | EC.D.EXT |
|                           | 4  | 1  | 58 | I    | OC.F.INT |      | 10 | 38 | 37  | III      | OM.D.INT |      | 15 | 41 | 1  | I        | EC.D.INT |
|                           | 4  | 5  | 38 | I    | OC.F.EXT |      | 10 | 49 | 32  | III      | OM.D.INT |      | 19 | 0  | 1  | I        | OC.F.INT |
|                           | 14 | 55 | 53 | II   | OM.D.INT |      | 11 | 31 | 12  | I        | OC.F.INT |      | 19 | 3  | 41 | I        | OC.F.EXT |
|                           | 14 | 59 | 58 | II   | OM.D.EXT |      | 11 | 34 | 53  | I        | OC.F.EXT |      |    |    |    |          |          |
|                           | 16 | 59 | 31 | II   | PA.D.EXT |      | 13 | 25 | 27  | III      | OM.F.INT | 31   | 6  | 50 | 29 | II       | OM.D.EXT |
|                           | 17 | 3  | 34 | II   | PA.D.INT |      | 13 | 36 | 27  | III      | OM.F.EXT |      | 6  | 54 | 33 | II       | OM.D.INT |
|                           | 17 | 41 | 21 | II   | OM.F.INT |      | 14 | 56 | 52  | III      | PA.D.EXT |      | 9  | 7  | 59 | II       | PA.D.EXT |
| 22                        | 17 | 45 | 26 | II   | OM.F.EXT |      | 15 | 7  | 27  | III      | PA.D.INT |      | 9  | 12 | 2  | II       | PA.D.EXT |
|                           | 19 | 45 | 10 | II   | PA.F.INT |      | 17 | 47 | 41  | III      | PA.F.INT |      | 9  | 36 | 14 | II       | OM.F.INT |
|                           | 19 | 49 | 14 | II   | PA.F.EXT |      | 17 | 58 | 14  | III      | PA.F.EXT |      | 9  | 40 | 19 | II       | OM.F.EXT |
|                           | 22 | 6  | 35 | I    | OM.D.EXT |      | 23 | 16 | 38  | II       | EC.D.PEN |      | 11 | 53 | 59 | II       | PA.F.EXT |
|                           | 22 | 10 | 15 | I    | OM.D.INT |      | 23 | 18 | 11  | II       | EC.D.EXT |      | 11 | 58 | 2  | II       | PA.F.EXT |
|                           | 23 | 7  | 10 | I    | PA.D.EXT |      | 23 | 22 | 14  | II       | EC.D.INT |      | 12 | 57 | 8  | I        | OM.D.EXT |
|                           | 23 | 10 | 50 | I    | PA.D.INT |      |    |    |     |          |          |      | 13 | 0  | 48 | I        | OM.D.INT |
|                           |    |    |    |      |          | 26   | 4  | 10 | 58  | II       | OC.F.INT |      | 14 | 4  | 10 | I        | PA.D.EXT |
|                           | 0  | 20 | 5  | I    | OM.F.INT |      | 4  | 14 | 58  | II       | OC.F.EXT |      | 14 | 7  | 49 | I        | PA.D.INT |
|                           | 0  | 23 | 46 | I    | OM.F.EXT |      | 5  | 31 | 54  | I        | OM.D.EXT |      | 15 | 10 | 32 | I        | OM.F.INT |
| 21                        | 1  | 20 | 32 | I    | PA.F.INT |      | 5  | 35 | 34  | I        | OM.D.INT |      | 15 | 14 | 12 | I        | OM.F.EXT |
|                           | 1  | 24 | 12 | I    | PA.F.EXT |      | 6  | 35 | 52  | I        | PA.D.EXT |      | 16 | 17 | 27 | I        | PA.F.INT |
|                           | 19 | 14 | 11 | I    | EC.D.PEN |      | 6  | 39 | 31  | I        | PA.D.INT |      | 16 | 21 | 6  | I        | PA.F.EXT |
|                           | 19 | 14 | 57 | I    | EC.D.EXT |      | 7  | 45 | 21  | I        | OM.F.INT |      |    |    |    |          |          |

**2001 -CONFIGURATIONS DES SATELLITES GALILIENS DE JUPITER**



Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter

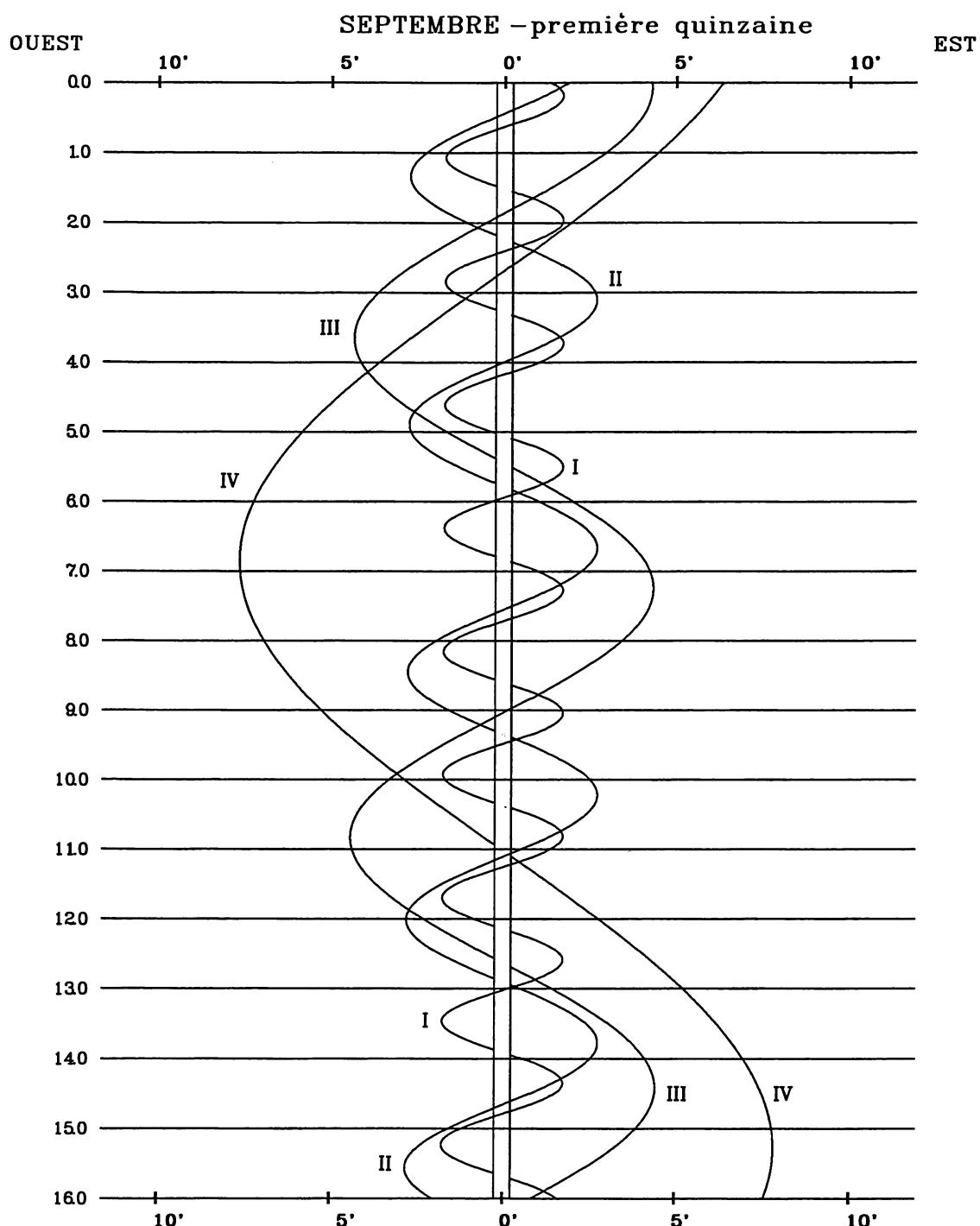


**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
 (Temps Terrestre)

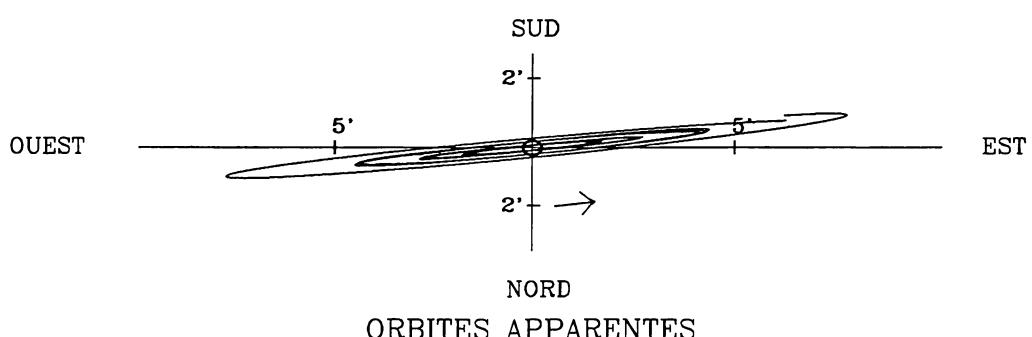
**SEPTEMBRE - PREMIÈRE QUINZAINE**

| jour | h  | m  | s  | SAT. | TYPE     | jour | h  | m  | s  | SAT.     | TYPE     | jour | h  | m  | s   | SAT.     | TYPE     |
|------|----|----|----|------|----------|------|----|----|----|----------|----------|------|----|----|-----|----------|----------|
| 1    | 10 | 5  | 6  | I    | EC.D.PEN | 20   | 18 | 13 | II | OC.F.EXT |          | 1    | 30 | 32 | II  | OM.F.INT |          |
|      | 10 | 5  | 52 | I    | EC.D.EXT | 20   | 22 | 21 | I  | OM.D.EXT |          | 1    | 34 | 37 | II  | OM.F.EXT |          |
|      | 10 | 9  | 34 | I    | EC.D.INT | 20   | 26 | 0  | I  | OM.D.INT |          | 1    | 44 | 16 | IV  | OC.F.EXT |          |
|      | 13 | 29 | 37 | I    | OC.F.INT | 21   | 32 | 6  | I  | PA.D.EXT |          | 3    | 47 | 27 | I   | OM.D.EXT |          |
|      | 13 | 33 | 17 | I    | OC.F.EXT | 21   | 35 | 44 | I  | PA.D.INT |          | 3    | 51 | 7  | I   | OM.D.INT |          |
|      | 14 | 37 | 0  | III  | OM.D.EXT | 22   | 35 | 41 | I  | OM.F.INT |          | 3    | 59 | 19 | II  | PA.F.INT |          |
|      | 14 | 47 | 50 | III  | OM.D.INT | 22   | 39 | 21 | I  | OM.F.EXT |          | 4    | 3  | 21 | II  | PA.F.EXT |          |
|      | 17 | 24 | 45 | III  | OM.F.INT | 23   | 45 | 20 | I  | PA.F.INT |          | 4    | 59 | 35 | I   | PA.D.EXT |          |
|      | 17 | 35 | 40 | III  | OM.F.EXT | 23   | 48 | 59 | I  | PA.F.EXT |          | 5    | 3  | 13 | I   | PA.D.INT |          |
|      | 19 | 12 | 18 | III  | PA.D.EXT |      |    |    |    |          |          | 6    | 0  | 46 | I   | OM.F.INT |          |
|      | 19 | 22 | 48 | III  | PA.D.INT | 6    | 17 | 30 | 29 | I        | EC.D.PEN |      | 6  | 4  | 25  | I        | OM.F.EXT |
|      | 22 | 4  | 21 | III  | PA.F.INT |      | 17 | 31 | 15 | I        | EC.D.EXT |      | 7  | 12 | 48  | I        | PA.F.INT |
|      | 22 | 14 | 48 | III  | PA.F.EXT |      | 17 | 34 | 57 | I        | EC.D.INT |      | 7  | 16 | 26  | I        | PA.F.EXT |
|      |    |    |    |      |          |      | 20 | 57 | 57 | I        | OC.F.INT |      |    |    |     |          |          |
| 2    | 1  | 50 | 48 | II   | EC.D.PEN |      | 21 | 1  | 37 | I        | OC.F.EXT | 12   | 0  | 55 | 59  | I        | EC.D.PEN |
|      | 1  | 52 | 21 | II   | EC.D.EXT |      |    |    |    |          |          | 0    | 56 | 44 | I   | EC.D.EXT |          |
|      | 1  | 56 | 23 | II   | EC.D.INT | 7    | 9  | 26 | 43 | II       | OM.D.EXT | 1    | 0  | 26 | I   | EC.D.INT |          |
|      | 6  | 53 | 28 | II   | OC.F.INT |      | 9  | 30 | 48 | II       | OM.D.INT |      | 4  | 26 | 0   | I        | OC.F.INT |
|      | 6  | 57 | 27 | II   | OC.F.EXT |      | 11 | 51 | 57 | II       | PA.D.EXT |      | 4  | 29 | 40  | I        | OC.F.EXT |
|      | 7  | 25 | 32 | I    | OM.D.EXT |      | 11 | 56 | 0  | II       | PA.D.INT |      | 8  | 29 | 4   | III      | EC.D.PEN |
|      | 7  | 29 | 12 | I    | OM.D.INT |      | 12 | 12 | 39 | II       | OM.F.INT |      | 8  | 33 | 0   | III      | EC.D.EXT |
|      | 8  | 33 | 31 | I    | PA.D.EXT |      | 12 | 16 | 44 | II       | OM.F.EXT |      | 8  | 44 | 6   | III      | EC.D.INT |
|      | 8  | 37 | 10 | I    | PA.D.INT |      | 14 | 38 | 8  | II       | PA.F.INT |      | 11 | 16 | 22  | III      | EC.F.INT |
|      | 9  | 38 | 55 | I    | OM.F.INT |      | 14 | 42 | 11 | II       | PA.F.EXT |      | 11 | 27 | 29  | III      | EC.F.EXT |
|      | 9  | 42 | 35 | I    | OM.F.EXT |      | 14 | 50 | 43 | I        | OM.D.EXT |      | 11 | 31 | 25  | III      | EC.F.PEN |
|      | 10 | 46 | 47 | I    | PA.F.INT |      | 14 | 54 | 22 | I        | OM.D.INT |      | 13 | 28 | 55  | III      | OC.D.EXT |
|      | 10 | 50 | 26 | I    | PA.F.EXT |      | 16 | 1  | 18 | I        | PA.D.EXT |      | 13 | 39 | 20  | III      | OC.D.INT |
|      | 15 | 36 | 25 | IV   | PA.D.EXT |      | 16 | 4  | 57 | I        | PA.D.INT |      | 16 | 25 | 15  | III      | OC.F.INT |
|      | 16 | 7  | 57 | IV   | PA.D.INT |      | 17 | 4  | 3  | I        | OM.F.INT |      | 16 | 35 | 39  | III      | OC.F.EXT |
|      | 17 | 12 | 7  | IV   | PA.F.EXT |      | 17 | 7  | 43 | I        | OM.F.EXT |      | 17 | 41 | 45  | II       | EC.D.PEN |
|      | 17 | 43 | 15 | IV   | PA.F.EXT |      | 18 | 14 | 33 | I        | PA.F.EXT |      | 17 | 43 | 18  | II       | EC.D.EXT |
|      |    |    |    |      |          |      | 18 | 18 | 11 | I        | PA.F.EXT |      | 17 | 47 | 19  | II       | EC.D.INT |
| 3    | 4  | 33 | 33 | I    | EC.D.PEN |      |    |    |    |          |          | 22   | 15 | 51 | I   | OM.D.EXT |          |
|      | 4  | 34 | 19 | I    | EC.D.EXT | 8    | 11 | 59 | 1  | I        | EC.D.PEN |      | 22 | 19 | 31  | I        | OM.D.INT |
|      | 4  | 38 | 1  | I    | EC.D.INT |      | 11 | 59 | 47 | I        | EC.D.EXT |      | 22 | 54 | 33  | II       | OC.F.INT |
|      | 7  | 59 | 5  | I    | OC.F.INT |      | 12 | 3  | 29 | I        | EC.D.INT |      | 22 | 58 | 32  | II       | OC.F.EXT |
|      | 8  | 2  | 46 | I    | OC.F.EXT |      | 15 | 27 | 23 | I        | OC.F.INT |      | 23 | 28 | 41  | I        | PA.D.EXT |
|      | 20 | 8  | 16 | II   | OM.D.EXT |      | 15 | 31 | 3  | I        | OC.F.EXT |      | 23 | 32 | 19  | I        | PA.D.INT |
|      | 20 | 12 | 20 | II   | OM.D.INT |      | 18 | 35 | 21 | III      | OM.D.EXT |      |    |    |     |          |          |
|      | 22 | 29 | 45 | II   | PA.D.EXT |      | 18 | 46 | 6  | III      | OM.D.INT | 13   | 0  | 29 | 9   | I        | OM.F.INT |
|      | 22 | 33 | 48 | II   | PA.D.INT |      | 21 | 24 | 3  | III      | OM.F.EXT |      | 0  | 32 | 49  | I        | OM.F.EXT |
|      | 22 | 54 | 5  | II   | OM.F.INT |      | 21 | 34 | 53 | III      | OM.F.EXT |      | 1  | 41 | 53  | I        | PA.F.INT |
|      | 22 | 58 | 10 | II   | OM.F.EXT |      | 23 | 25 | 13 | III      | PA.D.EXT |      | 1  | 45 | 32  | I        | PA.F.EXT |
|      |    |    |    |      |          |      | 23 | 35 | 37 | III      | PA.D.INT |      | 19 | 24 | 23  | I        | EC.D.PEN |
| 4    | 1  | 15 | 50 | II   | PA.F.INT |      |    |    |    |          |          | 19   | 25 | 9  | I   | EC.D.EXT |          |
|      | 1  | 19 | 52 | II   | PA.F.EXT | 9    | 2  | 18 | 27 | III      | PA.F.INT |      | 19 | 28 | 51  | I        | EC.D.INT |
|      | 1  | 53 | 55 | I    | OM.D.EXT |      | 2  | 28 | 48 | III      | PA.F.EXT |      | 22 | 55 | 10  | I        | OC.F.INT |
|      | 1  | 57 | 35 | I    | OM.D.INT |      | 4  | 24 | 48 | II       | EC.D.PEN |      | 22 | 58 | 50  | I        | OC.F.EXT |
|      | 3  | 2  | 48 | I    | PA.D.EXT |      | 4  | 26 | 20 | II       | EC.D.EXT | 14   | 12 | 3  | 3   | II       | OM.D.EXT |
|      | 3  | 6  | 27 | I    | PA.D.INT |      | 4  | 30 | 22 | II       | EC.D.INT |      | 12 | 7  | 7   | II       | OM.D.INT |
|      | 4  | 7  | 17 | I    | OM.F.INT |      | 9  | 19 | 6  | I        | OM.D.EXT |      | 14 | 34 | 36  | II       | PA.D.EXT |
|      | 4  | 10 | 57 | I    | OM.F.EXT |      | 9  | 22 | 45 | I        | OM.D.INT |      | 14 | 38 | 39  | II       | PA.D.INT |
|      | 5  | 16 | 4  | I    | PA.F.INT |      | 9  | 34 | 33 | II       | OC.F.INT |      | 14 | 49 | 10  | II       | OM.F.INT |
|      | 5  | 19 | 42 | I    | PA.F.EXT |      | 9  | 38 | 32 | II       | OC.F.EXT |      | 14 | 53 | 15  | II       | OM.F.EXT |
|      | 23 | 2  | 4  | I    | EC.D.PEN |      | 10 | 30 | 28 | I        | PA.D.EXT |      | 14 | 44 | 13  | I        | OM.D.EXT |
|      | 23 | 2  | 50 | I    | EC.D.EXT |      | 10 | 34 | 7  | I        | PA.D.INT |      | 16 | 47 | 52  | I        | OM.D.INT |
|      | 23 | 6  | 32 | I    | EC.D.INT |      | 11 | 32 | 25 | I        | OM.F.INT |      | 17 | 20 | 58  | II       | PA.F.EXT |
|      |    |    |    |      |          |      | 11 | 36 | 5  | I        | OM.F.EXT |      | 17 | 25 | 0   | II       | PA.F.EXT |
| 5    | 2  | 28 | 36 | I    | OC.F.INT |      | 12 | 43 | 42 | I        | PA.F.EXT |      | 17 | 57 | 42  | I        | PA.D.EXT |
|      | 2  | 32 | 16 | I    | OC.F.EXT |      | 12 | 47 | 20 | I        | PA.F.EXT |      | 18 | 1  | 20  | I        | PA.D.INT |
|      | 4  | 30 | 11 | III  | EC.D.PEN | 10   | 6  | 27 | 28 | I        | EC.D.PEN |      | 18 | 57 | 30  | I        | OM.F.INT |
|      | 4  | 34 | 9  | III  | EC.D.EXT |      | 6  | 28 | 14 | I        | EC.D.EXT |      | 19 | 1  | 10  | I        | OM.F.EXT |
|      | 4  | 45 | 21 | III  | EC.D.INT |      | 6  | 31 | 55 | I        | EC.D.INT |      | 20 | 10 | 54  | I        | PA.F.INT |
|      | 7  | 16 | 22 | III  | EC.F.INT |      | 9  | 56 | 40 | I        | OC.F.INT |      | 20 | 14 | 33  | I        | PA.F.EXT |
|      | 7  | 27 | 34 | III  | EC.F.EXT |      | 10 | 0  | 21 | I        | OC.F.EXT |      |    |    |     |          |          |
|      | 7  | 31 | 32 | III  | EC.F.PEN |      |    |    |    |          |          | 15   | 13 | 52 | 55  | I        | EC.D.PEN |
|      | 9  | 16 | 42 | III  | OC.D.EXT |      | 22 | 44 | 32 | II       | OM.D.EXT |      | 13 | 53 | 41  | I        | EC.D.EXT |
|      | 9  | 27 | 11 | III  | OC.D.INT |      | 22 | 48 | 36 | II       | OM.D.INT |      | 13 | 57 | 22  | I        | EC.D.INT |
|      | 12 | 11 | 42 | III  | OC.F.INT |      | 23 | 24 | 51 | IV       | OC.D.EXT |      | 13 | 24 | 25  | I        | OC.F.INT |
|      | 12 | 22 | 12 | III  | OC.F.EXT |      | 23 | 52 | 12 | IV       | OC.D.INT |      | 17 | 28 | 5   | I        | OC.F.EXT |
|      | 15 | 7  | 51 | II   | EC.D.PEN |      |    |    |    |          |          | 17   | 34 | 16 | III | OM.D.EXT |          |
|      | 15 | 9  | 24 | II   | EC.D.EXT | 11   | 1  | 13 | 3  | II       | PA.D.EXT |      | 22 | 44 | 57  | III      | OM.D.INT |
|      | 15 | 13 | 26 | II   | EC.D.INT |      | 1  | 16 | 54 | IV       | OC.F.INT |      | 22 | 44 | 57  | III      | OM.D.EXT |
|      | 20 | 14 | 14 | II   | OC.F.INT |      | 1  | 17 | 6  | II       | PA.D.INT |      |    |    |     |          |          |

