Ephémérides des satellites de Mars, Jupiter, Saturne et Uranus pour 1993

Th. Derouazi, Ch. Ruatti, W. Thuillot, D.T. Vu

SUPPLÉMENT À LA CONNAISSANCE DES TEMPS - PARIS 1992
BUREAU DES LONGITUDES

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• *Ephemerides of the faint satellites of Jupiter (VI, VII, VIII, IX) and of Saturn (IX) for 1993*

• *Phenomena and configurations of the Galilean satellites of Jupiter for 1993*

• *Configurations of the first eight satellites of Saturn for 1992*

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  - Cahier n° 2 « Stratosphère et couche d'ozone », G. MÉGIE, professeur à l'Université Pierre et Marie Curie
- Le Calendrier Républicain (Éditions de l'Observatoire de Paris)

AVERTISSEMENT

Depuis 1980, la *Connaissance des Temps* publie les éphémérides du Soleil, de la Lune, des planètes et des satellites galiléens de Jupiter sous forme de coefficients de Tchébycheff. A partir de 1981, des éphémérides des huit premiers satellites de Saturne ont été publiées sous la même forme dans un supplément à la *Connaissance des Temps*. Ces éphémérides ayant été appréciées par les utilisateurs, nous avons décidé d'étendre ces publications à d'autres satellites naturels du système solaire.

Depuis 1985, nous publions dans un même recueil des éphémérides des satellites galiléens de Jupiter, des huit premiers satellites de Saturne et des cinq satellites d'Uranus. A partir de 1991, les éphémérides des satellites de Mars ont été ajoutées. Les éphémérides ne sont plus représentées à l'aide de coefficients de Tchébycheff, mais à l'aide de fonctions mixtes du paramètre « temps » comprenant des termes séculaires et des termes périodiques. Cette représentation permet de garder une bonne précision tout en diminuant notablement le nombre de valeurs numériques à publier et en autorisant une plus grande facilité d'emploi.

La liste des satellites dont nous publions les éphémérides n'est pas limitative et nous envisageons de l'étendre en fonction des données dont nous disposerons.

En dehors des éphémérides proprement dites cet ouvrage contient des données diverses sur les satellites de Mars, Jupiter, Saturne et Uranus et présente un formulaire permettant de calculer les phénomènes des satellites galiléens de Jupiter.

J. CHAPRONT

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FOREWORD

Since 1980, Connaissance des Temps has published ephemerides of the Sun, the Moon, the Planets and the Galilean satellites of Jupiter as tables of Chebychev polynomials. From 1981, ephemerides of the first eight satellites of Saturn have been published under the same form in a supplement to the Connaissance des Temps. These ephemerides have been well received by the users; hence, we now intend to enlarge the publication to incorporate other natural satellites of the planets.

Starting from 1985, we have gathered in this booklet, the ephemerides of the Galilean satellites of Jupiter, the first eight satellites of Saturn and the five satellites of Uranus. From 1991, we added the ephemerides of the Satellites of Mars. The representation does not use Chebychev polynomials. It appears that a mixed form of representation, involving secular and periodic terms and depending directly on time, allows sufficient accuracy and reduces the amount of numerical data to be published. Furthermore, it is very easy to use these tables.

The list of the satellites, the ephemerides of which are published, is not limited and will be extended as soon as it is possible.

Beside the tables, the present publication contains various data concerning the satellites of Mars, Jupiter, Saturn and Uranus. We will also present, a formula which permits the calculation of the phenomena of the Galilean satellites.

J.-E. ARLOT

Responsable de la publication

Collaboration scientifique et technique : Th. DEROUAZI, Ch. RUATTI, W. THUILLOT, D.T. VU

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CONTENU

On trouve dans cette publication :

— des données sur les satellites galiléens de Jupiter rassemblant les résultats d'un certain nombre de travaux théoriques ou d'observations effectués sur ces satellites, ainsi que des données (en général recommandées par l'UAI) sur l'ensemble des satellites de Mars, Jupiter, Saturne et Uranus ;
— des tables permettant de calculer les positions des satellites de Mars, des satellites galiléens de Jupiter, des huit premiers satellites de Saturne et des cinq satellites d'Uranus ;
— des tables permettant de calculer les prédictions des phénomènes des satellites galiléens de Jupiter.

Les éphémérides des satellites donnent les coordonnées différentielles tangentielles des satellites par rapport au centre de la planète. Soit, au premier ordre :

$$X = \Delta\alpha \cos \delta \text{ et } Y = \Delta\delta$$

où δ est la déclinaison de la planète et où $\Delta\alpha$ et $\Delta\delta$ sont les différences en ascension droite et en déclinaison entre le satellite et la planète.

Ces coordonnées sont des coordonnées moyennes rapportées à l'équateur J2000 pour tous les satellites. L'axe des Y est dirigé vers le pôle de l'équateur moyen des coordonnées (nord) et l'axe des X est orienté dans le sens des ascensions droites croissantes (est).

Les théories utilisées pour la construction des éphémérides sont les suivantes :

— satellites de Mars : la théorie de Chapront-Touzé (1990) ;
— satellites galiléens : la théorie de Sampson (1921) améliorée par Lieske (1977) ; les constantes introduites ont été déterminées par Arlot (1982) ;
— huit premiers satellites de Saturne : les théories issues des travaux de Dourneau (1987), de Rapaport (1977), de Kozaï (1959) et de Struve (1930) ;
— satellites d'Uranus : la théorie de Laskar et Jacobson (1987).

CONTENTS

This publication contains the following :

— data on the Galilean satellites of Jupiter which sum the results of theoretical or observational studies in addition to various data (most of which are recommended by the IAU) concerning all known satellites of Mars, Jupiter, Saturn and Uranus ;
— tables which allow the computation of the positions of the satellites of Mars, the Galilean satellites of Jupiter, the first eight satellites of Saturn and the five satellites of Uranus ;
— tables to calculate the phenomena of the Galilean satellites of Jupiter.

These ephemerides of the satellites give the differential tangential coordinates of the satellites with respect to the centre of mass of the planet. We have, at the first order :

$$X = \Delta\alpha \cos \delta \text{ and } Y = \Delta\delta$$

where δ is the declination of the planet, $\Delta\alpha$ and $\Delta\delta$ the separations in right ascension and declination between the satellite and the planet.

These coordinates are mean coordinates equator J2000 for all the satellites. The Y-axis is set towards the pole of the equator (North) and the X-axis towards the increasing right ascensions (East).

The theories which have been used for the construction of the ephemerides are :

— satellites of Mars : theory from Chapront-Touzé (1990) ;
— Galilean satellites : Sampson's theory (1921) improved by Lieske (1977) ; the constants introduced have been determined by Arlot (1982) ;
— first eight satellites of Saturn : theories from the studies of Dourneau (1987), Rapaport (1977), Kozaï (1959) and Struve (1930) ;
— satellites of Uranus : theory from Laskar and Jacobson (1987).

REPRÉSENTATION DES COORDONNÉES

Soit T une date Julienne appartenant à l'intervalle de temps $T0$, $T0 + \Delta t$, les coordonnées des satellites pour la date T sont données par la formule :

REPRESENTATION OF THE COORDINATES

Let T be a Julian date belonging to the interval of time T0, T0 + Δt. The coordinates of the satellites for the date T are given by the formula :

$$\left.\begin{matrix} X \\ Y \end{matrix}\right\} = A0 + A1 \cdot t + B0 \sin (Nt + F0) + B1 \cdot t \sin (Nt + F1) + B2 \cdot t^2 \sin (Nt + F2) + C0 \sin (2Nt + P0) \qquad (1)$$

où :

- $t = T - T0$;
- $A0, A1, B0, F0, B1, F1, B2, F2, C0, P0$ sont les coefficients numériques valables pour l'intervalle de temps $T0, T0 + \Delta t$ contenant T ;
- N est la fréquence associée au satellite considéré. Cette fréquence est en général proche de celle du satellite lui-même, sauf dans le cas d'Hypérion pour lequel on prend une fréquence proche de celle de Titan du fait de l'existence d'un très gros terme perturbateur de fréquence plus grande que celle du satellite lui-même.

Cette représentation sous forme de fonctions mixtes (termes séculaires et sinusoïdaux) utilise le caractère quasi périodique des variations des positions des satellites naturels des planètes. On trouvera des explications détaillées sur cette représentation dans Chapront et Vu (1984).

where :

- $t = T - T0$;
- *$A0, A1, B0, F0, B1, F1, B2, F2, C0, P0$ are numerical coefficients valid for the time interval $T0, T0 + \Delta t$;*
- *N is the frequency associated with the chosen satellite. Generally, N is close to the natural frequency of the satellite itself. Nevertheless, in the case of Hyperion, N is close to the frequency of Titan because of the appearance of a large disturbing term which frequency is larger than the proper frequency of the satellite.*

This representation with mixed functions (secular and sinusoidal terms) of time, makes use of the quasi-periodic character of the variations of the differential coordinates of the satellites. Detailed explanations about this representation are given in Chapront and Vu (1984).

DESCRIPTION DES ÉPHÉMÉRIDES

Pour chaque satellite et pour chaque intervalle de temps, on donne :

— les dates de début et de fin de l'intervalle de validité ainsi que la date Julienne du début de l'intervalle ; cet intervalle peut varier de 3 jours à 31 jours ;

— deux jeux de coefficients $A0, A1, B0, F0, B1, F1, B2, F2, C0, P0$: l'un pour la coordonnée X, l'autre pour la coordonnée Y. Notons que pour quelques satellites (Titan, par exemple), certains coefficients ne sont pas donnés car ils sont nuls ;

— la valeur de la fréquence N associée au satellite est indiquée en haut de chaque page.

Les unités sont : la seconde de degré pour les coefficients $A0, B0, C0$, la seconde de degré par jour pour $A1, B1$, la seconde de degré par (jour)^2 pour $B2$; les phases $F0, F1, F2, P0$ sont mesurées en radian. N est en radian par jour et le paramètre « temps » t est compté en jours à partir du début de l'intervalle (époque $T0$).

DESCRIPTION OF THE EPHEMERIDES

The following is given for each satellite and for each time interval :

— the dates of the beginning and end of the interval and the Julian date of the beginning. The duration of the time interval may cover from 3 days to 31 days ;

— two sets of coefficients $A0, A1, B0, F0, B1, F1, B2, F2, C0, P0$: the first set for the X-coordinate and the second set for the Y-coordinate. Let us note that for some satellites (Titan for example) some coefficients, with zero value, are not listed ;

— the value of frequency N, associated with the satellite is indicated at the top of each page.

Units of the data : $A0, B0, C0$ in arcsecond ; $A1$ and $B1$ in arcsecond per day and $B2$ in arcsecond per (day)^2, For phases $F0, F1, F2, P0$ the unit is the radian. N is expressed in radian per day and t in days from the beginning of the interval (epoch $T0$).

ÉCHELLES DE TEMPS

L'argument « temps » des éphémérides publiées ici est le TDB (temps dynamique barycentrique) que l'on peut confondre, à la précision des éphémérides, avec le TDT (temps dynamique terrestre), proche du TE (temps des éphémérides) et réalisé physiquement par la mesure du TAI (temps atomique international). On a :

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

TIME-SCALES

The time argument of the ephemerides is TDB (barycentric dynamical time) which can be identified with TDT (terrestrial dynamic time) close to the former definition of ET (ephemeris time) and physically made by measuring TAI (international atomic time), so that :

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

Les événements astronomiques étant mesurés dans l'échelle UTC (temps universel coordonné), le tableau ci-dessous donne la relation (entre le 1 juillet 1983 et le 1 juillet 1992) entre TDT et UTC (d'après la relation entre TAI et UTC publiée par l'IERS).

Astronomical events are measured in the time-scale UTC (coordinated universal time). The table below gives the correspondence (from 1983 July 1 to 1992 July 1) between TDT and UTC (using the relationship between TAI and UTC published by the IERS).

	TDT-UTC
1983 Juil. 1 - 1985 Juil. 1	54.184 s
1985 Juil. 1 - 1988 Jan. 1	55.184 s
1988 Jan. 1 - 1990 Jan. 1	56.184 s
1990 Jan. 1 - 1991 Jan. 1	57.184 s
1991 Jan. 1 - 1992 Juil. 1	58.184 s
1992 Juil. 1 -	59.184 s

Pour 1993, on ne sait pas encore quelle en sera la valeur ; on peut cependant prendre 59 secondes, l'erreur commise n'ayant que peu d'influence sur la valeur des positions calculées des satellites.

For 1993 the value of TDT-UTC is not yet known ; one may take 59 seconds : the error made will have little effect on the values of the calculated positions of the satellites.

EXEMPLE DE CALCUL D'UNE POSITION

Pour calculer les coordonnées X et Y d'un satellite pour une date T exprimée en UTC :

— on effectue une correction déduite du tableau du paragraphe précédent pour se ramener à l'échelle TDT (identifiée à TDB) ;
— on cherche parmi les tableaux représentant X et Y celui qui correspond à l'intervalle $T0$, $T0 + \Delta t$ dans lequel se trouve T ;
— on applique la formule (1) avec $t = T - T0$.

Il faut insister sur le fait que la représentation n'est valable que sur son intervalle de validité : T doit être compris entre $T0$ et $T0 + \Delta t$.

EXEMPLE : Calculer les coordonnées tangentielles de Téthys (3e satellite de Saturne) par rapport à la planète, le 5 janvier 1993 à 23 h 30 min UTC.

On effectue d'abord une correction pour se ramener à l'échelle TDB. Pour 1993 nous avons choisi 59 secondes ; la date T est donc le 5 janvier 1993 à 23 h 30 min 59 s TDB.

Les coefficients nécessaires au calcul de X et Y sont ceux de la page 66 correspondant à l'intervalle du 1er janvier à 0 h au 17 janvier à 0 h. On a, pour X :

$A0 = -0.000\,5$, $A1 = 0.$, $B0 = 37.899\,9$, $B1 = 0.074\,37$, $B2 = 0.000\,373$, $C0 = 0.003\,3$,
$F0 = 4.657\,932$, $F1 = 2.602\,5$, $F2 = 4.484\,5$, $P0 = 0.001\,9$,

et pour Y :

$A0 = -0.000\,9$, $A1 = 0.000\,01$, $B0 = 11.853\,7$, $B1 = 0.038\,68$, $B2 = 0.000\,077$, $C0 = 0.001\,0$,
$F0 = 0.347\,461$, $F1 = 3.656\,9$, $F2 = 1.042\,6$, $P0 = 1.992\,8$.

On applique ensuite la formule (1) :

EXAMPLE OF A POSITION CALCULATION

To compute the X and Y coordinates of a satellite for a date T (expressed in UTC), one has to :

— apply the correction deduced from the preceding table to express the date T in TDT (identified with TDB) ;
— select from the tables of coefficients, the one which corresponds to the time interval $T0$, $T0 + \Delta t$ where T is found ;
— apply formula (1) with $t = T - T0$.

It is important to state that the representation is valid only for its time interval : T must belong to the interval $T0$, $T0 + \Delta t$.

EXAMPLE : Let us compute the tangential coordinates of Tethys (third satellite of Saturn) with respect to the planet for 1993 January 5, 23 h 30 m UTC.

First, the date must be corrected in order to fit with the TDB time-scale. For 1993, we choose 59 seconds ; so, the date T is 1993 January 5, 23 h 30 m 59 s TDB.

The coefficients necessary to compute X and Y are given on page 66 (interval from January, 1, 0 h to January 17, 0 h). We read for X :

and for Y :

We then apply formula (1) :

$$\left.\begin{matrix} X \\ Y \end{matrix}\right\} = A0 + A1 \cdot t + B0 \sin(Nt + F0) + B1 \cdot t \sin(Nt + F1) + B2 \cdot t^2 \sin(Nt + F2) + C0 \sin(2Nt + P0)$$

On a ici :

N = 3,328 radian/jour

t est le nombre de jours écoulés entre le 1 janvier à 0 h (début de l'intervalle) et le 5 janvier à 23 h 30 m 59 s, soit 4,979 849 jours.

On obtient finalement :

X = 26,25"
Y = −10,91"

PRÉCISION DES ÉPHÉMÉRIDES

Les théories dont sont issues les éphémérides sont construites pour la plupart avec une précision meilleure que 0,01" géocentrique.

Les observations utilisées pour l'ajustement des constantes et aussi certains défauts de la théorie ne permettent pas d'obtenir en réalité une précision meilleure que 0,05" ; cette précision peut n'être que de 0,5" pour Hyperion.

La représentation en fonctions mixtes publiée ici a été déterminée de façon à ce que l'écart avec la théorie-source soit de l'ordre de 0,01".

PHÉNOMÈNES DES SATELLITES GALILÉENS DE JUPITER

Les prédictions des phénomènes des satellites galiléens sont données suivant une représentation polynômiale en fonction d'une variable temporelle. La méthode (Thuillot, 1983) permet une représentation compacte puisque 14 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 donnés pages 51 à 54.

Where :

N = 3.328 radian/day

t is the number of days elapsed between January 1, 0 h (beginning of the interval) and January 5, 23 h 30 m 59 s. Hence t = 4.979 849 days.

Finally, we get :

X = 26.25"
Y = − 10.91"

ACCURACY OF THE EPHEMERIDES

The theories from which are built the ephemerides have an internal precision better than 0.01" (in a geocentric reference frame).

In reality, the observations used to fit the constants and shortcomings in the theories, do not allow a precision better than 0.05" and may reach 0.5" for Hyperion.

The representation in mixed functions, as published here, has been determined in such a way that the difference between the representation and the source always remains around 0.01".

PHENOMENA OF THE GALILEAN SATELLITES OF JUPITER

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 only 14 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 51 to 54.

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Note : Les calculs nécessaires à l'élaboration de cet ouvrage ont été effectués sur l'ordinateur NAS 9080 du Centre Inter-Régional de Calcul Electronique du CNRS, F-91405 ORSAY (France).

Nota : The calculations performed in order to build these tables have been made on the NAS 9080 computer of the Centre Inter-Régional de Calcul Electronique of the CNRS, F-91405 ORSAY (France).

SATELLITES DE MARS

SATELLITES OF MARS

DONNÉES SUR LES SATELLITES DE MARS

DATA ON THE SATELLITES OF MARS

NOM	masse	rayon	période rotation sidérale	albédo géométrique	magnitude visuelle	période orbitale	élongation maximale	1/2 grand axe	excentricité	inclinaison sur l'équateur de Mars
unité →	masse de Mars	km	jour			jour	(') (")	10^3 km		degré
I Phobos	2.0×10^{-8}	13 x 11 x 9	(S)	0.06	11.6	0.3189	25	9.38	0.0151	1.1
II Deimos	0.3×10^{-8}	8 x 6 x 5	(S)	0.06	12.7	1.262	1 02	23.46	0.0002	0.9/2.7
NAME	*mass*	*radius*	*sidereal period*	*geometrical albedo*	*visual magnitude*	*orbital period*	*greatest elongation*	*semi major axis*	*eccentricity*	*inclination on Mars' equator*
unit →	*Mars' mass*	*km*	*day*			*day*	*(') (")*	*10^3 km*		*degree*

NOTES

(S) : Révolution synchrone

(S) : synchronous revolution

ÉPHÉMÉRIDES DES SATELLITES DE MARS

EPHEMERIDES OF THE SATELLITES OF MARS

Coordonnées différentielles tangentielles données en secondes de degré dans le repère équatorial moyen J2000. On a, au premier ordre :

Differential tangential coordinates given in arcsecond in the mean equatorial frame J2000. We have, at the first order :

$$\Delta\alpha \cos\delta = X$$
$$\Delta\delta = Y$$

$$\left.\begin{matrix} X \\ Y \end{matrix}\right\} = A0 + A1 \cdot t + B0 \sin(Nt + F0) + B1 \cdot t \sin(Nt + F1) + B2 \cdot t^2 \sin(Nt + F2) + C0 \sin(2Nt + P0)$$

où $t = T - T0$ avec $T0$ date du début de l'intervalle et T date du calcul

where $t = T - T0$ with $T0$ date of the beginning of the interval and T the date for the calculation

satellite	intervalle Δt (jours)	N (rad/j)	page
Phobos	7	19.702 7	16
Deimos	7	4.978 8	20
	(days)	*(rad/d)*	