## 2001 - CONFIGURATIONS DES SATELLITES GALILIENS DE JUPITER



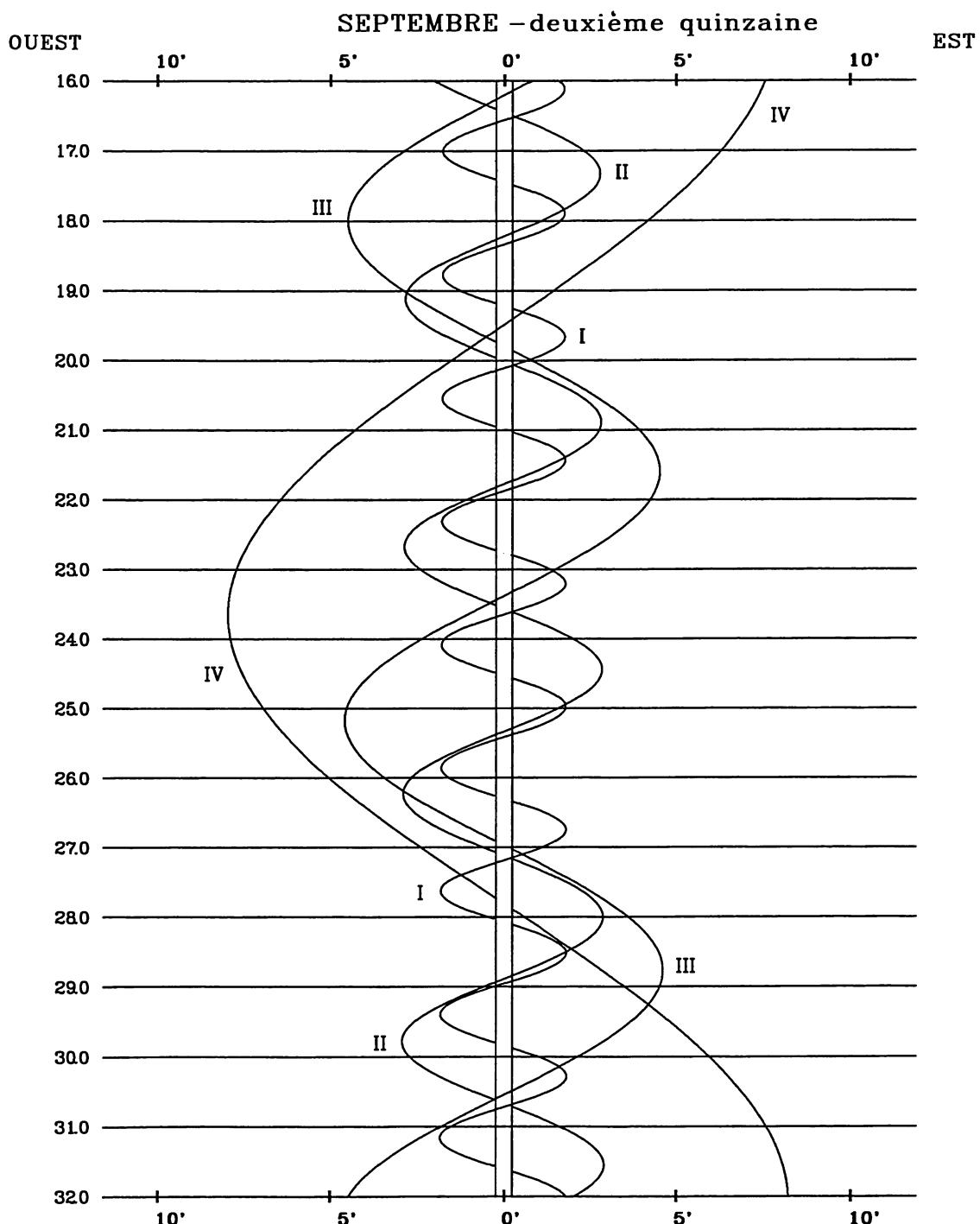
Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter



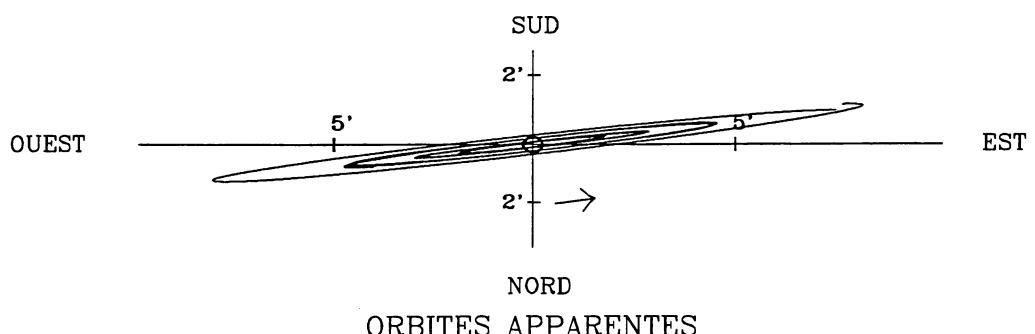
**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
 (Temps Terrestre)

| SEPTEMBRE - DEUXIÈME QUINZAINE |    |    |    |      |          |      |    |    |    |          |          |      |    |    |    |          |          |          |
|--------------------------------|----|----|----|------|----------|------|----|----|----|----------|----------|------|----|----|----|----------|----------|----------|
| jour                           | h  | m  | s  | SAT. | TYPE     | jour | h  | m  | s  | SAT.     | TYPE     | jour | h  | m  | s  | SAT.     | TYPE     |          |
| 16                             | 1  | 23 | 56 | III  | OM.F.INT | 21   | 0  | 51 | 36 | I        | OC.F.INT | 27   | 0  | 41 | 58 | III      | EC.D.INT |          |
|                                | 1  | 34 | 42 | III  | OM.F.EXT |      | 0  | 55 | 16 | I        | OC.F.EXT |      | 0  | 52 | 13 | III      | EC.F.INT |          |
|                                | 3  | 35 | 55 | III  | PA.D.EXT |      | 14 | 39 | 22 | II       | OM.D.EXT |      | 2  | 2  | 39 | I        | OM.D.EXT |          |
|                                | 3  | 46 | 14 | III  | PA.D.INT |      | 14 | 43 | 26 | II       | OM.D.INT |      | 2  | 6  | 18 | II       | EC.D.INT |          |
|                                | 6  | 30 | 17 | III  | PA.F.INT |      | 17 | 15 | 42 | II       | PA.D.EXT |      | 3  | 19 | 23 | I        | PA.D.INT |          |
|                                | 6  | 40 | 32 | III  | PA.F.EXT |      | 17 | 19 | 44 | I        | PA.D.INT |      | 4  | 10 | 15 | II       | OC.F.INT |          |
|                                | 6  | 58 | 37 | II   | EC.D.PEN |      | 17 | 25 | 41 | II       | OM.F.INT |      | 4  | 14 | 13 | II       | OC.F.EXT |          |
|                                | 7  | 0  | 10 | II   | EC.D.EXT |      | 17 | 29 | 46 | II       | OM.F.EXT |      | 4  | 15 | 55 | I        | OM.F.INT |          |
|                                | 7  | 4  | 11 | II   | EC.D.INT |      | 18 | 37 | 38 | I        | OM.D.EXT |      | 4  | 19 | 34 | I        | OM.F.EXT |          |
|                                | 11 | 12 | 34 | I    | OM.D.EXT |      | 18 | 41 | 17 | I        | OM.D.INT |      | 5  | 32 | 35 | I        | PA.F.INT |          |
|                                | 11 | 16 | 14 | I    | OM.D.INT |      | 19 | 53 | 16 | I        | PA.D.EXT |      | 5  | 36 | 13 | I        | PA.F.EXT |          |
|                                | 12 | 14 | 5  | II   | OC.F.INT |      | 19 | 56 | 55 | I        | PA.D.INT |      | 6  | 4  | 33 | IV       | EC.D.PEN |          |
|                                | 12 | 18 | 3  | II   | OC.F.EXT |      | 20 | 2  | 14 | II       | PA.F.INT |      | 6  | 29 | 36 | IV       | EC.F.EXT |          |
|                                | 12 | 26 | 40 | I    | PA.D.EXT |      | 20 | 6  | 16 | II       | PA.F.EXT |      | 7  | 33 | 50 | IV       | EC.D.INT |          |
|                                | 12 | 30 | 18 | I    | PA.D.INT |      | 20 | 50 | 54 | I        | OM.F.INT |      | 7  | 58 | 54 | IV       | EC.F.PEN |          |
|                                | 13 | 25 | 51 | I    | OM.F.INT |      | 20 | 54 | 33 | I        | OM.F.EXT |      | 18 | 34 | 9  | IV       | OC.D.INT |          |
|                                | 13 | 29 | 31 | I    | OM.F.EXT |      | 22 | 6  | 28 | I        | PA.F.INT |      | 20 | 47 | 14 | IV       | OC.F.INT |          |
|                                | 14 | 39 | 52 | I    | PA.F.INT |      | 22 | 10 | 6  | I        | PA.F.EXT |      | 23 | 12 | 9  | I        | EC.D.PEN |          |
|                                | 14 | 43 | 30 | I    | PA.F.EXT |      |    |    |    |          |          |      | 23 | 12 | 55 | I        | EC.D.INT |          |
| 17                             | 8  | 21 | 21 | I    | EC.D.PEN | 22   | 15 | 46 | 48 | I        | EC.D.PEN | 28   | 2  | 47 | 10 | I        | OC.F.INT |          |
|                                | 8  | 22 | 7  | I    | EC.D.EXT |      | 15 | 47 | 34 | I        | EC.D.EXT |      | 2  | 50 | 50 | I        | OC.F.EXT |          |
|                                | 8  | 25 | 49 | I    | EC.D.INT |      | 15 | 51 | 15 | I        | EC.D.INT |      | 17 | 15 | 45 | II       | OM.D.EXT |          |
|                                | 11 | 53 | 31 | I    | OC.F.INT |      | 19 | 20 | 38 | I        | OC.F.INT |      | 17 | 19 | 49 | II       | OM.D.INT |          |
|                                | 11 | 57 | 11 | I    | OC.F.EXT |      | 19 | 24 | 18 | I        | OC.F.EXT |      | 19 | 55 | 8  | II       | PA.D.EXT |          |
|                                |    |    |    |      |          |      |    |    |    |          |          |      | 19 | 59 | 10 | II       | PA.D.INT |          |
| 18                             | 1  | 20 | 49 | II   | OM.D.EXT | 23   | 2  | 32 | 56 | III      | OM.D.EXT | 28   | 2  | 47 | 10 | I        | OC.F.INT |          |
|                                | 1  | 24 | 53 | II   | OM.D.INT |      | 2  | 43 | 32 | III      | OM.D.INT |      | 2  | 50 | 50 | I        | OC.F.EXT |          |
|                                | 3  | 54 | 56 | II   | PA.D.EXT |      | 5  | 23 | 33 | III      | OM.F.INT |      | 23 | 12 | 9  | I        | EC.D.PEN |          |
|                                | 3  | 58 | 58 | II   | PA.D.INT |      | 5  | 34 | 15 | III      | OM.F.EXT |      | 23 | 12 | 55 | I        | EC.D.INT |          |
|                                | 4  | 7  | 1  | II   | OM.F.INT |      | 7  | 43 | 5  | III      | PA.D.EXT |      | 23 | 16 | 36 | I        | EC.D.INT |          |
|                                | 4  | 11 | 6  | II   | OM.F.EXT |      | 7  | 53 | 19 | III      | PA.D.INT |      |    |    |    |          |          |          |
|                                | 5  | 40 | 55 | I    | OM.D.EXT |      | 9  | 32 | 22 | II       | EC.D.PEN |      | 20 | 47 | 14 | IV       | OC.F.INT |          |
|                                | 5  | 44 | 34 | I    | OM.D.INT |      | 9  | 33 | 54 | II       | EC.D.EXT |      | 20 | 47 | 14 | IV       | OC.F.INT |          |
|                                | 6  | 41 | 22 | II   | PA.F.INT |      | 9  | 37 | 54 | II       | EC.D.INT |      | 23 | 12 | 9  | I        | EC.D.PEN |          |
|                                | 6  | 45 | 24 | II   | PA.F.EXT |      | 10 | 38 | 29 | III      | PA.F.INT |      | 23 | 12 | 55 | I        | EC.D.INT |          |
|                                | 6  | 55 | 34 | I    | PA.D.EXT |      | 10 | 48 | 40 | III      | PA.F.EXT |      | 23 | 16 | 36 | I        | EC.D.INT |          |
|                                | 6  | 59 | 13 | I    | PA.D.INT |      | 13 | 5  | 58 | I        | OM.D.EXT |      | 23 | 16 | 36 | I        | EC.D.INT |          |
|                                | 7  | 54 | 11 | I    | OM.F.INT |      | 13 | 9  | 37 | I        | OM.D.INT |      | 20 | 2  | 17 | II       | OM.F.INT |          |
|                                | 7  | 57 | 51 | I    | OM.F.EXT |      | 14 | 22 | 2  | I        | PA.D.EXT |      | 20 | 6  | 21 | II       | OM.F.EXT |          |
|                                | 9  | 8  | 46 | I    | PA.F.INT |      | 14 | 25 | 40 | I        | PA.D.INT |      | 20 | 30 | 58 | I        | OM.D.EXT |          |
|                                | 9  | 12 | 24 | I    | PA.F.EXT |      | 14 | 51 | 59 | II       | OC.F.INT |      | 20 | 34 | 37 | I        | OM.D.INT |          |
|                                |    |    |    |      |          |      | 14 | 55 | 57 | II       | OC.F.EXT |      | 20 | 46 | 10 | IV       | EC.F.INT |          |
| 19                             | 2  | 49 | 52 | I    | EC.D.PEN | 15   | 19 | 14 | I  | OM.F.INT |          | 21   | 47 | 59 | I  | PA.D.EXT |          |          |
|                                | 2  | 50 | 38 | I    | EC.D.EXT |      | 15 | 22 | 53 | I        | OM.F.EXT |      | 21 | 51 | 37 | I        | PA.D.INT |          |
|                                | 2  | 54 | 19 | I    | EC.D.INT |      | 16 | 35 | 13 | I        | PA.F.INT |      | 22 | 41 | 49 | II       | PA.F.INT |          |
|                                | 6  | 22 | 39 | I    | OC.F.INT |      | 16 | 38 | 51 | I        | PA.F.EXT |      | 22 | 44 | 15 | I        | OM.F.INT |          |
|                                | 6  | 26 | 18 | I    | OC.F.EXT |      |    |    |    |          |          |      | 22 | 45 | 51 | II       | PA.F.EXT |          |
|                                | 10 | 40 | 14 | IV   | PA.D.EXT | 24   | 10 | 15 | 14 | I        | EC.D.PEN |      | 22 | 47 | 54 | I        | OM.F.EXT |          |
|                                | 11 | 4  | 48 | IV   | PA.D.INT |      | 10 | 16 | 0  | I        | EC.D.EXT |      |    |    |    |          |          |          |
|                                | 12 | 27 | 48 | III  | EC.D.PEN |      | 10 | 19 | 41 | I        | EC.D.INT |      | 29 | 0  | 1  | 11       | I        | PA.F.INT |
|                                | 12 | 31 | 42 | III  | EC.D.EXT |      | 13 | 49 | 31 | I        | OC.F.INT |      | 0  | 4  | 49 | I        | PA.F.EXT |          |
|                                | 12 | 41 | 46 | IV   | PA.F.INT |      | 13 | 53 | 11 | I        | OC.F.EXT |      | 17 | 40 | 41 | I        | EC.D.PEN |          |
|                                | 12 | 42 | 43 | III  | EC.D.INT |      |    |    |    |          |          |      | 17 | 41 | 26 | I        | EC.D.INT |          |
|                                | 13 | 6  | 0  | IV   | PA.F.EXT | 25   | 3  | 57 | 8  | II       | OM.D.EXT |      | 17 | 45 | 8  | I        | EC.D.INT |          |
|                                | 15 | 16 | 12 | III  | EC.F.INT |      | 4  | 1  | 12 | II       | OM.D.INT |      | 21 | 15 | 59 | I        | OC.F.INT |          |
|                                | 15 | 27 | 14 | III  | EC.F.EXT |      | 6  | 35 | 11 | II       | PA.D.EXT |      | 21 | 19 | 38 | I        | OC.F.EXT |          |
|                                | 15 | 31 | 8  | III  | EC.F.PEN |      | 6  | 39 | 13 | II       | PA.D.INT |      |    |    |    |          |          |          |
|                                | 17 | 37 | 55 | III  | OC.D.EXT |      | 6  | 43 | 32 | II       | OM.F.INT |      | 30 | 6  | 32 | 12       | III      | OM.D.EXT |
|                                | 17 | 48 | 14 | III  | OC.D.INT |      | 6  | 47 | 37 | II       | OM.F.EXT |      | 6  | 42 | 44 | III      | OM.D.INT |          |
|                                | 20 | 15 | 33 | II   | EC.D.PEN |      | 7  | 34 | 17 | I        | OM.D.EXT |      | 9  | 23 | 49 | III      | OM.F.INT |          |
|                                | 20 | 17 | 5  | II   | EC.D.EXT |      | 7  | 37 | 56 | I        | OM.D.INT |      | 9  | 34 | 26 | III      | OM.F.EXT |          |
|                                | 20 | 21 | 6  | II   | EC.D.INT |      | 8  | 50 | 43 | I        | PA.D.EXT |      | 11 | 47 | 20 | III      | PA.D.EXT |          |
|                                | 20 | 35 | 27 | III  | OC.F.INT |      | 8  | 54 | 21 | I        | PA.D.INT |      | 11 | 57 | 29 | III      | PA.D.INT |          |
|                                | 20 | 45 | 46 | III  | OC.F.EXT |      | 9  | 21 | 47 | II       | PA.F.INT |      | 12 | 5  | 57 | II       | EC.D.PEN |          |
|                                |    |    |    |      |          |      | 9  | 25 | 49 | II       | PA.F.EXT |      | 12 | 7  | 29 | II       | EC.D.INT |          |
| 20                             | 0  | 9  | 17 | I    | OM.D.EXT |      | 9  | 47 | 33 | I        | OM.F.INT |      | 12 | 11 | 29 | II       | EC.D.INT |          |
|                                | 0  | 12 | 56 | I    | OM.D.INT |      | 9  | 51 | 13 | I        | OM.F.EXT |      | 14 | 43 | 42 | III      | PA.F.INT |          |
|                                | 1  | 24 | 28 | I    | PA.D.EXT |      | 11 | 3  | 55 | I        | PA.F.INT |      | 14 | 53 | 48 | III      | PA.F.EXT |          |
|                                | 1  | 28 | 6  | I    | PA.D.INT |      | 11 | 7  | 33 | I        | PA.F.EXT |      | 14 | 59 | 18 | I        | OM.D.INT |          |
|                                | 1  | 33 | 16 | II   | OC.F.INT |      | 15 | 2  | 26 | IV       | EC.D.INT |      | 15 | 2  | 56 | I        | OM.D.INT |          |
|                                | 1  | 37 | 14 | II   | OC.F.EXT |      |    |    |    |          |          |      | 16 | 16 | 30 | I        | PA.D.EXT |          |
|                                | 2  | 22 | 33 | I    | OM.F.INT | 26   | 4  | 43 | 45 | I        | EC.D.PEN |      | 16 | 20 | 8  | I        | PA.D.INT |          |
|                                | 2  | 26 | 13 | I    | OM.F.EXT |      | 4  | 44 | 31 | I        | EC.D.EXT |      | 17 | 12 | 35 | I        | OM.F.INT |          |
|                                | 3  | 37 | 39 | I    | PA.F.INT |      | 4  | 48 | 12 | I        | EC.D.INT |      | 17 | 16 | 14 | I        | OM.F.EXT |          |
|                                | 3  | 41 | 17 | I    | PA.F.EXT |      | 8  | 18 | 26 | I        | OC.F.INT |      | 17 | 28 | 3  | II       | OC.F.INT |          |
|                                | 21 | 18 | 17 | I    | EC.D.PEN |      | 8  | 22 | 6  | I        | OC.F.EXT |      | 17 | 32 | 0  | II       | OC.F.EXT |          |
|                                | 21 | 19 | 2  | I    | EC.D.EXT |      | 16 | 26 | 11 | III      | EC.D.PEN |      | 18 | 29 | 43 | I        | PA.F.INT |          |
|                                | 21 | 22 | 44 | I    | EC.D.INT |      | 16 | 30 | 4  | III      | EC.D.EXT |      | 18 | 33 | 21 | I        | PA.F.EXT |          |

## 2001 - CONFIGURATIONS DES SATELLITES GALILÉENS DE JUPITER



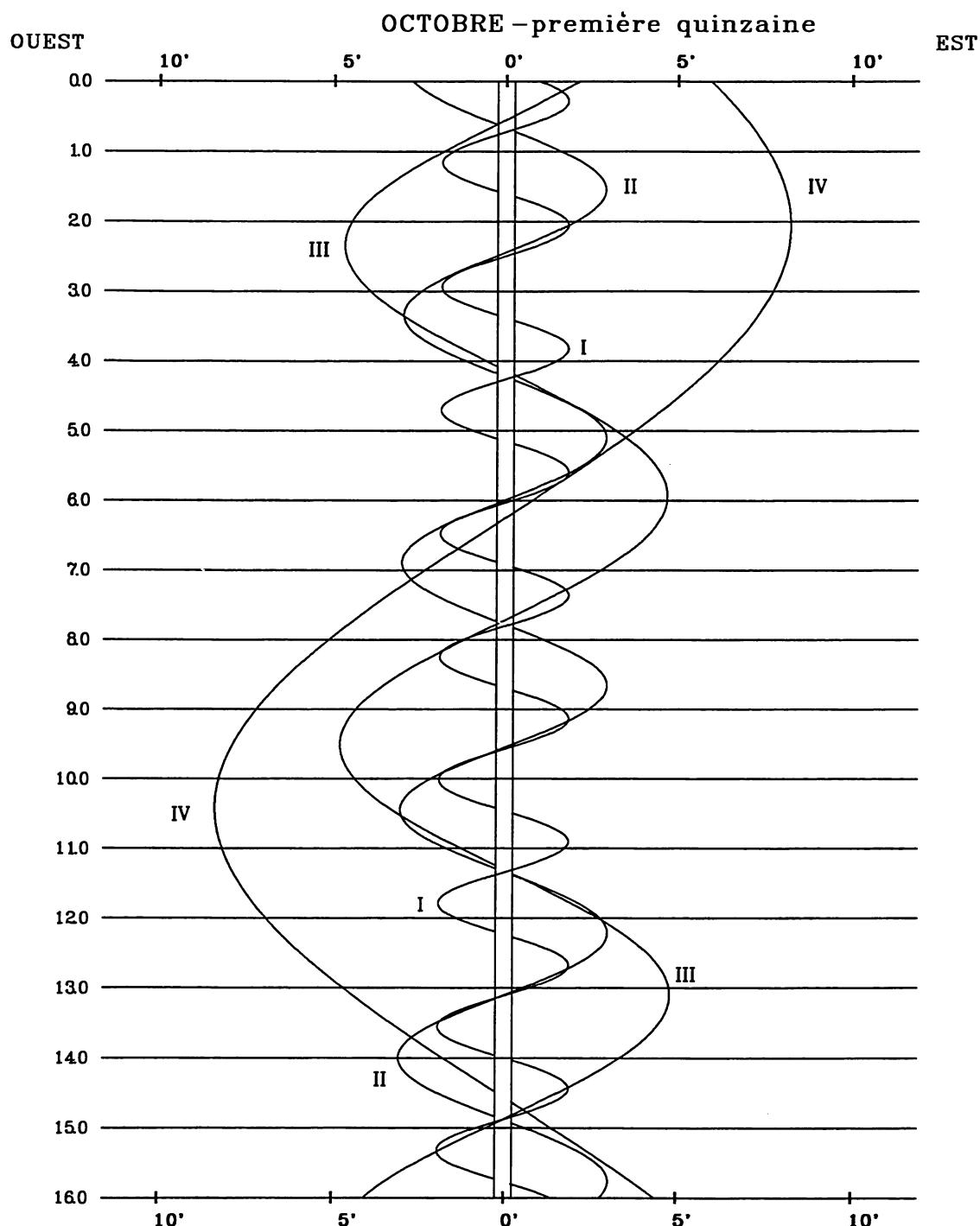
Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter



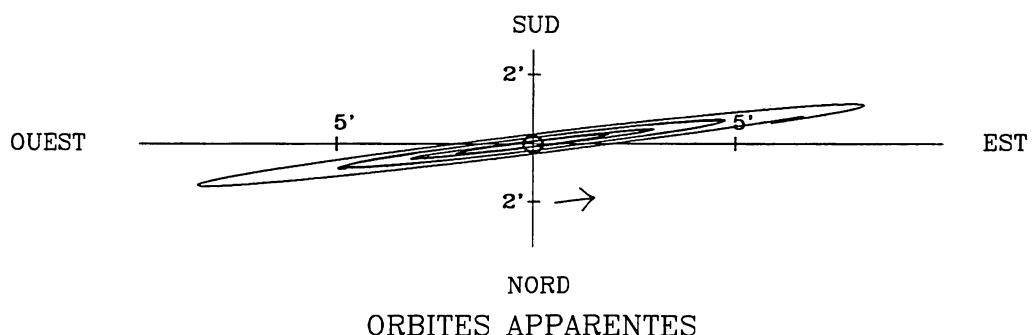
**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
 (Temps Terrestre)

| OCTOBRE - PREMIÈRE QUINZAINE |    |    |    |      |          |      |    |    |     |          |          |      |    |    |          |          |          |
|------------------------------|----|----|----|------|----------|------|----|----|-----|----------|----------|------|----|----|----------|----------|----------|
| jour                         | h  | m  | s  | SAT. | TYPE     | jour | h  | m  | s   | SAT.     | TYPE     | jour | h  | m  | s        | SAT.     | TYPE     |
| 1                            | 12 | 9  | 7  | I    | EC.D.PEN | 1    | 55 | 0  | I   | PA.F.INT |          | 7    | 10 | 3  | I        | PA.D.INT |          |
|                              | 12 | 9  | 52 | I    | EC.D.EXT | 1    | 58 | 37 | I   | PA.F.EXT |          | 8    | 2  | 33 | I        | OM.F.INT |          |
|                              | 12 | 13 | 34 | I    | EC.D.INT | 5    | 2  | 45 | IV  | PA.D.EXT |          | 8    | 6  | 12 | I        | OM.F.EXT |          |
|                              | 15 | 44 | 38 | I    | OC.F.INT | 5    | 24 | 8  | IV  | PA.D.INT |          | 8    | 44 | 27 | III      | OC.F.INT |          |
|                              | 15 | 48 | 17 | I    | OC.F.EXT | 7    | 21 | 9  | IV  | PA.F.INT |          | 8    | 54 | 34 | III      | OC.F.EXT |          |
|                              |    |    |    |      |          | 7    | 42 | 14 | IV  | PA.F.EXT |          | 9    | 18 | 34 | II       | OC.F.INT |          |
| 2                            | 6  | 33 | 30 | II   | OM.D.EXT | 19   | 34 | 33 | I   | EC.D.PEN |          | 9    | 19 | 43 | I        | PA.F.INT |          |
|                              | 6  | 37 | 34 | II   | OM.D.INT | 19   | 35 | 19 | I   | EC.D.EXT |          | 9    | 22 | 31 | II       | OC.F.EXT |          |
|                              | 9  | 13 | 43 | II   | PA.D.EXT | 19   | 39 | 0  | I   | EC.D.INT |          | 9    | 23 | 21 | I        | PA.F.EXT |          |
|                              | 9  | 17 | 45 | II   | PA.D.INT | 23   | 10 | 23 | I   | OC.F.INT |          |      |    |    |          |          |          |
|                              | 9  | 20 | 9  | II   | OM.F.INT | 23   | 14 | 2  | I   | OC.F.EXT | 12       | 2    | 59 | 55 | I        | EC.D.PEN |          |
|                              | 9  | 24 | 13 | II   | OM.F.EXT |      |    |    |     |          |          | 3    | 0  | 40 | I        | EC.D.EXT |          |
|                              | 9  | 27 | 36 | I    | OM.D.EXT | 7    | 10 | 30 | III | OM.D.EXT |          | 3    | 4  | 21 | I        | EC.D.INT |          |
|                              | 9  | 31 | 15 | I    | OM.D.INT | 10   | 40 | 59 | III | OM.D.INT |          | 6    | 35 | 28 | I        | OC.F.INT |          |
|                              | 10 | 44 | 58 | I    | PA.D.EXT | 13   | 23 | 9  | III | OM.F.INT |          | 6    | 39 | 7  | I        | OC.F.EXT |          |
|                              | 10 | 48 | 36 | I    | PA.D.INT | 13   | 33 | 42 | III | OM.F.EXT | 22       | 28   | 29 | II | OM.D.EXT |          |          |
|                              | 11 | 40 | 54 | I    | OM.F.INT | 14   | 39 | 29 | II  | EC.D.PEN |          | 22   | 32 | 32 | II       | OM.D.INT |          |
|                              | 11 | 44 | 33 | I    | OM.F.EXT | 14   | 41 | 1  | II  | EC.D.EXT |          |      |    |    |          |          |          |
|                              | 12 | 0  | 29 | II   | PA.F.INT | 14   | 45 | 1  | II  | EC.D.INT | 13       | 0    | 17 | 29 | I        | OM.D.EXT |          |
|                              | 12 | 4  | 31 | II   | PA.F.EXT | 15   | 46 | 52 | III | PA.D.EXT |          | 0    | 21 | 7  | I        | OM.D.INT |          |
|                              | 12 | 58 | 11 | I    | PA.F.INT | 15   | 56 | 57 | III | PA.D.INT |          | 1    | 8  | 15 | II       | PA.D.EXT |          |
|                              | 13 | 1  | 49 | I    | PA.F.EXT | 16   | 52 | 33 | I   | OM.D.EXT |          | 1    | 12 | 17 | II       | PA.D.INT |          |
|                              |    |    |    |      |          | 16   | 56 | 12 | I   | OM.D.INT |          | 1    | 15 | 30 | II       | OM.F.INT |          |
| 3                            | 6  | 37 | 38 | I    | EC.D.PEN | 18   | 10 | 2  | I   | PA.D.EXT |          | 1    | 19 | 34 | II       | OM.F.EXT |          |
|                              | 6  | 38 | 23 | I    | EC.D.EXT | 18   | 13 | 40 | I   | PA.D.INT |          | 1    | 34 | 32 | I        | PA.D.EXT |          |
|                              | 6  | 42 | 4  | I    | EC.D.INT | 18   | 44 | 7  | III | PA.F.INT |          | 1    | 38 | 10 | I        | PA.D.INT |          |
|                              | 10 | 13 | 19 | I    | OC.F.INT | 18   | 54 | 10 | III | PA.F.EXT |          | 2    | 30 | 53 | I        | OM.F.INT |          |
|                              | 10 | 16 | 58 | I    | OC.F.EXT | 19   | 5  | 54 | I   | OM.F.INT |          | 2    | 34 | 32 | I        | OM.F.EXT |          |
|                              | 20 | 24 | 42 | III  | EC.D.PEN | 19   | 9  | 33 | I   | OM.F.EXT |          | 3    | 47 | 51 | I        | PA.F.INT |          |
|                              | 20 | 28 | 34 | III  | EC.D.EXT | 20   | 2  | 14 | II  | OC.F.INT |          | 3    | 51 | 28 | I        | PA.F.EXT |          |
|                              | 20 | 39 | 26 | III  | EC.D.INT | 20   | 6  | 11 | II  | OC.F.EXT |          | 3    | 55 | 16 | II       | PA.F.INT |          |
|                              | 23 | 15 | 21 | III  | EC.F.INT | 20   | 23 | 18 | I   | PA.F.INT |          | 3    | 59 | 17 | II       | PA.F.EXT |          |
|                              | 23 | 26 | 13 | III  | EC.F.EXT | 20   | 26 | 55 | I   | PA.F.EXT |          | 20   | 58 | 25 | IV       | EC.F.INT |          |
|                              | 23 | 30 | 5  | III  | EC.F.PEN |      |    |    |     |          |          | 21   | 28 | 26 | I        | EC.D.PEN |          |
|                              |    |    |    |      |          | 8    | 14 | 2  | 59  | I        | EC.D.PEN |      | 21 | 29 | 12       | I        | EC.D.EXT |
| 4                            | 1  | 22 | 44 | II   | EC.D.PEN | 14   | 3  | 45 | I   | EC.D.EXT |          | 21   | 32 | 53 | I        | EC.D.INT |          |
|                              | 1  | 24 | 16 | II   | EC.D.EXT | 14   | 7  | 26 | I   | EC.D.INT |          |      |    |    |          |          |          |
|                              | 1  | 28 | 16 | III  | EC.D.INT | 17   | 38 | 47 | I   | OC.F.INT | 14       | 0    | 0  | 52 | IV       | EC.D.PEN |          |
|                              | 1  | 45 | 9  | III  | OC.D.EXT | 17   | 42 | 26 | I   | OC.F.EXT |          | 0    | 20 | 43 | IV       | EC.D.EXT |          |
|                              | 1  | 55 | 20 | III  | OC.D.INT |      |    |    |     |          |          | 1    | 3  | 46 | I        | OC.F.INT |          |
|                              | 3  | 55 | 56 | I    | OM.D.EXT | 9    | 9  | 9  | 51  | II       | OM.D.EXT |      | 1  | 7  | 25       | I        | OC.F.EXT |
|                              | 3  | 59 | 35 | I    | OM.D.INT | 9    | 13 | 55 | II  | OM.D.INT |          | 1    | 53 | 5  | IV       | EC.F.EXT |          |
|                              | 4  | 44 | 52 | III  | OC.F.INT | 11   | 20 | 51 | I   | OM.D.EXT |          | 2    | 12 | 57 | IV       | EC.F.PEN |          |
|                              | 4  | 55 | 3  | III  | OC.F.EXT | 11   | 24 | 30 | I   | OM.D.INT |          | 5    | 15 | 23 | IV       | EC.D.INT |          |
|                              | 5  | 13 | 24 | I    | PA.D.EXT | 11   | 50 | 18 | II  | PA.D.EXT |          | 12   | 10 | 52 | IV       | OC.D.INT |          |
|                              | 5  | 17 | 1  | I    | PA.D.INT | 11   | 54 | 19 | II  | PA.D.INT |          | 12   | 31 | 21 | IV       | OC.D.INT |          |
|                              | 6  | 9  | 15 | I    | OM.F.INT | 11   | 56 | 45 | II  | OM.F.INT |          | 14   | 28 | 39 | III      | OM.D.EXT |          |
|                              | 6  | 12 | 54 | I    | OM.F.EXT | 12   | 0  | 49 | II  | OM.F.EXT |          | 14   | 38 | 25 | IV       | OC.F.INT |          |
|                              | 6  | 45 | 22 | II   | OC.F.INT | 12   | 38 | 15 | I   | PA.D.EXT |          | 14   | 39 | 2  | III      | OM.D.INT |          |
|                              | 6  | 49 | 19 | II   | OC.F.EXT | 12   | 41 | 53 | I   | PA.D.INT |          | 14   | 58 | 54 | IV       | OC.F.EXT |          |
|                              | 7  | 26 | 38 | I    | PA.F.INT | 13   | 34 | 12 | I   | OM.F.INT |          | 17   | 12 | 56 | II       | EC.D.PEN |          |
|                              | 7  | 30 | 15 | I    | PA.F.EXT | 13   | 37 | 51 | I   | OM.F.EXT |          | 17   | 14 | 28 | II       | EC.D.EXT |          |
|                              |    |    |    |      |          | 14   | 37 | 13 | II  | PA.F.INT |          | 17   | 18 | 27 | II       | EC.D.INT |          |
| 5                            | 1  | 6  | 2  | I    | EC.D.PEN | 14   | 41 | 15 | II  | PA.F.EXT |          | 17   | 22 | 20 | III      | OM.F.INT |          |
|                              | 1  | 6  | 48 | I    | EC.D.EXT | 14   | 51 | 32 | I   | PA.F.INT |          | 17   | 32 | 48 | III      | OM.F.EXT |          |
|                              | 1  | 10 | 29 | I    | EC.D.INT | 14   | 55 | 9  | I   | PA.F.EXT |          | 18   | 45 | 46 | I        | OM.D.INT |          |
|                              | 4  | 41 | 49 | I    | OC.F.INT |      |    |    |     |          |          | 18   | 49 | 25 | I        | OM.D.INT |          |
|                              | 4  | 45 | 28 | I    | OC.F.EXT | 10   | 8  | 31 | 30  | I        | EC.D.PEN |      | 19 | 42 | 7        | III      | PA.D.EXT |
|                              | 16 | 54 | 21 | IV   | OM.D.EXT | 8    | 32 | 16 | I   | EC.D.EXT |          | 19   | 52 | 9  | III      | PA.D.INT |          |
|                              | 17 | 29 | 7  | IV   | OM.D.INT | 8    | 35 | 57 | I   | EC.D.INT |          | 20   | 2  | 34 | I        | PA.D.EXT |          |
|                              | 18 | 18 | 48 | IV   | OM.F.INT | 12   | 7  | 13 | I   | OC.F.INT |          | 20   | 6  | 11 | I        | PA.D.INT |          |
|                              | 18 | 55 | 18 | IV   | OM.F.EXT | 12   | 10 | 52 | I   | OC.F.EXT |          | 20   | 59 | 12 | I        | OM.F.INT |          |
|                              | 19 | 52 | 6  | II   | OM.D.EXT |      |    |    |     |          |          | 21   | 2  | 51 | I        | OM.F.EXT |          |
|                              | 19 | 56 | 10 | II   | OM.D.INT | 11   | 0  | 23 | 55  | III      | EC.D.PEN |      | 22 | 15 | 54       | I        | PA.F.INT |
|                              | 22 | 24 | 15 | I    | OM.D.EXT | 0    | 27 | 45 | III | EC.D.EXT |          | 22   | 19 | 31 | I        | PA.F.EXT |          |
|                              | 22 | 27 | 54 | I    | OM.D.INT | 0    | 38 | 33 | III | EC.D.INT |          | 22   | 34 | 23 | II       | OC.F.INT |          |
|                              | 22 | 32 | 42 | II   | PA.D.EXT | 3    | 15 | 41 | III | EC.F.INT |          | 22   | 38 | 19 | II       | OC.F.EXT |          |
|                              | 22 | 36 | 43 | II   | PA.D.INT | 3    | 26 | 29 | III | EC.F.EXT |          | 22   | 40 | 12 | III      | PA.F.INT |          |
|                              | 22 | 38 | 53 | II   | OM.F.INT | 3    | 30 | 19 | III | EC.F.PEN |          | 22   | 50 | 11 | III      | PA.F.EXT |          |
|                              | 22 | 42 | 57 | II   | OM.F.EXT | 3    | 56 | 14 | II  | EC.D.PEN |          |      |    |    |          |          |          |
|                              | 23 | 41 | 45 | I    | PA.D.EXT | 3    | 57 | 45 | II  | EC.D.EXT | 15       | 15   | 56 | 52 | I        | EC.D.PEN |          |
|                              | 23 | 45 | 23 | I    | PA.D.INT | 4    | 1  | 45 | II  | EC.D.INT |          | 15   | 57 | 38 | I        | EC.D.EXT |          |
|                              |    |    |    |      |          | 5    | 43 | 49 | III | OC.D.EXT |          | 16   | 1  | 19 | I        | EC.D.INT |          |
| 6                            | 0  | 37 | 34 | I    | OM.F.INT | 5    | 49 | 10 | I   | OM.D.EXT |          | 19   | 31 | 54 | I        | OC.F.INT |          |
|                              | 0  | 41 | 13 | I    | OM.F.EXT | 5    | 52 | 49 | I   | OM.D.INT |          | 19   | 35 | 34 | I        | OC.F.EXT |          |
|                              | 1  | 19 | 33 | II   | PA.F.INT | 5    | 53 | 56 | III | OC.D.INT |          |      |    |    |          |          |          |
|                              | 1  | 23 | 34 | II   | PA.F.EXT | 7    | 6  | 26 | I   | PA.D.EXT |          |      |    |    |          |          |          |

## 2001 - CONFIGURATIONS DES SATELLITES GALILÉENS DE JUPITER



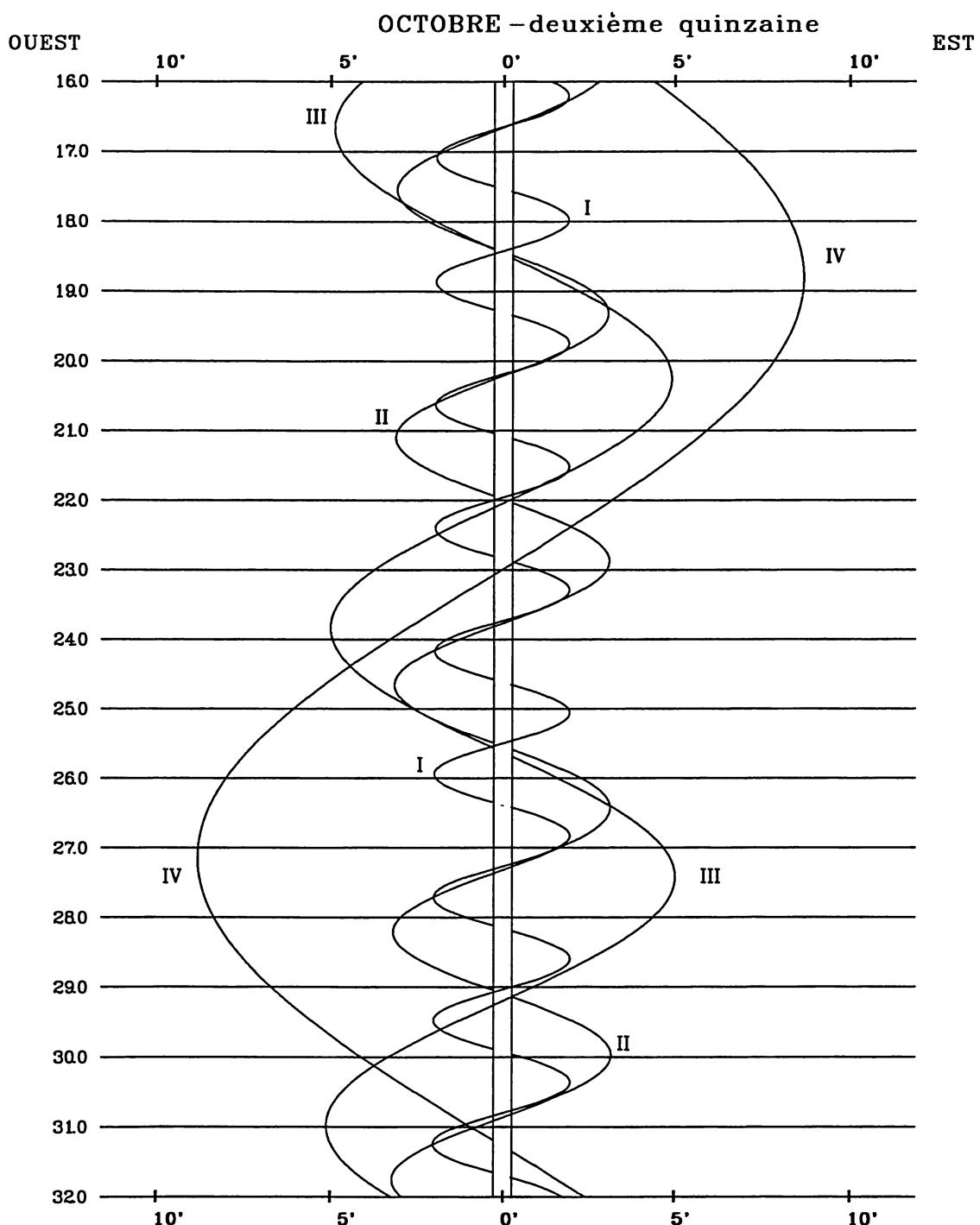
Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter