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE MARS: PHOBOS N=19.7027

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN. 1 (0H) (2448988.5)	X:	+0.4394	-0.00217	+20.0144 0.174444	+0.11724 1.7764	+0.003943 3.3221	+0.1504 -4.6100
A JAN. 8 (0H)	Y:	+0.0919	+0.00096	+ 5.6887 0.701019	+0.08092 6.0342	+0.000610 3.2481	+0.0442 -4.1519
JAN. 8 (0H) (2448995.5)	X:	+0.4223	-0.00384	+19.8113 6.187656	+0.13142 1.9115	+0.003625 3.3688	+0.1473 -5.2498
A JAN.15 (0H)	Y:	+0.0986	+0.00068	+ 6.0090 0.315703	+0.07225 5.6919	+0.001335 2.8291	+0.0466 -4.8911
JAN.15 (0H) (2449002.5)	X:	+0.3948	-0.00513	+19.2680 5.916742	+0.14591 1.9591	+0.003215 3.4542	+0.1417 -5.8971
A JAN.22 (0H)	Y:	+0.1032	+0.00010	+ 6.2771 6.230554	+0.05346 5.2903	+0.001809 2.5353	+0.0478 -5.6184
JAN.22 (0H) (2449009.5)	X:	+0.3596	-0.00565	+18.4563 5.640424	+0.15448 1.9446	+0.002802 3.5535	+0.1353 -0.2704
A JAN.29 (0H)	Y:	+0.1039	-0.00054	+ 6.4259 5.879884	+0.03098 4.6585	+0.001893 2.2663	+0.0482 -0.0577
JAN.29 (0H) (2449016.5)	X:	+0.3210	-0.00540	+17.4774 5.354853	+0.15603 1.8880	+0.002427 3.6228	+0.1261 -0.9320
A FEV. 5 (0H)	Y:	+0.1000	-0.00106	+ 6.4189 5.543599	+0.02171 3.3518	+0.001618 2.0060	+0.0479 -0.7630
FEV. 5 (0H) (2449023.5)	X:	+0.2836	-0.00477	+16.4307 5.057648	+0.15274 1.7972	+0.002070 3.6345	+0.1199 -1.6054
A FEV.12 (0H)	Y:	+0.0924	-0.00140	+ 6.2595 5.217400	+0.03443 2.3630	+0.001160 1.7315	+0.0463 -1.4549
FEV.12 (0H) (2449030.5)	X:	+0.2503	-0.00411	+15.3913 4.748084	+0.14745 1.6745	+0.001749 3.6064	+0.1117 -2.2985
A FEV.19 (0H)	Y:	+0.0824	-0.00159	+ 5.9781 4.897796	+0.04825 1.8549	+0.000706 1.3788	+0.0436 -2.1480
FEV.19 (0H) (2449037.5)	X:	+0.2220	-0.00353	+14.4043 4.426577	+0.14152 1.5244	+0.001435 3.5823	+0.1047 -3.0064
A FEV.26 (0H)	Y:	+0.0712	-0.00169	+ 5.6128 4.582821	+0.05740 1.4644	+0.000351 0.7411	+0.0407 -2.8414
FEV.26 (0H) (2449044.5)	X:	+0.1982	-0.00295	+13.4942 4.094077	+0.13505 1.3463	+0.001101 3.5599	+0.0988 -3.7183
A MAR. 5 (0H)	Y:	+0.0595	-0.00167	+ 5.1991 4.271873	+0.06164 1.1036	+0.000239 5.8237	+0.0377 -3.5246
MAR. 5 (0H) (2449051.5)	X:	+0.1783	-0.00227	+12.6716 3.751922	+0.12808 1.1364	+0.000754 3.4924	+0.0928 -4.4349
A MAR.12 (0H)	Y:	+0.0479	-0.00156	+ 4.7673 3.965302	+0.06208 0.7440	+0.000279 4.9683	+0.0344 -4.1984
MAR.12 (0H) (2449058.5)	X:	+0.1617	-0.00158	+11.9375 3.401744	+0.12143 0.8928	+0.000473 3.2998	+0.0872 -5.1654
A MAR.19 (0H)	Y:	+0.0367	-0.00140	+ 4.3403 3.664254	+0.06030 0.3779	+0.000301 4.3892	+0.0311 -4.8732
MAR.19 (0H) (2449065.5)	X:	+0.1486	-0.00113	+11.2858 3.045175	+0.11585 0.6219	+0.000335 3.0097	+0.0825 -5.9056
A MAR.26 (0H)	Y:	+0.0263	-0.00129	+ 3.9337 3.370516	+0.05746 0.0058	+0.000339 3.8386	+0.0282 -5.5439
MAR.26 (0H) (2449072.5)	X:	+0.1387	-0.00103	+10.7073 2.683648	+0.11136 0.3319	+0.000329 2.8512	+0.0787 -0.3645
A AVR. 2 (0H)	Y:	+0.0168	-0.00124	+ 3.5577 3.086205	+0.05384 5.9122	+0.000400 3.3888	+0.0256 -6.1999
AVR. 2 (0H) (2449079.5)	X:	+0.1311	-0.00113	+10.1911 2.318354	+0.10730 0.0314	+0.000378 2.9246	+0.0753 -1.1038
A AVR. 9 (0H)	Y:	+0.0080	-0.00122	+ 3.2208 2.813272	+0.04954 5.5287	+0.000445 3.0405	+0.0232 -0.5561

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE MARS: PHOBOS N=19.7027

		AO	A1	BO FO	B1 F1	B2 F2	CO PO
AVR. 9 (OH) (2449086.5)	X:	+0.1244	-0.00119	+ 9.7268 1.950110	+0.10285 6.0055	+0.000419 3.0560	+0.0718 -1.8447
A AVR.16 (OH)	Y:	-0.0002	-0.00117	+ 2.9297 2.552975	+0.04468 5.1332	+0.000449 2.7310	+0.0212 -1.1829
AVR.16 (OH) (2449093.5)	X:	+0.1179	-0.00104	+ 9.3076 1.579503	+0.09790 5.6834	+0.000415 3.1244	+0.0685 -2.5946
A AVR.23 (OH)	Y:	-0.0081	-0.00108	+ 2.6903 2.305519	+0.04036 4.7210	+0.000428 2.3686	+0.0196 -1.8022
AVR.23 (OH) (2449100.5)	X:	+0.1116	-0.00074	+ 8.9289 1.207169	+0.09303 5.3451	+0.000353 3.0825	+0.0659 -3.3487
A AVR.30 (OH)	Y:	-0.0155	-0.00097	+ 2.5068 2.069570	+0.03620 4.2940	+0.000411 1.9321	+0.0185 -2.4116
AVR.30 (OH) (2449107.5)	X:	+0.1061	-0.00049	+ 8.5852 0.833828	+0.08888 4.9939	+0.000274 2.8731	+0.0639 -4.0967
A MAI 7 (OH)	Y:	-0.0223	-0.00086	+ 2.3811 1.841539	+0.03231 3.8550	+0.000407 1.4855	+0.0177 -3.0129
MAI 7 (OH) (2449114.5)	X:	+0.1018	-0.00039	+ 8.2696 0.460031	+0.08573 4.6386	+0.000250 2.3977	+0.0615 -4.8391
A MAI 14 (OH)	Y:	-0.0286	-0.00078	+ 2.3115 1.615675	+0.02860 3.4017	+0.000396 1.0774	+0.0174 -3.6165
MAI 14 (OH) (2449121.5)	X:	+0.0984	-0.00039	+ 7.9756 0.085896	+0.08310 4.2663	+0.000326 1.9343	+0.0589 -5.5912
A MAI 21 (OH)	Y:	-0.0343	-0.00074	+ 2.2929 1.385438	+0.02521 2.9277	+0.000374 0.6779	+0.0174 -4.2285
MAI 21 (OH) (2449128.5)	X:	+0.0952	-0.00040	+ 7.7002 5.994465	+0.08020 3.9343	+0.000419 1.6665	+0.0571 -0.0659
A MAI 28 (OH)	Y:	-0.0396	-0.00071	+ 2.3173 1.145218	+0.02231 2.4296	+0.000349 0.2478	+0.0178 -4.8508
MAI 28 (OH) (2449135.5)	X:	+0.0921	-0.00039	+ 7.4424 5.619395	+0.07693 3.5751	+0.000456 1.4624	+0.0556 -0.8149
A JUN. 4 (OH)	Y:	-0.0445	-0.00068	+ 2.3757 0.891403	+0.01996 1.9106	+0.000335 6.0792	+0.0183 -5.4861
JUN. 4 (OH) (2449142.5)	X:	+0.0892	-0.00040	+ 7.2006 5.244075	+0.07381 3.2050	+0.000415 1.2323	+0.0537 -1.5587
A JUN.11 (OH)	Y:	-0.0492	-0.00061	+ 2.4589 0.622646	+0.01805 1.3726	+0.000327 5.6705	+0.0189 -6.1391
JUN.11 (OH) (2449149.5)	X:	+0.0865	-0.00044	+ 6.9721 4.868663	+0.07140 2.8280	+0.000319 0.8522	+0.0516 -2.3099
A JUN.18 (OH)	Y:	-0.0535	-0.00051	+ 2.5581 0.339312	+0.01667 0.8091	+0.000306 5.2973	+0.0197 -0.5238
JUN.18 (OH) (2449156.5)	X:	+0.0840	-0.00048	+ 6.7539 4.493122	+0.06967 2.4542	+0.000261 0.2220	+0.0500 -3.0672
A JUN.25 (OH)	Y:	-0.0575	-0.00044	+ 2.6662 0.042619	+0.01608 0.2305	+0.000274 4.8702	+0.0206 -1.1981
JUN.25 (OH) (2449163.5)	X:	+0.0815	-0.00043	+ 6.5442 4.117214	+0.06798 2.0893	+0.000290 6.0062	+0.0488 -3.8171
A JUL. 2 (OH)	Y:	-0.0609	-0.00043	+ 2.7781 6.017308	+0.01622 5.9489	+0.000260 4.3502	+0.0214 -1.8827
JUL. 2 (OH) (2449170.5)	X:	+0.0788	-0.00027	+ 6.3424 3.740680	+0.06600 1.7283	+0.000326 5.8193	+0.0473 -4.5625
A JUL. 9 (OH)	Y:	-0.0639	-0.00046	+ 2.8901 5.698704	+0.01669 5.4090	+0.000274 3.8588	+0.0222 -2.5803
JUL. 9 (OH) (2449177.5)	X:	+0.0763	-0.00010	+ 6.1489 3.363313	+0.06394 1.3627	+0.000326 5.7485	+0.0456 -5.3128
A JUL.16 (OH)	Y:	-0.0668	-0.00046	+ 2.9995 5.371679	+0.01728 4.8816	+0.000285 3.4823	+0.0230 -3.2871

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE MARS: PHOBOS N=19.7027

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JUL.16 (0H) (2449184.5)	X:	+0.0745	-0.00003	+ 5.9640 2.985010	+0.06231 0.9886	+0.000277 5.6478	+0.0441 -6.0695
A JUL.23 (0H)	Y:	-0.0696	-0.00039	+ 3.1036 5.037701	+0.01817 4.3602	+0.000266 3.1507	+0.0238 -3.9985
JUL.23 (0H) (2449191.5)	X:	+0.0733	-0.00010	+ 5.7869 2.605762	+0.06148 0.6122	+0.000203 5.3222	+0.0430 -0.5410
A JUL.30 (0H)	Y:	-0.0723	-0.00027	+ 3.2005 4.697788	+0.01953 3.8615	+0.000225 2.7046	+0.0245 -4.7109
JUL.30 (0H) (2449198.5)	X:	+0.0725	-0.00023	+ 5.6156 2.225338	+0.06122 0.2431	+0.000187 4.6679	+0.0418 -1.2894
A AOU. 6 (0H)	Y:	-0.0746	-0.00016	+ 3.2888 4.352649	+0.02100 3.3956	+0.000212 2.1012	+0.0251 -5.4286
AOU. 6 (0H) (2449205.5)	X:	+0.0715	-0.00030	+ 5.4493 1.843188	+0.06092 6.1644	+0.000240 4.2265	+0.0404 -2.0417
A AOU.13 (0H)	Y:	-0.0764	-0.00013	+ 3.3685 4.003002	+0.02224 2.9488	+0.000237 1.5922	+0.0256 -6.1548
AOU.13 (0H) (2449212.5)	X:	+0.0703	-0.00023	+ 5.2893 1.458752	+0.06031 5.8015	+0.000285 4.0737	+0.0391 -2.8036
A AOU.20 (0H)	Y:	-0.0777	-0.00016	+ 3.4394 3.649634	+0.02323 2.5041	+0.000260 1.2506	+0.0261 -0.6029
AOU.20 (0H) (2449219.5)	X:	+0.0692	-0.00008	+ 5.1371 1.071771	+0.05968 5.4310	+0.000296 4.0164	+0.0381 -3.5686
A AOU.27 (0H)	Y:	-0.0788	-0.00019	+ 3.5008 3.293281	+0.02427 2.0568	+0.000254 0.9385	+0.0267 -1.3296
AOU.27 (0H) (2449226.5)	X:	+0.0684	+0.00005	+ 4.9934 0.682235	+0.05968 5.0544	+0.000274 3.8807	+0.0373 -4.3261
A SEP. 3 (0H)	Y:	-0.0799	-0.00017	+ 3.5516 2.934417	+0.02558 1.6165	+0.000225 0.4899	+0.0269 -2.0554
SEP. 3 (0H) (2449233.5)	X:	+0.0682	+0.00012	+ 4.8570 0.289887	+0.06049 4.6808	+0.000239 3.4864	+0.0361 -5.0865
A SEP.10 (0H)	Y:	-0.0809	-0.00011	+ 3.5913 2.573224	+0.02690 1.1909	+0.000218 6.1331	+0.0270 -2.7929
SEP.10 (0H) (2449240.5)	X:	+0.0686	+0.00015	+ 4.7280 6.177233	+0.06157 4.3141	+0.000253 2.8869	+0.0349 -5.8616
A SEP.17 (0H)	Y:	-0.0816	-0.00005	+ 3.6201 2.209911	+0.02787 0.7724	+0.000252 5.5494	+0.0273 -3.5339
SEP.17 (0H) (2449247.5)	X:	+0.0693	+0.00016	+ 4.6082 5.777255	+0.06244 3.9493	+0.000318 2.4149	+0.0343 -0.3584
A SEP.24 (0H)	Y:	-0.0820	-0.00001	+ 3.6382 1.844890	+0.02843 0.3491	+0.000287 5.1081	+0.0275 -4.2677
SEP.24 (0H) (2449254.5)	X:	+0.0703	+0.00018	+ 4.5005 5.372849	+0.06308 3.5787	+0.000372 2.1194	+0.0337 -1.1311
A OCT. 1 (0H)	Y:	-0.0821	+0.00003	+ 3.6451 1.478694	+0.02880 6.1978	+0.000287 4.7082	+0.0274 -4.9996
OCT. 1 (0H) (2449261.5)	X:	+0.0716	+0.00018	+ 4.4067 4.964030	+0.06388 3.1989	+0.000366 1.8905	+0.0328 -1.9055
A OCT. 8 (0H)	Y:	-0.0820	+0.00010	+ 3.6397 1.111811	+0.02923 5.7565	+0.000254 4.2130	+0.0272 -5.7410
OCT. 8 (0H) (2449268.5)	X:	+0.0732	+0.00017	+ 4.3280 4.550871	+0.06520 2.8157	+0.000308 1.6097	+0.0320 -2.6977
A OCT.15 (0H)	Y:	-0.0816	+0.00018	+ 3.6207 0.744564	+0.02961 5.3190	+0.000241 3.5662	+0.0271 -0.2011
OCT.15 (0H) (2449275.5)	X:	+0.0750	+0.00019	+ 4.2654 4.133380	+0.06686 2.4376	+0.000259 1.1327	+0.0318 -3.4943
A OCT.22 (0H)	Y:	-0.0808	+0.00021	+ 3.5871 0.377274	+0.02958 4.8857	+0.000277 2.9935	+0.0269 -0.9355

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE MARS: PHOBOS N=19.7027

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
OCT.22 (OH)	X:	+0.0769	+0.00031	+ 4.2208	+0.06839	+0.000288	+0.0317
(2449282.5)				3.711694	2.0658	0.5637	-4.2834
A OCT.29 (OH)	Y:	-0.0794	+0.00020	+ 3.5385	+0.02903	+0.000322	+0.0264
				0.010463	4.4453	2.5941	-1.6673
OCT.29 (OH)	X:	+0.0790	+0.00048	+ 4.1972	+0.06949	+0.000370	+0.0314
(2449289.5)				3.286243	1.6943	0.1884	-5.0731
A NOV. 5 (OH)	Y:	-0.0778	+0.00019	+ 3.4745	+0.02822	+0.000334	+0.0257
				5.928053	3.9854	2.2423	-2.4026
NOV. 5 (OH)	X:	+0.0817	+0.00061	+ 4.1972	+0.07025	+0.000422	+0.0313
(2449296.5)				2.857949	1.3148	6.2340	-5.8758
A NOV.12 (OH)	Y:	-0.0759	+0.00023	+ 3.3942	+0.02755	+0.000318	+0.0250
				5.564622	3.5052	1.7953	-3.1383
NOV.12 (OH)	X:	+0.0850	+0.00062	+ 4.2220	+0.07120	+0.000400	+0.0317
(2449303.5)				2.428231	0.9264	5.9555	-0.3982
A NOV.19 (OH)	Y:	-0.0739	+0.00035	+ 3.2958	+0.02710	+0.000326	+0.0243
				5.204378	3.0176	1.2118	-3.8645
NOV.19 (OH)	X:	+0.0889	+0.00052	+ 4.2699	+0.07254	+0.000342	+0.0324
(2449310.5)				1.998440	0.5367	5.4651	-1.1924
A NOV.26 (OH)	Y:	-0.0715	+0.00050	+ 3.1786	+0.02657	+0.000383	+0.0234
				4.848320	2.5255	0.6869	-4.5823
NOV.26 (OH)	X:	+0.0929	+0.00040	+ 4.3367	+0.07374	+0.000355	+0.0329
(2449317.5)				1.569517	0.1513	4.7959	-1.9825
A DEC. 3 (OH)	Y:	-0.0684	+0.00061	+ 3.0430	+0.02591	-0.000430	+0.0222
				4.497669	2.0149	0.2707	-5.2979
DEC. 3 (OH)	X:	+0.0965	+0.00036	+ 4.4269	+0.07412	+0.000445	+0.0333
(2449324.5)				1.142240	6.0506	4.3155	-2.7799
A DEC.10 (OH)	Y:	-0.0646	+0.00064	+ 2.8904	+0.02550	+0.000431	+0.0210
				4.154182	1.4776	6.1463	-6.0088
DEC.10 (OH)	X:	+0.0998	+0.00044	+ 4.5330	+0.07357	+0.000511	+0.0343
(2449331.5)				0.717694	5.6591	4.0127	-3.5783
A DEC.17 (OH)	Y:	-0.0603	+0.00064	+ 2.7229	+0.02575	+0.000406	+0.0198
				3.820337	0.9281	5.6562	-0.4223
DEC.17 (OH)	X:	+0.1031	+0.00053	+ 4.6526	+0.07279	+0.000505	+0.0355
(2449338.5)				0.297092	5.2555	3.6978	-4.3607
A DEC.24 (OH)	Y:	-0.0556	+0.00065	+ 2.5436	+0.02647	+0.000407	+0.0185
				3.499204	0.3893	5.1047	-1.0993
DEC.24 (OH)	X:	+0.1064	+0.00057	+ 4.7791	+0.07229	+0.000469	+0.0364
(2449345.5)				6.164189	4.8461	3.2287	-5.1360
A DEC.31 (OH)	Y:	-0.0508	+0.00070	+ 2.3578	+0.02728	+0.000430	+0.0170
				3.194234	6.1449	4.6065	-1.7624
DEC.31 (OH)	X:	+0.1099	+0.00054	+ 4.9064	+0.07178	+0.000493	+0.0371
(2449352.5)				5.752433	4.4385	2.6447	-5.9179
A JAN. 7 (OH)	Y:	-0.0457	+0.00079	+ 2.1741	+0.02817	+0.000432	+0.0157
				2.909412	5.6201	4.1533	-2.4074

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 2 DE MARS: DEIMOS N= 4.9788

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN. 1 (0H)	X:	-0.0086	+0.00065	+49.7400	+0.24018	+0.009531	+0.0126
(2448988.5)				2.992585	4.6163	6.1395	3.1216
A JAN. 8 (0H)	Y:	-0.0018	+0.00018	+15.1617	+0.20955	+0.001772	+0.0038
				3.447110	2.5178	6.0892	3.3778
JAN. 8 (0H)	X:	-0.0085	+0.00082	+49.2122	+0.28105	+0.008627	+0.0115
(2448995.5)				0.178999	2.2714	3.4947	3.5901
A JAN.15 (0H)	Y:	-0.0017	+0.00013	+15.9999	+0.18662	+0.004006	+0.0034
				0.528814	5.8977	3.0042	3.8657
JAN.15 (0H)	X:	-0.0069	+0.00050	+47.8489	+0.34073	+0.007771	+0.0088
(2449002.5)				3.648094	6.0513	1.2200	4.2406
A JAN.22 (0H)	Y:	-0.0020	+0.00019	+16.6668	+0.13228	+0.004768	+0.0029
				3.909057	2.9444	0.2769	4.5027
JAN.22 (0H)	X:	-0.0069	+0.00068	+45.8221	+0.36944	+0.006083	+0.0081
(2449009.5)				0.829984	3.5016	5.0270	5.0992
A JAN.29 (0H)	Y:	-0.0020	+0.00022	+17.0004	+0.07791	+0.004916	+0.0032
				1.023097	5.9718	3.6943	5.3034
JAN.29 (0H)	X:	-0.0065	+0.00072	+43.3826	+0.38119	+0.005976	+0.0090
(2449016.5)				4.286150	0.6814	2.6168	5.7421
A FEV. 5 (0H)	Y:	-0.0019	+0.00024	+16.9198	+0.06235	+0.003909	+0.0037
				4.433290	2.1133	0.9540	5.8454
FEV. 5 (0H)	X:	-0.0061	+0.00060	+40.7821	+0.37569	+0.004595	+0.0091
(2449023.5)				1.448336	4.5370	0.0913	6.2043
A FEV.12 (0H)	Y:	-0.0020	+0.00026	+16.4455	+0.09811	+0.002816	+0.0036
				1.569963	5.0105	4.3254	6.2655
FEV.12 (0H)	X:	-0.0056	+0.00053	+38.2044	+0.36369	+0.003939	+0.0075
(2449030.5)				4.881543	1.8645	3.7429	0.3353
A FEV.19 (0H)	Y:	-0.0017	+0.00021	+15.6634	+0.13102	+0.001771	+0.0029
				4.995606	1.9776	1.4463	0.4133
FEV.19 (0H)	X:	-0.0052	+0.00048	+35.7638	+0.35018	+0.003370	+0.0055
(2449037.5)				2.019926	5.4468	1.0887	0.9596
A FEV.26 (0H)	Y:	-0.0016	+0.00019	+14.6756	+0.15279	+0.000874	+0.0021
				2.142325	5.3285	4.6644	1.1159
FEV.26 (0H)	X:	-0.0055	+0.00052	+33.5191	+0.33686	+0.002170	+0.0050
(2449044.5)				5.430930	2.7312	4.8737	1.7507
A MAR. 5 (0H)	Y:	-0.0016	+0.00023	+13.5726	+0.16252	+0.000694	+0.0021
				5.576128	2.4356	1.0279	1.9610
MAR. 5 (0H)	X:	-0.0048	+0.00037	+31.4961	+0.32089	+0.001883	+0.0057
(2449051.5)				2.549086	6.2465	2.0010	2.3665
A MAR.12 (0H)	Y:	-0.0012	+0.00015	+12.4308	+0.16405	+0.000578	+0.0023
				2.730659	5.8129	3.5503	2.5444
MAR.12 (0H)	X:	-0.0045	+0.00031	+29.6917	+0.31017	+0.001292	+0.0061
(2449058.5)				5.943110	3.4734	6.1223	2.7399
A MAR.19 (0H)	Y:	-0.0010	+0.00014	+11.3045	+0.15900	+0.000942	+0.0023
				6.174073	2.9257	0.6924	2.8965
MAR.19 (0H)	X:	-0.0048	+0.00038	+28.0853	+0.29389	+0.000863	+0.0054
(2449065.5)				3.047279	0.6551	2.9678	3.0545
A MAR.26 (0H)	Y:	-0.0009	+0.00015	+10.2313	+0.15113	+0.000941	+0.0017
				3.340787	0.0085	3.7640	3.2977
MAR.26 (0H)	X:	-0.0047	+0.00031	+26.6598	+0.28586	+0.001127	+0.0042
(2449072.5)				0.146960	4.1197	0.9811	3.4649
A AVR. 2 (0H)	Y:	-0.0008	+0.00015	+ 9.2376	+0.14060	+0.001148	+0.0011
				0.516927	3.3886	1.0089	3.9239
AVR. 2 (0H)	X:	-0.0045	+0.00024	+25.3865	+0.27063	+0.000714	+0.0029
(2449079.5)				3.525511	1.2741	4.6893	4.1059
A AVR. 9 (0H)	Y:	-0.0005	+0.00012	+ 8.3436	+0.12924	+0.001118	+0.0010
				3.986726	0.4570	4.2487	4.9315

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 2 DE MARS: DEIMOS N= 4.9788

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
AVR. 9 (0H) (2449086.5)	X:	-0.0046	+0.00026	+24.2527 0.618246	+0.26038 4.6963	+0.000814 1.8924	+0.0030 4.9490
A AVR.16 (0H)	Y:	-0.0004	+0.00013	+ 7.5677 1.186035	+0.11726 3.8095	+0.001144 1.3638	+0.0012 5.5251
AVR.16 (0H) (2449093.5)	X:	-0.0048	+0.00027	+23.2263 3.992070	+0.24998 1.8345	+0.001045 5.6481	+0.0036 5.4391
A AVR.23 (0H)	Y:	-0.0003	+0.00013	+ 6.9222 4.681550	+0.10538 0.8646	+0.001117 4.7335	+0.0011 5.9276
AVR.23 (0H) (2449100.5)	X:	-0.0046	+0.00018	+22.2986 1.080938	+0.23846 5.2315	+0.000713 2.7840	+0.0039 5.7998
A AVR.30 (0H)	Y:	-0.0001	+0.00011	+ 6.4180 1.905957	+0.09430 4.1885	+0.001110 1.7588	+0.0008 0.0998
AVR.30 (0H) (2449107.5)	X:	-0.0045	+0.00014	+21.4484 4.452189	+0.23128 2.3559	+0.001203 6.2383	+0.0034 6.0786
A MAI 7 (0H)	Y:	+0.0000	+0.00008	+ 6.0604 5.422622	+0.08300 1.2187	+0.001039 5.1609	+0.0006 1.0379
MAI 7 (0H) (2449114.5)	X:	-0.0046	+0.00013	+20.6674 1.539000	+0.21650 5.7364	+0.000628 3.7132	+0.0025 0.2817
A MAI 14 (0H)	Y:	+0.0001	+0.00010	+ 5.8477 2.659155	+0.07374 4.5112	+0.001067 2.1094	+0.0008 1.9877
MAI 14 (0H) (2449121.5)	X:	-0.0045	+0.00006	+19.9424 4.909109	+0.21498 2.8526	+0.001273 0.4836	+0.0021 0.9993
A MAI 21 (0H)	Y:	+0.0002	+0.00010	+ 5.7678 6.176102	+0.06349 1.5043	+0.000921 5.5741	+0.0010 2.4400
MAI 21 (0H) (2449128.5)	X:	-0.0042	+0.00001	+19.2636 1.994879	+0.20306 6.2284	+0.000715 4.3058	+0.0023 1.7443
A MAI 28 (0H)	Y:	+0.0004	+0.00009	+ 5.8018 3.400158	+0.05661 4.7554	+0.000983 2.4968	+0.0009 2.7669
MAI 28 (0H) (2449135.5)	X:	-0.0042	+0.00000	+18.6272 5.364078	+0.19962 3.3317	+0.001063 1.0312	+0.0029 2.1343
A JUN. 4 (0H)	Y:	+0.0006	+0.00009	+ 5.9267 0.611434	+0.04912 1.6902	+0.000860 5.8927	+0.0006 3.2621
JUN. 4 (0H) (2449142.5)	X:	-0.0041	-0.00002	+18.0239 2.449211	+0.19002 0.4269	+0.000832 4.8743	+0.0028 2.3916
A JUN.11 (0H)	Y:	+0.0006	+0.00012	+ 6.1173 4.090369	+0.04447 4.8868	+0.000888 2.8652	+0.0006 4.2599
JUN.11 (0H) (2449149.5)	X:	-0.0039	-0.00006	+17.4545 5.817608	+0.18702 3.8015	+0.000871 1.5901	+0.0023 2.6828
A JUN.18 (0H)	Y:	+0.0007	+0.00011	+ 6.3522 1.271194	+0.04067 1.7626	+0.000801 6.2136	+0.0008 5.0541
JUN.18 (0H) (2449156.5)	X:	-0.0039	-0.00005	+16.9072 2.902018	+0.18064 0.9004	+0.000916 5.2435	+0.0015 3.1000
A JUN.25 (0H)	Y:	+0.0008	+0.00010	+ 6.6127 4.721057	+0.03923 4.9134	+0.000771 3.2277	+0.0010 5.4149
JUN.25 (0H) (2449163.5)	X:	-0.0039	-0.00006	+16.3882 6.269032	+0.17584 4.2666	+0.000622 2.3595	+0.0011 4.1127
A JUL. 2 (0H)	Y:	+0.0008	+0.00011	+ 6.8851 1.875260	+0.03946 1.7972	+0.000816 0.2552	+0.0009 5.6844
JUL. 2 (0H) (2449170.5)	X:	-0.0037	-0.00011	+15.8672 3.352321	+0.17336 1.3711	+0.000992 5.6460	+0.0015 4.8439
A JUL. 9 (0H)	Y:	+0.0008	+0.00012	+ 7.1585 5.302205	+0.04138 4.9492	+0.000650 3.5171	+0.0006 6.1734
JUL. 9 (0H) (2449177.5)	X:	-0.0037	-0.00011	+15.4100 0.434261	+0.16792 4.7333	+0.000611 3.0802	+0.0020 5.2267
A JUL.16 (0H)	Y:	+0.0010	+0.00009	+ 7.4246 2.436438	+0.04364 1.8936	+0.000795 0.5895	+0.0005 0.8809

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DU SATELLITE 2 DE MARS: DEIMOS N= 4.9788

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JUL.16 (0H)	X:	-0.0037	-0.00011	+14.9486	+0.16749	+0.000886	+0.0020
(2449184.5)				3.798752	1.8332	6.1310	5.4184
A JUL.23 (0H)	Y:	+0.0011	+0.00008	+ 7.6780	+0.04777	+0.000600	+0.0008
				5.846572	5.1003	3.8195	1.7165
JUL.23 (0H)	X:	-0.0035	-0.00016	+14.5063	+0.16274	+0.000627	+0.0016
(2449191.5)				0.878100	5.1993	3.7058	5.7004
A JUL.30 (0H)	Y:	+0.0010	+0.00011	+ 7.9141	+0.05085	+0.000780	+0.0010
				2.966444	2.0961	0.9018	2.0000
JUL.30 (0H)	X:	-0.0033	-0.00017	+14.0812	+0.16350	+0.000831	+0.0011
(2449198.5)				4.239524	2.2963	0.3955	6.1606
A AOU. 6 (0H)	Y:	+0.0011	+0.00009	+ 8.1317	+0.05570	+0.000576	+0.0011
				0.081225	5.3473	4.1227	2.2348
AOU. 6 (0H)	X:	-0.0033	-0.00015	+13.6735	+0.16061	+0.000698	+0.0008
(2449205.5)				1.315368	5.6648	4.1133	0.8570
A AOU.13 (0H)	Y:	+0.0011	+0.00008	+ 8.3258	+0.05921	+0.000703	+0.0008
				3.473930	2.3687	1.1511	2.4283
AOU.13 (0H)	X:	-0.0032	-0.00016	+13.2828	+0.16070	+0.000730	+0.0012
(2449212.5)				4.672425	2.7550	1.1319	1.5190
A AOU.20 (0H)	Y:	+0.0011	+0.00009	+ 8.4981	+0.06300	+0.000648	+0.0005
				0.579512	5.6567	4.5236	3.0132
AOU.20 (0H)	X:	-0.0029	-0.00019	+12.9098	+0.16076	+0.000756	+0.0013
(2449219.5)				1.743617	6.1274	4.5205	1.7812
A AOU.27 (0H)	Y:	+0.0010	+0.00010	+ 8.6443	+0.06753	+0.000635	+0.0005
				3.964695	2.6861	1.3287	4.1795
AOU.27 (0H)	X:	-0.0029	-0.00015	+12.5562	+0.16052	+0.000744	+0.0013
(2449226.5)				5.094969	3.2137	1.7861	2.0065
A SEP. 3 (0H)	Y:	+0.0010	+0.00006	+ 8.7670	+0.06986	+0.000685	+0.0007
				1.063312	5.9998	4.8458	4.8583
SEP. 3 (0H)	X:	-0.0029	-0.00011	+12.2232	+0.16264	+0.000810	+0.0010
(2449233.5)				2.160133	0.3023	4.9769	2.1588
A SEP.10 (0H)	Y:	+0.0010	+0.00005	+ 8.8625	+0.07442	+0.000617	+0.0009
				4.442790	3.0318	1.5375	5.0443
SEP.10 (0H)	X:	-0.0028	-0.00012	+11.9121	+0.16223	+0.000824	+0.0005
(2449240.5)				5.504501	3.6685	2.4548	2.7311
A SEP.17 (0H)	Y:	+0.0009	+0.00004	+ 8.9311	+0.07528	+0.000733	+0.0008
				1.536222	0.0708	5.1953	5.2132
SEP.17 (0H)	X:	-0.0027	-0.00010	+11.6268	+0.16670	+0.000830	+0.0005
(2449247.5)				2.562241	0.7547	5.4158	4.0168
A SEP.24 (0H)	Y:	+0.0009	+0.00001	+ 8.9718	+0.08000	+0.000642	+0.0005
				4.911527	3.3866	1.6911	5.5381
SEP.24 (0H)	X:	-0.0027	-0.00005	+11.3689	+0.16672	+0.000928	+0.0008
(2449254.5)				5.898375	4.1214	2.8866	4.6755
A OCT. 1 (0H)	Y:	+0.0010	-0.00001	+ 8.9831	+0.07964	+0.000736	+0.0002
				2.001308	0.4268	5.3882	0.2636
OCT. 1 (0H)	X:	-0.0026	-0.00005	+11.1451	+0.17123	+0.000857	+0.0011
(2449261.5)				2.947505	1.2007	6.0321	4.8003
A OCT. 8 (0H)	Y:	+0.0009	-0.00001	+ 8.9644	+0.08263	+0.000690	+0.0005
				5.373703	3.7396	2.0324	1.4001
OCT. 8 (0H)	X:	-0.0024	-0.00005	+10.9554	+0.17319	+0.001039	+0.0011
(2449268.5)				6.275004	4.5683	3.2582	4.8994
A OCT.15 (0H)	Y:	+0.0009	-0.00003	+ 8.9120	+0.08194	+0.000796	+0.0008
				2.461586	0.7759	5.5468	1.5648
OCT.15 (0H)	X:	-0.0024	+0.00000	+10.8097	+0.17737	+0.000925	+0.0009
(2449275.5)				3.315256	1.6409	0.2930	5.0126
A OCT.22 (0H)	Y:	+0.0008	-0.00005	+ 8.8268	+0.08318	+0.000740	+0.0008
				5.832733	4.0772	2.3145	1.7173

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 2 DE MARS: DEIMOS N= 4.9788

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
OCT.22 (0H)	X:	-0.0022	+0.00000	+10.7069	+0.18108	+0.001096	+0.0005
(2449282.5)				0.351376	5.0060	3.5699	5.0968
A OCT.29 (0H)	Y:	+0.0007	-0.00005	+ 8.7030	+0.08218	+0.000885	+0.0007
				2.920605	1.1050	5.6440	1.7185
OCT.29 (0H)	X:	-0.0020	+0.00002	+10.6572	+0.18339	+0.001087	+0.0001
(2449289.5)				3.667101	2.0755	0.8310	0.1602
A NOV. 5 (0H)	Y:	+0.0006	-0.00005	+ 8.5421	+0.08067	+0.000793	+0.0003
				0.009323	4.3877	2.6755	1.8019
NOV. 5 (0H)	X:	-0.0018	+0.00006	+10.6579	+0.18902	+0.001167	+0.0004
(2449296.5)				0.697347	5.4339	3.8717	1.3294
A NOV.12 (0H)	Y:	+0.0006	-0.00007	+ 8.3374	+0.08000	+0.001036	+0.0001
				3.383038	1.4014	5.8055	3.9331
NOV.12 (0H)	X:	-0.0017	+0.00009	+10.7155	+0.19002	+0.001216	+0.0007
(2449303.5)				4.008435	2.5009	1.1864	1.6218
A NOV.19 (0H)	Y:	+0.0004	-0.00007	+ 8.0906	+0.07683	+0.000894	+0.0004
				0.475566	4.6579	2.9036	4.8079
NOV.19 (0H)	X:	-0.0014	+0.00010	+10.8265	+0.19501	+0.001234	+0.0009
(2449310.5)				1.036220	5.8508	4.2358	1.6190
A NOV.26 (0H)	Y:	+0.0003	-0.00006	+ 7.7976	+0.07560	+0.001121	+0.0006
				3.855326	1.6447	6.0426	4.7750
NOV.26 (0H)	X:	-0.0013	+0.00017	+10.9900	+0.19492	+0.001345	+0.0007
(2449317.5)				4.347070	2.9149	1.5069	1.7361
A DEC. 3 (0H)	Y:	+0.0003	-0.00009	+ 7.4599	+0.07225	+0.000984	+0.0005
				0.956282	4.8718	3.1219	4.8029
DEC. 3 (0H)	X:	-0.0011	+0.00019	+11.1995	+0.19866	+0.001335	+0.0005
(2449324.5)				1.376817	6.2557	4.5682	1.8988
A DEC.10 (0H)	Y:	+0.0003	-0.00009	+ 7.0782	+0.07111	+0.001195	+0.0003
				4.347602	1.8295	0.0129	4.8841
DEC.10 (0H)	X:	-0.0008	+0.00019	+11.4474	+0.19785	+0.001423	+0.0001
(2449331.5)				4.691609	3.3134	1.7320	2.7505
A DEC.17 (0H)	Y:	+0.0003	-0.00007	+ 6.6570	+0.06909	+0.001097	+0.0000
				1.464086	5.0306	3.3004	4.8970
DEC.17 (0H)	X:	-0.0005	+0.00021	+11.7244	+0.19823	+0.001454	+0.0005
(2449338.5)				1.726563	0.3651	4.9676	4.3752
A DEC.24 (0H)	Y:	+0.0002	-0.00006	+ 6.2044	+0.06835	+0.001157	+0.0002
				4.875732	1.9555	0.2451	1.4133
DEC.24 (0H)	X:	-0.0004	+0.00025	+12.0193	+0.19729	+0.001521	+0.0008
(2449345.5)				5.048180	3.6969	1.9578	4.4575
A DEC.31 (0H)	Y:	+0.0003	-0.00007	+ 5.7333	+0.06804	+0.001157	+0.0004
				2.019406	5.1537	3.5045	1.3966
DEC.31 (0H)	X:	+0.0000	+0.00021	+12.3201	+0.19470	+0.001555	+0.0009
(2449352.5)				2.090317	0.7417	5.3331	4.6036
A JAN. 7 (0H)	Y:	+0.0003	-0.00004	+ 5.2629	+0.06870	+0.001124	+0.0004
				5.466055	2.0669	0.4214	1.4518

SATELLITES DE JUPITER

SATELLITES OF JUPITER

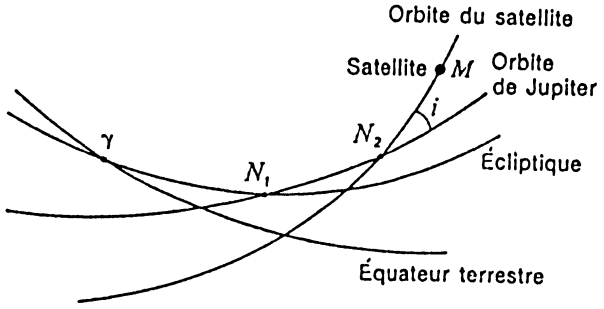
DONNÉES SUR LES SATELLITES GALILÉENS

DATA ON THE GALILEAN SATELLITES

	IO (I)	EUROPE (II)	GANYMÈDE (III)	CALLISTO (IV)
Masses (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
Rayons (km)				
Danjon (1954) :	1650	1400	2450	2300
Dollfus (1961) :	1775	1550	2800	2525
Pioneer 11 (1976) :	1840	1552	2650	2420
Voyager (1983) :	1816	1563	2638	2410
Magnitudes visuelles à l'opposition de Jupiter :				
Harris (1961) :	4.8	5.2	4.5	5.5
Albedos géométriques (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
Albédo de Bond (visuel)	0.54	0.49	0.29	0.15
Demi-grand axe (Sampson, 1921)				
en UA :	0.002820	0.004486	0.007155	0.012586
en rayons de Jupiter :	5.87	9.34	14.91	26.22
en kilomètres :	421810	671140	1070500	1882900
Plus grande élongation à l'opposition de Jupiter (minutes et secondes de degré)				
Sampson (1921) :	2' 17"	3' 40"	5' 48"	10' 13"
Période synodique (jours)				
Sampson (1921) :	1.7698604883	3.5540941742	7.1663872292	16.7535523007
Inclinaison moyenne sur l'équateur de Jupiter pour 1993.5 (minutes et secondes de degré)				
Sampson (1921) :	1' 34"	26' 53"	10' 05"	21' 25"
Valeur moyenne de l'excentricité pour 1993.5				
Sampson (1921) :	0.004	0.009	0.001	0.007
Partie séculaire du mouvement (degrés 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



(repère moyen de la date)
(mean frame of the date)

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

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 τ 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.

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

If τ is the time in days which has elapsed from 1900.0, one gets :

$$\gamma N_1 N_2 = 316.051° + 0.00003559\,\tau,\ i = 3.10350°$$

	$\gamma N_1 + N_1 N_2 + N_2 M$	Période sidérale en jours *Sidereal period in days*
Io	142.59987° + 203.488992435 τ	1.7691374639
Europe	99.55081° + 101.374761672 τ	3.5511797420
Ganymède	168.02628° + 50.317646290 τ	7.1545476894
Callisto	234.40790° + 21.571109630 τ	16.6889884746

DONNÉES SUR L'ENSEMBLE DES SATELLITES DE JUPITER

DATA ON THE GALILEAN AND OTHER SATELLITES OF JUPITER

NOM	masse	rayon	période rotation sidérale	albédo géométrique	magnitude visuelle	période orbitale	élongation maximale	1/2 grand axe	excentricité	inclinaison sur l'équateur de Jupiter
unité →	masse de Jupiter	km	jour			jour	(°) (') (")	10^3 km		degré
I Io	4.70×10^{-5}	1 815	(S)	0.61	5.02	1.769 137	2 18	422	0.004	0.04
II Europa	2.56×10^{-5}	1 569	(S)	0.64	5.29	3.551 181	3 40	671	0.009	0.47
III Ganymede	7.84×10^{-5}	2 631	(S)	0.42	4.61	7.154 552	5 51	1 070	0.002	0.21
IV Callisto	5.6×10^{-5}	2 400	(S)	0.20	5.65	16.689 018	10 18	1 883	0.007	0.51
V Amalthea	$38. \times 10^{-10}$	135 × 85 × 75	(S)	0.05	14.1	0.498 179	59	181	0.003	0.40
VI Himalia	$50. \times 10^{-10}$	90	0.4	0.03	14.84	250.566 2	1 02 46	11 480	0.158	27.63 (1) (2)
VII Elara	$4. \times 10^{-10}$	40	0.5	0.03	16.77	259.652 8	1 04 10	11 737	0.207	24.77 (1) (2)
VIII Pasiphae	$1. \times 10^{-10}$				17.0	735. (R)	2 08 26	23 500	0.378	145. (1) (2)
IX Sinope	0.4×10^{-10}	15			18.3	758. (R)	2 09 31	23 700	0.275	153. (1) (2)
X Lysithea	0.4×10^{-10}	10			18.4	259.22	1 04 04	11 720	0.107	29.02 (2)
XI Carme	0.5×10^{-10}	15			18.0	692. (R)	2 03 31	22 600	0.207	164. (2)
XII Ananke	0.2×10^{-10}	10			18.9	631. (R)	1 55 52	21 200	0.169	147. (2)
XIII Leda	0.03×10^{-10}	8			20.	238.72	1 00 39	11 094	0.148	26.07 (2)
XIV Thebe	$4. \times 10^{-10}$	40		0.05	16.0	0.674 55	1 13	221		
XV Adrastea	0.1×10^{-10}	10		0.05	18.9	0.298	42	129		
XVI Metis	0.5×10^{-10}	20		0.05	17.5	0.294 79	42	128		
NAME	*mass*	*radius*	*sidereal rotation*	*geometrical albedo*	*visual magnitude*	*orbital period*	*greatest elongation*	*semi major axis*	*eccentricity*	*inclination on Jupiter's equator*
unit →	*Jupiter's mass*	*km*	*day*			*day*	*(°) (') (")*	*10^3 km*		*degree*

NOTES

(S) : révolution synchrone
(R) : révolution rétrograde
(1) : les éphémérides des satellites VI, VII, VIII et IX sont données sous forme de coefficients de Tchébycheff dans le *« Supplément à la Connaissance des Temps : Satellites faibles... »*
(2) : inclinaison sur l'orbite de Jupiter

Données extraites de l'*Encyclopédie du Bureau des Longitudes.*

(S) : synchronous revolution
(R) : retrograde revolution
(1) : the ephemerides for satellites VI, VII, VIII and IX are given as Chebychev coefficients in the « Supplément à la Connaissance des Temps : Faint satellites... »
(2) : inclinaison on Jupiter's orbit

Data from the Encyclopédie du Bureau des Longitudes.