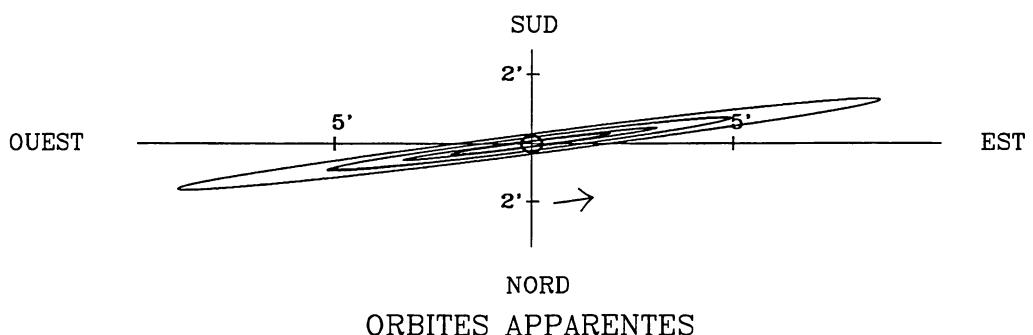
**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
(Temps Terrestre)

| OCTOBRE - DEUXIÈME QUINZAINE |    |    |     |          |          |      |    |     |          |          |          |      |    |    |          |          |          |
|------------------------------|----|----|-----|----------|----------|------|----|-----|----------|----------|----------|------|----|----|----------|----------|----------|
| jour                         | h  | m  | s   | SAT.     | TYPE     | jour | h  | m   | s        | SAT.     | TYPE     | jour | h  | m  | s        | SAT.     | TYPE     |
| 16                           | 11 | 46 | 15  | II       | OM.D.EXT | 21   | 21 | 15  | III      | OM.F.INT | 27       | 3    | 41 | 14 | II       | OM.D.EXT |          |
|                              | 11 | 50 | 19  | II       | OM.D.INT | 21   | 31 | 40  | III      | OM.F.EXT |          | 3    | 45 | 17 | II       | OM.D.INT |          |
| 13                           | 14 | 3  | I   | OM.D.EXT | 21       | 54   | 2  | I   | PA.D.EXT |          | 4        | 3    | 50 | I  | OM.D.EXT |          |          |
| 13                           | 17 | 42 | I   | OM.D.INT | 21       | 57   | 40 | I   | PA.D.INT |          | 4        | 7    | 28 | I  | OM.D.INT |          |          |
| 14                           | 24 | 49 | II  | PA.D.EXT | 22       | 52   | 30 | I   | OM.F.INT |          | 5        | 16   | 56 | I  | PA.D.EXT |          |          |
| 14                           | 28 | 51 | II  | PA.D.INT | 22       | 56   | 9  | I   | OM.F.EXT |          | 5        | 20   | 34 | I  | PA.D.INT |          |          |
| 14                           | 30 | 31 | I   | PA.D.EXT | 23       | 32   | 52 | III | PA.D.EXT |          | 6        | 12   | 48 | II | PA.D.EXT |          |          |
| 14                           | 33 | 25 | II  | OM.F.INT | 23       | 42   | 51 | III | PA.D.INT |          | 6        | 16   | 49 | II | PA.D.INT |          |          |
| 14                           | 34 | 9  | I   | PA.D.INT |          |      |    |     |          |          | 6        | 17   | 31 | I  | OM.F.INT |          |          |
| 14                           | 37 | 29 | II  | OM.F.EXT | 22       | 0    | 7  | 28  | I        | PA.F.INT |          | 6    | 21 | 9  | I        | OM.F.EXT |          |
| 15                           | 27 | 31 | I   | OM.F.INT |          | 0    | 11 | 5   | I        | PA.F.EXT |          | 6    | 28 | 52 | II       | OM.F.INT |          |
| 15                           | 31 | 10 | I   | OM.F.EXT |          | 1    | 4  | 23  | II       | OC.F.INT |          | 6    | 32 | 55 | II       | OM.F.EXT |          |
| 16                           | 43 | 53 | I   | PA.F.INT |          | 1    | 8  | 19  | II       | OC.F.EXT |          | 7    | 30 | 28 | I        | PA.F.INT |          |
| 16                           | 47 | 30 | I   | PA.F.EXT |          | 2    | 31 | 43  | III      | PA.F.INT |          | 7    | 34 | 5  | I        | PA.F.EXT |          |
| 17                           | 11 | 55 | II  | PA.F.INT |          | 2    | 41 | 39  | III      | PA.F.EXT |          | 9    | 0  | 9  | II       | PA.F.INT |          |
| 17                           | 15 | 56 | II  | PA.F.EXT |          | 10   | 51 | 21  | IV       | OM.D.EXT |          | 9    | 4  | 9  | II       | PA.F.EXT |          |
|                              |    |    |     |          |          | 11   | 18 | 33  | IV       | OM.D.INT |          |      |    |    |          |          |          |
| 17                           | 10 | 25 | 24  | I        | EC.D.PEN | 12   | 40 | 44  | IV       | OM.F.INT | 28       | 1    | 16 | 16 | I        | EC.D.PEN |          |
| 10                           | 26 | 9  | I   | EC.D.EXT |          | 13   | 8  | 47  | IV       | OM.F.EXT |          | 1    | 17 | 1  | I        | EC.D.EXT |          |
| 10                           | 29 | 50 | I   | EC.D.INT |          | 17   | 50 | 47  | I        | EC.D.PEN |          | 1    | 20 | 42 | I        | EC.D.INT |          |
| 14                           | 0  | 4  | I   | OC.F.INT |          | 17   | 51 | 32  | I        | EC.D.EXT |          | 4    | 47 | 15 | I        | OC.F.INT |          |
| 14                           | 3  | 43 | I   | OC.F.EXT |          | 17   | 55 | 13  | I        | EC.D.INT |          | 4    | 50 | 54 | I        | OC.F.EXT |          |
|                              |    |    |     |          |          | 21   | 23 | 56  | I        | OC.F.INT |          | 22   | 19 | 48 | II       | EC.D.PEN |          |
| 18                           | 4  | 22 | 49  | III      | EC.D.PEN | 21   | 27 | 35  | I        | OC.F.EXT |          | 22   | 21 | 19 | II       | EC.D.EXT |          |
| 4                            | 26 | 38 | III | EC.D.EXT |          | 22   | 35 | 56  | IV       | PA.D.EXT |          | 22   | 24 | 20 | III      | OM.D.EXT |          |
| 4                            | 37 | 21 | III | EC.D.INT |          | 22   | 55 | 33  | IV       | PA.D.INT |          | 22   | 25 | 18 | II       | EC.D.INT |          |
| 6                            | 29 | 39 | II  | EC.D.PEN |          |      |    |     |          |          |          | 22   | 32 | 7  | I        | OM.D.EXT |          |
| 6                            | 31 | 11 | II  | EC.D.EXT | 23       | 1    | 5  | 42  | IV       | PA.F.INT |          | 22   | 34 | 37 | III      | OM.D.INT |          |
| 6                            | 35 | 10 | II  | EC.D.INT |          | 1    | 25 | 5   | IV       | PA.F.EXT |          | 22   | 35 | 45 | I        | OM.D.INT |          |
| 7                            | 15 | 41 | III | EC.F.INT |          | 14   | 22 | 37  | II       | OM.D.EXT |          | 23   | 44 | 25 | I        | PA.D.EXT |          |
| 7                            | 26 | 25 | III | EC.F.EXT |          | 14   | 26 | 40  | II       | OM.D.INT |          | 23   | 48 | 2  | I        | PA.D.EXT |          |
| 7                            | 30 | 13 | III | EC.F.PEN |          | 15   | 7  | 14  | I        | OM.D.EXT |          |      |    |    |          |          |          |
| 7                            | 42 | 22 | I   | OM.D.EXT |          | 15   | 10 | 52  | I        | OM.D.INT | 29       | 0    | 45 | 50 | I        | OM.F.INT |          |
| 7                            | 46 | 1  | I   | OM.D.INT |          | 16   | 21 | 44  | I        | PA.D.EXT |          | 0    | 49 | 29 | I        | OM.F.EXT |          |
| 8                            | 58 | 26 | I   | PA.D.EXT |          | 16   | 25 | 21  | I        | PA.D.INT |          | 1    | 20 | 17 | III      | OM.F.INT |          |
| 9                            | 2  | 4  | I   | PA.D.INT |          | 16   | 57 | 6   | II       | PA.D.EXT |          | 1    | 30 | 38 | III      | OM.F.EXT |          |
| 9                            | 37 | 46 | III | OC.D.EXT |          | 17   | 1  | 7   | II       | PA.D.INT |          | 1    | 57 | 59 | I        | PA.F.INT |          |
| 9                            | 47 | 50 | III | OC.D.INT |          | 17   | 10 | 5   | II       | OM.F.INT |          | 2    | 1  | 36 | I        | PA.F.EXT |          |
| 9                            | 55 | 51 | I   | OM.F.INT |          | 17   | 14 | 9   | II       | OM.F.EXT |          | 3    | 19 | 10 | III      | PA.D.EXT |          |
| 9                            | 59 | 30 | I   | OM.F.EXT |          | 17   | 20 | 49  | I        | OM.F.INT |          | 3    | 29 | 6  | III      | PA.D.INT |          |
| 11                           | 11 | 49 | I   | PA.F.INT |          | 17   | 24 | 28  | I        | OM.F.EXT |          | 3    | 32 | 12 | II       | OC.F.INT |          |
| 11                           | 15 | 26 | I   | PA.F.EXT |          | 18   | 35 | 11  | I        | PA.F.INT |          | 3    | 36 | 8  | II       | OC.F.EXT |          |
| 11                           | 49 | 38 | II  | OC.F.INT |          | 18   | 38 | 49  | I        | PA.F.EXT |          | 6    | 18 | 42 | III      | PA.F.INT |          |
| 11                           | 53 | 35 | II  | OC.F.EXT |          | 19   | 44 | 21  | II       | PA.F.INT |          | 6    | 28 | 36 | III      | PA.F.EXT |          |
| 12                           | 39 | 11 | III | OC.F.INT |          | 19   | 48 | 22  | II       | PA.F.EXT |          | 19   | 44 | 43 | I        | EC.D.PEN |          |
| 12                           | 49 | 14 | III | OC.F.EXT |          |      |    |     |          |          |          | 19   | 45 | 28 | I        | EC.D.EXT |          |
|                              |    |    |     |          |          | 24   | 12 | 19  | 19       | I        | EC.D.PEN |      | 19 | 49 | 9        | I        | EC.D.INT |
| 19                           | 4  | 53 | 48  | I        | EC.D.PEN |      | 12 | 20  | 4        | I        | EC.D.EXT |      | 23 | 14 | 50       | I        | OC.F.INT |
| 4                            | 54 | 34 | I   | EC.D.EXT |          | 12   | 23 | 45  | I        | EC.D.INT |          | 23   | 18 | 29 | I        | OC.F.EXT |          |
| 4                            | 58 | 15 | I   | EC.D.INT |          | 15   | 51 | 49  | I        | OC.F.INT |          |      |    |    |          |          |          |
| 8                            | 28 | 2  | I   | OC.F.INT |          | 15   | 55 | 28  | I        | OC.F.EXT | 30       | 16   | 59 | 0  | II       | OM.D.EXT |          |
|                              |    |    |     |          |          | 25   | 8  | 22  | 23       | III      | EC.D.PEN |      | 17 | 3  | 3        | II       | OM.D.INT |
| 20                           | 1  | 4  | 52  | II       | OM.D.EXT |      | 8  | 26  | 10       | III      | EC.D.EXT |      | 17 | 4  | 2        | I        | OM.D.INT |
| 1                            | 8  | 55 | II  | OM.D.INT |          | 8    | 36 | 48  | III      | EC.D.INT |          | 17   | 58 | 23 | IV       | EC.D.PEN |          |
| 2                            | 10 | 40 | I   | OM.D.EXT |          | 9    | 3  | 6   | II       | EC.D.PEN |          | 18   | 11 | 50 | I        | PA.D.EXT |          |
| 2                            | 14 | 19 | I   | OM.D.INT |          | 9    | 4  | 37  | II       | EC.D.EXT |          | 18   | 15 | 25 | IV       | EC.D.INT |          |
| 3                            | 26 | 17 | I   | PA.D.EXT |          | 9    | 8  | 36  | II       | EC.D.INT |          | 18   | 15 | 27 | I        | PA.D.EXT |          |
| 3                            | 29 | 54 | I   | PA.D.INT |          | 9    | 35 | 32  | I        | OM.D.EXT |          | 18   | 57 | 1  | IV       | EC.D.INT |          |
| 3                            | 41 | 41 | II  | PA.D.EXT |          | 9    | 39 | 10  | I        | OM.D.INT |          | 19   | 14 | 10 | I        | OM.F.INT |          |
| 3                            | 45 | 42 | II  | PA.D.INT |          | 10   | 49 | 22  | I        | PA.D.EXT |          | 19   | 17 | 48 | I        | OM.F.EXT |          |
| 3                            | 52 | 11 | II  | OM.F.INT |          | 10   | 52 | 59  | I        | PA.D.INT |          | 19   | 27 | 3  | II       | PA.D.EXT |          |
| 3                            | 56 | 15 | II  | OM.F.EXT |          | 11   | 16 | 20  | III      | EC.F.INT |          | 19   | 27 | 17 | IV       | EC.F.INT |          |
| 4                            | 24 | 11 | I   | OM.F.INT |          | 11   | 26 | 59  | III      | EC.F.EXT |          | 19   | 31 | 4  | II       | PA.D.EXT |          |
| 4                            | 27 | 50 | I   | OM.F.EXT |          | 11   | 30 | 46  | III      | EC.F.PEN |          | 19   | 46 | 47 | II       | OM.F.EXT |          |
| 5                            | 39 | 41 | I   | PA.F.INT |          | 11   | 49 | 10  | I        | OM.F.INT |          | 19   | 50 | 50 | II       | OM.F.EXT |          |
| 5                            | 43 | 19 | I   | PA.F.EXT |          | 11   | 52 | 49  | I        | OM.F.EXT |          | 20   | 8  | 54 | IV       | EC.F.EXT |          |
| 6                            | 28 | 51 | II  | PA.F.EXT |          | 13   | 2  | 51  | I        | PA.F.INT |          | 20   | 25 | 26 | I        | PA.F.EXT |          |
| 6                            | 32 | 52 | II  | PA.F.EXT |          | 13   | 6  | 28  | I        | PA.F.EXT |          | 20   | 25 | 55 | IV       | EC.F.PEN |          |
| 23                           | 22 | 20 | I   | EC.D.PEN |          | 13   | 27 | 44  | III      | OC.D.EXT |          | 20   | 29 | 3  | I        | PA.F.EXT |          |
| 23                           | 23 | 6  | I   | EC.D.EXT |          | 13   | 37 | 45  | III      | OC.D.INT |          | 22   | 14 | 29 | II       | PA.F.EXT |          |
| 23                           | 26 | 47 | I   | EC.D.INT |          | 14   | 18 | 34  | II       | OC.F.INT |          | 22   | 18 | 30 | II       | PA.F.EXT |          |
|                              |    |    |     |          |          | 14   | 22 | 31  | II       | OC.F.EXT |          |      |    |    |          |          |          |
| 21                           | 2  | 56 | 4   | I        | OC.F.INT | 16   | 29 | 46  | III      | OC.F.INT | 31       | 5    | 16 | 11 | IV       | OC.D.EXT |          |
| 2                            | 59 | 43 | I   | OC.F.EXT |          | 16   | 39 | 47  | III      | OC.F.EXT |          | 5    | 35 | 20 | IV       | OC.D.INT |          |
| 18                           | 26 | 28 | III | OM.D.EXT |          | 26   | 6  | 47  | 43       | I        | EC.D.PEN |      | 7  | 52 | 49       | IV       | OC.F.EXT |
| 18                           | 36 | 48 | III | OM.D.INT |          | 6    | 48 | 29  | I        | EC.D.EXT |          | 14   | 13 | 15 | I        | EC.D.PEN |          |
| 19                           | 46 | 22 | II  | EC.D.PEN |          | 6    | 52 | 10  | I        | EC.D.INT |          | 14   | 14 | 1  | I        | EC.D.EXT |          |
| 19                           | 47 | 53 | II  | EC.D.EXT |          | 10   | 19 | 31  | I        | EC.F.INT |          | 14   | 17 | 41 | I        | EC.D.INT |          |
| 19                           | 51 | 52 | II  | EC.D.INT |          | 10   | 23 | 10  | I        | OC.F.EXT |          | 17   | 42 | 26 | I        | OC.F.INT |          |
| 20                           | 38 | 57 | I   | OM.D.EXT |          | 10   |    |     |          |          |          | 17   | 46 | 5  | I        | OC.F.EXT |          |