ÉPHÉMÉRIDES DES SATELLITES GALILÉENS

EPHEMERIDES OF THE GALILEAN SATELLITES

Coordonnées différentielles tangentielles données en secondes de degré dans le repère équatorial moyen J2000. On a, au premier ordre (voir note) :

Differential tangential coordinates given in arcsecond in the mean equatorial frame J2000. We have, at the first order (cf. note below) :

$$\Delta\alpha \cos\delta = X$$
$$\Delta\delta = Y$$

$$\left.\begin{matrix} X \\ Y \end{matrix}\right\} = A0 + A1 \cdot t + B0 \sin(Nt + F0) + B1 \cdot t \sin(Nt + F1) + B2 \cdot t^2 \sin(Nt + F2) + C0 \sin(2Nt + P0)$$

où $t = T - T0$ avec $T0$ date du début de l'intervalle et T date du calcul

where $t = T - T0$ with $T0$ date of beginning of the interval and T the date for the calculation

satellite	intervalle Δt (jours)	N (rad/j)	page
Io	3	3.551 6	30
Europe	4	1.769 3	38
Ganymède	9	0.878 2	44
Callisto	10	0.376 5	47
	(days)	*(rad/d)*	

Note : le premier ordre n'est pas suffisant lorsque le satellite s'éloigne beaucoup de la planète (tel Callisto). On a alors :

Note : the first order is not sufficient for satellite with large elongation (such as Callisto). So, we have then :

$$\Delta\alpha \cos\delta - \Delta\alpha\,\Delta\delta \sin\delta = X$$
$$\Delta\delta + \frac{(\Delta\alpha)^2}{2} \sin\delta \cos\delta = Y$$

ou bien :

or :

$$\Delta\alpha \cos\delta = X + XY \operatorname{tg}\delta$$
$$\Delta\delta = Y - \frac{X^2}{2} \operatorname{tg}\delta$$

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE JUPITER: IO N=3.5516

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN. 1 (0H) (2448988.5)	X:	+0.5206	-0.00015	+ 97.7966 2.750144	+0.34415 2.3554	+0.008643 5.1649	+0.1852 0.3215
A JAN. 4 (0H)	Y:	-0.2170	-0.00108	+ 44.9411 6.012632	+0.12599 5.7067		+0.0843 3.5875
JAN. 4 (0H) (2448991.5)	X:	+0.5104	+0.01802	+ 98.7219 0.835006	+0.30877 0.4635	+0.007053 1.6388	+0.1884 2.8211
A JAN. 7 (0H)	Y:	-0.2166	-0.00635	+ 45.3041 4.098554	+0.12657 3.8473		+0.0859 6.0855
JAN. 7 (0H) (2448994.5)	X:	+0.5831	-0.01306	+ 99.6339 5.203333	+0.29570 4.9923	+0.009269 4.6097	+0.1906 5.3295
A JAN.10 (0H)	Y:	-0.2429	+0.00349	+ 45.6744 2.184816	+0.12817 2.0084		+0.0867 2.3074
JAN.10 (0H) (2448997.5)	X:	+0.5252	+0.00083	+100.5283 3.289377	+0.34791 3.1048	+0.006356 0.4850	+0.1941 1.5523
A JAN.13 (0H)	Y:	-0.2223	+0.00042	+ 46.0492 0.271657	+0.13539 0.1442		+0.0885 4.8194
JAN.13 (0H) (2449000.5)	X:	+0.5412	+0.01358	+101.4915 1.376002	+0.33592 1.0908	+0.010832 3.0420	+0.1955 4.0475
A JAN.16 (0H)	Y:	-0.2270	-0.00844	+ 46.4444 4.642126	+0.13671 4.5415		+0.0885 1.0345
JAN.16 (0H) (2449003.5)	X:	+0.5847	-0.00339	+102.4545 5.745660	+0.30239 5.6492	+0.008194 5.0579	+0.1980 0.2664
A JAN.19 (0H)	Y:	-0.2489	-0.00052	+ 46.8498 2.729763	+0.13635 2.6715		+0.0898 3.5366
JAN.19 (0H) (2449006.5)	X:	+0.5761	+0.02986	+103.3895 3.832906	+0.33965 3.6035	+0.009618 1.4136	+0.2019 2.7627
A JAN.22 (0H)	Y:	-0.2533	-0.01081	+ 47.2607 0.817752	+0.13787 0.8248		+0.0916 6.0316
JAN.22 (0H) (2449009.5)	X:	+0.6778	-0.02114	+104.3456 1.921003	+0.35551 1.7725	+0.017578 4.2611	+0.2049 5.2696
A JAN.25 (0H)	Y:	-0.2859	+0.00410	+ 47.6743 5.189460	+0.14420 5.2413		+0.0926 2.2554
JAN.25 (0H) (2449012.5)	X:	+0.6074	+0.00156	+105.3260 0.009019	+0.31399 6.2496	+0.007046 1.6568	+0.2080 1.4910
A JAN.28 (0H)	Y:	-0.2643	+0.00012	+ 48.1055 3.278386	+0.14269 3.3695		+0.0948 4.7555
JAN.28 (0H) (2449015.5)	X:	+0.6283	+0.00063	+106.2741 4.380700	+0.31209 4.4768	+0.000604 5.1952	+0.2101 3.9972
A JAN.31 (0H)	Y:	-0.2741	-0.00095	+ 48.5346 1.367609	+0.14522 1.5310		+0.0960 0.9833
JAN.31 (0H) (2449018.5)	X:	+0.6257	-0.00575	+107.2102 2.470109	+0.31675 2.4898	+0.014820 4.2152	+0.2140 0.2149
A FEV. 3 (0H)	Y:	-0.2663	-0.00392	+ 48.9599 5.740564	+0.15264 5.9493		+0.0975 3.4938
FEV. 3 (0H) (2449021.5)	X:	+0.6172	+0.03695	+108.1707 0.559736	+0.26417 0.6825	+0.019433 1.2318	+0.2162 2.7114
A FEV. 6 (0H)	Y:	-0.2850	-0.00995	+ 49.3991 3.830930	+0.15271 4.0512		+0.0977 5.9878
FEV. 6 (0H) (2449024.5)	X:	+0.7295	-0.02429	+109.0846 4.932677	+0.28750 5.3669	+0.018272 4.2479	+0.2198 5.2229
A FEV. 9 (0H)	Y:	-0.3152	+0.00446	+ 49.8453 1.921463	+0.14893 2.2081		+0.0993 2.2104
FEV. 9 (0H) (2449027.5)	X:	+0.6522	+0.01541	+109.9426 3.023412	+0.34906 3.4039	+0.014254 0.7674	+0.2233 1.4399
A FEV.12 (0H)	Y:	-0.2981	-0.00264	+ 50.2804 0.012407	+0.15217 0.3609		+0.1013 4.7102
FEV.12 (0H) (2449030.5)	X:	+0.6977	-0.01352	+110.8328 1.114739	+0.31331 1.4327	+0.006919 3.2250	+0.2251 3.9443
A FEV.15 (0H)	Y:	-0.3100	+0.00453	+ 50.7105 4.367026	+0.15648 4.7721		+0.1025 0.9342
FEV.15 (0H) (2449033.5)	X:	+0.6414	-0.00130	+111.6822 5.489385	+0.32316 5.9155	+0.006393 2.7179	+0.2288 0.1644
A FEV.18 (0H)	Y:	-0.2863	-0.00205	+ 51.1438 2.478926	+0.15426 2.6875		+0.1054 3.4385

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE JUPITER: IO N=3.5516

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
FEV.18 (OH)	X:	+0.6498	+0.02844	+112.4874	+0.34239	+0.015720	+0.2316
(2449036.5)				3.581315	4.0432	0.6485	2.6695
A FEV.21 (OH)	Y:	-0.3063	-0.00766	+ 51.5697	+0.15320		+0.1059
				0.570936	1.0616		5.9504
FEV.21 (OH)	X:	+0.7306	-0.01872	+113.2782	+0.29770	+0.023943	+0.2355
(2449039.5)				1.674071	2.0117	3.8130	5.1770
A FEV.24 (OH)	Y:	-0.3213	-0.00014	+ 51.9737	+0.15809		+0.1070
				4.946635	5.4751		2.1748
FEV.24 (OH)	X:	+0.6810	+0.02170	+114.0615	+0.23647	+0.019008	+0.2358
(2449042.5)				6.049871	0.3847	0.7034	1.3961
A FEV.27 (OH)	Y:	-0.3244	-0.00335	+ 52.3751	+0.15523		+0.1077
				3.039615	3.5937		4.6690
FEV.27 (OH)	X:	+0.7390	-0.02611	+114.7427	+0.29304	+0.005167	+0.2390
(2449045.5)				4.142757	4.9410	2.8679	3.9042
A MAR. 2 (OH)	Y:	-0.3378	+0.01079	+ 52.7708	+0.14900		+0.1094
				1.132746	1.7612		0.6951
MAR. 2 (OH)	X:	+0.6492	-0.00012	+115.3746	+0.29178	+0.008085	+0.2426
(2449048.5)				2.236333	3.0049	4.8324	0.1165
A MAR. 5 (OH)	Y:	-0.2979	-0.00361	+ 53.1381	+0.15008		+0.1112
				5.509259	6.2123		3.3911
MAR. 5 (OH)	X:	+0.6600	+0.01486	+115.9832	+0.25591	+0.011928	+0.2447
(2449051.5)				0.330223	1.2499	1.2421	2.6219
A MAR. 8 (OH)	Y:	-0.3164	-0.00506	+ 53.4835	+0.14925		+0.1123
				3.603017	4.3379		5.8966
MAR. 8 (OH)	X:	+0.6821	-0.00368	+116.4965	+0.30423	+0.006749	+0.2481
(2449054.5)				4.707402	5.7031	3.1218	5.1314
A MAR.11 (OH)	Y:	-0.3184	-0.00114	+ 53.8113	+0.14520		+0.1145
				1.696982	2.4766		2.1261
MAR.11 (OH)	X:	+0.6829	+0.02217	+116.9427	+0.32654	+0.019580	+0.2497
(2449057.5)				2.801856	3.7263	0.0911	1.3557
A MAR.14 (OH)	Y:	-0.3347	-0.00472	+ 54.1205	+0.13789		+0.1142
				6.074272	0.6509		4.6360
MAR.14 (OH)	X:	+0.7275	-0.02446	+117.3852	+0.24768	+0.011727	+0.2514
(2449060.5)				0.896694	1.9620	2.5486	3.8603
A MAR.17 (OH)	Y:	-0.3426	+0.01065	+ 54.3908	+0.13750		+0.1155
				4.168499	5.0911		0.8531
MAR.17 (OH)	X:	+0.6516	-0.00320	+117.7390	+0.27685	+0.007322	+0.2524
(2449063.5)				5.274540	0.2702	4.7055	0.0748
A MAR.20 (OH)	Y:	-0.3081	-0.00204	+ 54.6387	+0.13058		+0.1167
				2.263002	3.2425		3.3481
MAR.20 (OH)	X:	+0.6431	+0.00219	+117.9849	+0.32189	+0.023023	+0.2553
(2449066.5)				3.369414	4.5627	1.0258	2.5810
A MAR.23 (OH)	Y:	-0.3229	+0.00693	+ 54.8618	+0.12623		+0.1176
				0.357399	1.4577		5.8574
MAR.23 (OH)	X:	+0.6281	-0.00153	+118.2088	+0.24398	+0.021074	+0.2579
(2449069.5)				1.464764	2.6790	4.0863	5.0806
A MAR.26 (OH)	Y:	-0.2944	-0.00841	+ 55.0424	+0.12534		+0.1189
				4.735027	5.9236		2.0676
MAR.26 (OH)	X:	+0.6538	+0.01601	+118.3667	+0.24927	+0.009980	+0.2578
(2449072.5)				5.842904	1.1333	0.5613	1.3067
A MAR.29 (OH)	Y:	-0.3273	-0.00368	+ 55.1849	+0.12220		+0.1196
				2.829594	4.0791		4.5767
MAR.29 (OH)	X:	+0.6768	-0.01946	+118.4030	+0.26176	+0.006375	+0.2597
(2449075.5)				3.937951	5.4759	1.7549	3.8143
A AVR. 1 (OH)	Y:	-0.3323	+0.01026	+ 55.2980	+0.11637		+0.1210
				0.924145	2.2613		0.8040
AVR. 1 (OH)	X:	+0.6359	-0.00703	+118.3743	+0.24310	+0.018253	+0.2601
(2449078.5)				2.033276	3.5214	4.8919	0.0310
A AVR. 4 (OH)	Y:	-0.3082	-0.00143	+ 55.3733	+0.10973		+0.1201
				5.301823	0.4543		3.3021
AVR. 4 (OH)	X:	+0.6014	-0.00969	+118.3415	+0.23139	+0.020520	+0.2616
(2449081.5)				0.128376	2.1178	1.1445	2.5335
A AVR. 7 (OH)	Y:	-0.3080	+0.01092	+ 55.4134	+0.10506		+0.1214
				3.396180	4.9589		5.8036

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE JUPITER: IO N=3.5516

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
AVR. 7 (OH) (2449084.5)	X:	+0.5635	-0.00293	+118.1682 4.506099	+0.31995 0.1758	+0.021874 3.8640	+0.2619 5.0334
A AVR.10 (OH)	Y:	-0.2713	-0.00792	+ 55.4143 1.490441	+0.10048 3.1658		+0.1217 2.0210
AVR.10 (OH) (2449087.5)	X:	+0.5783	+0.01361	+117.8925 2.600954	+0.30161 4.3310	+0.025728 0.4175	+0.2623 1.2573
A AVR.13 (OH)	Y:	-0.3081	+0.00254	+ 55.3892 5.867599	+0.10028 1.4431		+0.1214 4.5261
AVR.13 (OH) (2449090.5)	X:	+0.5886	-0.00894	+117.6181 0.695833	+0.23759 2.6519	+0.012890 3.5802	+0.2628 3.7538
A AVR.16 (OH)	Y:	-0.2907	-0.00075	+ 55.3150 3.961231	+0.10440 5.9173		+0.1229 0.7319
AVR.16 (OH) (2449093.5)	X:	+0.5884	-0.00797	+117.2765 5.073190	+0.28255 0.9589	+0.005588 4.6036	+0.2618 6.2580
A AVR.19 (OH)	Y:	-0.2974	+0.00263	+ 55.2037 2.054757	+0.10374 4.1145		+0.1229 3.2400
AVR.19 (OH) (2449096.5)	X:	+0.5437	-0.02187	+116.8149 3.167248	+0.27905 5.2245	+0.014954 1.0669	+0.2634 2.4788
A AVR.22 (OH)	Y:	-0.2846	+0.01509	+ 55.0588 0.148014	+0.10325 2.3127		+0.1233 5.7448
AVR.22 (OH) (2449099.5)	X:	+0.4915	-0.00657	+116.3222 1.261490	+0.19471 3.4704	+0.024873 4.0469	+0.2627 4.9757
A AVR.25 (OH)	Y:	-0.2416	-0.00720	+ 54.8827 4.524139	+0.10370 0.5314		+0.1225 1.9545
AVR.25 (OH) (2449102.5)	X:	+0.4861	-0.00002	+115.8322 5.638026	+0.27004 1.9269	+0.013099 0.3789	+0.2613 1.1957
A AVR.28 (OH)	Y:	-0.2629	+0.00409	+ 54.6752 2.616790	+0.10491 5.0437		+0.1225 4.4582
AVR.28 (OH) (2449105.5)	X:	+0.4757	+0.00092	+115.2318 3.730777	+0.31888 6.2116	+0.015274 3.0741	+0.2602 3.6912
A MAI 1 (OH)	Y:	-0.2456	-0.00396	+ 54.4361 0.709044	+0.10686 3.2451		+0.1216 0.6679
MAI 1 (OH) (2449108.5)	X:	+0.5128	-0.01389	+114.5390 1.823665	+0.24133 4.2225	+0.019350 5.4111	+0.2600 6.1893
A MAI 4 (OH)	Y:	-0.2689	+0.00586	+ 54.1719 5.064134	+0.10896 1.4598		+0.1210 3.1623
MAI 4 (OH) (2449111.5)	X:	+0.4502	-0.01938	+113.8826 6.199211	+0.26187 2.6188	+0.007663 2.1821	+0.2600 2.4010
A MAI 7 (OH)	Y:	-0.2375	+0.00913	+ 53.8863 3.175440	+0.11788 5.9201		+0.1225 5.6550
MAI 7 (OH) (2449114.5)	X:	+0.4068	-0.00886	+113.1616 4.290791	+0.31232 0.7147	+0.010036 3.8985	+0.2580 4.9032
A MAI 10 (OH)	Y:	-0.2140	+0.00026	+ 53.5653 1.266396	+0.11959 4.0754		+0.1216 1.6791
MAI 10 (OH) (2449117.5)	X:	+0.3760	-0.01005	+112.3608 2.382131	+0.28137 5.0344	+0.012258 0.5539	+0.2577 1.1204
A MAI 13 (OH)	Y:	-0.2120	+0.00841	+ 53.2262 5.640131	+0.12259 2.2403		+0.1213 4.3770
MAI 13 (OH) (2449120.5)	X:	+0.3407	+0.01233	+111.5636 0.473424	+0.25249 3.3976	+0.010341 3.1108	+0.2550 3.6113
A MAI 16 (OH)	Y:	-0.1874	-0.00845	+ 52.8703 3.730289	+0.12629 0.4196		+0.1199 0.5830
MAI 16 (OH) (2449123.5)	X:	+0.4042	-0.01918	+110.7794 4.846800	+0.33446 1.5052	+0.014265 4.7110	+0.2536 6.1079
A MAI 19 (OH)	Y:	-0.2161	+0.00583	+ 52.5002 1.819927	+0.13366 4.8628		+0.1191 3.0822
MAI 19 (OH) (2449126.5)	X:	+0.3266	-0.00501	+109.8989 2.936575	+0.30983 5.7634	+0.020093 1.5492	+0.2530 2.3162
A MAI 22 (OH)	Y:	-0.1906	+0.00797	+ 52.1082 6.192273	+0.13581 2.9982		+0.1186 5.5658
MAI 22 (OH) (2449129.5)	X:	+0.3296	-0.02307	+108.9998 1.026359	+0.24027 4.0466	+0.019152 4.5058	+0.2516 4.8128
A MAI 25 (OH)	Y:	-0.1760	+0.00464	+ 51.7021 4.281032	+0.13595 1.1509		+0.1184 1.7752

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		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
MAI 25 (0H) (2449132.5)	X:	+0.2530	-0.01525	+108.1446 5.398553	+0.28302 2.2999	+0.007349 1.8825	+0.2498 1.0217
A MAI 28 (0H)	Y:	-0.1496	+0.00790	+ 51.2938 2.369358	+0.14202 5.6016		+0.1188 4.2697
MAI 28 (0H) (2449135.5)	X:	+0.2142	+0.01006	+107.2618 3.486763	+0.32051 0.3592	+0.006026 3.0236	+0.2469 3.5182
A MAI 31 (0H)	Y:	-0.1311	-0.00604	+ 50.8697 0.457031	+0.14479 3.7179		+0.1166 0.4869
MAI 31 (0H) (2449138.5)	X:	+0.2599	-0.01771	+106.3228 1.574824	+0.27527 4.8269	+0.009244 4.9803	+0.2465 6.0114
A JUN. 3 (0H)	Y:	-0.1516	+0.00664	+ 50.4354 4.827584	+0.14466 1.8654		+0.1161 2.9799
JUN. 3 (0H) (2449141.5)	X:	+0.1890	+0.00893	+105.4434 5.945691	+0.32778 3.0998	+0.014139 1.1512	+0.2441 2.2150
A JUN. 6 (0H)	Y:	-0.1277	+0.00105	+ 50.0025 2.914509	+0.14882 0.0121		+0.1149 5.4665
JUN. 6 (0H) (2449144.5)	X:	+0.2304	-0.03067	+104.5573 4.032312	+0.36505 1.0714	+0.016031 4.0830	+0.2420 4.7125
A JUN. 9 (0H)	Y:	-0.1301	+0.00921	+ 49.5709 1.000926	+0.15619 4.4214		+0.1139 1.6778
JUN. 9 (0H) (2449147.5)	X:	+0.1173	-0.00889	+103.6156 2.118456	+0.32660 5.3379	+0.018933 1.0279	+0.2405 0.9156
A JUN.12 (0H)	Y:	-0.0938	+0.01023	+ 49.1302 5.369962	+0.15807 2.5180		+0.1135 4.1574
JUN.12 (0H) (2449150.5)	X:	+0.0941	+0.00281	+102.6886 0.204787	+0.29746 3.6547	+0.005602 3.8335	+0.2378 3.4039
A JUN.15 (0H)	Y:	-0.0726	-0.00337	+ 48.6832 3.455515	+0.15594 0.6502		+0.1126 0.3682
JUN.15 (0H) (2449153.5)	X:	+0.0967	-0.01134	+101.7976 4.573496	+0.31310 1.7917	+0.001993 2.1779	+0.2364 5.8940
A JUN.18 (0H)	Y:	-0.0767	+0.00563	+ 48.2417 1.540661	+0.15815 5.0685		+0.1122 2.8616
JUN.18 (0H) (2449156.5)	X:	+0.0559	+0.01341	+100.9028 2.658358	+0.31003 6.1228	+0.009728 1.1899	+0.2342 2.1035
A JUN.21 (0H)	Y:	-0.0631	-0.00257	+ 47.8032 5.908488	+0.16125 3.1801		+0.1104 5.3526
JUN.21 (0H) (2449159.5)	X:	+0.1062	-0.02961	+ 99.9967 0.743134	+0.29240 4.3679	+0.008437 4.2495	+0.2331 4.5952
A JUN.24 (0H)	Y:	-0.0753	+0.01159	+ 47.3573 3.992778	+0.15857 1.3077		+0.1099 1.5589
JUN.24 (0H) (2449162.5)	X:	-0.0005	-0.00802	+ 99.1496 5.110707	+0.33332 2.5518	+0.007023 0.7193	+0.2297 0.7954
A JUN.27 (0H)	Y:	-0.0320	+0.00605	+ 46.9243 2.076790	+0.16240 5.7282		+0.1083 4.0416
JUN.27 (0H) (2449165.5)	X:	-0.0151	-0.00850	+ 98.3127 3.194152	+0.33900 0.5454	+0.006073 2.5436	+0.2274 3.2843
A JUN.30 (0H)	Y:	-0.0217	+0.00399	+ 46.4988 0.160252	+0.16671 3.8267		+0.1069 0.2492
JUN.30 (0H) (2449168.5)	X:	-0.0527	-0.01239	+ 97.4636 1.277353	+0.31989 4.9613	+0.005047 5.4814	+0.2265 5.7656
A JUL. 3 (0H)	Y:	-0.0036	+0.00490	+ 46.0734 4.526479	+0.16739 1.9205		+0.1067 2.7285
JUL. 3 (0H) (2449171.5)	X:	-0.0816	+0.01679	+ 96.6426 5.643575	+0.33933 3.1419	+0.005732 0.8760	+0.2242 1.9717
A JUL. 6 (0H)	Y:	+0.0040	-0.00522	+ 45.6470 2.609236	+0.16414 0.0361		+0.1055 5.2211
JUL. 6 (0H) (2449174.5)	X:	-0.0371	-0.02193	+ 95.8415 3.726031	+0.33668 1.2396	+0.002373 4.8386	+0.2227 4.4627
A JUL. 9 (0H)	Y:	-0.0104	+0.01038	+ 45.2343 0.691711	+0.16662 4.4345		+0.1051 1.4264
JUL. 9 (0H) (2449177.5)	X:	-0.1156	-0.00240	+ 95.0553 1.807937	+0.32306 5.5679	+0.006624 0.7247	+0.2201 0.6674
A JUL.12 (0H)	Y:	+0.0234	+0.00339	+ 44.8246 5.056963	+0.16697 2.5374		+0.1035 3.9136

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		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JUL.12 (OH)	X:	-0.1218	-0.01550	+ 94.2904	+0.34337	+0.005705	+0.2185
(2449180.5)				6.173104	3.7631	0.9221	3.1512
A JUL.15 (OH)	Y:	+0.0269	+0.00982	+ 44.4160	+0.16486		+0.1027
				3.138781	0.6564		0.1198
JUL.15 (OH)	X:	-0.1234	-0.01369	+ 93.5524	+0.34097	+0.010104	+0.2158
(2449183.5)				4.254457	1.8092	3.9960	5.6308
A JUL.18 (OH)	Y:	+0.0653	+0.00214	+ 44.0193	+0.16664		+0.1011
				1.220420	5.0661		2.6001
JUL.18 (OH)	X:	-0.2114	+0.01661	+ 92.8291	+0.30855	+0.014753	+0.2145
(2449186.5)				2.335369	6.1668	0.9969	1.8391
A JUL.21 (OH)	Y:	+0.0625	-0.00203	+ 43.6389	+0.17099		+0.0999
				5.584775	3.1484		5.0875
JUL.21 (OH)	X:	-0.1721	-0.01987	+ 92.1216	+0.30453	+0.009984	+0.2134
(2449189.5)				0.416256	4.3999	4.2746	4.3208
A JUL.24 (OH)	Y:	+0.0596	+0.00589	+ 43.2552	+0.16806		+0.0997
				3.665567	1.2360		1.2820
JUL.24 (OH)	X:	-0.2227	+0.00249	+ 91.4634	+0.33588	+0.002350	+0.2104
(2449192.5)				4.779973	2.5059	0.1274	0.5237
A JUL.27 (OH)	Y:	+0.0767	+0.00007	+ 42.8779	+0.16626		+0.0983
				1.746228	5.6286		3.7726
JUL.27 (OH)	X:	-0.2124	-0.02518	+ 90.8154	+0.33306	+0.001490	+0.2092
(2449195.5)				2.860139	0.6243	5.1818	3.0111
A JUL.30 (OH)	Y:	+0.0757	+0.01169	+ 42.5117	+0.16718		+0.0980
				6.109866	3.7393		6.2611
JUL.30 (OH)	X:	-0.2939	-0.01133	+ 90.1876	+0.32760	+0.007601	+0.2071
(2449198.5)				0.940026	5.0611	3.8834	5.4929
A AOU. 2 (OH)	Y:	+0.1186	+0.00175	+ 42.1553	+0.16753		+0.0964
				4.189976	1.8226		2.4636
AOU. 2 (OH)	X:	-0.3148	+0.00656	+ 89.6050	+0.36492	+0.011404	+0.2056
(2449201.5)				5.302952	3.1372	0.3612	1.6966
A AOU. 5 (OH)	Y:	+0.1157	+0.00112	+ 41.7979	+0.16451		+0.0952
				2.269944	6.2162		4.9524
AOU. 5 (OH)	X:	-0.3059	-0.01254	+ 89.0436	+0.35728	+0.013238	+0.2032
(2449204.5)				3.362112	1.1387	3.6132	4.1789
A AOU. 8 (OH)	Y:	+0.1261	+0.00130	+ 41.4524	+0.16504		+0.0937
				0.349813	4.3309		1.1452
AOU. 8 (OH)	X:	-0.3262	+0.00846	+ 88.4760	+0.30884	+0.009555	+0.2016
(2449207.5)				1.461083	5.5605	0.0311	0.3819
A AOU.11 (OH)	Y:	+0.1241	-0.00115	+ 41.1210	+0.16724		+0.0928
				4.712592	2.4210		3.6309
AOU.11 (OH)	X:	-0.3067	-0.02303	+ 87.9555	+0.32445	+0.001731	+0.2007
(2449210.5)				5.823249	3.7171	3.2306	2.8594
A AOU.14 (OH)	Y:	+0.1225	+0.01070	+ 40.7940	+0.16508		+0.0928
				2.791818	0.4957		6.1096
AOU.14 (OH)	X:	-0.3802	-0.00625	+ 87.4613	+0.32850	+0.004414	+0.1982
(2449213.5)				3.901906	1.7917	3.7489	5.3450
A AOU.17 (OH)	Y:	+0.1585	+0.00123	+ 40.4681	+0.16241		+0.0914
				0.871033	4.8897		2.3159
AOU.17 (OH)	X:	-0.3884	-0.00775	+ 86.9833	+0.31757	+0.003618	+0.1974
(2449216.5)				1.980395	6.2134	0.5576	1.5510
A AOU.20 (OH)	Y:	+0.1579	+0.00485	+ 40.1552	+0.16276		+0.0908
				5.233287	2.9890		4.8051
AOU.20 (OH)	X:	-0.4214	-0.00357	+ 86.5273	+0.32153	+0.009410	+0.1954
(2449219.5)				0.058835	4.4179	3.2328	4.0335
A AOU.23 (OH)	Y:	+0.1793	-0.00116	+ 39.8525	+0.16414		+0.0890
				3.312178	1.0752		1.0056
AOU.23 (OH)	X:	-0.4073	+0.00567	+ 86.1404	+0.35169	+0.009162	+0.1935
(2449222.5)				4.420112	2.3916	5.1249	0.2344
A AOU.26 (OH)	Y:	+0.1684	-0.00309	+ 39.5529	+0.16229		+0.0879
				1.390872	5.4441		3.4909
AOU.26 (OH)	X:	-0.3983	-0.01358	+ 85.7429	+0.32516	+0.008139	+0.1920
(2449225.5)				2.497944	0.4739	2.0287	2.7133
A AOU.29 (OH)	Y:	+0.1650	+0.00757	+ 39.2589	+0.16032		+0.0871
				5.752724	3.5477		5.9645

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		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
AOU.29 (OH) (2449228.5)	X:	-0.4313	-0.00788	+ 85.3567 0.575755	+0.30266 4.9840	+0.010772 4.4921	+0.1911 5.1990
A SEP. 1 (OH)	Y:	+0.1866	+0.00013	+ 38.9769 3.831215	+0.15944 1.6329		+0.0865 2.1682
SEP. 1 (OH) (2449231.5)	X:	-0.4464	-0.01431	+ 85.0347 4.936702	+0.33398 3.0565	+0.004666 0.9891	+0.1901 1.3962
A SEP. 4 (OH)	Y:	+0.1867	+0.00851	+ 38.7006 1.909585	+0.15797 6.0031		+0.0861 4.6504
SEP. 4 (OH) (2449234.5)	X:	-0.5021	+0.00212	+ 84.7279 3.014076	+0.32762 1.0837	+0.006125 3.2057	+0.1876 3.8643
A SEP. 7 (OH)	Y:	+0.2170	-0.00311	+ 38.4264 6.271046	+0.15432 4.1015		+0.0845 0.8581
SEP. 7 (OH) (2449237.5)	X:	-0.4759	+0.00472	+ 84.4226 1.091517	+0.31084 5.5447	+0.003984 5.5290	+0.1872 0.0891
A SEP.10 (OH)	Y:	+0.2010	-0.00181	+ 38.1623 4.349367	+0.15416 2.2066		+0.0841 3.3472
SEP.10 (OH) (2449240.5)	X:	-0.4812	+0.00060	+ 84.1668 5.452289	+0.34655 3.6880	+0.009150 1.3455	+0.1855 2.5674
A SEP.13 (OH)	Y:	+0.2008	+0.00298	+ 37.9076 2.427566	+0.15457 0.2956		+0.0827 5.3264
SEP.13 (OH) (2449243.5)	X:	-0.4674	-0.00457	+ 83.9614 3.529380	+0.35072 1.6503	+0.012111 4.1450	+0.1842 5.0546
A SEP.16 (OH)	Y:	+0.2051	-0.00153	+ 37.6610 0.505698	+0.15526 4.6591		+0.0818 2.0293
SEP.16 (OH) (2449246.5)	X:	-0.4880	-0.01216	+ 83.7420 1.606197	+0.30409 6.0050	+0.013890 1.0295	+0.1831 1.2525
A SEP.19 (OH)	Y:	+0.2040	+0.01006	+ 37.4187 4.866909	+0.15295 2.7412		+0.0812 4.5062
SEP.19 (OH) (2449249.5)	X:	-0.5354	+0.00146	+ 83.5350 5.966655	+0.30946 4.2926	+0.008324 3.4245	+0.1816 3.7373
A SEP.22 (OH)	Y:	+0.2350	-0.00346	+ 37.1843 2.944927	+0.15160 0.8282		+0.0800 0.7139
SEP.22 (OH) (2449252.5)	X:	-0.5159	-0.00037	+ 83.3967 4.043695	+0.32853 2.3364	+0.002686 6.1378	+0.1810 6.2194
A SEP.25 (OH)	Y:	+0.2201	+0.00115	+ 36.9549 1.022822	+0.14843 5.1932		+0.0798 3.1968
SEP.25 (OH) (2449255.5)	X:	-0.5322	+0.00793	+ 83.2712 2.120489	+0.31616 0.3877	+0.004977 1.9617	+0.1792 2.4248
A SEP.28 (OH)	Y:	+0.2285	-0.00310	+ 36.7295 5.383932	+0.14514 3.2851		+0.0786 5.6852
SEP.28 (OH) (2449258.5)	X:	-0.4905	+0.00130	+ 83.1444 0.197395	+0.30394 4.8640	+0.005288 4.5537	+0.1792 4.9138
A OCT. 1 (OH)	Y:	+0.2125	-0.00132	+ 36.5087 3.461932	+0.14228 1.3927		+0.0782 1.6929
OCT. 1 (OH) (2449261.5)	X:	-0.5022	-0.00975	+ 83.0736 4.557823	+0.34630 2.9841	+0.008676 0.5676	+0.1774 1.1101
A OCT. 4 (OH)	Y:	+0.2135	+0.00743	+ 36.3006 1.539971	+0.14275 5.7654		+0.0768 4.3745
OCT. 4 (OH) (2449264.5)	X:	-0.5353	+0.00323	+ 83.0464 2.634466	+0.32722 0.9651	+0.006793 2.8478	+0.1758 3.5972
A OCT. 7 (OH)	Y:	+0.2343	-0.00269	+ 36.0987 5.901139	+0.14193 3.8442		+0.0757 0.5803
OCT. 7 (OH) (2449267.5)	X:	-0.5230	-0.00753	+ 83.0144 0.711162	+0.30403 5.3803	+0.006612 5.9973	+0.1755 6.0777
A OCT.10 (OH)	Y:	+0.2255	+0.00390	+ 35.9022 3.979153	+0.14041 1.9281		+0.0753 3.0585
OCT.10 (OH) (2449270.5)	X:	-0.5602	+0.01852	+ 82.9996 5.071457	+0.33313 3.5881	+0.008095 1.6430	+0.1749 2.2817
A OCT.13 (OH)	Y:	+0.2389	-0.00607	+ 35.7100 2.057203	+0.13792 0.0246		+0.0745 5.5472
OCT.13 (OH) (2449273.5)	X:	-0.4949	+0.00498	+ 83.0414 3.148262	+0.33306 1.6373	+0.004256 5.4091	+0.1743 4.7686
A OCT.16 (OH)	Y:	+0.2132	-0.00163	+ 35.5294 0.135253	+0.13736 4.3802		+0.0744 1.7497

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		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
OCT.16 (0H)	X:	-0.4971	-0.00269	+ 83.1018	+0.31405	+0.004896	+0.1728
(2449276.5)				1.224925	5.9660	1.1703	0.9749
A OCT.19 (0H)	Y:	+0.2148	+0.00253	+ 35.3487	+0.13306		+0.0733
				4.496468	2.4657		4.2430
OCT.19 (0H)	X:	-0.5018	+0.00450	+ 83.1669	+0.32509	+0.002399	+0.1726
(2449279.5)				5.585116	4.1309	1.1343	3.4621
A OCT.22 (0H)	Y:	+0.2169	-0.00059	+ 35.1719	+0.12934		+0.0727
				2.574652	0.5716		0.4545
OCT.22 (0H)	X:	-0.4916	-0.01603	+ 83.2857	+0.33392	+0.007768	+0.1712
(2449282.5)				3.662163	2.1758	4.4351	5.9418
A OCT.25 (0H)	Y:	+0.2188	+0.00412	+ 35.0065	+0.12930		+0.0713
				0.653023	4.9520		2.9346
OCT.25 (0H)	X:	-0.5465	+0.02328	+ 83.4319	+0.29948	+0.012327	+0.1709
(2449285.5)				1.738896	0.2260	1.3519	2.1519
A OCT.28 (0H)	Y:	+0.2320	-0.00687	+ 34.8522	+0.12796		+0.0705
				5.014497	3.0118		5.4236
OCT.28 (0H)	X:	-0.4657	-0.00201	+ 83.5668	+0.28824	+0.011086	+0.1710
(2449288.5)				6.099086	4.7482	4.5806	4.6362
A OCT.31 (0H)	Y:	+0.2063	-0.00161	+ 34.6968	+0.12322		+0.0705
				3.092865	1.1035		1.6221
OCT.31 (0H)	X:	-0.4778	+0.00925	+ 83.7506	+0.32627	+0.003853	+0.1698
(2449291.5)				4.176502	2.8633	1.0166	0.8409
A NOV. 3 (0H)	Y:	+0.2062	-0.00235	+ 34.5484	+0.12074		+0.0696
				1.171440	5.4910		4.1171
NOV. 3 (0H)	X:	-0.4395	+0.00289	+ 83.9687	+0.32701	+0.003629	+0.1696
(2449294.5)				2.253725	0.9608	5.5260	3.3292
NOV. 6 (0H)	Y:	+0.1930	-0.00083	+ 34.4098	+0.12050		+0.0696
				5.533341	3.5842		0.3257
OV. 6 (0H)	X:	-0.4399	-0.01449	+ 84.2111	+0.32067	+0.003188	+0.1687
2449297.5)				0.330939	5.3406	4.0502	5.8192
NOV. 9 (0H)	Y:	+0.1972	+0.00448	+ 34.2779	+0.11717		+0.0684
				3.612001	1.6552		2.8203
OV. 9 (0H)	X:	-0.4855	+0.02059	+ 84.4685	+0.35128	+0.008803	+0.1692
2449300.5)				4.691763	3.4507	0.6785	2.0288
NOV.12 (0H)	Y:	+0.2072	-0.00555	+ 34.1457	+0.11278		+0.0677
				1.690881	6.0510		5.3166
OV.12 (0H)	X:	-0.4189	-0.00515	+ 84.7880	+0.34751	+0.011304	+0.1682
2449303.5)				2.769298	1.4452	3.8185	4.5144
NOV.15 (0H)	Y:	+0.1908	-0.00165	+ 34.0255	+0.11212		+0.0667
				6.053195	4.1524		1.5142
NOV.15 (0H)	X:	-0.4378	+0.02123	+ 85.1122	+0.31187	+0.006745	+0.1675
2449306.5)				0.846669	5.8519	0.5972	0.7249
A NOV.18 (0H)	Y:	+0.1889	-0.00656	+ 33.9177	+0.11084		+0.0663
				4.132371	2.2167		4.0076
NOV.18 (0H)	X:	-0.3612	+0.00278	+ 85.4492	+0.31108	+0.002750	+0.1681
(2449309.5)				5.207539	4.0100	4.4259	3.2071
A NOV.21 (0H)	Y:	+0.1625	-0.00063	+ 33.8112	+0.10459		+0.0664
				2.211549	0.2955		0.2104
NOV.21 (0H)	X:	-0.3626	-0.00989	+ 85.8241	+0.32419	+0.005687	+0.1675
(2449312.5)				3.285561	2.0899	3.8842	5.6979
A NOV.24 (0H)	Y:	+0.1683	+0.00179	+ 33.7081	+0.10127		+0.0654
				0.291119	4.7089		2.7072
NOV.24 (0H)	X:	-0.3784	+0.01045	+ 86.2190	+0.32112	+0.001815	+0.1680
(2449315.5)				1.363625	0.2477	0.2743	1.9116
A NOV.27 (0H)	Y:	+0.1697	-0.00369	+ 33.6184	+0.09952		+0.0652
				4.654018	2.8037		5.2035
NOV.27 (0H)	X:	-0.3475	-0.00683	+ 86.6375	+0.32145	+0.006403	+0.1676
(2449318.5)				5.724993	4.6937	3.5374	4.4059
A NOV.30 (0H)	Y:	+0.1618	+0.00069	+ 33.5360	+0.09716		+0.0643
				2.733883	0.8929		1.4176
NOV.30 (0H)	X:	-0.3616	+0.02372	+ 87.1025	+0.33830	+0.005921	+0.1677
(2449321.5)				3.803589	2.7079	4.8987	0.6155
A DEC. 3 (0H)	Y:	+0.1636	-0.01028	+ 33.4572	+0.09354		+0.0638
				0.813959	5.2903		3.9152

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DU SATELLITE 1 DE JUPITER: IO N=3.5516

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
DEC. 3 (0H) (2449324.5)	X:	-0.2795	+0.00710	+ 87.5889 1.882178	+0.32404 0.8235	+0.005455 1.6035	+0.1671 3.1001
A DEC. 6 (0H)	Y:	+0.1303	-0.00088	+ 33.3896 5.177517	+0.09217 3.4018		+0.0631 0.1136
DEC. 6 (0H) (2449327.5)	X:	-0.2667	-0.00266	+ 88.0919 6.244038	+0.31892 5.3101	+0.010344 4.3370	+0.1679 5.5962
A DEC. 9 (0H)	Y:	+0.1332	-0.00180	+ 33.3348 3.257962	+0.08905 1.4737		+0.0628 2.6120
DEC. 9 (0H) (2449330.5)	X:	-0.2581	+0.00946	+ 88.6349 4.323213	+0.34962 3.3650	+0.007597 0.7516	+0.1690 1.8029
A DEC.12 (0H)	Y:	+0.1219	-0.00059	+ 33.2840 1.338562	+0.08344 5.8541		+0.0629 5.1045
DEC.12 (0H) (2449333.5)	X:	-0.2486	-0.00705	+ 89.2128 2.402350	+0.33017 1.4059	+0.006905 3.1394	+0.1683 4.3013
A DEC.15 (0H)	Y:	+0.1269	+0.00041	+ 33.2374 5.702669	+0.07852 4.0029		+0.0620 1.3231
DEC.15 (0H) (2449336.5)	X:	-0.2578	+0.02359	+ 89.7928 0.481795	+0.33563 5.8717	+0.001352 4.1032	+0.1693 0.5171
A DEC.18 (0H)	Y:	+0.1249	-0.00898	+ 33.2065 3.783951	+0.07751 2.1203		+0.0624 3.8208
DEC.18 (0H) (2449339.5)	X:	-0.1873	+0.00963	+ 90.4102 4.844769	+0.35520 3.9739	+0.007474 1.0380	+0.1693 3.0092
A DEC.21 (0H)	Y:	+0.0960	-0.00076	+ 33.1837 1.865336	+0.07340 0.2366		+0.0617 0.0354
DEC.21 (0H) (2449342.5)	X:	-0.1596	+0.00764	+ 91.0836 2.924834	+0.34532 1.9398	+0.016476 3.9093	+0.1704 5.5056
A DEC.24 (0H)	Y:	+0.0977	-0.00752	+ 33.1679 6.230321	+0.07179 4.6730		+0.0612 2.5370
DEC.24 (0H) (2449345.5)	X:	-0.1234	+0.00905	+ 91.7523 1.004750	+0.29635 0.1341	+0.016304 0.7585	+0.1707 1.7151
A DEC.27 (0H)	Y:	+0.0710	+0.00240	+ 33.1665 4.312417	+0.07068 2.8010		+0.0608 5.0234
DEC.27 (0H) (2449348.5)	X:	-0.1187	-0.00900	+ 92.4251 5.368459	+0.32858 4.6858	+0.011768 3.5114	+0.1712 4.2176
A DEC.30 (0H)	Y:	+0.0840	-0.00022	+ 33.1799 2.394667	+0.06764 0.8986		+0.0606 1.2448
DEC.30 (0H) (2449351.5)	X:	-0.1258	+0.01850	+ 93.1623 3.449435	+0.34740 2.6961	+0.003785 5.7059	+0.1727 0.4254
A JAN. 2 (0H)	Y:	+0.0790	-0.00644	+ 33.1990 0.477094	+0.06225 5.3297		+0.0610 3.7383

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 2 DE JUPITER: EUROPE N=1.7693