## 2001 - CONFIGURATIONS DES SATELLITES GALILIENS DE JUPITER



Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter

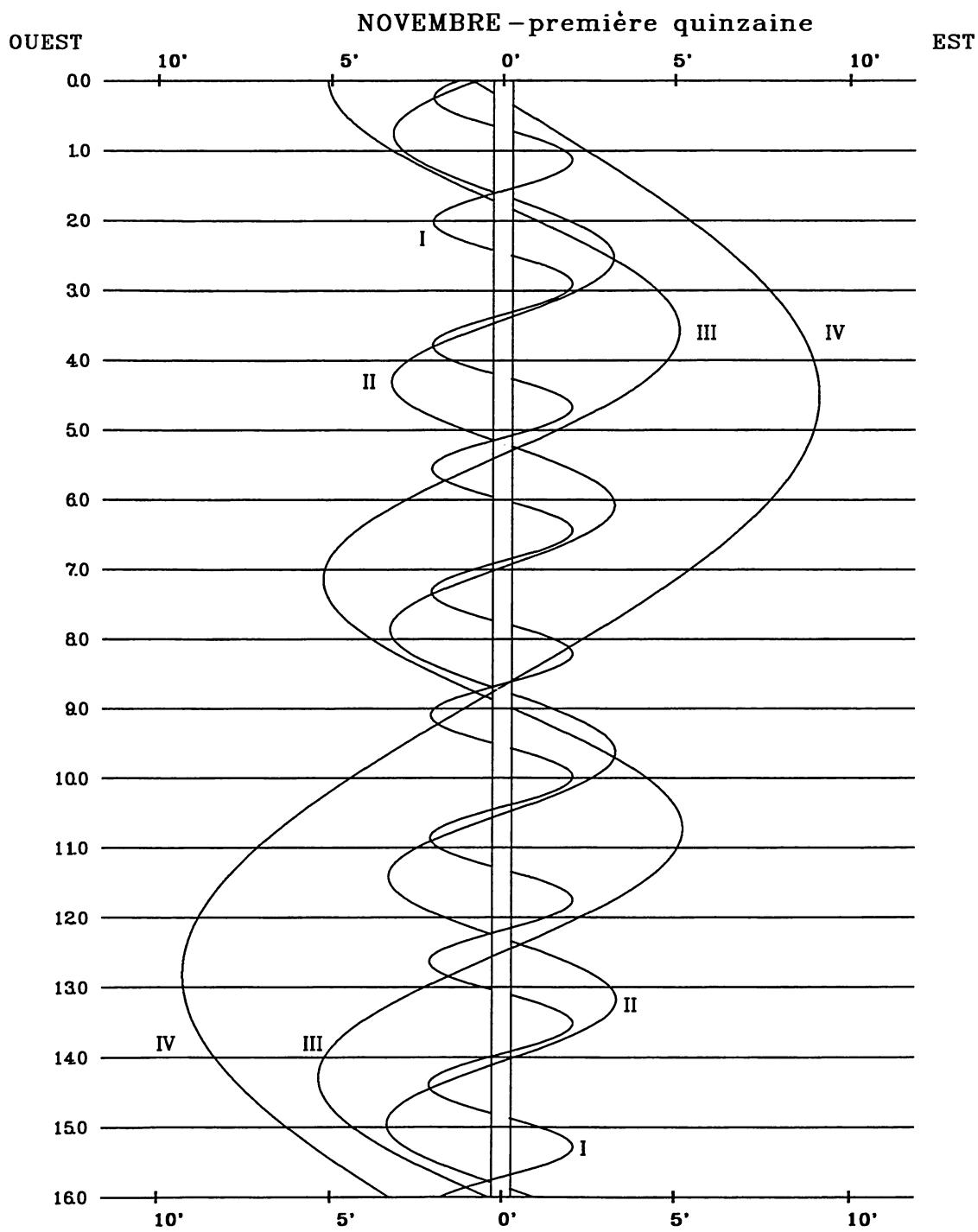


**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
 (Temps Terrestre)

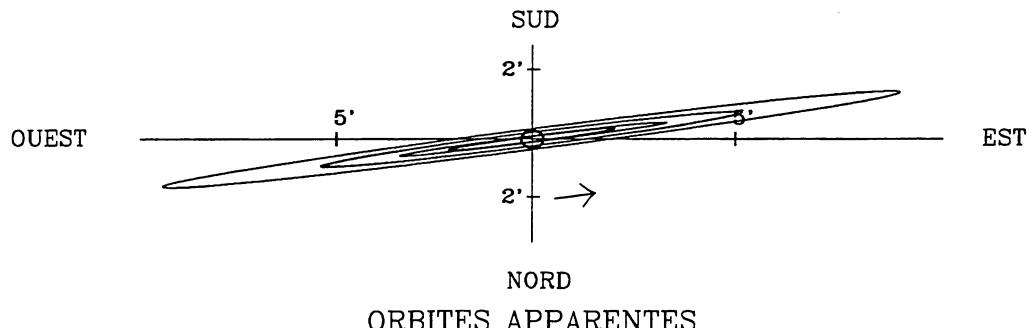
**NOVEMBRE - PREMIÈRE QUINZAINE**

| jour | h  | m  | s  | SAT. | TYPE     | jour | h  | m  | s   | SAT.     | TYPE     | jour | h  | m  | s        | SAT.     | TYPE |
|------|----|----|----|------|----------|------|----|----|-----|----------|----------|------|----|----|----------|----------|------|
| 1    | 11 | 28 | 42 | I    | OM.D.EXT | 6    | 1  | 4  | 34  | I        | OC.F.INT | 13   | 59 | 41 | II       | PA.F.EXT |      |
|      | 11 | 32 | 20 | I    | OM.D.INT |      | 1  | 8  | 13  | I        | OC.F.EXT |      |    |    |          |          |      |
|      | 11 | 36 | 31 | II   | EC.D.PEN | 18   | 53 | 34 | I   | OM.D.EXT | 11       | 5    | 4  | 13 | I        | EC.D.PEN |      |
|      | 11 | 38 | 2  | II   | EC.D.EXT | 18   | 57 | 12 | I   | OM.D.INT |          | 5    | 4  | 59 | I        | EC.D.EXT |      |
|      | 11 | 42 | 1  | II   | EC.D.INT | 19   | 35 | 23 | II  | OM.D.EXT |          | 5    | 8  | 39 | I        | EC.D.INT |      |
|      | 12 | 21 | 10 | III  | EC.D.PEN | 19   | 39 | 25 | II  | OM.D.INT |          | 8    | 26 | 10 | I        | OC.F.INT |      |
|      | 12 | 24 | 55 | III  | EC.D.EXT | 20   | 0  | 50 | I   | PA.D.EXT |          | 8    | 29 | 49 | I        | OC.F.EXT |      |
|      | 12 | 35 | 29 | III  | EC.D.INT | 20   | 4  | 27 | I   | PA.D.EXT |          |      |    |    |          |          |      |
|      | 12 | 39 | 12 | I    | PA.D.EXT | 21   | 7  | 32 | I   | OM.F.INT | 12       | 2    | 18 | 28 | I        | OM.D.EXT |      |
|      | 12 | 42 | 49 | I    | PA.D.INT | 21   | 11 | 11 | I   | OM.F.EXT |          | 2    | 22 | 6  | I        | OM.D.INT |      |
|      | 13 | 42 | 31 | I    | OM.F.INT | 21   | 54 | 39 | II  | PA.D.EXT |          | 3    | 21 | 51 | I        | PA.D.EXT |      |
|      | 13 | 46 | 9  | I    | OM.F.EXT | 21   | 58 | 40 | II  | PA.D.INT |          | 3    | 25 | 28 | I        | PA.D.INT |      |
|      | 14 | 52 | 50 | I    | PA.F.INT | 22   | 14 | 35 | I   | PA.F.INT |          | 3    | 26 | 47 | II       | EC.D.PEN |      |
|      | 14 | 56 | 27 | I    | PA.F.EXT | 22   | 18 | 12 | I   | PA.F.EXT |          | 3    | 28 | 17 | II       | EC.D.EXT |      |
|      | 15 | 16 | 11 | III  | EC.F.INT | 22   | 23 | 31 | II  | OM.F.INT |          | 3    | 32 | 16 | II       | EC.D.INT |      |
|      | 15 | 26 | 45 | III  | EC.F.EXT | 22   | 27 | 34 | II  | OM.F.EXT |          | 4    | 32 | 37 | I        | OM.F.INT |      |
|      | 15 | 30 | 31 | III  | EC.F.PEN |      |    |    |     |          |          | 4    | 36 | 15 | I        | OM.F.EXT |      |
|      | 16 | 45 | 14 | II   | OC.F.INT | 7    | 0  | 42 | 16  | II       | PA.F.INT | 5    | 35 | 45 | I        | PA.F.INT |      |
|      | 16 | 49 | 10 | II   | OC.F.EXT | 0    | 46 | 16 | II  | PA.F.EXT |          | 5    | 39 | 22 | I        | PA.F.EXT |      |
|      | 17 | 12 | 13 | III  | OC.D.EXT | 16   | 7  | 14 | I   | EC.D.PEN |          | 6    | 21 | 11 | III      | OM.D.EXT |      |
|      | 17 | 22 | 12 | III  | OC.D.INT | 16   | 7  | 59 | I   | EC.D.EXT |          | 6    | 31 | 21 | III      | OM.D.INT |      |
|      | 20 | 14 | 45 | III  | OC.F.INT | 16   | 11 | 40 | I   | EC.D.INT |          | 8    | 21 | 2  | II       | OC.F.INT |      |
|      | 20 | 24 | 44 | III  | OC.F.EXT | 19   | 31 | 53 | I   | OC.F.INT |          | 8    | 24 | 58 | II       | OC.F.EXT |      |
|      |    |    |    |      |          | 19   | 35 | 32 | I   | OC.F.EXT |          | 9    | 19 | 33 | III      | OM.F.INT |      |
| 2    | 8  | 41 | 40 | I    | EC.D.PEN |      |    |    |     |          |          | 9    | 29 | 46 | III      | OM.F.EXT |      |
|      | 8  | 42 | 26 | I    | EC.D.EXT | 8    | 4  | 48 | 37  | IV       | OM.D.EXT | 10   | 38 | 44 | III      | PA.D.EXT |      |
|      | 8  | 46 | 6  | I    | EC.D.INT | 5    | 11 | 55 | IV  | OM.D.INT |          | 10   | 48 | 37 | III      | PA.D.INT |      |
|      | 12 | 9  | 50 | I    | OC.F.INT | 6    | 57 | 7  | IV  | OM.F.INT |          | 13   | 39 | 25 | III      | PA.F.INT |      |
|      | 12 | 13 | 29 | I    | OC.F.EXT | 7    | 20 | 55 | IV  | OM.F.EXT |          | 13   | 49 | 15 | III      | PA.F.EXT |      |
| 3    | 5  | 57 | 0  | I    | OM.D.EXT | 13   | 25 | 30 | I   | OM.D.INT |          | 23   | 32 | 42 | I        | EC.D.PEN |      |
|      | 6  | 0  | 38 | I    | OM.D.INT | 14   | 10 | 0  | II  | EC.D.PEN |          | 23   | 33 | 27 | I        | EC.D.EXT |      |
|      | 6  | 17 | 39 | II   | OM.D.EXT | 14   | 11 | 31 | II  | EC.D.EXT |          | 23   | 37 | 7  | I        | EC.D.INT |      |
|      | 6  | 21 | 41 | II   | OM.D.INT | 14   | 15 | 29 | II  | EC.D.INT | 13       | 2    | 53 | 10 | I        | OC.F.INT |      |
|      | 7  | 6  | 30 | I    | PA.D.EXT | 14   | 27 | 54 | I   | PA.D.EXT |          | 2    | 56 | 49 | I        | OC.F.EXT |      |
|      | 7  | 10 | 7  | I    | PA.D.INT | 14   | 31 | 32 | I   | PA.D.INT |          | 20   | 46 | 46 | I        | OM.D.EXT |      |
|      | 8  | 10 | 52 | I    | OM.F.INT | 15   | 11 | 18 | IV  | PA.D.EXT |          | 20   | 50 | 24 | I        | OM.D.INT |      |
|      | 8  | 14 | 30 | I    | OM.F.EXT | 15   | 29 | 57 | IV  | PA.D.INT |          | 21   | 48 | 43 | I        | PA.D.EXT |      |
|      | 8  | 41 | 37 | II   | PA.D.EXT | 15   | 35 | 54 | I   | OM.F.INT |          | 21   | 52 | 20 | I        | PA.D.INT |      |
|      | 8  | 45 | 37 | II   | PA.D.INT | 15   | 39 | 32 | I   | OM.F.EXT |          | 22   | 11 | 46 | II       | OM.D.EXT |      |
|      | 9  | 5  | 36 | II   | OM.F.INT | 16   | 19 | 50 | III | EC.D.PEN |          | 22   | 15 | 48 | II       | OM.D.INT |      |
|      | 9  | 9  | 39 | II   | OM.F.EXT | 16   | 23 | 34 | III | EC.D.EXT |          | 23   | 0  | 58 | I        | OM.F.INT |      |
|      | 9  | 20 | 10 | I    | PA.F.INT | 16   | 34 | 3  | III | EC.D.INT |          | 23   | 4  | 37 | I        | OM.F.EXT |      |
|      | 11 | 29 | 8  | II   | PA.F.INT | 16   | 45 | 19 | I   | PA.F.EXT | 14       | 0    | 2  | 39 | I        | PA.F.INT |      |
|      | 11 | 33 | 8  | II   | PA.F.EXT | 17   | 48 | 4  | IV  | PA.F.EXT |          | 0    | 6  | 16 | I        | PA.F.EXT |      |
| 4    | 3  | 10 | 13 | I    | EC.D.PEN | 18   | 6  | 33 | IV  | PA.F.EXT |          | 0    | 19 | 50 | II       | PA.D.EXT |      |
|      | 3  | 10 | 59 | I    | EC.D.EXT | 19   | 9  | 39 | II  | OC.F.INT |          | 0    | 23 | 50 | II       | PA.D.INT |      |
|      | 3  | 14 | 39 | I    | EC.D.INT | 19   | 13 | 35 | II  | OC.F.EXT |          | 1    | 0  | 15 | II       | OM.F.INT |      |
|      | 6  | 37 | 17 | I    | OC.F.INT | 19   | 15 | 55 | III | EC.F.INT |          | 1    | 4  | 17 | II       | OM.F.EXT |      |
|      | 6  | 40 | 56 | I    | OC.F.EXT | 19   | 26 | 25 | III | EC.F.EXT |          | 3    | 7  | 37 | II       | PA.F.INT |      |
| 5    | 0  | 25 | 17 | I    | OM.D.EXT | 20   | 51 | 47 | III | OC.D.EXT |          | 18   | 1  | 16 | I        | EC.D.PEN |      |
|      | 0  | 28 | 55 | I    | OM.D.INT | 21   | 1  | 43 | III | OC.D.INT |          | 18   | 2  | 1  | I        | EC.D.EXT |      |
|      | 0  | 53 | 14 | II   | EC.D.PEN | 23   | 54 | 41 | III | OC.F.INT |          | 18   | 5  | 41 | I        | EC.D.INT |      |
|      | 0  | 54 | 45 | II   | EC.D.EXT | 9    | 0  | 4  | 37  | III      | OC.F.EXT | 21   | 23 | 51 | I        | OC.F.EXT |      |
|      | 0  | 58 | 44 | II   | EC.D.INT | 10   | 35 | 40 | I   | EC.D.PEN |          |      |    |    |          |          |      |
|      | 1  | 33 | 42 | I    | PA.D.EXT | 10   | 36 | 25 | I   | EC.D.EXT | 15       | 15   | 4  | 42 | I        | OM.D.EXT |      |
|      | 1  | 37 | 19 | I    | PA.D.INT | 10   | 40 | 6  | I   | EC.D.INT | 15       | 18   | 42 | I  | OM.D.INT |          |      |
|      | 2  | 22 | 52 | III  | OM.D.EXT | 13   | 59 | 0  | I   | OC.F.INT | 16       | 15   | 31 | I  | PA.D.EXT |          |      |
|      | 2  | 33 | 5  | III  | OM.D.INT | 14   | 2  | 39 | I   | OC.F.EXT | 16       | 19   | 8  | I  | PA.D.INT |          |      |
|      | 2  | 39 | 12 | I    | OM.F.INT |      |    |    |     |          |          | 16   | 43 | 32 | II       | EC.D.PEN |      |
|      | 2  | 42 | 50 | I    | OM.F.EXT | 7    | 50 | 11 | I   | OM.D.EXT |          | 16   | 45 | 3  | II       | EC.D.EXT |      |
|      | 3  | 47 | 25 | I    | PA.F.INT | 7    | 53 | 49 | I   | OM.D.INT |          | 16   | 49 | 1  | II       | EC.D.INT |      |
|      | 3  | 51 | 2  | I    | PA.F.EXT | 8    | 54 | 1  | II  | OM.D.EXT |          | 17   | 29 | 21 | I        | OM.F.INT |      |
|      | 5  | 20 | 1  | III  | OM.F.INT | 8    | 54 | 56 | I   | PA.D.EXT |          | 17   | 32 | 59 | I        | OM.F.EXT |      |
|      | 5  | 30 | 18 | III  | OM.F.EXT | 8    | 58 | 3  | II  | OM.D.INT |          | 18   | 29 | 30 | I        | PA.F.INT |      |
|      | 5  | 57 | 44 | II   | OC.F.INT | 8    | 58 | 33 | I   | PA.D.INT |          | 18   | 33 | 7  | I        | PA.F.EXT |      |
|      | 6  | 1  | 40 | II   | OC.F.EXT | 10   | 4  | 16 | I   | OM.F.INT |          | 20   | 18 | 18 | III      | EC.D.PEN |      |
|      | 7  | 1  | 29 | III  | PA.D.EXT | 10   | 7  | 54 | I   | OM.F.EXT |          | 20   | 22 | 0  | III      | EC.D.EXT |      |
|      | 7  | 11 | 24 | III  | PA.D.INT | 11   | 7  | 59 | II  | PA.D.EXT |          | 20   | 32 | 25 | III      | EC.D.INT |      |
|      | 10 | 1  | 39 | III  | PA.F.INT | 11   | 8  | 47 | I   | PA.F.INT |          | 21   | 31 | 48 | II       | OC.F.INT |      |
|      | 10 | 11 | 31 | III  | PA.F.EXT | 11   | 11 | 59 | II  | PA.D.INT |          | 21   | 35 | 44 | II       | OC.F.EXT |      |
|      | 21 | 38 | 41 | I    | EC.D.PEN | 11   | 12 | 24 | I   | PA.F.EXT |          | 23   | 15 | 26 | III      | EC.F.EXT |      |
|      | 21 | 39 | 26 | I    | EC.D.EXT | 11   | 42 | 19 | II  | OM.F.INT |          | 23   | 25 | 52 | III      | EC.F.EXT |      |
|      | 21 | 43 | 7  | I    | EC.D.INT | 11   | 46 | 22 | II  | OM.F.EXT |          | 23   | 29 | 34 | III      | EC.F.PEN |      |
|      |    |    |    |      |          | 13   | 55 | 40 | II  | PA.F.EXT |          |      |    |    |          |          |      |

## 2001 - CONFIGURATIONS DES SATELLITES GALILIENS DE JUPITER



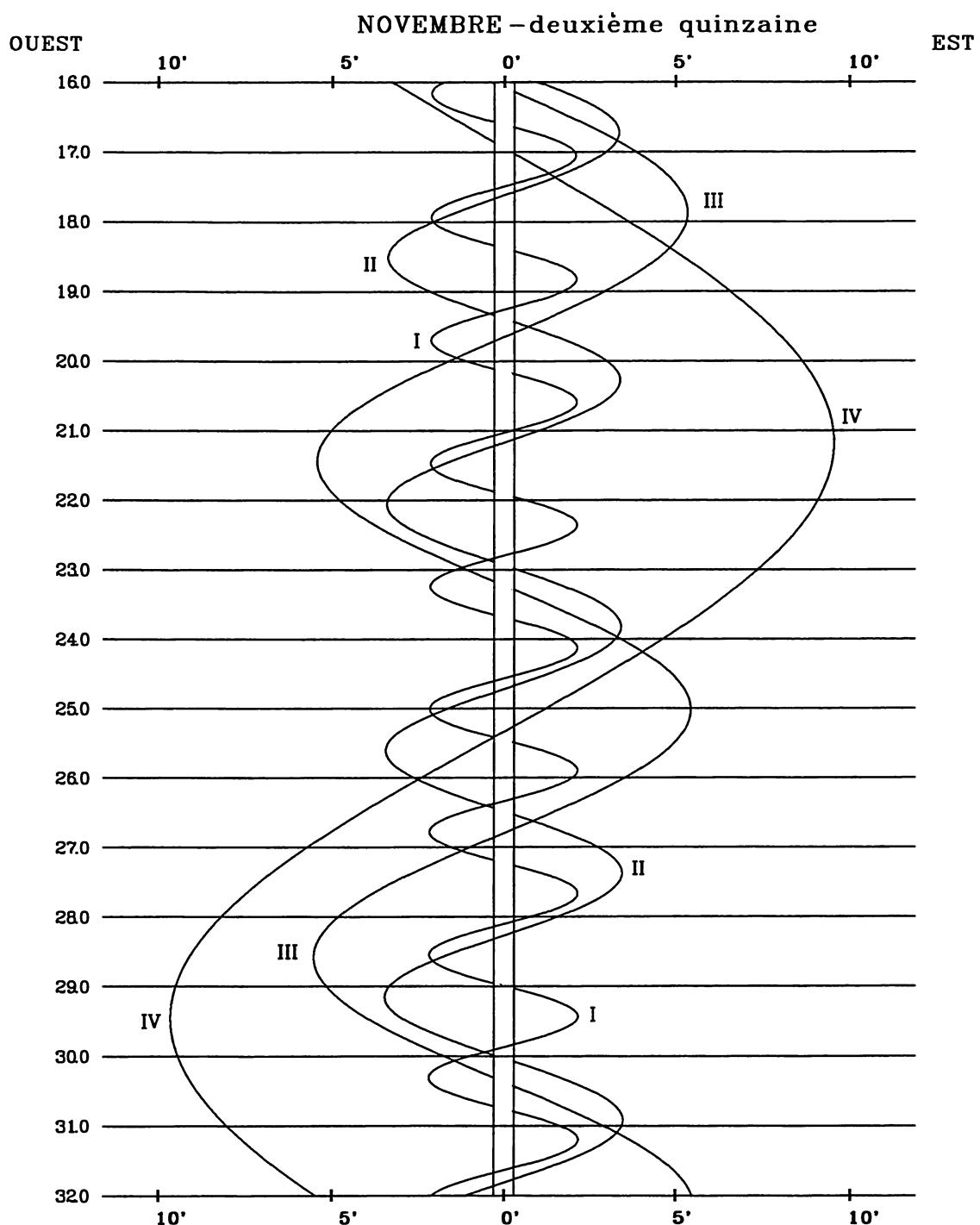
Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter



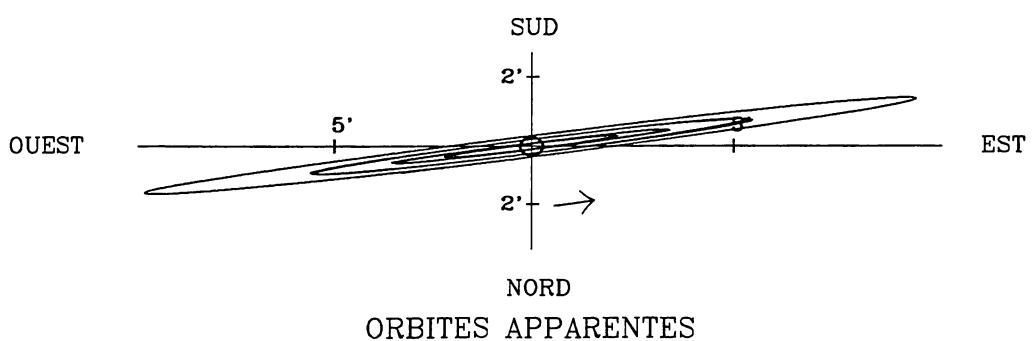
## **2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER (Temps Terrestre)**