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN. 1 (OH)	X:	-0.4388	-0.70026	+154.4041	+1.47643	+0.290046	+0.7498
(2448988.5)				0.872118	1.7350	5.7467	5.8627
A JAN. 5 (OH)	Y:	+0.7750	+0.00685	+ 71.3608	+0.19665		+0.3557
				4.156505	3.8467		2.8528
JAN. 5 (OH)	X:	-2.5563	+0.23955	+158.2493	+0.28299	+0.135675	+0.7624
(2448992.5)				1.663152	5.7932	2.2021	1.2045
A JAN. 9 (OH)	Y:	+0.7999	+0.01887	+ 72.1014	+0.21538		+0.3590
				4.947162	4.7003		4.4925
JAN. 9 (OH)	X:	-2.0992	+0.06525	+159.8543	+0.58049	+0.098670	+0.7839
(2448996.5)				2.455999	1.5449	4.0218	2.7985
A JAN.13 (OH)	Y:	+0.8866	+0.00116	+ 72.9096	+0.20003		+0.3648
				5.737807	5.6317		6.1080
JAN.13 (OH)	X:	-0.6587	-0.80056	+161.8326	+1.98383	+0.354999	+0.7983
(2449000.5)				3.255318	2.5689	6.0901	4.4079
A JAN.17 (OH)	Y:	+0.9440	-0.00802	+ 73.7180	+0.21598		+0.3655
				0.246616	0.2000		1.4661
JAN.17 (OH)	X:	-4.8346	+1.31955	+161.3720	+2.77064	+0.597383	+0.8856
(2449004.5)				4.028881	5.2285	2.7843	6.0524
A JAN.21 (OH)	Y:	+0.8651	+0.04814	+ 74.6711	+0.17542		+0.3753
				1.039696	0.8737		3.0914
JAN.21 (OH)	X:	-0.5903	-0.78420	+167.3324	+1.24186	+0.352478	+0.8687
(2449008.5)				4.826186	2.2035	5.6497	1.4789
A JAN.25 (OH)	Y:	+1.0207	-0.01735	+ 75.4354	+0.24238		+0.3771
				1.833805	1.7578		4.7472
JAN.25 (OH)	X:	-2.6204	+0.04371	+167.8599	+0.89697	+0.150311	+0.8561
(2449012.5)				5.626831	4.7675	1.2448	3.1302
A JAN.29 (OH)	Y:	+1.0292	-0.00175	+ 76.3133	+0.24775		+0.3771
				2.627740	2.6310		0.1011
JAN.29 (OH)	X:	-3.2527	+0.46344	+169.7741	+1.36556	+0.227943	+0.8405
(2449016.5)				0.139518	5.9437	3.0335	4.7672
A FEV. 2 (OH)	Y:	+1.0132	+0.02564	+ 77.2217	+0.24980		+0.3798
				3.421904	3.6239		1.7367
FEV. 2 (OH)	X:	-0.7144	-0.87366	+170.1519	+1.97242	+0.366721	+0.8055
(2449020.5)				0.924160	1.9994	5.9194	0.1364
A FEV. 6 (OH)	Y:	+1.0879	+0.00018	+ 78.1742	+0.24243		+0.3801
				4.217745	4.4453		3.3884
FEV. 6 (OH)	X:	-4.4056	+0.98438	+175.6378	+1.49045	+0.429761	+0.8050
(2449024.5)				1.721797	5.4944	2.8040	1.6703
A FEV.10 (OH)	Y:	+1.0697	+0.01871	+ 79.0961	+0.24769		+0.3828
				5.014512	5.2920		5.0038
FEV.10 (OH)	X:	-0.9596	-0.73999	+174.9991	+1.95453	+0.333843	+0.8620
(2449028.5)				2.530373	2.2629	5.7079	3.3149
A FEV.14 (OH)	Y:	+1.1755	-0.01816	+ 80.0223	+0.25230		+0.3894
				5.810957	6.2599		0.3672
FEV.14 (OH)	X:	-3.4660	+0.35598	+176.7882	+1.38443	+0.231473	+0.9033
(2449032.5)				3.314563	4.5274	2.0320	4.9739
A FEV.18 (OH)	Y:	+1.0921	+0.03743	+ 81.0318	+0.20366		+0.3963
				0.326876	0.6879		2.0099
FEV.18 (OH)	X:	-3.6357	+0.60587	+178.3764	+1.45725	+0.282575	+0.9042
(2449036.5)				4.113908	5.4313	3.1112	0.3422
A FEV.22 (OH)	Y:	+1.1535	+0.01065	+ 81.8865	+0.22942		+0.3958
				1.125239	1.5874		3.6519
FEV.22 (OH)	X:	+0.2252	-1.40353	+183.5430	+2.43343	+0.641259	+0.9508
(2449040.5)				4.912539	2.2701	5.9312	2.0522
A FEV.26 (OH)	Y:	+1.2867	-0.05334	+ 82.6565	+0.26940		+0.4047
				1.925974	2.2219		5.3084
FEV.26 (OH)	X:	-4.3864	+0.88043	+181.6968	+2.11198	+0.397310	+0.8719
(2449044.5)				5.727117	5.4454	2.5890	3.7117
A MAR. 2 (OH)	Y:	+1.1336	+0.03016	+ 83.5413	+0.26038		+0.3977
				2.723907	3.3846		0.6659
MAR. 2 (OH)	X:	-1.5728	-0.44844	+182.9969	+1.38698	+0.194564	+0.8446
(2449048.5)				0.229385	1.5563	5.3963	5.3350
A MAR. 6 (OH)	Y:	+1.1910	+0.01618	+ 84.3194	+0.26068		+0.3985
				3.524660	4.2034		2.3176

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DU SATELLITE 2 DE JUPITER: EUROPE N=1.7693

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
MAR. 6 (OH)	X:	-2.9013	+0.12694	+185.3742	+0.17199	+0.078511	+0.8564
(2449052.5)				1.035354	2.8618	2.0169	0.6448
A MAR.10 (OH)	Y:	+1.2109	+0.00742	+ 85.0952	+0.24301		+0.4002
				4.325802	5.1004		3.9444
MAR.10 (OH)	X:	-3.4256	+0.50919	+186.9030	+0.49924	+0.222536	+0.8480
(2449056.5)				1.836261	5.4549	3.1583	2.2872
A MAR.14 (OH)	Y:	+1.2337	-0.01101	+ 85.7767	+0.23733		+0.4018
				5.126974	6.0138		5.6057
MAR.14 (OH)	X:	-0.4035	-1.10849	+186.0187	+2.26591	+0.497788	+0.9030
(2449060.5)				2.649689	2.5975	6.0879	3.8804
A MAR.18 (OH)	Y:	+1.2436	-0.01783	+ 86.3982	+0.22336		+0.4045
				5.928702	0.6997		0.9500
MAR.18 (OH)	X:	-4.6819	+1.07256	+186.6230	+2.59468	+0.475564	+0.9386
(2449064.5)				3.431292	5.2160	2.6676	5.5896
A MAR.22 (OH)	Y:	-1.1560	+0.03080	+ 86.9782	+0.17771		+0.4106
				0.448257	1.5551		2.6104
MAR.22 (OH)	X:	-0.8772	-0.69037	+189.9516	+1.43777	+0.358160	+0.9262
(2449068.5)				4.246115	1.6891	5.4185	1.0116
A MAR.26 (OH)	Y:	+1.2885	-0.03657	+ 87.2672	+0.19843		+0.4076
				1.250929	2.2067		4.2721
MAR.26 (OH)	X:	-2.1268	-0.18816	+188.7925	+0.15708	+0.146535	+0.8921
(2449072.5)				5.049098	2.6837	0.4880	2.6488
A MAR.30 (OH)	Y:	+1.1912	-0.00933	+ 87.6560	+0.19479		+0.4057
				2.052594	3.2622		5.9058
MAR.30 (OH)	X:	-4.0799	+0.90003	+187.8607	+1.70903	+0.407282	+0.8775
(2449076.5)				5.860190	5.6743	2.8023	4.3418
A AVR. 3 (OH)	Y:	+1.0916	+0.03679	+ 87.8364	+0.22753		+0.4042
				2.853910	4.2056		1.2921
AVR. 3 (OH)	X:	-0.7400	-0.78702	+187.6525	+1.98570	+0.329356	+0.8182
(2449080.5)				0.363670	2.1944	5.8917	5.9325
A AVR. 7 (OH)	Y:	+1.1719	+0.00020	+ 88.0508	+0.16596		+0.3982
				3.656677	5.2269		2.9163
AVR. 7 (OH)	X:	-3.7219	+0.73719	+189.5724	+1.14684	+0.300540	+0.8288
(2449084.5)				1.175608	5.0307	2.7227	1.2583
A AVR.11 (OH)	Y:	+1.1627	-0.00901	+ 88.0519	+0.16397		+0.3961
				4.458846	6.1143		4.5775
AVR.11 (OH)	X:	-0.5301	-0.75776	+186.2445	+1.63775	+0.371943	+0.8842
(2449088.5)				1.982524	2.3713	5.7287	2.8833
A AVR.15 (OH)	Y:	+1.2039	-0.05437	+ 88.0295	+0.21333		+0.4015
				5.259892	0.9611		6.2051
AVR.15 (OH)	X:	-2.1064	-0.02929	+186.6692	+0.77285	+0.112856	+0.8632
(2449092.5)				2.778607	4.3847	1.0226	4.5686
A AVR.19 (OH)	Y:	+1.0594	-0.00115	+ 87.8199	+0.16927		+0.3954
				6.062335	1.8386		1.5914
AVR.19 (OH)	X:	-3.7771	+0.97217	+185.3898	+2.33822	+0.452218	+0.9041
(2449096.5)				3.572846	5.6891	3.0352	6.2221
A AVR.23 (OH)	Y:	+1.0051	+0.02500	+ 87.5702	+0.15887		+0.3963
				0.580540	2.9936		3.2286
AVR.23 (OH)	X:	-0.0693	-0.91260	+186.8704	+1.85339	+0.414587	+0.8689
(2449100.5)				4.385159	1.9916	5.8787	1.6466
A AVR.27 (OH)	Y:	+1.0793	-0.03524	+ 87.0859	+0.15155		+0.3927
				1.380825	3.5760		4.8889
AVR.27 (OH)	X:	-3.5719	+0.83478	+182.3815	+1.45418	+0.361848	+0.8139
(2449104.5)				5.191360	5.2963	2.4343	3.3263
A MAI 1 (OH)	Y:	+0.9451	+0.00195	+ 86.6413	+0.18762		+0.3831
				2.179695	4.5330		0.2631
MAI 1 (OH)	X:	-1.1913	-0.20096	+182.2806	+0.95354	+0.101800	+0.7888
(2449108.5)				5.981321	1.9146	5.2016	4.9065
A MAI 5 (OH)	Y:	+0.9055	+0.00543	+ 86.1189	+0.19468		+0.3800
				2.979204	5.4973		1.8581
MAI 5 (OH)	X:	-1.2352	-0.20724	+180.7731	+0.88061	+0.104026	+0.7755
(2449112.5)				0.496669	2.8469	6.2601	0.2797
A MAI 9 (OH)	Y:	+0.9062	-0.01088	+ 85.5040	+0.19904		+0.3730
				3.777779	0.1589		3.5495

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DU SATELLITE 2 DE JUPITER: EUROPE N=1.7693

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
MAI 9 (OH)	X:	-2.4288	+0.51320	+180.1641	+0.93637	+0.203281	+0.7760
(2449116.5)				1.301492	5.1725	3.1595	1.8699
A MAI 13 (OH)	Y:	+0.9099	-0.03423	+ 84.8558	+0.22532		+0.3716
				4.575623	1.1116		5.1821
MAI 13 (OH)	X:	+0.1044	-0.74465	+176.3756	+1.18661	+0.350405	+0.8004
(2449120.5)				2.103174	2.5249	5.9634	3.5134
A MAI 17 (OH)	Y:	+0.8441	-0.03974	+ 84.0765	+0.22741		+0.3672
				5.372410	1.9323		0.5469
MAI 17 (OH)	X:	-3.3771	+1.03777	+176.0029	+2.59371	+0.467122	+0.8350
(2449124.5)				2.883072	5.3687	2.6054	5.2079
A MAI 21 (OH)	Y:	+0.6429	+0.03413	+ 83.3277	+0.23021		+0.3694
				6.170438	3.1339		2.1981
MAI 21 (OH)	X:	-0.5872	-0.21230	+174.6459	+0.94090	+0.136317	+0.7790
(2449128.5)				3.693851	1.1414	5.1284	0.5946
A MAI 25 (OH)	Y:	+0.7034	-0.01555	+ 82.3936	+0.20752		+0.3582
				0.681662	3.7563		3.8472
MAI 25 (OH)	X:	-0.0648	-0.53593	+173.1405	+1.39966	+0.280680	+0.7827
(2449132.5)				4.489596	2.2281	6.1948	2.2584
A MAI 29 (OH)	Y:	+0.7123	-0.04577	+ 81.4726	+0.18911		+0.3568
				1.476606	4.6660		5.4942
MAI 29 (OH)	X:	-2.1587	+0.64843	+169.2744	+0.77664	+0.275587	+0.7277
(2449136.5)				5.266649	5.5398	2.8142	3.9044
A JUN. 2 (OH)	Y:	+0.5470	+0.00427	- 80.6475	+0.23807		+0.3476
				2.269512	5.3949		0.8486
JUN. 2 (OH)	X:	+0.4214	-0.55829	+168.2951	+1.54817	+0.248560	+0.6932
(2449140.5)				6.068208	2.3396	5.7460	5.5242
A JUN. 6 (OH)	Y:	+0.5182	-0.01503	+ 79.7312	+0.23876		+0.3409
				3.062916	0.0323		2.4967
JUN. 6 (OH)	X:	-1.8806	+0.61242	+167.2754	+1.31184	+0.250396	+0.7092
(2449144.5)				0.591109	4.9450	2.7264	0.8063
A JUN.10 (OH)	Y:	+0.4604	-0.00738	+ 78.7992	+0.24293		+0.3367
				3.855410	0.8644		4.1154
JUN.10 (OH)	X:	-0.2157	-0.12118	+164.0610	+0.11087	+0.091595	+0.7121
(2449148.5)				1.378547	3.9093	5.2994	2.4861
A JUN.14 (OH)	Y:	+0.4456	-0.03025	+ 77.8824	+0.25984		+0.3340
				4.646649	1.7196		5.7745
JUN.14 (OH)	X:	+0.0024	-0.26772	+162.0641	+0.35236	+0.180657	+0.7276
(2449152.5)				2.169883	3.8721	0.3695	4.1107
A JUN.18 (OH)	Y:	+0.3410	-0.01472	+ 76.9335	+0.26415		+0.3303
				5.438254	2.6612		1.1273
JUN.18 (OH)	X:	-1.5362	+0.67151	+160.7937	+1.62466	+0.290359	+0.7274
(2449156.5)				2.951918	5.7293	2.8504	5.7817
A JUN.22 (OH)	Y:	+0.2346	+0.00630	+ 75.9875	+0.26078		+0.3275
				6.226254	3.5135		2.7674
JUN.22 (OH)	X:	+1.6960	-0.87334	+160.2145	+2.21343	+0.406239	+0.7163
(2449160.5)				3.758093	1.9114	5.7335	1.2118
A JUN.26 (OH)	Y:	+0.2864	-0.04467	+ 74.9448	+0.21751		+0.3231
				0.734081	4.3380		4.4284
JUN.26 (OH)	X:	-0.7375	+0.31799	+156.2210	+0.19590	+0.138537	+0.6630
(2449164.5)				4.539263	5.0228	2.2996	2.8113
A JUN.30 (OH)	Y:	+0.1597	-0.00760	+ 74.1034	+0.25154		+0.3153
				1.522240	5.0791		6.0478
JUN.30 (OH)	X:	-0.2318	+0.20610	+154.8522	+0.11815	+0.097273	+0.6553
(2449168.5)				5.326753	2.2384	3.3015	4.4566
A JUL. 4 (OH)	Y:	+0.0880	-0.00546	+ 73.1879	+0.25206		+0.3122
				2.309902	5.6846		1.4164
JUL. 4 (OH)	X:	+0.7448	-0.27110	+153.5534	+0.93022	+0.131732	+0.6358
(2449172.5)				6.110252	2.9407	6.1355	6.0485
A JUL. 8 (OH)	Y:	+0.0444	-0.01532	+ 72.3012	+0.25970		+0.3075
				3.097687	0.4577		3.0313
JUL. 8 (OH)	X:	-0.6983	+0.54851	+152.4694	+1.33478	+0.224022	+0.6343
(2449176.5)				0.622537	5.0984	2.8402	1.3732
A JUL.12 (OH)	Y:	-0.0288	-0.00884	+ 71.4083	+0.25639		+0.3030
				3.884314	1.2889		4.6784

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		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JUL.12 (OH)	X:	+2.0180	-0.77388	+148.4950	+1.14119	+0.363531	+0.6801
(2449180.5)				1.403561	2.3032	5.8852	2.9944
A JUL.16 (OH)	Y:	-0.0101	-0.04266	+ 70.5999	+0.28746		+0.3038
				4.670383	2.0668		0.0161
JUL.16 (OH)	X:	-0.2054	+0.35352	+149.0491	+1.13231	+0.160116	+0.6620
(2449184.5)				2.184764	5.4426	2.3457	4.6892
A JUL.20 (OH)	Y:	-0.1527	+0.00073	+ 69.6962	+0.26518		+0.2997
				5.456729	3.0073		1.6724
JUL.20 (OH)	X:	+0.2214	+0.31091	+147.3755	+1.06861	+0.169199	+0.6656
(2449188.5)				2.971738	0.1817	3.4195	0.0457
A JUL.24 (OH)	Y:	-0.2029	-0.00425	+ 68.8583	+0.26699		+0.2964
				6.241906	3.8487		3.3020
JUL.24 (OH)	X:	+1.7610	-0.49237	+146.2596	+1.37871	+0.230754	+0.6417
(2449192.5)				3.763750	2.0743	6.0333	1.7091
A JUL.28 (OH)	Y:	-0.2180	-0.02490	+ 68.0201	+0.23919		+0.2926
				0.742596	4.5912		4.9393
JUL.28 (OH)	X:	-0.4930	+0.67872	+142.8461	+0.87787	+0.286059	+0.6071
(2449196.5)				4.542560	5.1625	2.6190	3.3714
A AOU. 1 (OH)	Y:	-0.3134	+0.00019	+ 67.2779	+0.25539		+0.2873
				1.526432	5.3582		0.3044
AOU. 1 (OH)	X:	+1.9232	-0.45181	+143.6960	+1.32372	+0.205486	+0.5861
(2449200.5)				5.319995	2.4230	5.7638	4.9135
A AOU. 5 (OH)	Y:	-0.3185	-0.01664	+ 66.5080	+0.25564		+0.2840
				2.310635	6.2006		1.9113
AOU. 5 (OH)	X:	+0.7786	+0.13880	+141.9127	+0.74664	+0.065352	+0.6022
(2449204.5)				6.110382	4.2462	2.0244	0.2711
A AOU. 9 (OH)	Y:	-0.3938	-0.00980	+ 65.7651	+0.25325		+0.2826
				3.093722	0.7142		3.5576
AOU. 9 (OH)	X:	+1.0139	+0.15145	+140.5782	+0.52481	+0.093937	+0.6152
(2449208.5)				0.608986	5.3807	3.8683	1.8718
A AOU.13 (OH)	Y:	-0.4033	-0.02791	+ 65.0835	+0.27349		+0.2821
				3.876956	1.5001		5.1788
AOU.13 (OH)	X:	+2.2709	-0.52222	+138.5493	+0.54810	+0.238057	+0.6257
(2449212.5)				1.388418	2.3341	6.0515	3.5079
A AOU.17 (OH)	Y:	-0.4634	-0.01514	+ 64.3624	+0.26089		+0.2788
				4.659332	2.3128		0.5304
AOU.17 (OH)	X:	-0.5575	+0.93809	+139.9729	+2.21530	+0.416888	+0.6607
(2449216.5)				2.161744	5.5398	2.6903	5.1988
A AOU.21 (OH)	Y:	-0.5781	+0.02471	+ 63.6482	+0.27261		+0.2819
				5.443255	3.2946		2.1723
AOU.21 (OH)	X:	+2.2499	-0.37557	+137.7534	+1.22411	+0.183502	+0.6097
(2449220.5)				2.959041	1.6094	5.5677	0.5656
A AOU.25 (OH)	Y:	-0.5232	-0.02268	+ 62.9795	+0.23617		+0.2741
				6.223486	3.9453		3.8016
AOU.25 (OH)	X:	+1.5558	-0.06618	+136.6071	+0.58212	+0.086719	+0.6025
(2449224.5)				3.734619	2.4064	0.6145	2.1987
A AOU.29 (OH)	Y:	-0.5750	-0.02016	+ 62.3272	+0.23262		+0.2732
				0.722313	4.7937		5.4378
AOU.29 (OH)	X:	+0.9583	+0.32696	+135.4342	+0.13816	+0.144646	+0.5813
(2449228.5)				4.512631	5.4006	3.0306	3.8055
A SEP. 2 (OH)	Y:	-0.6377	+0.00143	+ 61.7596	+0.24498		+0.2694
				1.503651	5.5144		0.7729
SEP. 2 (OH)	X:	+2.6939	-0.55861	+136.1682	+1.39816	+0.244388	+0.5641
(2449232.5)				5.288705	2.5979	5.9549	5.4055
A SEP. 6 (OH)	Y:	-0.6360	-0.01017	+ 61.1472	+0.24317		+0.2670
				2.285354	0.0925		2.4110
SEP. 6 (OH)	X:	+0.1287	+0.76720	+134.5682	+1.73099	+0.325610	+0.5995
(2449236.5)				6.085598	5.1149	2.7705	0.6748
A SEP.10 (OH)	Y:	-0.6867	+0.00152	+ 60.5673	+0.23346		+0.2668
				3.066073	0.8239		4.0153
SEP.10 (OH)	X:	+2.5820	-0.39866	+133.4059	+0.42603	+0.190151	+0.6201
(2449240.5)				0.566265	2.1580	5.5165	2.3603
A SEP.14 (OH)	Y:	-0.6815	-0.01730	+ 60.0459	+0.25055		+0.2680
				3.847363	1.6379		5.6609

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		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
SEP.14 (OH) (2449244.5)	X:	+1.7441	-0.06650	+133.7197 1.348610	+0.49736 4.8695	+0.122548 0.9219	+0.6282 3.9987
A SEP.18 (OH)	Y:	-0.7432	+0.00318	+ 59.4653 4.628774	+0.24575 2.5076		+0.2654 1.0081
SEP.18 (OH) (2449248.5)	X:	+0.8881	+0.46379	+133.9814 2.126894	+1.23594 5.9631	+0.211822 2.9946	+0.6266 5.6532
A SEP.22 (OH)	Y:	-0.7492	+0.00909	+ 58.9496 5.409283	+0.23620 3.3074		+0.2651 2.6334
SEP.22 (OH) (2449252.5)	X:	+3.4311	-0.81273	+132.7576 2.922713	+2.01901 1.9743	+0.360676 5.8241	+0.6163 1.0622
A SEP.26 (OH)	Y:	-0.6968	-0.02594	+ 58.4012 6.189071	+0.20540 4.0778		+0.2638 4.2826
SEP.26 (OH) (2449256.5)	X:	+0.6144	+0.58445	+131.7810 3.681959	+0.69654 5.3500	+0.249562 2.6351	+0.5681 2.6266
A SEP.30 (OH)	Y:	-0.7748	+0.00281	+ 57.9909 0.686906	+0.23069 4.8196		+0.2586 5.8868
SEP.30 (OH) (2449260.5)	X:	+2.3353	-0.22210	+132.9754 4.467168	+0.87908 2.3092	+0.105704 5.3798	+0.5825 4.2283
A OCT. 4 (OH)	Y:	-0.7749	+0.00092	+ 57.4979 1.467545	+0.21960 5.6621		+0.2591 1.2413
OCT. 4 (OH) (2449264.5)	X:	+1.7677	-0.03135	+132.3936 5.248544	+0.76861 3.7511	+0.074465 1.1310	+0.5980 5.8134
A OCT. 8 (OH)	Y:	-0.7846	+0.01039	+ 57.0656 2.247723	+0.21537 0.0980		+0.2602 2.8481
OCT. 8 (OH) (2449268.5)	X:	+0.8027	+0.52419	+132.0463 6.033444	+1.32227 5.2271	+0.234375 2.9627	+0.6073 1.1448
A OCT.12 (OH)	Y:	-0.7741	+0.00661	+ 56.6214 3.028435	+0.20854 0.9400		+0.2582 4.4837
OCT.12 (OH) (2449272.5)	X:	+3.7350	-0.97348	+131.1637 0.509813	+1.49481 2.3259	+0.440853 5.9281	+0.6674 2.7840
A OCT.16 (OH)	Y:	-0.7145	-0.02988	+ 56.2732 3.809646	+0.24371 1.6939		+0.2620 6.0998
OCT.16 (OH) (2449276.5)	X:	+0.6397	+0.54003	+133.6718 1.301128	+1.54057 5.4500	+0.246285 2.5320	+0.6423 4.4790
A OCT.20 (OH)	Y:	-0.8008	+0.01947	+ 55.7947 4.590311	+0.20667 2.6233		+0.2593 1.4625
OCT.20 (OH) (2449280.5)	X:	+2.0751	-0.10986	+132.4786 2.083452	+0.94397 0.9127	+0.099305 4.6042	+0.6315 6.1145
A OCT.24 (OH)	Y:	-0.7646	+0.01266	+ 55.4184 5.370754	+0.20243 3.3999		+0.2575 3.0896
OCT.24 (OH) (2449284.5)	X:	+2.1641	-0.27162	+132.6656 2.862292	+0.85469 2.0725	+0.129970 0.0313	+0.6181 1.4432
A OCT.28 (OH)	Y:	-0.7119	-0.00705	+ 55.0794 6.151039	+0.18972 4.1106		+0.2565 4.7076
OCT.28 (OH) (2449288.5)	X:	+0.4922	+0.60283	+132.5024 3.630554	+0.69166 5.4387	+0.262078 2.8298	+0.5951 3.0710
A NOV. 1 (OH)	Y:	-0.7364	+0.00813	+ 54.7503 0.649018	+0.19509 4.9166		+0.2543 0.0620
NOV. 1 (OH) (2449292.5)	X:	+3.1592	-0.76919	+135.1486 4.419337	+1.87822 2.4517	+0.327710 5.9293	+0.6045 4.5948
A NOV. 5 (OH)	Y:	-0.7005	-0.00325	+ 54.4135 1.430350	+0.18737 5.7447		+0.2537 1.6634
NOV. 5 (OH) (2449296.5)	X:	+0.4829	+0.50707	+133.2158 5.202682	+1.35890 4.8497	+0.240138 2.5564	+0.6506 6.2376
A NOV. 9 (OH)	Y:	-0.7176	+0.02164	+ 54.1188 2.210875	+0.17471 0.1757		+0.2568 3.2978
NOV. 9 (OH) (2449300.5)	X:	+1.9242	-0.15080	+134.4821 5.972489	+0.11383 0.8807	+0.132532 4.8620	+0.6724 1.5941
A NOV.13 (OH)	Y:	-0.6228	-0.01147	+ 53.8606 2.993521	+0.20116 1.0174		+0.2579 4.9238
NOV.13 (OH) (2449304.5)	X:	+2.1797	-0.41669	+135.0311 0.467699	+0.32074 2.8390	+0.194081 6.2297	+0.6782 3.2360
A NOV.17 (OH)	Y:	-0.6252	-0.00221	+ 53.5714 3.774718	+0.18042 1.8337		+0.2563 0.2669