| NOVEMBRE - DEUXIÈME QUINZAINE |    |    |    |      |            |      |    |    |     |          |          |      |    |     |          |          |      |  |
|-------------------------------|----|----|----|------|------------|------|----|----|-----|----------|----------|------|----|-----|----------|----------|------|--|
| jour                          | h  | m  | s  | SAT. | TYPE       | jour | h  | m  | s   | SAT.     | TYPE     | jour | h  | m   | s        | SAT.     | TYPE |  |
| 16                            | 0  | 26 | 23 | III  | OC.D.EXT   | 0    | 58 | 7  | I   | OM.F.EXT | 6        | 54   | 59 | I   | PA.D.EXT |          |      |  |
|                               | 0  | 36 | 18 | III  | OC.D.INT   | 1    | 49 | 39 | I   | PA.F.INT | 6        | 58   | 36 | I   | PA.D.INT |          |      |  |
|                               | 3  | 29 | 33 | III  | OC.F.INT   | 1    | 53 | 16 | I   | PA.F.EXT | 8        | 19   | 41 | I   | OM.F.INT |          |      |  |
|                               | 3  | 39 | 28 | III  | OC.F.EXT   | 2    | 42 | 42 | II  | PA.D.EXT | 8        | 23   | 19 | I   | OM.F.EXT |          |      |  |
|                               | 11 | 57 | 4  | IV   | EC.D.PEN   | 2    | 46 | 42 | II  | PA.D.INT | 8        | 34   | 6  | II  | EC.D.PEN |          |      |  |
|                               | 12 | 12 | 13 | IV   | EC.D.EXT   | 3    | 37 | 2  | II  | OM.F.INT | 8        | 35   | 37 | II  | EC.D.EXT |          |      |  |
|                               | 12 | 29 | 43 | I    | EC.D.PEN   | 3    | 41 | 5  | II  | OM.F.EXT | 8        | 39   | 34 | II  | EC.D.INT |          |      |  |
|                               | 12 | 30 | 28 | I    | EC.D.EXT   | 5    | 30 | 39 | II  | PA.F.INT | 9        | 9    | 14 | I   | PA.F.INT |          |      |  |
|                               | 12 | 34 | 8  | I    | EC.D.INT   | 5    | 34 | 39 | II  | PA.F.EXT | 9        | 12   | 52 | I   | PA.F.EXT |          |      |  |
|                               | 12 | 41 | 30 | IV   | EC.D.INT   | 19   | 55 | 21 | I   | EC.D.PEN | 13       | 1    | 2  | II  | OC.F.INT |          |      |  |
|                               | 13 | 53 | 55 | IV   | EC.F.INT   | 19   | 56 | 7  | I   | EC.D.EXT | 13       | 4    | 58 | II  | OC.F.EXT |          |      |  |
|                               | 14 | 23 | 13 | IV   | EC.F.EXT   | 19   | 59 | 47 | I   | EC.D.INT | 14       | 18   | 27 | III | OM.D.EXT |          |      |  |
|                               | 14 | 38 | 21 | IV   | EC.F.PEN   | 23   | 7  | 23 | I   | OC.F.INT | 14       | 28   | 30 | III | OM.D.INT |          |      |  |
|                               | 15 | 47 | 2  | I    | OC.F.INT   | 23   | 11 | 2  | I   | OC.F.EXT | 17       | 19   | 15 | III | OM.F.INT |          |      |  |
|                               | 15 | 50 | 41 | I    | OC.F.EXT   |      |    |    |     |          | 17       | 29   | 20 | III | OM.F.EXT |          |      |  |
|                               | 21 | 22 | 11 | IV   | OC.D.EXT   | 22   | 17 | 8  | II  | OM.D.EXT | 17       | 39   | 45 | III | PA.D.EXT |          |      |  |
|                               | 21 | 40 | 38 | IV   | OC.D.INT   | 17   | 11 | 59 | I   | OM.D.INT | 17       | 49   | 36 | III | PA.D.INT |          |      |  |
|                               |    |    |    |      |            | 18   | 2  | 4  | I   | PA.D.EXT | 20       | 50   | 59 | III | PA.F.EXT |          |      |  |
| 17                            | 0  | 3  | 39 | IV   | OC.F.INT   | 18   | 5  | 41 | I   | PA.D.INT |          |      |    |     |          |          |      |  |
|                               | 0  | 22 | 7  | IV   | OC.F.EXT   | 19   | 17 | 11 | II  | EC.D.PEN | 27       | 3    | 20 | 55  | I        | EC.D.PEN |      |  |
|                               | 9  | 43 | 24 | I    | OM.D.EXT   | 19   | 18 | 41 | II  | EC.D.EXT | 3        | 21   | 40 | I   | EC.D.EXT |          |      |  |
|                               | 9  | 47 | 2  | I    | OM.D.INT   | 19   | 22 | 39 | II  | EC.D.INT | 3        | 25   | 20 | I   | EC.D.INT |          |      |  |
|                               | 10 | 42 | 16 | I    | PA.D.EXT   | 19   | 22 | 53 | I   | OM.F.INT | 6        | 27   | 3  | I   | OC.F.INT |          |      |  |
|                               | 10 | 45 | 54 | I    | PA.D.INT   | 19   | 26 | 31 | I   | OM.F.EXT | 6        | 30   | 41 | I   | OC.F.EXT |          |      |  |
|                               | 11 | 30 | 26 | II   | OM.D.EXT   | 20   | 16 | 14 | I   | PA.F.INT |          |      |    |     |          |          |      |  |
|                               | 11 | 34 | 27 | II   | OM.D.INT   | 20   | 19 | 51 | I   | PA.F.EXT | 28       | 0    | 33 | 21  | I        | OM.D.EXT |      |  |
|                               | 11 | 57 | 45 | I    | OM.F.INT   | 23   | 51 | 46 | II  | OC.F.INT | 0        | 36   | 59 | I   | OM.D.INT |          |      |  |
|                               | 12 | 1  | 23 | I    | OM.F.EXT   | 23   | 55 | 42 | II  | OC.F.EXT | 1        | 21   | 20 | I   | PA.D.EXT |          |      |  |
|                               | 12 | 56 | 18 | I    | PA.F.INT   |      |    |    |     |          | 1        | 24   | 58 | I   | PA.D.INT |          |      |  |
|                               | 12 | 59 | 55 | I    | PA.F.EXT   | 23   | 0  | 16 | 58  | III      | EC.D.PEN | 2    | 48 | 6   | I        | OM.F.INT |      |  |
|                               | 13 | 31 | 59 | II   | PA.D.EXT   | 0    | 20 | 39 | III | EC.D.EXT | 2        | 51   | 44 | I   | OM.F.EXT |          |      |  |
|                               | 13 | 35 | 59 | II   | PA.D.INT   | 0    | 31 | 0  | III | EC.D.INT | 3        | 24   | 38 | II  | OM.D.EXT |          |      |  |
|                               | 14 | 19 | 5  | II   | OM.F.INT   | 3    | 15 | 10 | III | EC.F.INT | 3        | 28   | 39 | II  | OM.D.INT |          |      |  |
|                               | 14 | 23 | 7  | II   | OM.F.EXT   | 3    | 25 | 31 | III | EC.F.EXT | 3        | 35   | 39 | I   | PA.F.INT |          |      |  |
|                               | 16 | 19 | 51 | II   | PA.F.INT   | 3    | 29 | 13 | III | EC.F.PEN | 3        | 39   | 16 | I   | PA.F.EXT |          |      |  |
|                               | 16 | 23 | 50 | II   | PA.F.EXT   | 3    | 56 | 30 | III | OC.D.EXT | 5        | 3    | 19 | II  | PA.D.EXT |          |      |  |
|                               |    |    |    |      |            | 4    | 6  | 24 | III | OC.D.INT | 5        | 7    | 19 | II  | PA.D.INT |          |      |  |
| 18                            | 6  | 58 | 17 | I    | EC.D.PEN   | 6    | 59 | 51 | III | OC.F.INT | 6        | 13   | 49 | II  | OM.F.INT |          |      |  |
|                               | 6  | 59 | 2  | I    | EC.D.EXT   | 7    | 9  | 44 | III | OC.F.EXT | 6        | 17   | 50 | II  | OM.F.EXT |          |      |  |
|                               | 7  | 2  | 42 | I    | EC.D.INT   | 14   | 23 | 49 | I   | EC.D.PEN | 7        | 51   | 26 | II  | PA.F.EXT |          |      |  |
|                               | 10 | 13 | 54 | I    | OC.F.F.INT | 14   | 24 | 35 | I   | EC.D.EXT | 7        | 55   | 25 | II  | PA.F.EXT |          |      |  |
|                               | 10 | 17 | 33 | I    | OC.F.EXT   | 14   | 28 | 15 | I   | EC.D.INT | 21       | 49   | 31 | I   | EC.D.PEN |          |      |  |
|                               |    |    |    |      |            | 17   | 33 | 57 | I   | OC.F.INT | 21       | 50   | 17 | I   | EC.D.EXT |          |      |  |
|                               |    |    |    |      |            | 17   | 37 | 36 | I   | OC.F.EXT | 21       | 53   | 56 | I   | EC.D.INT |          |      |  |
| 19                            | 4  | 11 | 42 | I    | OM.D.EXT   |      |    |    |     |          | 29       | 0    | 53 | 33  | I        | OC.F.INT |      |  |
|                               | 4  | 15 | 20 | I    | OM.D.INT   | 24   | 11 | 36 | 42  | I        | OM.D.EXT | 0    | 57 | 12  | I        | OC.F.EXT |      |  |
|                               | 5  | 8  | 56 | I    | PA.D.EXT   | 11   | 40 | 20 | I   | OM.D.INT | 19       | 1    | 42 | I   | OM.D.EXT |          |      |  |
|                               | 5  | 12 | 33 | I    | PA.D.INT   | 12   | 28 | 34 | I   | PA.D.EXT | 19       | 5    | 20 | I   | OM.D.INT |          |      |  |
|                               | 6  | 0  | 22 | II   | EC.D.PEN   | 12   | 32 | 12 | I   | PA.D.INT | 19       | 47   | 39 | I   | PA.D.EXT |          |      |  |
|                               | 6  | 1  | 52 | II   | EC.D.EXT   | 13   | 51 | 18 | I   | OM.F.INT | 19       | 51   | 16 | I   | PA.D.INT |          |      |  |
|                               | 6  | 5  | 51 | II   | EC.D.INT   | 13   | 54 | 56 | I   | OM.F.EXT | 21       | 16   | 30 | I   | OM.F.INT |          |      |  |
|                               | 6  | 26 | 7  | I    | OM.F.INT   | 14   | 6  | 50 | II  | OM.D.INT | 21       | 20   | 8  | I   | OM.F.EXT |          |      |  |
|                               | 6  | 29 | 45 | I    | OM.F.EXT   | 14   | 10 | 52 | II  | OM.D.EXT | 21       | 50   | 59 | II  | EC.D.PEN |          |      |  |
|                               | 7  | 23 | 0  | I    | PA.F.INT   | 14   | 42 | 47 | I   | PA.F.EXT | 21       | 52   | 30 | II  | EC.D.EXT |          |      |  |
|                               | 7  | 26 | 37 | I    | PA.F.EXT   | 14   | 46 | 24 | I   | PA.F.EXT | 21       | 56   | 27 | II  | EC.D.INT |          |      |  |
|                               | 10 | 20 | 14 | III  | OM.D.EXT   | 15   | 53 | 41 | II  | PA.D.EXT | 22       | 2    | 0  | I   | PA.F.INT |          |      |  |
|                               | 10 | 30 | 20 | III  | OM.D.INT   | 15   | 57 | 41 | II  | PA.D.INT | 22       | 5    | 37 | I   | PA.F.EXT |          |      |  |
|                               | 10 | 42 | 4  | II   | OC.F.INT   | 16   | 55 | 50 | II  | OM.F.INT |          |      |    |     |          |          |      |  |
|                               | 10 | 46 | 0  | II   | OC.F.EXT   | 16   | 59 | 52 | II  | OM.F.EXT |          |      |    |     |          |          |      |  |
|                               | 13 | 19 | 48 | III  | OM.F.INT   | 18   | 41 | 42 | II  | PA.F.INT |          |      |    |     |          |          |      |  |
|                               | 13 | 29 | 58 | III  | OM.F.EXT   | 18   | 45 | 42 | II  | PA.F.EXT | 30       | 2    | 9  | 46  | II       | OC.F.INT |      |  |
|                               | 14 | 11 | 55 | III  | PA.D.EXT   | 22   | 46 | 12 | IV  | OM.D.EXT | 2        | 13   | 42 | II  | OC.F.EXT |          |      |  |
|                               | 14 | 21 | 46 | III  | PA.D.INT   | 23   | 7  | 2  | IV  | PA.F.EXT | 30       | 4    | 16 | 26  | III      | EC.D.PEN |      |  |
|                               | 17 | 12 | 59 | III  | PA.F.INT   |      |    |    | IV  | OM.D.INT | 4        | 20   | 6  | III | EC.D.EXT |          |      |  |
|                               | 17 | 22 | 49 | III  | PA.F.EXT   | 25   | 1  | 10 | 50  | IV       | OM.F.INT | 4    | 30 | 23  | III      | EC.D.INT |      |  |
| 20                            | 1  | 26 | 46 | I    | EC.D.PEN   | 1    | 31 | 57 | IV  | OM.F.EXT | 7        | 15   | 42 | III | EC.F.INT |          |      |  |
|                               | 1  | 27 | 32 | I    | EC.D.EXT   | 6    | 47 | 35 | IV  | PA.D.EXT | 7        | 23   | 5  | III | OC.D.EXT |          |      |  |
|                               | 1  | 31 | 12 | I    | EC.D.INT   | 7    | 5  | 48 | IV  | PA.D.INT | 7        | 26   | 0  | III | EC.F.EXT |          |      |  |
|                               | 4  | 40 | 38 | I    | OC.F.INT   | 8    | 52 | 25 | I   | EC.D.PEN | 7        | 29   | 39 | III | EC.F.PEN |          |      |  |
|                               | 4  | 44 | 17 | I    | OC.F.EXT   | 8    | 53 | 10 | I   | EC.D.EXT | 7        | 32   | 58 | III | OC.D.INT |          |      |  |
|                               | 22 | 40 | 1  | I    | OM.D.EXT   | 8    | 56 | 50 | I   | EC.D.INT | 10       | 26   | 30 | III | OC.F.INT |          |      |  |
|                               | 22 | 43 | 39 | I    | OM.D.INT   | 9    | 27 | 35 | IV  | PA.F.INT | 10       | 36   | 23 | III | OC.F.EXT |          |      |  |
|                               | 23 | 35 | 32 | I    | PA.D.EXT   | 9    | 45 | 43 | IV  | PA.F.EXT | 16       | 18   | 0  | I   | EC.D.PEN |          |      |  |
|                               | 23 | 39 | 9  | I    | PA.D.INT   | 12   | 0  | 34 | I   | OC.F.INT | 16       | 18   | 46 | I   | EC.D.EXT |          |      |  |
|                               |    |    |    |      |            | 12   | 4  | 13 | I   | OC.F.EXT | 16       | 22   | 26 | I   | EC.D.INT |          |      |  |
| 21                            | 0  | 48 | 12 | II   | OM.D.EXT   |      |    |    |     |          | 19       | 19   | 53 | I   | OC.F.INT |          |      |  |
|                               | 0  | 52 | 14 | II   | OM.D.INT   | 26   | 6  | 5  | 1   | I        | OM.D.EXT | 19   | 23 | 32  | I        | OC.F.EXT |      |  |
|                               | 0  | 54 | 29 | I    | OM.F.INT   | 6    | 8  | 39 | I   | OM.D.INT |          |      |    |     |          |          |      |  |

## 2001 - CONFIGURATIONS DES SATELLITES GALILÉENS DE JUPITER



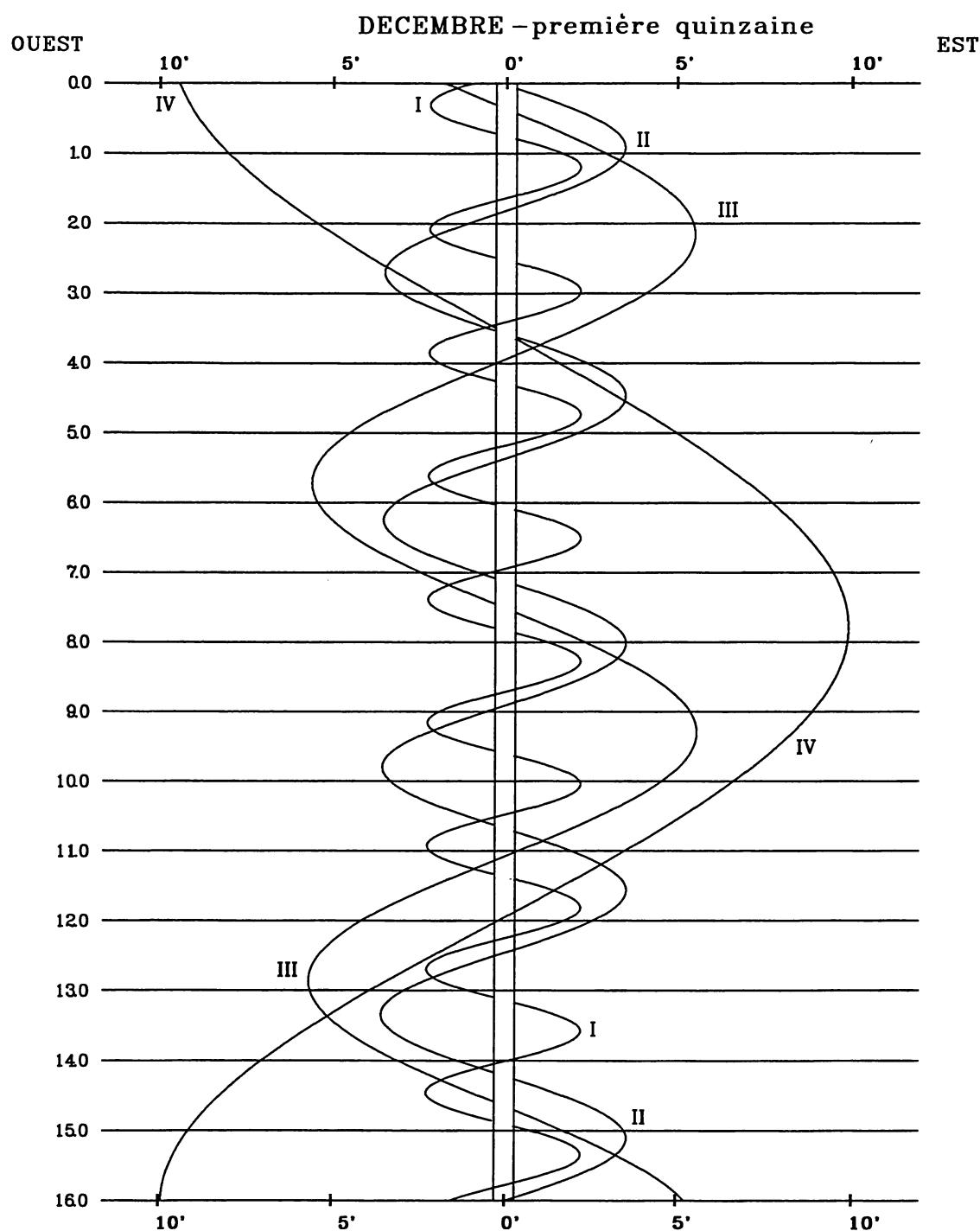
Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter



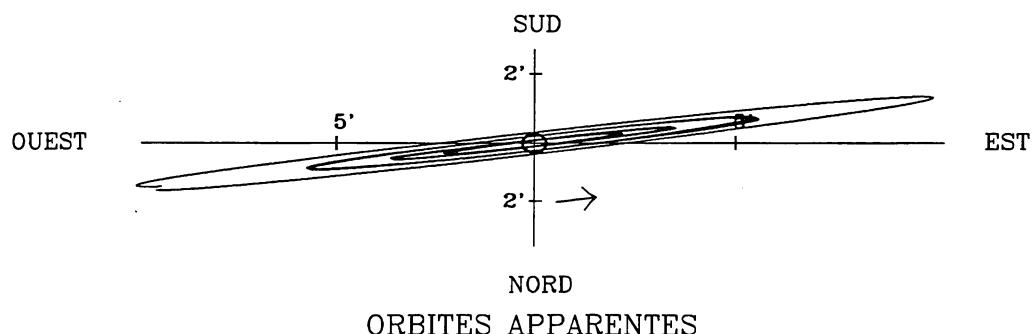
**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
 (Temps Terrestre)

| DÉCEMBRE - PREMIÈRE QUINZAINE |    |    |    |      |          |          |    |    |    |          |          |          |    |    |     |          |          |          |
|-------------------------------|----|----|----|------|----------|----------|----|----|----|----------|----------|----------|----|----|-----|----------|----------|----------|
| jour                          | h  | m  | s  | SAT. | TYPE     | jour     | h  | m  | s  | SAT.     | TYPE     | jour     | h  | m  | s   | SAT.     | TYPE     |          |
| 1                             | 13 | 30 | 5  | I    | OM.D.EXT | 10       | 14 | 13 | II | PA.F.EXT |          | 3        | 35 | 5  | III | PA.F.EXT |          |          |
|                               | 13 | 33 | 43 | I    | OM.D.INT | 23       | 43 | 46 | I  | EC.D.PEN |          | 7        | 9  | 27 | I   | EC.D.PEN |          |          |
|                               | 14 | 13 | 56 | I    | PA.D.EXT | 23       | 44 | 31 | I  | EC.D.EXT |          | 7        | 10 | 12 | I   | EC.D.EXT |          |          |
|                               | 14 | 17 | 33 | I    | PA.D.INT | 23       | 48 | 11 | I  | EC.D.INT |          | 7        | 13 | 52 | I   | EC.D.INT |          |          |
|                               | 15 | 44 | 58 | I    | OM.F.INT |          |    |    |    |          |          | 9        | 57 | 12 | I   | OC.F.INT |          |          |
|                               | 15 | 48 | 35 | I    | OM.F.EXT | 6        | 2  | 38 | 49 | I        | OC.F.INT |          | 10 | 0  | 50  | I        | OC.F.EXT |          |
|                               | 16 | 28 | 20 | I    | PA.F.INT |          | 2  | 42 | 27 | I        | OC.F.EXT |          | 16 | 45 | 24  | IV       | OM.D.EXT |          |
|                               | 16 | 31 | 57 | I    | PA.F.EXT |          | 20 | 55 | 11 | I        | OM.D.EXT |          | 17 | 4  | 26  | IV       | OM.D.INT |          |
|                               | 16 | 43 | 16 | II   | OM.D.EXT |          | 20 | 58 | 49 | I        | OM.D.INT |          | 19 | 24 | 20  | IV       | OM.F.INT |          |
|                               | 16 | 47 | 17 | II   | OM.D.INT |          | 21 | 32 | 23 | I        | PA.D.EXT |          | 19 | 43 | 31  | IV       | OM.F.EXT |          |
|                               | 18 | 13 | 16 | I    | PA.D.EXT |          | 21 | 36 | 0  | I        | PA.D.INT |          | 21 | 33 | 7   | IV       | PA.D.EXT |          |
|                               | 18 | 17 | 16 | I    | PA.D.INT |          | 23 | 10 | 15 | I        | OM.F.INT |          | 21 | 51 | 14  | IV       | PA.D.INT |          |
|                               | 19 | 32 | 36 | II   | OM.F.INT |          | 23 | 13 | 53 | I        | OM.F.EXT |          |    |    |     |          |          |          |
|                               | 19 | 36 | 38 | II   | OM.F.EXT |          | 23 | 46 | 54 | I        | PA.F.INT | 12       | 0  | 13 | 42  | IV       | PA.F.INT |          |
|                               | 21 | 1  | 25 | I    | PA.F.INT |          | 23 | 50 | 31 | I        | PA.F.EXT |          | 0  | 31 | 48  | IV       | PA.F.EXT |          |
|                               | 21 | 5  | 25 | II   | PA.F.EXT |          |    |    |    |          |          | 4        | 20 | 24 | I   | OM.D.EXT |          |          |
|                               |    |    |    |      |          | 7        | 0  | 24 | 55 | II       | EC.D.PEN |          | 4  | 24 | 2   | I        | OM.D.INT |          |
| 2                             | 10 | 46 | 37 | I    | EC.D.PEN |          | 0  | 26 | 26 | II       | EC.D.EXT |          | 4  | 50 | 29  | I        | PA.D.EXT |          |
|                               | 10 | 47 | 22 | I    | EC.D.INT |          | 0  | 30 | 23 | II       | EC.D.INT |          | 4  | 54 | 6   | I        | PA.D.INT |          |
|                               | 10 | 51 | 2  | I    | EC.D.INT |          | 4  | 25 | 58 | II       | OC.F.INT |          | 6  | 35 | 39  | I        | OM.F.INT |          |
|                               | 13 | 46 | 16 | I    | OC.F.INT |          | 4  | 29 | 54 | II       | OC.F.EXT |          | 6  | 39 | 17  | I        | OM.F.EXT |          |
|                               | 13 | 49 | 55 | I    | OC.F.EXT |          | 8  | 15 | 38 | III      | EC.D.PEN |          | 7  | 5  | 7   | I        | PA.F.INT |          |
|                               |    |    |    |      |          |          | 8  | 19 | 16 | III      | EC.D.EXT |          | 7  | 8  | 44  | I        | PA.F.INT |          |
| 3                             | 5  | 55 | 59 | IV   | EC.D.PEN |          | 8  | 29 | 29 | III      | EC.D.INT |          | 8  | 37 | 40  | II       | OM.D.EXT |          |
|                               | 6  | 9  | 45 | IV   | EC.D.EXT |          | 13 | 48 | 49 | III      | OC.F.INT |          | 8  | 41 | 40  | II       | OM.D.INT |          |
|                               | 6  | 34 | 3  | IV   | EC.D.INT |          | 13 | 58 | 41 | III      | OC.F.EXT |          | 9  | 38 | 56  | II       | PA.D.EXT |          |
|                               | 7  | 58 | 26 | I    | OM.D.EXT |          | 18 | 12 | 17 | I        | EC.D.PEN |          | 9  | 42 | 56  | II       | PA.D.EXT |          |
|                               | 8  | 2  | 4  | I    | OM.D.INT |          | 18 | 13 | 2  | I        | EC.D.EXT |          | 11 | 27 | 26  | II       | OM.F.INT |          |
|                               | 8  | 11 | 55 | IV   | EC.F.INT |          | 18 | 16 | 41 | I        | EC.D.INT |          | 11 | 31 | 27  | II       | OM.F.EXT |          |
|                               | 8  | 36 | 14 | IV   | EC.F.EXT |          | 21 | 4  | 56 | I        | OC.F.INT |          | 12 | 27 | 15  | II       | PA.F.INT |          |
|                               | 8  | 40 | 7  | I    | PA.D.EXT |          | 21 | 8  | 35 | I        | OC.F.EXT |          | 12 | 31 | 14  | II       | PA.F.EXT |          |
|                               | 8  | 43 | 44 | I    | PA.D.INT |          |    |    |    |          |          |          |    |    |     |          |          |          |
|                               | 8  | 50 | 0  | IV   | EC.F.PEN | 8        | 15 | 23 | 36 | I        | OM.D.EXT | 13       | 1  | 38 | 6   | I        | EC.D.PEN |          |
|                               | 10 | 13 | 22 | I    | OM.F.INT |          | 15 | 27 | 14 | I        | OM.D.INT |          | 1  | 38 | 51  | I        | EC.D.EXT |          |
|                               | 10 | 17 | 0  | I    | OM.F.EXT |          | 15 | 58 | 29 | I        | PA.D.EXT |          | 1  | 42 | 31  | I        | EC.D.INT |          |
|                               | 10 | 54 | 34 | I    | PA.F.INT |          | 16 | 2  | 6  | I        | PA.D.INT |          | 4  | 23 | 19  | I        | OC.F.INT |          |
|                               | 10 | 58 | 11 | I    | PA.F.EXT |          | 17 | 38 | 44 | I        | PA.D.INT |          | 4  | 26 | 58  | I        | OC.F.EXT |          |
|                               | 11 | 7  | 57 | II   | EC.D.PEN |          | 17 | 42 | 22 | I        | OM.F.EXT |          | 22 | 48 | 49  | I        | OM.D.EXT |          |
|                               | 11 | 9  | 28 | II   | EC.D.EXT |          | 18 | 13 | 3  | I        | PA.F.INT |          | 22 | 52 | 27  | I        | OM.D.INT |          |
|                               | 11 | 13 | 25 | II   | EC.D.INT |          | 18 | 16 | 40 | I        | PA.F.EXT |          | 23 | 16 | 25  | I        | PA.D.EXT |          |
|                               | 12 | 30 | 26 | IV   | OC.D.EXT |          | 19 | 19 | 47 | II       | OM.D.EXT |          | 23 | 20 | 3   | I        | PA.D.INT |          |
|                               | 12 | 48 | 37 | IV   | OC.D.INT |          | 19 | 23 | 48 | II       | OM.D.INT |          |    |    |     |          |          |          |
|                               | 15 | 13 | 33 | IV   | OC.F.INT |          | 20 | 31 | 2  | II       | PA.D.EXT | 14       | 1  | 4  | 7   | I        | OM.F.INT |          |
|                               | 15 | 18 | 5  | II   | OC.F.INT |          | 20 | 35 | 2  | II       | PA.D.EXT |          | 1  | 7  | 45  | I        | OM.F.EXT |          |
|                               | 15 | 22 | 2  | II   | OC.F.EXT |          | 22 | 9  | 25 | II       | OM.F.INT |          | 1  | 31 | 5   | I        | PA.F.INT |          |
|                               | 15 | 31 | 44 | IV   | OC.F.EXT |          | 22 | 13 | 26 | II       | OM.F.EXT |          | 1  | 34 | 43  | I        | PA.F.EXT |          |
|                               | 18 | 16 | 38 | III  | OM.D.EXT |          | 23 | 19 | 17 | II       | PA.F.INT |          | 2  | 59 | 5   | II       | EC.D.PEN |          |
|                               | 18 | 26 | 38 | III  | OM.D.INT |          | 23 | 23 | 17 | II       | PA.F.EXT |          | 3  | 0  | 35  | II       | EC.D.EXT |          |
|                               | 21 | 3  | 25 | III  | PA.D.EXT |          |    |    |    |          |          | 3        | 4  | 33 | II  | EC.D.EXT |          |          |
|                               | 21 | 13 | 15 | III  | PA.D.INT | 9        | 12 | 40 | 54 | I        | EC.D.PEN |          | 6  | 40 | 46  | II       | OC.F.INT |          |
|                               | 21 | 18 | 38 | III  | OM.F.INT |          | 12 | 41 | 39 | I        | EC.D.EXT |          | 6  | 44 | 42  | II       | OC.F.EXT |          |
|                               | 21 | 28 | 40 | III  | OM.F.EXT |          | 12 | 45 | 19 | I        | EC.D.INT |          | 12 | 15 | 32  | III      | EC.D.PEN |          |
|                               |    |    |    |      |          |          | 15 | 31 | 7  | I        | OC.F.INT |          | 12 | 19 | 9   | III      | EC.D.EXT |          |
| 4                             | 0  | 5  | 3  | III  | PA.F.INT |          | 15 | 34 | 46 | I        | OC.F.EXT |          | 12 | 29 | 18  | III      | EC.D.INT |          |
|                               | 0  | 14 | 52 | III  | PA.F.EXT |          |    |    |    |          |          | 17       | 8  | 26 | III | OC.F.INT |          |          |
|                               | 5  | 15 | 8  | I    | EC.D.PEN | 10       | 9  | 51 | 59 | I        | OM.D.EXT |          | 17 | 18 | 18  | III      | OC.F.EXT |          |
|                               | 5  | 15 | 54 | I    | EC.D.EXT |          | 9  | 55 | 37 | I        | OM.D.INT |          | 20 | 6  | 38  | I        | EC.D.PEN |          |
|                               | 5  | 19 | 33 | I    | EC.D.INT |          | 10 | 24 | 29 | I        | PA.D.EXT |          | 20 | 7  | 24  | I        | EC.D.INT |          |
|                               | 8  | 12 | 31 | I    | OC.F.INT |          | 10 | 28 | 7  | I        | PA.D.INT |          | 20 | 11 | 3   | I        | EC.D.INT |          |
|                               | 8  | 16 | 10 | I    | OC.F.EXT |          | 12 | 7  | 11 | I        | OM.F.INT |          | 22 | 49 | 17  | I        | OC.F.INT |          |
|                               | 5  | 2  | 26 | 48   | I        | OM.D.EXT |    | 12 | 39 | 5        | I        | PA.F.INT |    | 22 | 52  | 56       | I        | OC.F.EXT |
|                               | 2  | 30 | 26 | I    | OM.D.INT |          | 12 | 42 | 43 | I        | PA.F.EXT | 15       | 17 | 17 | 17  | I        | OM.D.EXT |          |
|                               | 3  | 6  | 17 | I    | PA.D.EXT |          | 13 | 41 | 59 | II       | EC.D.PEN |          | 17 | 20 | 54  | I        | OM.D.INT |          |
|                               | 3  | 9  | 54 | I    | PA.D.INT |          | 13 | 43 | 29 | II       | EC.D.EXT |          | 17 | 42 | 23  | I        | PA.D.EXT |          |
|                               | 4  | 41 | 49 | I    | OM.F.INT |          | 13 | 47 | 27 | II       | EC.D.INT |          | 17 | 46 | 0   | I        | PA.D.INT |          |
|                               | 4  | 45 | 27 | I    | OM.F.EXT |          | 17 | 33 | 32 | II       | OC.F.INT |          | 19 | 32 | 39  | I        | OM.F.INT |          |
|                               | 5  | 20 | 46 | I    | PA.F.INT |          | 17 | 37 | 28 | II       | OC.F.EXT |          | 19 | 36 | 16  | I        | OM.F.EXT |          |
|                               | 5  | 24 | 23 | I    | PA.F.EXT |          | 22 | 14 | 43 | III      | OM.D.EXT |          | 19 | 57 | 5   | I        | PA.F.INT |          |
|                               | 6  | 1  | 8  | II   | OM.D.EXT |          | 22 | 24 | 40 | III      | OM.D.INT |          | 20 | 0  | 42  | I        | PA.F.EXT |          |
|                               | 6  | 5  | 9  | II   | OM.D.INT |          |    |    |    |          |          | 21       | 56 | 20 | II  | OM.D.EXT |          |          |
|                               | 7  | 22 | 0  | II   | PA.D.EXT | 11       | 0  | 23 | 27 | III      | PA.D.EXT |          | 22 | 0  | 20  | II       | OM.D.INT |          |
|                               | 7  | 25 | 59 | II   | PA.D.INT |          | 0  | 33 | 16 | III      | PA.D.INT |          | 22 | 47 | 16  | II       | PA.D.EXT |          |
|                               | 8  | 50 | 38 | II   | OM.F.INT |          | 1  | 17 | 55 | III      | OM.F.INT |          | 22 | 51 | 15  | II       | PA.D.EXT |          |
|                               | 8  | 54 | 39 | II   | OM.F.EXT |          | 1  | 27 | 53 | III      | OM.F.EXT |          |    |    |     |          |          |          |
|                               | 10 | 10 | 13 | II   | PA.F.INT |          | 3  | 25 | 15 | III      | PA.F.EXT |          |    |    |     |          |          |          |

## 2001 - CONFIGURATIONS DES SATELLITES GALILIENS DE JUPITER



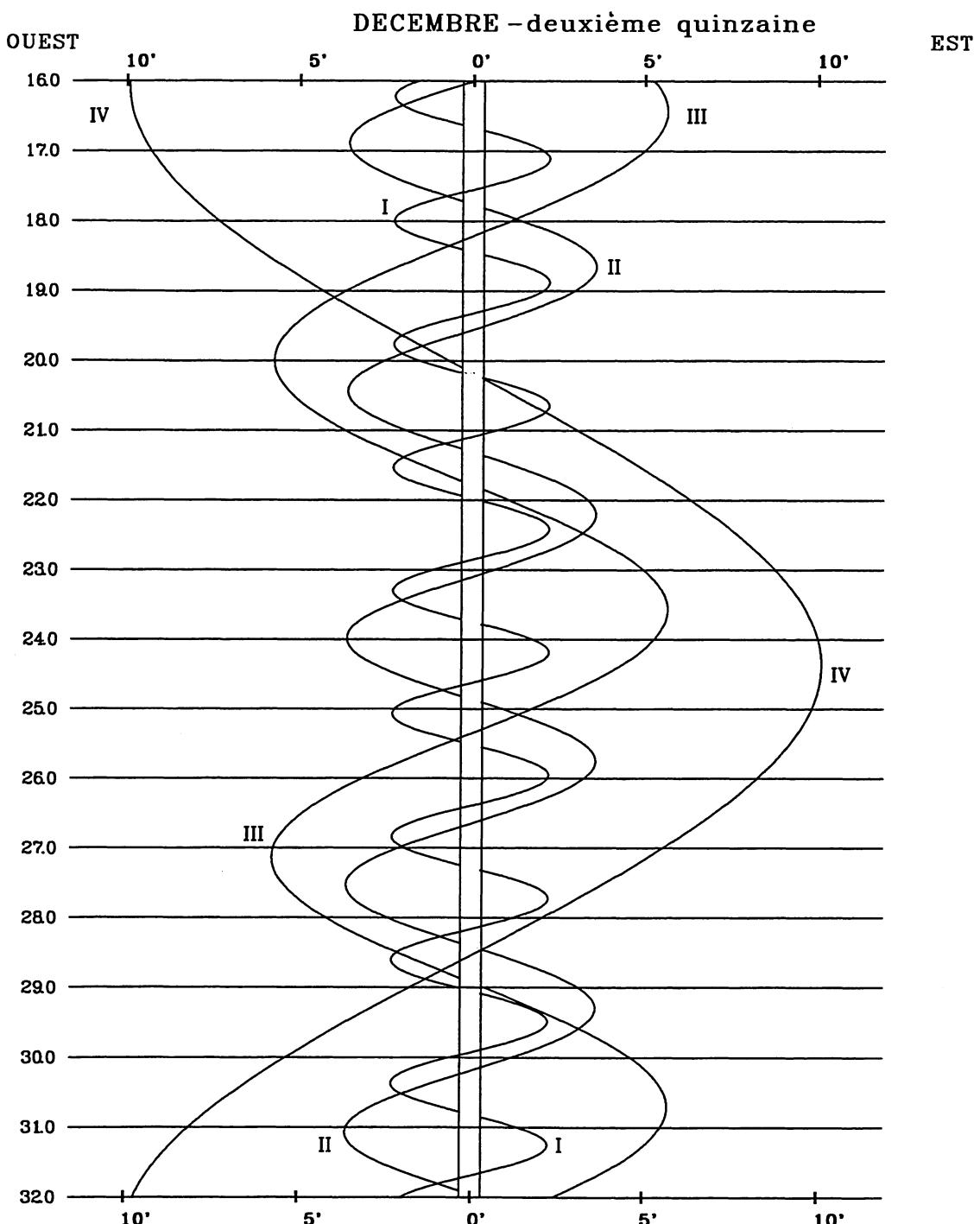
Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter



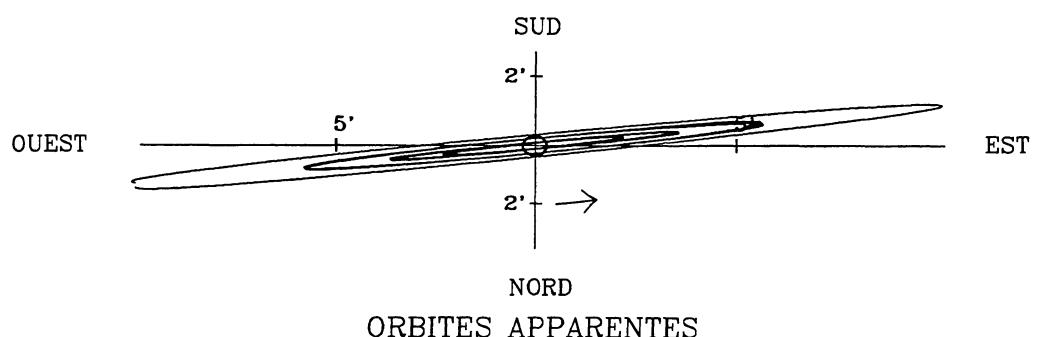
**2001 - PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER**  
(Temps Terrestre)

| DÉCEMBRE - DEUXIÈME QUINZAINE |    |    |    |      |          |          |    |    |     |          |          |      |    |    |    |          |          |          |
|-------------------------------|----|----|----|------|----------|----------|----|----|-----|----------|----------|------|----|----|----|----------|----------|----------|
| jour                          | h  | m  | s  | SAT. | TYPE     | jour     | h  | m  | s   | SAT.     | TYPE     | jour | h  | m  | s  | SAT.     | TYPE     |          |
| 16                            | 0  | 46 | 12 | II   | OM.F.INT | 16       | 14 | 43 | III | EC.D.PEN |          | 28   | 2  | 36 | 36 | I        | OM.D.EXT |          |
|                               | 0  | 50 | 13 | II   | OM.F.EXT | 16       | 18 | 19 | III | EC.D.EXT |          |      | 2  | 40 | 14 | I        | OM.D.INT |          |
|                               | 1  | 35 | 34 | II   | PA.F.INT | 16       | 28 | 24 | III | EC.D.INT |          |      | 2  | 43 | 17 | I        | PA.D.EXT |          |
|                               | 1  | 39 | 34 | II   | PA.F.EXT | 20       | 24 | 52 | III | OC.F.INT |          |      | 2  | 46 | 55 | I        | PA.D.INT |          |
|                               | 14 | 35 | 17 | I    | EC.D.PEN | 20       | 34 | 44 | III | OC.F.EXT |          |      | 4  | 52 | 18 | I        | OM.F.INT |          |
|                               | 14 | 36 | 2  | I    | EC.D.EXT | 22       | 1  | 6  | I   | EC.D.PEN |          |      | 4  | 55 | 56 | I        | OM.F.EXT |          |
|                               | 14 | 39 | 42 | I    | EC.D.INT | 22       | 1  | 51 | I   | EC.D.EXT |          |      | 4  | 58 | 8  | I        | PA.F.INT |          |
|                               | 17 | 15 | 20 | I    | OC.F.INT | 22       | 5  | 30 | I   | EC.D.INT |          |      | 5  | 1  | 46 | I        | PA.F.EXT |          |
|                               | 17 | 18 | 58 | I    | OC.F.EXT |          |    |    |     |          |          |      | 8  | 7  | 59 | II       | EC.D.PEN |          |
|                               |    |    |    |      |          | 22       | 0  | 33 | 9   | I        | OC.F.INT |      | 8  | 9  | 30 | II       | EC.D.EXT |          |
| 17                            | 11 | 45 | 42 | I    | OM.D.EXT | 0        | 36 | 47 | I   | OC.F.EXT |          | 10   | 8  | 13 | 27 | II       | EC.D.INT |          |
|                               | 11 | 49 | 20 | I    | OM.D.INT | 19       | 11 | 8  | I   | OM.D.EXT |          |      | 10 | 44 | 56 | IV       | OM.D.EXT |          |
|                               | 12 | 8  | 16 | I    | PA.D.EXT | 19       | 14 | 45 | I   | OM.D.INT |          |      | 11 | 2  | 33 | IV       | OM.D.INT |          |
|                               | 12 | 11 | 53 | I    | PA.D.INT | 19       | 25 | 51 | I   | PA.D.EXT |          |      | 11 | 7  | 39 | II       | OC.F.INT |          |
|                               | 14 | 1  | 7  | I    | OM.F.INT | 19       | 29 | 29 | I   | PA.D.INT |          |      | 11 | 11 | 35 | II       | OC.F.EXT |          |
|                               | 14 | 4  | 45 | I    | OM.F.EXT | 21       | 26 | 42 | I   | OM.F.INT |          |      | 11 | 44 | 34 | IV       | PA.D.EXT |          |
|                               | 14 | 22 | 59 | I    | PA.F.INT | 21       | 30 | 20 | I   | OM.F.EXT |          |      | 12 | 2  | 47 | IV       | PA.D.INT |          |
|                               | 16 | 26 | 37 | I    | PA.F.EXT | 21       | 40 | 39 | I   | PA.F.INT |          |      | 13 | 36 | 44 | IV       | OM.F.INT |          |
|                               | 16 | 16 | 14 | II   | EC.D.PEN | 21       | 44 | 17 | I   | PA.F.EXT |          |      | 13 | 54 | 26 | IV       | OM.F.EXT |          |
|                               | 16 | 17 | 44 | II   | EC.D.EXT |          |    |    |     |          |          |      | 14 | 24 | 27 | IV       | PA.F.INT |          |
| 18                            | 16 | 21 | 41 | II   | EC.D.INT | 23       | 0  | 32 | 59  | II       | OM.D.EXT | 20   | 14 | 42 | 40 | IV       | PA.F.EXT |          |
|                               | 19 | 47 | 43 | II   | OC.F.INT | 0        | 36 | 59 | II  | OM.D.INT |          |      | 20 | 13 | 52 | III      | EC.D.PEN |          |
|                               | 19 | 51 | 40 | II   | OC.F.EXT | 1        | 2  | 27 | II  | PA.D.EXT |          |      | 20 | 17 | 26 | III      | EC.D.EXT |          |
|                               |    |    |    |      |          | 1        | 6  | 26 | II  | PA.D.INT |          |      | 20 | 27 | 27 | III      | EC.D.INT |          |
|                               |    |    |    |      |          | 3        | 23 | 3  | II  | OM.F.INT |          |      | 23 | 39 | 49 | III      | OC.F.INT |          |
|                               | 2  | 22 | 58 | III  | OM.D.INT | 3        | 27 | 3  | II  | OM.F.EXT |          |      | 23 | 49 | 41 | III      | OC.F.EXT |          |
|                               | 3  | 40 | 48 | III  | PA.D.INT | 3        | 50 | 46 | II  | PA.F.INT |          |      | 23 | 55 | 40 | I        | EC.D.PEN |          |
|                               | 3  | 50 | 38 | III  | PA.D.INT | 3        | 54 | 45 | II  | PA.F.EXT |          |      | 23 | 56 | 25 | I        | EC.D.EXT |          |
|                               | 5  | 17 | 25 | III  | OM.F.INT | 16       | 29 | 46 | I   | EC.D.PEN |          |      | 29 | 0  | 0  | 4        | I        | EC.D.INT |
|                               | 5  | 27 | 20 | III  | OM.F.EXT | 16       | 30 | 31 | I   | EC.D.EXT |          |      | 2  | 16 | 45 | I        | OC.F.INT |          |
| 19                            | 6  | 42 | 43 | III  | PA.F.INT | 16       | 34 | 10 | I   | EC.D.INT |          | 23   | 2  | 20 | 24 | I        | OC.F.EXT |          |
|                               | 6  | 52 | 33 | III  | PA.F.EXT | 18       | 59 | 6  | I   | OC.F.INT |          |      | 21 | 5  | 10 | I        | OM.D.INT |          |
|                               | 9  | 3  | 52 | I    | EC.D.PEN | 19       | 2  | 44 | I   | OC.F.EXT |          |      | 21 | 8  | 47 | I        | OM.D.INT |          |
|                               | 9  | 4  | 37 | I    | EC.D.EXT |          |    |    |     |          |          |      | 21 | 9  | 9  | I        | PA.D.EXT |          |
|                               | 9  | 8  | 16 | I    | EC.D.INT | 24       | 13 | 39 | 36  | I        | OM.D.EXT |      | 21 | 12 | 46 | I        | PA.D.INT |          |
|                               | 11 | 41 | 16 | I    | OC.F.INT | 13       | 43 | 14 | I   | OM.D.INT |          |      | 23 | 20 | 54 | I        | OM.F.INT |          |
|                               | 11 | 41 | 44 | 55   | I        | OC.F.EXT | 13 | 51 | 40  | I        | PA.D.EXT |      | 14 | 24 | 0  | I        | PA.F.INT |          |
|                               |    |    |    |      |          | 13       | 55 | 17 | I   | PA.D.INT |          | 23   | 24 | 31 | I  | OM.F.EXT |          |          |
|                               |    |    |    |      |          | 15       | 55 | 13 | I   | OM.F.INT |          | 23   | 27 | 38 | I  | PA.F.EXT |          |          |
|                               |    |    |    |      |          | 15       | 58 | 50 | I   | OM.F.EXT |          | 30   | 3  | 9  | 40 | II       | OM.D.EXT |          |
| 20                            | 6  | 14 | 9  | I    | OM.D.EXT | 18       | 50 | 40 | II  | EC.D.PEN |          | 20   | 3  | 13 | 40 | II       | OM.D.INT |          |
|                               | 6  | 17 | 47 | I    | OM.D.INT | 18       | 52 | 10 | II  | EC.D.EXT |          |      | 3  | 17 | 1  | II       | PA.D.EXT |          |
|                               | 6  | 34 | 8  | I    | PA.D.INT | 18       | 56 | 8  | II  | EC.D.INT |          |      | 3  | 21 | 0  | II       | PA.D.INT |          |
|                               | 6  | 37 | 45 | I    | PA.D.INT | 22       | 1  | 5  | II  | OC.F.INT |          |      | 5  | 59 | 51 | II       | OM.F.INT |          |
|                               | 8  | 29 | 38 | I    | OM.F.INT | 22       | 5  | 2  | II  | OC.F.EXT |          |      | 6  | 3  | 50 | II       | OM.F.EXT |          |
|                               | 8  | 33 | 16 | I    | OM.F.EXT |          |    |    |     |          |          |      | 6  | 5  | 17 | II       | PA.F.EXT |          |
|                               | 8  | 48 | 54 | I    | PA.F.INT | 26       | 6  | 12 | 7   | III      | OM.D.INT | 25   | 6  | 9  | 16 | II       | PA.F.EXT |          |
|                               | 8  | 52 | 31 | I    | PA.F.EXT | 6        | 22 | 8  | III | OM.D.INT |          |      | 14 | 46 | 21 | I        | EC.D.PEN |          |
|                               | 11 | 14 | 16 | II   | OM.D.INT | 6        | 56 | 59 | III | PA.D.EXT |          |      | 14 | 25 | 6  | I        | EC.D.INT |          |
|                               | 11 | 18 | 16 | II   | OM.D.EXT | 7        | 6  | 49 | III | PA.D.INT |          |      | 18 | 28 | 45 | I        | EC.D.INT |          |
|                               | 11 | 54 | 35 | II   | PA.D.EXT | 9        | 17 | 45 | III | OM.F.INT |          |      | 20 | 42 | 41 | I        | OC.F.EXT |          |
| 21                            | 0  | 8  | 53 | IV   | EC.D.EXT | 9        | 58 | 22 | I   | EC.D.PEN |          | 21   | 17 | 49 | 49 | I        | PA.F.EXT |          |
|                               | 0  | 30 | 12 | IV   | EC.D.INT | 10       | 59 | 7  | I   | EC.D.EXT |          |      | 17 | 53 | 5  | I        | OM.F.EXT |          |
|                               | 2  | 27 | 41 | IV   | EC.F.INT | 11       | 2  | 46 | I   | EC.D.INT |          |      | 17 | 53 | 26 | I        | PA.F.EXT |          |
|                               | 2  | 49 | 0  | IV   | EC.F.EXT | 13       | 24 | 58 | I   | OC.F.INT |          |      | 21 | 25 | 23 | II       | EC.D.PEN |          |
|                               | 2  | 54 | 40 | IV   | OC.D.INT | 13       | 28 | 37 | I   | OC.F.EXT |          |      | 21 | 26 | 54 | II       | EC.D.EXT |          |
|                               | 3  | 1  | 43 | IV   | EC.F.PEN | 10       | 8  | 48 | III | PA.F.INT |          |      | 21 | 30 | 51 | II       | EC.D.INT |          |
|                               | 3  | 12 | 50 | IV   | OC.D.INT | 10       | 58 | 22 | I   | EC.D.PEN |          |      | 17 | 49 | 49 | I        | PA.F.EXT |          |
|                               | 3  | 32 | 32 | I    | EC.D.PEN | 8        | 11 | 44 | I   | OM.D.INT |          |      | 17 | 53 | 26 | I        | PA.F.EXT |          |
|                               | 3  | 33 | 17 | I    | EC.D.EXT | 8        | 17 | 29 | I   | PA.D.EXT |          |      | 21 | 25 | 51 | II       | EC.D.PEN |          |
|                               | 3  | 36 | 57 | I    | EC.D.INT | 8        | 21 | 7  | I   | PA.D.EXT |          |      | 21 | 26 | 54 | II       | EC.D.EXT |          |
| 22                            | 5  | 37 | 15 | IV   | OC.F.INT | 10       | 23 | 46 | I   | OM.F.INT |          | 22   | 10 | 11 | 30 | III      | OM.D.EXT |          |
|                               | 5  | 55 | 26 | IV   | OC.F.EXT | 10       | 27 | 23 | I   | OM.F.EXT |          |      | 10 | 12 | 3  | III      | PA.D.EXT |          |
|                               | 6  | 7  | 16 | I    | OC.F.INT | 10       | 32 | 20 | I   | PA.F.INT |          |      | 10 | 21 | 18 | III      | OM.D.INT |          |
|                               | 6  | 10 | 55 | I    | OC.F.EXT | 10       | 35 | 57 | I   | PA.F.EXT |          |      | 10 | 18 | 13 | II       | EC.F.PEN |          |
|                               |    |    |    |      |          | 13       | 50 | 57 | II  | OM.D.EXT |          |      | 10 | 18 | 8  | II       | OC.F.EXT |          |
|                               |    |    |    |      |          | 13       | 54 | 57 | II  | OM.D.INT |          |      | 13 | 23 | 52 | III      | PA.F.EXT |          |
|                               |    |    |    |      |          | 14       | 9  | 25 | II  | PA.D.EXT |          |      | 13 | 27 | 47 | III      | OM.F.EXT |          |
|                               |    |    |    |      |          | 14       | 13 | 24 | II  | PA.D.INT |          |      | 15 | 8  | 49 | I        | EC.F.INT |          |
|                               | 1  | 3  | 36 | I    | PA.D.INT | 16       | 41 | 6  | II  | OM.F.INT |          |      | 15 | 12 | 37 | I        | EC.F.EXT |          |
|                               | 2  | 58 | 8  | I    | OM.F.INT | 16       | 45 | 6  | II  | OM.F.EXT |          |      | 12 | 52 | 51 | I        | OC.D.EXT |          |
| 23                            | 3  | 1  | 46 | I    | OM.F.EXT | 16       | 57 | 45 | II  | PA.F.INT |          | 23   | 12 | 56 | 30 | I        | OC.D.INT |          |
|                               | 3  | 14 | 45 | I    | PA.F.INT | 17       | 1  | 44 | II  | PA.F.EXT |          |      | 13 | 14 | 1  | III      | PA.F.INT |          |
|                               | 3  | 18 | 23 | I    | PA.F.EXT |          |    |    |     |          |          |      | 13 | 17 | 59 | III      | OM.F.INT |          |
|                               | 5  | 33 | 25 | II   | EC.D.PEN | 27       | 5  | 27 | 4   | I        | EC.D.PEN |      | 13 | 23 | 52 | III      | PA.F.EXT |          |
|                               | 5  | 34 | 55 | II   | EC.D.EXT | 5        | 27 | 49 | I   | EC.D.EXT |          |      | 13 | 27 | 47 | III      | OM.F.EXT |          |
|                               | 5  | 38 | 52 | II   | EC.D.INT | 5        | 31 | 28 | I   | EC.D.INT |          |      | 15 | 8  | 49 | I        | EC.F.INT |          |
|                               | 8  | 54 | 29 | II   | OC.F.INT | 7        | 50 | 55 | I   | OC.F.INT |          |      | 15 | 12 | 27 | I        | EC.F.EXT |          |
|                               | 8  | 58 | 25 | II   | OC.F.EXT | 7        | 54 | 34 | I   | OC.F.EXT |          |      | 15 | 13 | 12 | I        | EC.F.PEN |          |