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		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
NOV.17 (OH)	X:	-0.4560	+0.91609	+137.9117	+2.27463	+0.421649	+0.7043
(2449308.5)				1.255384	5.5609	2.7296	4.9224
A NOV.21 (OH)	Y:	-0.6882	+0.03924	+ 53.2484	+0.17069		+0.2593
				4.557235	2.8413		1.9080
NOV.21 (OH)	X:	+2.6194	-0.65517	+135.7344	+1.53299	+0.273365	+0.6480
(2449312.5)				2.038914	1.8162	5.7962	0.2620
A NOV.25 (OH)	Y:	-0.5657	-0.00128	+ 53.0878	+0.15272		+0.2541
				5.338089	3.3944		3.5270
NOV.25 (OH)	X:	+0.5884	+0.25153	+137.5859	+0.14042	+0.128801	+0.6481
(2449316.5)				2.807848	5.4254	2.2911	1.8560
A NOV.29 (OH)	Y:	-0.5451	+0.00789	+ 52.8717	+0.15075		+0.2547
				6.120762	4.2540		5.1574
NOV.29 (OH)	X:	+1.2934	-0.05658	+138.8706	+0.67233	+0.069751	+0.6602
(2449320.5)				3.594207	2.0753	4.6696	3.4326
A DEC. 3 (OH)	Y:	-0.5029	-0.00117	+ 52.6890	+0.14437		+0.2550
				0.620506	5.0653		0.4787
DEC. 3 (OH)	X:	+1.9851	-0.52230	+140.5000	+1.35482	+0.224317	+0.6629
(2449324.5)				4.376675	2.7651	6.1478	5.0496
A DEC. 7 (OH)	Y:	-0.4848	+0.00418	+ 52.5250	+0.13884		+0.2545
				1.403554	5.8910		2.1196
DEC. 7 (OH)	X:	-0.9108	+0.93245	+139.0852	+2.12344	+0.431399	+0.7259
(2449328.5)				5.162832	5.2136	2.6409	0.3501
A DEC.11 (OH)	Y:	-0.4898	+0.02786	+ 52.4175	+0.13399		+0.2575
				2.186617	0.2612		3.7267
DEC.11 (OH)	X:	+2.1697	-0.66625	+142.0557	+0.86668	+0.289127	+0.7416
(2449332.5)				5.927277	2.2203	5.7042	2.0471
A DEC.15 (OH)	Y:	-0.3738	-0.00789	+ 52.3012	+0.14746		+0.2595
				2.971487	1.2210		5.3709
DEC.15 (OH)	X:	+0.1746	+0.17445	+143.7639	+1.05286	+0.147554	+0.7401
(2449336.5)				0.438633	5.1055	1.7575	3.7015
A DEC.19 (OH)	Y:	-0.3925	+0.01539	+ 52.1632	+0.13018		+0.2574
				3.755441	2.1550		0.7217
DEC.19 (OH)	X:	+0.0674	+0.29377	+144.9656	+1.06904	+0.154228	+0.7335
(2449340.5)				1.220288	6.1500	3.1162	5.3268
A DEC.23 (OH)	Y:	-0.3598	+0.01742	+ 52.1080	+0.11616		+0.2583
				4.539868	2.9962		2.3432
DEC.23 (OH)	X:	+1.9543	-0.75757	+144.6054	+1.76433	+0.308703	+0.7194
(2449344.5)				2.006422	1.9697	5.9134	0.7070
A DEC.27 (OH)	Y:	-0.2886	+0.00446	+ 52.0873	+0.10002		+0.2578
				5.324244	3.7537		3.9869
DEC.27 (OH)	X:	-1.0574	+0.68865	+147.6645	+0.91331	+0.311408	+0.6947
(2449348.5)				2.774460	5.5053	2.7636	2.2567
A DEC.31 (OH)	Y:	-0.2690	+0.01772	+ 52.1042	+0.10862		+0.2570
				6.110525	4.5886		5.5935
DEC.31 (OH)	X:	+1.3494	-0.55797	+149.6396	+1.57364	+0.240486	+0.7343
(2449352.5)				3.574022	2.3186	5.7077	3.8564
A JAN. 4 (OH)	Y:	-0.1875	-0.00166	+ 52.1021	+0.09144		+0.2592
				0.612915	5.5805		0.9418

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DU SATELLITE 3 DE JUPITER: GANYMEDE N=0.8782

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN. 1 (0H) (2448988.5)	X:	-0.4175	+0.02196	+247.9440 4.657913	+0.87747 4.2524	+0.003968 0.5984	+0.1273 0.9652
A JAN.10 (0H)	Y:	+0.2177	-0.01208	+114.2910 1.624924	+0.34240 1.3030		+0.0593 4.1810
JAN.10 (0H) (2448997.5)	X:	-0.1557	-0.02090	+254.9361 6.266929	+0.80002 6.0603	+0.004598 6.0300	+0.1030 4.0266
A JAN.19 (0H)	Y:	+0.1355	-0.00052	+117.1463 3.237391	+0.35099 3.0796		+0.0474 1.0565
JAN.19 (0H) (2449006.5)	X:	-0.6134	+0.09137	+262.6395 1.597821	+0.61516 1.2737	+0.028937 2.4446	+0.1101 0.5773
A JAN.28 (0H)	Y:	+0.0417	+0.01774	+120.1900 4.854570	+0.37733 4.8108		+0.0550 3.9774
JAN.28 (0H) (2449015.5)	X:	+0.1376	-0.08386	+269.5786 3.218056	+0.90736 3.0337	+0.027082 5.5154	+0.1527 3.7062
A FEV. 6 (0H)	Y:	+0.1886	-0.01337	+123.4355 0.191049	+0.38843 0.3507		+0.0742 0.7626
FEV. 6 (0H) (2449024.5)	X:	-0.2798	+0.00108	+276.5467 4.839470	+0.80327 5.0607	+0.005083 1.0068	+0.1985 0.8096
A FEV.15 (0H)	Y:	+0.1347	+0.00073	+126.8253 1.815661	+0.38875 2.1060		+0.0924 4.0498
FEV.15 (0H) (2449033.5)	X:	-0.5420	+0.04529	+283.3036 0.184477	+0.75725 0.4037	+0.021319 2.3709	+0.2072 4.2103
A FEV.24 (0H)	Y:	+0.0905	+0.01930	+130.0632 3.443877	+0.40717 3.8876		+0.0906 1.1571
FEV.24 (0H) (2449042.5)	X:	-0.3766	+0.00836	+289.2191 1.814911	+0.72942 2.4763	+0.004972 4.1502	+0.1929 1.1725
A MAR. 5 (0H)	Y:	+0.2129	-0.00587	+133.2980 5.075710	+0.38304 5.6932		+0.0887 4.4576
MAR. 5 (0H) (2449051.5)	X:	-0.0821	-0.04111	+294.1940 3.450994	+0.65667 4.1367	+0.023344 5.8492	+0.1922 4.2524
A MAR.14 (0H)	Y:	+0.2223	-0.02176	+136.0576 0.427443	+0.37951 1.2205		+0.0931 1.3177
MAR.14 (0H) (2449060.5)	X:	-0.1663	-0.01227	+297.7106 5.088041	+0.74535 6.2420	+0.007943 2.2294	+0.2421 1.1178
A MAR.23 (0H)	Y:	+0.0210	+0.02244	+138.4175 2.064419	+0.35006 3.1121		+0.1145 4.3872
MAR.23 (0H) (2449069.5)	X:	-0.7068	+0.08282	+300.2181 0.446560	+0.44043 1.8859	+0.027366 2.4305	+0.2955 4.4583
A AVR. 1 (0H)	Y:	+0.1080	+0.01494	+139.9985 3.703795	+0.31654 4.9500		+0.1308 1.4007
AVR. 1 (0H) (2449078.5)	X:	-0.1418	-0.05757	+300.0989 2.087063	+0.68282 3.5351	+0.024660 5.4441	+0.3075 1.5500
A AVR.10 (0H)	Y:	+0.3137	-0.02615	+140.8644 5.342271	+0.31390 0.6655		+0.1369 4.8057
AVR.10 (0H) (2449087.5)	X:	-0.5441	+0.02603	+298.9835 3.727144	+0.75107 5.5729	+0.014235 1.4456	+0.2910 4.9148
A AVR.19 (0H)	Y:	+0.1438	+0.00918	+140.9295 0.698466	+0.28537 2.6489		+0.1377 1.9486
AVR.19 (0H) (2449096.5)	X:	-0.4421	+0.00976	+296.3016 5.366983	+0.69119 1.2201	+0.011206 2.7082	+0.2657 1.8783
A AVR.28 (0H)	Y:	+0.1270	+0.01860	+140.0192 2.335215	+0.29952 4.5603		+0.1303 5.1430
AVR.28 (0H) (2449105.5)	X:	-0.0359	-0.07026	+291.9624 0.720219	+0.83207 2.9511	+0.024814 5.4159	+0.2581 5.0686
A MAI 7 (0H)	Y:	+0.2666	-0.01939	+138.4953 3.970261	+0.31579 0.2650		+0.1283 2.0015

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DU SATELLITE 3 DE JUPITER: GANYMEDE N=0.8782

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
MAI 7 (OH) (2449114.5)	X:	-0.2825	-0.01439	+286.9750 2.355119	+0.69244 4.9963	+0.009488 6.0167	+0.2915 1.9983
A MAI 16 (OH)	Y:	+0.2082	-0.01154	+136.1910 5.601506	+0.33125 2.0880		+0.1340 5.2316
MAI 16 (OH) (2449123.5)	X:	-0.6763	+0.05678	+280.6454 3.984373	+0.75871 0.3092	+0.025060 2.3435	+0.3277 5.3387
A MAI 25 (OH)	Y:	+0.0881	+0.02487	+133.5297 0.946139	+0.36399 3.9451		+0.1500 2.3299
MAI 25 (OH) (2449132.5)	X:	-0.6615	+0.02573	+274.3287 5.611893	+0.72940 2.5023	+0.005921 2.0080	+0.3138 2.4583
A JUN. 3 (OH)	Y:	+0.2485	+0.00120	+130.3732 2.570324	+0.36453 5.7461		+0.1488 5.6821
JUN. 3 (OH) (2449141.5)	X:	-0.2525	-0.05387	+267.1449 0.949018	+0.67887 3.9842	+0.021127 5.4147	+0.2836 5.7657
A JUN.12 (OH)	Y:	+0.3202	-0.01740	+127.1752 4.189709	+0.39600 1.2046		+0.1365 2.6791
JUN.12 (OH) (2449150.5)	X:	-0.4343	-0.00557	+260.4999 2.566785	+0.77079 5.9420	+0.005273 0.7771	+0.2590 2.6533
A JUN.21 (OH)	Y:	+0.2031	+0.00166	+123.7744 5.805936	+0.39625 2.9660		+0.1198 5.8838
JUN.21 (OH) (2449159.5)	X:	-0.4814	+0.00963	+253.6148 4.179623	+0.75480 1.3793	+0.007649 2.6238	+0.2613 5.8117
A JUN.30 (OH)	Y:	+0.1721	+0.00896	+120.4181 1.134570	+0.40274 4.6749		+0.1221 2.7785
JUN.30 (OH) (2449168.5)	X:	-0.2194	-0.05791	+247.2596 5.787737	+0.86032 2.9935	+0.017437 5.3307	+0.2780 2.7609
A JUL. 9 (OH)	Y:	+0.2608	-0.00701	+117.1544 2.743475	+0.41185 0.1193		+0.1312 6.0361
JUL. 9 (OH) (2449177.5)	X:	-0.6385	+0.02098	+241.1957 1.111127	+0.84687 4.8996	+0.004037 2.3477	+0.2877 6.0823
A JUL.18 (OH)	Y:	+0.2602	-0.00048	+113.9918 4.348330	+0.40754 1.7842		+0.1348 3.0460
JUL.18 (OH) (2449186.5)	X:	-0.7409	+0.03208	+235.4371 2.712343	+0.78724 0.1844	+0.012120 2.0158	+0.2707 3.1766
A JUL.27 (OH)	Y:	+0.2429	+0.00715	+110.9977 5.951050	+0.41132 3.4799		+0.1250 0.1102
JUL.27 (OH) (2449195.5)	X:	-0.3543	-0.05124	+230.5506 4.312580	+0.93393 2.0264	+0.014150 5.4853	+0.2370 0.1702
A AOU. 5 (OH)	Y:	+0.3043	-0.00649	+108.1107 1.267638	+0.40026 5.1577		+0.1115 3.3704
AOU. 5 (OH) (2449204.5)	X:	-0.5172	+0.00486	+225.7161 5.908520	+0.74949 3.6885	+0.006267 4.4218	+0.2174 3.3153
A AOU.14 (OH)	Y:	+0.2742	-0.00610	+105.4997 2.865169	+0.40404 0.5140		+0.1049 0.2696
AOU.14 (OH) (2449213.5)	X:	-0.5195	-0.00250	+221.7974 1.219790	+0.79604 5.3868	+0.003002 0.9207	+0.2245 0.1803
A AOU.23 (OH)	Y:	+0.2352	+0.00239	+102.9977 4.460860	+0.39600 2.1723		+0.1050 3.4239
AOU.23 (OH) (2449222.5)	X:	-0.6055	+0.00429	+218.3597 2.811609	+0.75950 0.7732	+0.005041 2.0093	+0.2450 3.4418
A SEP. 1 (OH)	Y:	+0.2483	+0.00482	+100.6880 6.054845	+0.39005 3.8148		+0.1115 0.4004
SEP. 1 (OH) (2449231.5)	X:	-0.4354	-0.03975	+215.8305 4.402332	+0.86706 2.3722	+0.012854 4.8937	+0.2474 0.4842
A SEP.10 (OH)	Y:	+0.3198	-0.00505	+ 98.5221 1.364717	+0.38377 5.4698		+0.1081 3.7260

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DU SATELLITE 3 DE JUPITER: GANYMEDE N=0.8782

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
SEP.10 (0H) (2449240.5)	X:	-0.7925	+0.04035	+213.4181 5.992517	+0.83942 4.2444	+0.007523 2.3874	+0.2294 3.8003
A SEP.19 (0H)	Y:	+0.2819	+0.00092	+ 96.5631 2.956014	+0.37194 0.7979		+0.1018 0.7495
SEP.19 (0H) (2449249.5)	X:	-0.5840	+0.00182	+211.8293 1.296426	+0.76631 5.8139	+0.004650 0.5545	+0.1958 0.7349
A SEP.28 (0H)	Y:	+0.2725	-0.00200	+ 94.7469 4.547126	+0.36625 2.4303		+0.0883 3.9746
SEP.28 (0H) (2449258.5)	X:	-0.3415	-0.03650	+210.8530 2.884949	+0.88408 1.2761	+0.008170 5.0553	+0.1804 3.8327
A OCT. 7 (0H)	Y:	+0.2572	-0.00213	+ 93.0480 6.137565	+0.35239 4.0665		+0.0826 0.8103
OCT. 7 (0H) (2449267.5)	X:	-0.7435	+0.04471	+210.2313 4.470623	+0.72207 2.9989	+0.012009 2.6849	+0.1892 0.7122
A OCT.16 (0H)	Y:	+0.2514	-0.00005	+ 91.5523 1.444634	+0.34461 5.6790		+0.0827 4.0135
OCT.16 (0H) (2449276.5)	X:	-0.5816	-0.00320	+210.5637 6.057167	+0.81282 4.5549	+0.002260 0.2905	+0.2086 4.0057
A OCT.25 (0H)	Y:	+0.2455	+0.00400	+ 90.1567 3.034710	+0.32723 1.0232		+0.0874 1.0046
OCT.25 (0H) (2449285.5)	X:	-0.4766	-0.02585	+211.3009 1.360394	+0.77338 0.0351	+0.007538 5.8168	+0.2080 1.0971
A NOv. 3 (0H)	Y:	+0.2709	-0.00062	+ 88.9273 4.625308	+0.31425 2.6483		+0.0854 4.3563
NOV. 3 (0H) (2449294.5)	X:	-0.6113	+0.02340	+212.9551 2.947062	+0.81201 1.5294	+0.010356 3.2126	+0.1832 4.4086
A NOV.12 (0H)	Y:	+0.2615	-0.00243	+ 87.8289 6.216522	+0.30048 4.2847		+0.0751 1.3222
NOV.12 (0H) (2449303.5)	X:	-0.5696	+0.02046	+214.8096 4.534743	+0.84695 3.3405	+0.003114 1.6512	+0.1562 1.3097
A NOV.21 (0H)	Y:	+0.2365	-0.00600	+ 86.8936 1.525091	+0.27938 5.9137		+0.0632 4.5533
NOV.21 (0H) (2449312.5)	X:	-0.4378	-0.00234	+217.5433 6.122696	+0.83428 4.9554	-0.002508 6.1015	+0.1512 4.3796
A NOV.30 (0H)	Y:	+0.1942	+0.00065	+ 86.1132 3.118092	-0.26051 1.2774		+0.0590 1.4071
NOV.30 (0H) (2449321.5)	X:	-0.4023	-0.01373	+220.7221 1.429085	+0.87665 0.3767	+0.000977 3.7223	+0.1696 1.2762
A DEC. 9 (0H)	Y:	+0.1775	+0.00736	+ 85.4870 4.712576	+0.24145 2.9570		+0.0651 4.5900
DEC. 9 (0H) (2449330.5)	X:	-0.6924	+0.04251	+224.6379 3.018639	+0.74868 2.0406	+0.012985 2.4330	+0.1802 4.5840
A DEC.18 (0H)	Y:	+0.2123	+0.00296	+ 85.0864 0.025291	+0.22189 4.6107		+0.0647 1.5642
DEC.18 (0H) (2449339.5)	X:	-0.3179	-0.02794	+229.3477 4.612122	+0.88099 3.6094	+0.011850 5.6184	+0.1707 1.6867
A DEC.27 (0H)	Y:	+0.2443	-0.01092	+ 84.8426 1.623229	+0.19922 0.0805		+0.0592 4.9689
DEC.27 (0H) (2449348.5)	X:	-0.2416	-0.02171	+234.2156 6.206082	+0.81748 5.4663	+0.008169 5.3592	+0.1289 5.0229
A JAN. 5 (0H)	Y:	+0.1817	-0.00472	+ 84.8721 3.223020	+0.17681 1.8143		+0.0483 2.0383

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DU SATELLITE 4 DE JUPITER: CALLISTO N=0.3765