## 2001 - CONFIGURATIONS DES SATELLITES GALILÉENS DE JUPITER



Dans le sens OUEST-EST, les satellites passent au-delà de Jupiter





**PHÉNOMÈNES POUR 2002**

**PHENOMENA FOR 2002**



## LES PHÉNOMÈNES POUR 2002

Pour l'année 2002, les phénomènes sont donnés par l'intermédiaire de coefficients d'un polynôme. On a ainsi une représentation sous une forme très condensée. La précision est cependant moins bonne que celle des prédictions des phénomènes pour 2001. Cette précision et la méthode pour déterminer les phénomènes sont données ci-après.

### UTILISATION DES COEFFICIENTS

Soit  $P$  la période synodique moyenne d'un satellite ; la date approchée  $T_1$  du phénomène proche de la date  $T$  est donnée par la relation :

$$T_1 = KP + \tau/24 + T_0 \quad (1)$$

où  $K$  représente la partie entière de la quantité  $(T - T_0)/P$  et où  $\tau$  est donné, sur l'intervalle  $(T_0, T_0 + DT)$  par un polynôme de la forme :

$$\tau = C_0 + C_1x + C_2x^2 + \dots + C_nx^n \quad (2)$$

avec

$$x = [2(T - T_0)/DT] - 1 \quad (3)$$

$T_1$  ayant été obtenu par la relation (1), on peut réitérer le calcul en substituant  $T_1$  à  $T$  dans la formule (3) pour obtenir une date  $T_2$  plus proche du phénomène recherché que  $T_1$ . La précision de ce type de prédiction est meilleure que 60 secondes de temps.

Les tables donnent les coefficients  $C_i$  de la formule (2), numérotés à partir de  $C_0$  pour les quatre satellites et pour les phénomènes :

- débuts et fins des éclipses des satellites par Jupiter (notés EC.D et EC.F),
- débuts et fins des occultations des satellites par Jupiter (notés OC.D et OC.F),
- débuts et fins des passages de l'ombre des satellites sur le disque de Jupiter (OM.D et OM.F),
- débuts et fins des passages des satellites devant la planète (PA.D et PA.F).

## PHENOMENA FOR 2002

For 2002, the phenomena are given using polynomial coefficients. So, we have a compact representation. However, the accuracy is less than the one from the data given for 2001. This accuracy and the method of calculation of the phenomena are given here after.

### USE OF THE COEFFICIENTS

Let  $P$  be the mean synodic period of a satellite ; the approximate date  $T_1$  of a phenomenon close to a date  $T$  is given by :

$$T_1 = KP + \tau/24 + T_0 \quad (1)$$

where  $K$  is the integer part of  $(T - T_0)/P$  and where  $\tau$  is given on the interval  $(T_0, T_0 + DT)$  by a polynomial :

$$\tau = C_0 + C_1x + C_2x^2 + \dots + C_nx^n \quad (2)$$

with

$$x = [2(T - T_0)/DT] - 1 \quad (3)$$

The value  $T_1$  deduced from equation (1) is then substituted in place of  $T$  in equation (3). The new iteration yields a date  $T_2$  closer to the date of the phenomenon than  $T_1$ . The precision of this type of prediction is better than 60 seconds of time.

The tables give the coefficients  $C_i$  in formula (2) numbered from  $C_0$  for the four satellites and for the following phenomena:

- disappearance and reappearance of the satellites eclipsed by Jupiter (denoted respectively by EC.D and EC.F),
- disappearance and reappearance of the satellites occulted by Jupiter (denoted OC.D and OC.F),
- ingress and egress of the transits of the satellites shadow across the disc of Jupiter (OM.D and OM.F),
- ingress and egress of the satellites transits across the planet (PA.D and PA.F).

## EXEMPLE D'UTILISATION

Déterminons les dates des phénomènes du satellite I (Io) au voisinage du 30 juin 2002.

Voyons tout d'abord le calcul pour le début d'éclipse pour lequel les tables donnent :

$$T_0 = 0 ; P = 1,769\,860\,5 ; DT = 366$$

Du 0 janvier au 30 juin 2002, 181 jours se sont écoulés, on a donc  $T = 181$  et la formule (3) donne alors :

$$x = 2(181 - 0)/366 - 1 = -0,010\,928\,96$$

La formule (2) donne ensuite :

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| $\tau = 37.123\,035$     | $- 0.070\,246 \quad x$   | $- 0.431\,690 \quad x^2$ |
| $+ 0.026\,428 \quad x^3$ | $+ 0.183\,417 \quad x^4$ |                          |

d'où :  $\tau = 37,123\,751\,13$

On a d'autre part :

$$\begin{aligned} K &= \text{partie entière de } (181 - 0)/1,769\,860\,5 \\ &= 102 \end{aligned}$$

La formule (1) donne alors :

$$\begin{aligned} T_1 &= 102 \times 1,769\,860\,5 + 37,123\,751\,13/24 + 0 \\ T_1 &= 182,072\,594\,0 \text{ jours} \end{aligned}$$

depuis le 0 janvier (début de l'intervalle pour les éclipses) soit EC.D le 1<sup>er</sup> juillet 2002 à 1h 44m 32s TT. Le calcul réitéré donne  $T_2 = 182,072\,578\,5$  jours soit le 1<sup>er</sup> juillet à 1h 44m 31s TT.

On trouverait de même pour les autres phénomènes :

|      |    |            |   |            |
|------|----|------------|---|------------|
| PA.D | le | 30 juin    | à | 4h 12m 31s |
| OM.D | le | 30 juin    | à | 4h 32m 12s |
| PA.F | le | 30 juin    | à | 6h 29m 39s |
| OM.F | le | 30 juin    | à | 6h 49m 18s |
| OC.D | le | 1er juill. | à | 1h 25m 55s |
| OC.F | le | 1er juill. | à | 3h 42m 14s |
| EC.F | le | 1er juill. | à | 4h 1m 1s   |

## EXAMPLE

*Let us find the dates of the phenomena of satellite I (Io) which take place near the 30th of June 2002.*

*Let us start with the computation of the disappearance for the eclipse of the satellite for which the tables gives :*

$$T_0 = 0 ; P = 1,769\,860\,5 ; DT = 366$$

*Between January 0 to June the 30th 2002, 181 days have elapsed:  $T = 181$  and formula (3) gives :*

$$x = 2(181 - 0)/366 - 1 = -0.010\,928\,96$$

*Formula (2) then gives:*

*therefore  $\tau = 37.123\,751\,13$*

*On the other hand:*

$$\begin{aligned} K &= \text{integer part of } (181 - 0)/1.769\,860\,5 \\ &= 102 \end{aligned}$$

*Formula (1) then gives:*

$$\begin{aligned} T_1 &= 102 \times 1.769\,860\,5 + 37.123\,751\,13/24 + 0 \\ T_1 &= 182.072\,594\,0 \text{ days} \end{aligned}$$

*from January 0 (beginning of the interval for the occultations) that is July the 1st 2002 at 1h 44m 32s TT. Another iteration gives  $T_2 = 182.072\,578\,5$  days that is July the 1st 2002 at 1h 44m 31s TT.*

*One would find as well for the other phenomena:*

|      |               |    |            |
|------|---------------|----|------------|
| PA.D | June the 30th | at | 4h 12m 31s |
| OM.D | June the 30th | at | 4h 32m 12s |
| PA.F | June the 30th | at | 6h 29m 39s |
| OM.F | June the 30th | at | 6h 49m 18s |
| OC.D | July the 1st  | at | 1h 25m 55s |
| OC.F | July the 1st  | at | 3h 42m 14s |
| EC.F | July the 1st  | at | 4h 1m 1s   |

## CONDITIONS D'EXISTENCE DES PHÉNOMÈNES

Le recouvrement des cônes d'ombre et de visibilité rend inexistants certains phénomènes. Ainsi avant (ou après) l'opposition de Jupiter, les fins (respectivement débuts) d'éclipse et les débuts (respectivement fins) d'occultations sont inobservables. Ceci ne pouvant être pris en compte dans la représentation, il est nécessaire que l'utilisateur vérifie les conditions d'existence pour les éclipses et les occultations en calculant les quatre phases EC.D, EC.F, OC.D et OC.F. Ainsi, dans l'exemple précédent, on a dans l'ordre chronologique :

OC.D le 1<sup>er</sup> juillet à 1h 25m 55s observable

EC.D le 1<sup>er</sup> juillet à 1h 44m 31s inobservable car occulté

OC.F le 1<sup>er</sup> juillet à 3h 42m 14s inobservable car déjà éclipsé

EC.F le 1<sup>er</sup> juillet à 4h 1m 1s observable.

D'autre part, les caractéristiques de l'orbite du satellite IV (Callisto) font qu'il n'existe pas toujours de phénomènes. Les coefficients relatifs à ce satellite ne sont donc donnés que sur l'intervalle où ils existent.

## CONDITIONS FOR THE EXISTENCE OF THE PHENOMENA

*As the visibility and shadow cones may sometimes overlap, some of the computed phenomena may not exist. Thus, before (or after) the opposition of Jupiter, the reappearances (respectively the disappearances) for the eclipses, and the disappearances (respectively reappearances) for the occultations are not observable. This could not be taken into account in the representation; so the user will have to check the existence conditions of the eclipses and occultations by computing the four steps EC.D, EC.F, OC.D and OC.F. For instance, in the example above one has, in chronological order:*

*OC.D July 1st at 1h 25m 55s observable*

*EC.D July 1st at 1h 44m 31s unobservable as occulted*

*OC.F July 1st at 3h 42m 14s unobservable as eclipsed*

*EC.F July 1st at 4h 1m 1s observable.*

*Moreover, the orbit of satellite IV (Callisto) is such that phenomena are not always present. The coefficients for this satellite are given on the interval for which they exist.*

**2002- COEFFICIENTS DES PHÉNOMÈNES  
DES SATELLITES GALILIENS DE JUPITER**

| SATELLITE 1 |           |   | P = 1.7698605 |      | T0 = 0    |      | DT = 366jours |  |
|-------------|-----------|---|---------------|------|-----------|------|---------------|--|
|             |           |   | EC.D          | EC.F | OM.D      | OM.F |               |  |
| 0           | 37.123035 | 0 | 39.398287     | 0    | 15.920052 | 0    | 18.205274     |  |
| 1           | -0.070246 | 1 | -0.039101     | 1    | 0.198849  | 1    | 0.219970      |  |
| 2           | -0.431690 | 2 | -0.410726     | 2    | -0.507104 | 2    | -0.599369     |  |
| 3           | 0.026428  | 3 | 0.019149      | 3    | -0.190348 | 3    | -0.197966     |  |
| 4           | 0.183417  | 4 | 0.171612      | 4    | 0.197138  | 4    | 0.270841      |  |
|             |           |   | OC.D          | OC.F | PA.D      | PA.F |               |  |
| 0           | 36.828597 | 0 | 39.099437     | 0    | 15.622420 | 0    | 17.907039     |  |
| 1           | 2.962070  | 1 | 3.016175      | 1    | 3.247083  | 1    | 3.306011      |  |
| 2           | 0.192183  | 2 | 0.229875      | 2    | 0.133209  | 2    | -0.021264     |  |
| 3           | -2.746154 | 3 | -2.789124     | 3    | -3.149741 | 3    | -3.252292     |  |
| 4           | 0.717965  | 4 | 0.681069      | 4    | 0.641182  | 4    | 0.880688      |  |
| 5           | 0.086913  | 5 | 0.100719      | 5    | 0.254278  | 5    | 0.315513      |  |
| 6           | -0.469772 | 6 | -0.455448     | 6    | -0.402235 | 6    | -0.507492     |  |

*TO = 0 correspond au 0 janvier 2002 à 0h soit la date julienne 2452274.5*

| SATELLITE 2 |           |   | P = 3.5540942 |      | T0 = 0    |      | DT = 366jours |  |
|-------------|-----------|---|---------------|------|-----------|------|---------------|--|
|             |           |   | EC.D          | EC.F | OM.D      | OM.F |               |  |
| 0           | 22.011929 | 0 | 24.899074     | 0    | 64.483750 | 0    | 67.312084     |  |
| 1           | 0.606914  | 1 | 0.632914      | 1    | -0.495969 | 1    | -0.416482     |  |
| 2           | -0.810708 | 2 | -0.906577     | 2    | -0.192875 | 2    | -0.206566     |  |
| 3           | -0.549394 | 3 | -0.533249     | 3    | 0.341676  | 3    | 0.307096      |  |
| 4           | 0.341881  | 4 | 0.377970      | 4    | 0.048414  | 4    | 0.093186      |  |
|             |           |   | OC.D          | OC.F | PA.D      | PA.F |               |  |
| 0           | 21.407210 | 0 | 24.285385     | 0    | 63.900004 | 0    | 66.723107     |  |
| 1           | 6.772284  | 1 | 6.840839      | 1    | 5.259681  | 1    | 5.406612      |  |
| 2           | 0.366059  | 2 | 0.244527      | 2    | 1.122244  | 2    | 1.083345      |  |
| 3           | -5.789227 | 3 | -5.832567     | 3    | -3.326726 | 3    | -3.532183     |  |
| 4           | 1.589724  | 4 | 1.696310      | 4    | 0.926686  | 4    | 1.079669      |  |
| 5           | -1.540273 | 5 | -1.518717     | 5    | -3.097922 | 5    | -2.967489     |  |
| 6           | -1.050281 | 6 | -1.084547     | 6    | -0.813448 | 6    | -0.893375     |  |
| 7           | 1.335182  | 7 | 1.330890      | 7    | 1.729129  | 7    | 1.707849      |  |

*TO = 0 correspond au 0 janvier 2002 à 0h soit la date julienne 2452274.5*

**2002– COEFFICIENTS DES PHÉNOMÈNES  
DES SATELLITES GALILÉENS DE JUPITER**

| <b>SATELLITE 3</b> |            | <b>P = 7.1663872</b> |             | <b>T0 = 0</b> | <b>DT = 366jours</b> |   |           |
|--------------------|------------|----------------------|-------------|---------------|----------------------|---|-----------|
|                    |            | <b>EC.D</b>          | <b>EC.F</b> | <b>OM.D</b>   | <b>OM.F</b>          |   |           |
| 0                  | 120.396284 | 0                    | 123.812215  | 0             | 34.408978            | 0 | 37.802226 |
| 1                  | -0.207394  | 1                    | 0.081745    | 1             | -0.083957            | 1 | 0.209592  |
| 2                  | -0.467805  | 2                    | -0.539478   | 2             | -0.508143            | 2 | -0.677069 |
| 3                  | -0.020562  | 3                    | -0.026044   | 3             | -0.144791            | 3 | -0.168488 |
| 4                  | 0.172422   | 4                    | 0.169466    | 4             | 0.183241             | 4 | 0.277802  |
|                    |            | <b>OC.D</b>          | <b>OC.F</b> | <b>PA.D</b>   | <b>PA.F</b>          |   |           |
| 0                  | 119.208444 | 0                    | 122.573413  | 0             | 33.224607            | 0 | 36.573318 |
| 1                  | 11.781516  | 1                    | 12.338701   | 1             | 11.818166            | 1 | 12.404103 |
| 2                  | 2.057330   | 2                    | 2.073457    | 2             | 2.072462             | 2 | 1.912330  |
| 3                  | -8.794945  | 3                    | -9.198756   | 3             | -9.001607            | 3 | -9.540597 |
| 4                  | 2.128515   | 4                    | 2.043321    | 4             | 1.794701             | 4 | 1.997966  |
| 5                  | -4.946855  | 5                    | -4.755390   | 5             | -4.749667            | 5 | -4.435811 |
| 6                  | -1.447350  | 6                    | -1.344533   | 6             | -1.042280            | 6 | -1.054293 |
| 7                  | 3.182669   | 7                    | 3.137418    | 7             | 3.142459             | 7 | 3.072615  |
| 8                  | -0.267387  | 8                    | -0.303818   | 8             | -0.405805            | 8 | -0.452912 |

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| <b>SATELLITE 4</b> |            | <b>P = 16.7535520</b> |             | <b>T0 = 0</b> | <b>DT = 366jours</b> |   |            |
|--------------------|------------|-----------------------|-------------|---------------|----------------------|---|------------|
|                    |            | <b>EC.D</b>           | <b>EC.F</b> | <b>OM.D</b>   | <b>OM.F</b>          |   |            |
| 0                  | 137.795567 | 0                     | 142.040152  | 0             | 340.461140           | 0 | 344.649810 |
| 1                  | -0.536074  | 1                     | 0.457491    | 1             | -0.756361            | 1 | 0.248733   |
| 2                  | -0.457201  | 2                     | -0.881114   | 2             | -0.418520            | 2 | -0.947572  |
| 3                  | -0.110857  | 3                     | -0.056230   | 3             | -0.042358            | 3 | -0.140043  |
| 4                  | 0.238316   | 4                     | 0.195749    | 4             | 0.155406             | 4 | 0.221107   |
| 5                  | -0.005677  | 5                     | 0.017450    | 5             | -0.080946            | 5 | 0.054297   |
|                    |            | <b>OC.D</b>           | <b>OC.F</b> | <b>PA.D</b>   | <b>PA.F</b>          |   |            |
| 0                  | 135.036822 | 0                     | 139.102724  | 0             | 337.740181           | 0 | 341.764808 |
| 1                  | 27.447613  | 1                     | 29.472058   | 1             | 26.809789            | 1 | 28.817819  |
| 2                  | 5.723522   | 2                     | 5.070983    | 2             | 5.346134             | 2 | 4.461581   |
| 3                  | -20.690264 | 3                     | -21.982462  | 3             | -20.482204           | 3 | -21.930755 |
| 4                  | 5.015997   | 4                     | 5.485776    | 4             | 5.234349             | 4 | 6.047555   |
| 5                  | -11.356472 | 5                     | -11.012803  | 5             | -11.093276           | 5 | -10.513100 |
| 6                  | -4.472800  | 6                     | -4.541871   | 6             | -4.480835            | 6 | -4.688189  |
| 7                  | 7.382123   | 7                     | 7.388885    | 7             | 7.239387             | 7 | 7.151316   |

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