		A0	A1	B0 F0	B1 F1	C0 P0
JAN. 1 (0H) (2448988.5)	X:	- 3.8992	+ 0.36880	+437.9777 3.092579	+ 1.19651 2.6347	+1.9645 3.4507
A JAN.11 (0H)	Y:	+ 1.4915	- 0.15888	+200.1868 0.065514	+ 0.46242 5.9704	+0.9066 0.4317
JAN.11 (0H) (2448998.5)	X:	- 2.7999	+ 0.07176	+450.9094 0.567272	+ 1.48005 0.2669	+2.3318 4.5744
A JAN.21 (0H)	Y:	+ 1.2645	- 0.06930	+205.5896 3.827379	+ 0.63127 3.5496	+1.0634 1.5561
JAN.21 (0H) (2449008.5)	X:	- 1.5063	- 0.35719	+464.8902 4.327766	+ 1.70568 4.1128	+2.1349 5.8388
A JAN.31 (0H)	Y:	+ 0.4020	+ 0.17274	+211.5666 1.306619	+ 0.74824 1.1180	+0.9720 2.8202
JAN.31 (0H) (2449018.5)	X:	+ 1.6076	- 0.70536	+474.4573 1.803033	+ 1.88798 2.1312	+2.4086 0.8979
A FEV.10 (0H)	Y:	- 0.9855	+ 0.32368	+215.6690 5.068305	+ 0.90915 5.3878	+1.1056 4.1686
FEV.10 (0H) (2449028.5)	X:	- 5.0069	+ 0.64484	+488.9455 5.572652	+ 1.89102 6.0620	+2.4541 1.9782
A FEV.20 (0H)	Y:	+ 1.9000	- 0.26679	+222.7415 2.555690	+ 0.90976 3.0021	+1.1146 5.2405
FEV.20 (0H) (2449038.5)	X:	- 5.1415	+ 0.41469	+505.6052 3.058232	+ 1.20073 3.9404	+2.3878 3.3877
A MAR. 2 (0H)	Y:	+ 2.0973	- 0.20265	+230.7429 0.041381	+ 0.61847 0.8188	+1.0988 0.3744
MAR. 2 (0H) (2449048.5)	X:	- 2.1788	- 0.03940	+515.5855 0.559096	+ 1.19322 1.4852	+2.8584 4.5706
A MAR.12 (0H)	Y:	+ 0.9092	- 0.00564	+236.4289 3.826315	+ 0.60231 4.5622	+1.3139 1.5517
MAR.12 (0H) (2449058.5)	X:	- 2.8190	- 0.03602	+522.7153 4.343098	+ 1.27309 5.4164	+2.5041 5.8669
A MAR.22 (0H)	Y:	+ 0.9951	+ 0.01763	+240.8247 1.325992	+ 0.62558 2.1946	+1.1523 2.8459
MAR.22 (0H) (2449068.5)	X:	+ 2.7467	- 1.00032	+521.8513 1.843355	+ 1.96994 3.0995	+2.8409 0.9650
A AVR. 1 (0H)	Y:	- 1.5784	+ 0.48510	+241.5317 5.109123	+ 0.92583 6.1826	+1.3305 4.2276
AVR. 1 (0H) (2449078.5)	X:	- 2.7107	+ 0.37272	+526.9665 5.631081	+ 1.59090 0.9895	+2.6588 2.0882
A AVR.11 (0H)	Y:	+ 0.8032	- 0.14541	+245.3348 2.610501	+ 0.68131 4.1033	+1.2361 5.3489
AVR.11 (0H) (2449088.5)	X:	- 6.9787	+ 0.86033	+528.2498 3.127226	+ 1.90221 5.4109	+2.5491 3.4959
A AVR.21 (0H)	Y:	+ 3.1115	- 0.42907	+246.7459 0.103545	+ 0.81515 2.3279	+1.1945 0.4736
AVR.21 (0H) (2449098.5)	X:	- 2.3399	- 0.01509	+521.4799 0.639330	+ 1.31551 3.1103	+2.8437 4.7092
A MAI 1 (0H)	Y:	+ 0.9387	- 0.01293	+244.6890 3.897228	+ 0.51890 0.1065	+1.3403 1.6619
MAI 1 (0H) (2449108.5)	X:	- 0.3771	- 0.21373	+513.1941 4.423063	+ 1.27289 0.8819	+2.3744 5.9609
A MAI 11 (0H)	Y:	- 0.0891	+ 0.10758	+241.4340 1.394600	+ 0.53852 4.2172	+1.1101 2.9335
MAI 11 (0H) (2449118.5)	X:	+ 1.9496	- 0.77830	+496.3817 1.915205	+ 1.28755 4.2312	+2.6325 1.0792
A MAI 21 (0H)	Y:	- 1.2633	+ 0.39292	+233.7634 5.168195	+ 0.52506 1.1920	+1.2504 4.3298

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DU SATELLITE 4 DE JUPITER: CALLISTO N=0.3765

		A0	A1	B0 F0	B1 F1	C0 P0
MAI 21 (0H) (2449126.5)	X:	- 1.7728	+ 0.15682	+487.6506 5.689436	+ 1.32787 2.3036	+2.3020 2.1449
A MAI 31 (0H)	Y:	+ 0.5558	- 0.06593	+230.0327 2.655898	+ 0.60599 5.6271	+1.0840 5.3960
MAI 31 (0H) (2449138.5)	X:	- 5.5499	+ 0.81545	+477.3451 3.165966	+ 2.02921 6.2459	+2.2059 3.5532
A JUN.10 (0H)	Y:	+ 2.3922	- 0.38678	+225.0322 0.129882	+ 0.95548 3.2202	+1.0418 0.5206
JUN.10 (0H) (2449148.5)	X:	- 2.7785	+ 0.12556	+462.5320 0.656573	+ 1.50043 4.1483	+2.3342 4.7107
A JUN.20 (0H)	Y:	+ 1.2274	- 0.09205	+218.2088 3.902950	+ 0.73337 1.1590	+1.1073 1.6755
JUN.20 (0H) (2449158.5)	X:	+ 1.0048	- 0.46268	+450.3052 4.416512	+ 1.62975 1.8838	+1.9475 5.9329
A JUN.30 (0H)	Y:	- 0.6441	+ 0.22127	+212.1974 1.377564	+ 0.81149 5.1119	+0.9130 2.9012
JUN.30 (0H) (2449168.5)	X:	+ 1.3078	- 0.55953	+432.1206 1.880899	+ 0.97721 5.3939	+2.1148 1.0109
A JUL.10 (0H)	Y:	- 0.9768	+ 0.29688	+203.0316 5.125334	+ 0.47574 2.3300	+1.0014 4.2584
JUL.10 (0H) (2449178.5)	X:	- 2.9198	+ 0.30018	+421.8778 5.631258	+ 1.15585 3.1840	+1.8676 2.0247
A JUL.20 (0H)	Y:	+ 1.1498	- 0.13924	+197.9074 2.591825	+ 0.59252 0.0714	+0.8746 5.2764
JUL.20 (0H) (2449188.5)	X:	- 4.3555	+ 0.57631	+414.5221 3.084010	+ 1.71856 0.4834	+1.7985 3.4198
A JUL.30 (0H)	Y:	+ 1.8531	- 0.26704	+193.5742 0.044251	+ 0.85471 3.6382	+0.8403 0.3872
JUL.30 (0H) (2449198.5)	X:	- 2.3546	+ 0.05293	+403.4380 0.549542	+ 1.50048 4.6185	+1.9191 4.5309
A AOU. 9 (0H)	Y:	+ 1.0297	- 0.05767	+187.6509 3.794934	+ 0.74818 1.4709	+0.8981 1.5026
AOU. 9 (0H) (2449208.5)	X:	+ 0.5829	- 0.46019	+396.0999 4.291186	+ 1.72479 2.2918	+1.6310 5.7452
A AOU.19 (0H)	Y:	- 0.3477	+ 0.20270	+183.1098 1.253251	+ 0.82910 5.3592	+0.7503 2.7218
AOU.19 (0H) (2449218.5)	X:	+ 0.4669	- 0.42989	+384.7140 1.735946	+ 1.04177 6.0485	+1.7704 0.7888
A AOU.29 (0H)	Y:	- 0.6215	+ 0.24224	+176.2149 4.983770	+ 0.48704 2.7237	+0.8162 4.0496
AOU.29 (0H) (2449228.5)	X:	- 3.9150	+ 0.40115	+379.0003 5.471142	+ 1.13986 3.7276	+1.6177 1.7809
A SEP. 8 (0H)	Y:	+ 1.5853	- 0.18321	+172.2968 2.437964	+ 0.54036 0.3504	+0.7322 5.0490
SEP. 8 (0H) (2449238.5)	X:	- 4.2028	+ 0.43832	+378.4807 2.911705	+ 1.50228 0.8274	+1.5754 3.1613
A SEP.18 (0H)	Y:	+ 1.7274	- 0.19216	+170.0072 6.163244	+ 0.73694 3.7828	+0.7054 0.1451
SEP.18 (0H) (2449248.5)	X:	- 2.0649	- 0.07736	+373.7736 0.362359	+ 1.43169 4.8610	+1.7194 4.2552
A SEP.28 (0H)	Y:	+ 0.8911	- 0.00699	+165.8164 3.618479	+ 0.66525 1.5072	+0.7648 1.2479
SEP.28 (0H) (2449258.5)	X:	- 0.1514	- 0.41372	+372.5400 4.096826	+ 1.74589 2.5132	+1.5033 5.4691
A OCT. 8 (0H)	Y:	+ 0.0287	+ 0.16716	+162.9253 1.071157	+ 0.73849 5.3943	+0.6523 2.4688

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 4 DE JUPITER: CALLISTO N=0.3765

		A0	A1	B0 F0	B1 F1	C0 P0
OCT. 6 (OH) (2449268.5)	X:	- 0.6375	- 0.31594	+368.9034 1.533439	+ 1.20005 0.0935	+1.6357 0.4939
A OCT.18 (OH)	Y:	- 0.1781	+ 0.18392	+158.3427 4.795216	+ 0.44845 2.7978	+0.7025 3.7794
OCT.18 (OH) (2449278.5)	X:	- 4.8703	+ 0.45876	+368.4969 5.262677	+ 1.26212 4.0706	+1.5578 1.4835
A OCT.28 (OH)	Y:	+ 1.8941	- 0.19592	+155.6032 2.246050	+ 0.44370 0.4386	+0.6517 4.7782
OCT.28 (OH) (2449288.5)	X:	- 4.3871	+ 0.33703	+374.8470 2.702290	+ 1.43540 1.1254	+1.5418 2.8569
A NOV. 7 (OH)	Y:	+ 1.6210	- 0.12867	+154.9343 5.971804	+ 0.58582 3.8134	+0.6325 6.1513
NOV. 7 (OH) (2449298.5)	X:	- 2.1218	- 0.18875	+376.9736 0.147965	+ 1.41896 5.0629	+1.7152 3.9499
A NOV.17 (OH)	Y:	+ 0.9154	+ 0.02169	+152.4221 3.424233	+ 0.52462 1.4756	+0.6906 0.9714
NOV.17 (OH) (2449308.5)	X:	- 0.9080	- 0.38801	+381.6787 3.884045	+ 1.83005 2.6971	+1.5493 5.1741
A NOV.27 (OH)	Y:	+ 0.2778	+ 0.14920	+150.9600 0.880028	+ 0.58516 5.4223	+0.6049 2.2027
NOV.27 (OH) (2449318.5)	X:	- 1.9474	- 0.18959	+385.7734 1.323264	+ 1.43621 0.3246	+1.6894 0.1828
A DEC. 7 (OH)	Y:	+ 0.3455	+ 0.10574	+148.5862 4.607861	+ 0.35293 2.9179	+0.6472 3.4972
DEC. 7 (OH) (2449328.5)	X:	- 6.0083	+ 0.50926	+390.9279 5.054810	+ 1.50233 4.3526	+1.6805 1.1930
A DEC.17 (OH)	Y:	+ 2.0977	- 0.18809	+147.1431 2.063067	+ 0.30471 0.7309	+0.6229 4.5132
DEC.17 (OH) (2449338.5)	X:	- 4.5928	+ 0.22479	+404.0155 2.503410	+ 1.48093 1.4781	+1.6853 2.5698
A DEC.27 (OH)	Y:	+ 1.4613	- 0.07472	+148.1456 5.798863	+ 0.36493 4.0212	+0.6141 5.8947
DEC.27 (OH) (2449348.5)	X:	- 2.5077	- 0.26355	+413.5159 6.238023	+ 1.43413 5.3575	+1.9086 3.6694
A JAN. 6 (OH)	Y:	+ 1.0251	+ 0.03999	+147.6669 3.258084	+ 0.32108 1.7397	+0.6734 0.7159

PHÉNOMÈNES DES SATELLITES GALILÉENS

DESCRIPTION

Les satellites galiléens, dont les orbites sont faiblement inclinées sur l'équateur et sur l'écliptique, présentent de nombreux phénomènes. Au cours de chaque révolution, les trois premiers satellites, et en général le quatrième satellite, traversent le cône de visibilité et le cône d'ombre qui s'appuient sur la planète. On peut alors observer les passages des satellites devant Jupiter et les occultations par Jupiter lors de la traversée du cône de visibilité, ou les éclipses ou les passages d'ombre sur la planète lors de la traversée du cône d'ombre. Au cours d'une année, environ 3 000 tels événements (passages début ou fin, éclipses début ou fin, occultations début ou fin, passages d'ombre début ou fin) sont calculables (mais environ 2 200 seulement sont observables). Nous donnons ici une représentation compacte de ces prédictions utilisant un développement polynômial.

MÉTHODE DE CALCUL

Les tables des pages 53 et 54 permettent de calculer les dates en TDT des phénomènes des satellites galiléens de la manière suivante.

Soit P la période synodique moyenne d'un satellite ; la date approchée $T1$ du phénomène proche de la date T est donnée par la relation :

$$T1 = K \times P + \tau/24 + T0 \qquad (2)$$

où K représente la partie entière de la quantité $(T - T0)/P$ et où τ est donné, sur l'intervalle $T0$, $T0 + DT$ par un polynôme de la forme :

$$\tau = C0 + C1\,x + C2\,x^2 + \ldots\ldots + Cn\,x^n \qquad (3)$$

avec
$$x = \{2(T - T0)/DT\} - 1 \qquad (4)$$

$T1$ ayant été obtenu par la relation (2), on peut réitérer le calcul en substituant $T1$ à T dans la formule (4) pour obtenir une date $T2$ plus proche du phénomène recherché que $T1$. La précision de ce type de prédiction est meilleure que 60 secondes de temps.

Les tables donnent les coefficients Ci de la formule (3), numérotés de $C0$ à $C10$ pour les quatre satellites et pour les phénomènes :

— débuts et fins des éclipses des satellites par Jupiter (notées respectivement EC.D et EC.F),

— débuts et fins des occultations des satellites par Jupiter (notées 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).

EXEMPLE D'UTILISATION

Déterminons les dates des phénomènes du satellite I (Io) au voisinage du 30 juin 1993.

PHENOMENA OF THE GALILEAN SATELLITES

DESCRIPTION

The Galilean satellites which orbits have low inclinations upon the equator and the ecliptic, display many phenomena. During each revolution, the first three satellites and, often the fourth one, pass through the visibility and shadow cones which are tangent to the planet. It is then possible to observe the transits of the satellites across Jupiter and their occultations by Jupiter when they pass through the visibility cone, or the eclipses and the shadow transits when the shadow cone is involved. In the course of a year 3 000 such events may be computed (transits ingress and egress, eclipses disappearance and reappearance, occultations disappearance and reappearance, transits of the shadow ingress and egress). Only about 2 200 are observable. A compact representation of these predictions using a polynomial approximation is given here.

COMPUTATIONAL METHOD

The tables on p. 53 and 54 permit the computation of the dates in TDT of phenomena of the satellites of Jupiter in the following way.

Let P be the mean synodic period of a satellite ; the approximate date $T1$ of a phenomenon close to a date T is given by :

$$T1 = K \times P + \tau/24 + T0 \qquad (2)$$

where K is the integer part of $(T - T0)/P$ and where τ is given (on the interval $T0$, $T0 + DT$) by a polynomial :

$$\tau = C0 + C1\,x + C2\,x^2 + \ldots\ldots + Cn\,x^n \qquad (3)$$

with
$$x = \{2(T - T0)/DT\} - 1 \qquad (4)$$

The value $T1$ deduced from equation (2) is then substituted in place of T in equation (4). The new iteration yields a date $T2$ closer to the date of the phenomenon than $T1$. The precision of this type of prediction is better than 60 seconds of time. The tables give the coefficients Ci in formula (3), numbered from $C0$ to $C10$, 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).

EXAMPLE

Let us find the dates of the phenomena of satellite I (Io) which takes place near the 30th of June 1993.

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

$T0 = 0$; $P = 1{,}769\,860\,5$; $DT = 366$

Du 0 janvier au 30 juin 1993, 181 jours se sont écoulés, on a donc :

$T = 181$ et la formule (4) donne alors :

$x = 2\,(181 - 0)/366 - 1 = -0{,}010\,928\,962$

La formule (3) donne ensuite :

$$\tau = 2.793\,559 + 0.386\,356\,x - 0.072\,324\,x^2 - 0.663\,240\,x^3 + 0.246\,755\,x^4 + 0.119\,635\,x^5 - 0.217\,262\,x^6 + 0.132\,255\,x^7 + 0.031\,044\,x^8 - 0.064\,166\,x^9 + 0.023\,754\,x^{10}$$

d'où $\tau = 2{,}789\,329$

On a d'autre part :

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

La formule (2) donne alors :

$T1 = 102 \times 1{,}769\,860\,5 + 2{,}789\,329/24 + 0$

$T1 = 180{,}641\,993$ jours depuis le 0 janvier (début de l'intervalle pour les occultations) soit EC.D le 29 juin 1993 à 15 h 24 m 28 s TDT. Le calcul réitéré donne $T2 = 180{,}641\,961$ jours soit le 29 juin 1993 à 15 h 24 m 25 s TDT.

On trouverait de même pour les autres phénomènes :

OC.D le 29 juin à 14 h 07 m 00 s
OC.F le 29 juin à 16 h 20 m 55 s
EC.F le 29 juin à 17 h 36 m 52 s
PA.D le 30 juin à 11 h 22 m 55 s
OM.D le 30 juin à 12 h 37 m 51 s
PA.F le 30 juin à 13 h 34 m 24 s
OM.F le 30 juin à 14 h 48 m 00 s

IMPORTANT : 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'éclipses 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 29 juin à 14 h 07 m 00 s observable
EC.D le 29 juin à 15 h 24 m 28 s inobservable car déjà occulté
OC.F le 29 juin à 16 h 20 m 55 s inobservable car éclipsé
EC.F le 29 juin à 17 h 36 m 52 s 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.

Let us start with the computation of the disappearance for the occultation of the satellite for which the tables give :

$T0 = 0$; $P = 1.769\,860\,5$; $DT = 366$

Between January 0 to June the 30 th 1993, 181 days have elapsed

$T = 181$ and formula (4) gives :

$x = 2\,(181 - 0)/366 - 1 = -0.010\,928\,962$

Formula (3) then gives :

$$\tau = 2.793\,559 + 0.386\,356\,x - 0.072\,324\,x^2 - 0.663\,240\,x^3 + 0.246\,755\,x^4 + 0.119\,635\,x^5 - 0.217\,262\,x^6 + 0.132\,255\,x^7 + 0.031\,044\,x^8 - 0.064\,166\,x^9 + 0.023\,754\,x^{10}$$

therefore $\tau = 2.789\,329$

On the other hand,

K = integer part of $(181 - 0)/1.769\,860\,5 = 102$

Formula (2) then gives :

$T1 = 102 \times 1.769\,860\,5 + 2.789\,329/24 + 0$

$T1 = 180.641\,993$ days from January 0 (beginning of the interval for the occultations) that is June the 29th 1993 at 15 h 24 m 28 s TDT. Another iteration gives $T2 = 180.641\,961$ days that is June the 29th 1993 at 15 h 24 m 25 s TDT.

One would find as well for the other phenomena :

OC.D the June 29th at 14 h 07 m 00 s
OC.F the June 29th at 16 h 20 m 55 s
EC.F the June 29th at 17 h 36 m 52 s
PA.D the June 30th at 11 h 22 m 55 s
OM.D the June 30th at 12 h 37 m 51 s
PA.F the June 30th at 13 h 34 m 24 s
OM.F the June 30th at 14 h 48 m 00 s

IMPORTANT : 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 June 29th at 14 h 07 m 00 s observable
EC.D June 29th at 15 h 24 m 28 s unobservable as occulted
OC.F June 29th at 16 h 20 m 55 s unobservable as eclipsed
EC.F June 29th at 17 h 36 m 52 s 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.

Année 1993 Satellite 1 P = 1.7698605 jours T0 = 0.0 DT = 366. jours

	EC.D		EC.F		OM.D		OM.F
0	2.793559	0	4.999790	0	24.013412	0	26.182334
1	0.386356	1	0.353691	1	0.099191	1	0.083491
2	-0.072324	2	-0.096090	2	-0.009948	2	0.174059
3	-0.663240	3	-0.653503	3	-0.307719	3	-0.399634
4	0.246755	4	0.266509	4	0.172261	4	-0.238184
5	0.119635	5	0.109235	5	-0.170701	5	0.155915
6	-0.217262	6	-0.224794	6	-0.017161	6	0.310178
7	0.132255	7	0.142967	7	0.402838	7	0.003768
8	0.031044	8	0.030128	8	-0.157516	8	-0.204243
9	-0.064166	9	-0.068622	9	-0.171505	9	-0.014503
10	0.023754	10	0.025742	10	0.074024	10	0.041238

	OC.D		OC.F		PA.D		PA.F
0	1.505620	0	3.736451	0	22.766514	0	24.958052
1	0.623961	1	0.636322	1	0.328009	1	0.348130
2	5.035597	2	4.878652	2	4.756386	2	4.827686
3	-3.874130	3	-3.844422	3	-3.462436	3	-3.478914
4	-1.490742	4	-1.332297	4	-0.496398	4	-0.863388
5	6.081677	5	5.884472	5	5.708970	5	5.755017
6	-4.198371	6	-4.206200	6	-5.684896	6	-5.152038
7	-3.975167	7	-3.767823	7	-3.637632	7	-3.774813
8	4.636971	8	4.550575	8	5.767966	8	5.432105
9	0.972083	9	0.899812	9	0.836310	9	0.909070
10	-1.536762	10	-1.494803	10	-1.888885	10	-1.807478

T0 = 0 CORRESPOND AU 0 JANVIER 1993 à 0 H SOIT LA DATE JULIENNE 2448987.5

Année 1993 Satellite 2 P = 3.5540942 jours T0 = 0.0 DT = 366. jours

	EC.D		EC.F		OM.D		OM.F
0	7.744347	0	10.173144	0	50.495875	0	52.923606
1	-0.510137	1	-0.598795	1	0.784956	1	0.682615
2	0.124241	2	0.196096	2	-0.364148	2	-0.199180
3	0.128200	3	0.101781	3	-1.323683	3	-1.412069
4	-0.193561	4	-0.216531	4	0.857149	4	0.396152
5	0.100263	5	0.156476	5	0.399871	5	0.800433
6	0.978591	6	0.958440	6	-1.224147	6	-0.773600
7	-0.182843	7	-0.250002	7	0.070897	7	-0.426684
8	-1.509430	8	-1.471204	8	0.966859	8	0.811958
9	0.093395	9	0.122945	9	-0.054409	9	0.142087
10	0.699619	10	0.682262	10	-0.319110	10	-0.314164

	OC.D		OC.F		PA.D		PA.F
0	5.204014	0	7.722804	0	47.881678	0	50.403685
1	-0.099743	1	-0.038488	1	1.229966	1	1.298125
2	10.002541	2	9.593008	2	10.011447	2	9.654076
3	-6.191754	3	-5.959415	3	-7.901806	3	-7.792256
4	-2.616235	4	-2.268093	4	-2.406727	4	-2.411123
5	11.933467	5	10.978970	5	12.811373	5	12.193018
6	-8.133140	6	-7.779431	6	-10.455785	6	-9.632775
7	-8.332863	7	-7.441976	7	-8.591419	7	-8.040918
8	8.325067	8	7.667691	8	11.601405	8	10.659900
9	2.147218	9	1.862187	9	2.153171	9	1.988785
10	-2.571671	10	-2.305973	10	-3.942026	10	-3.604578

T0 = 0 CORRESPOND AU 0 JANVIER 1993 à 0 H SOIT LA DATE JULIENNE 2448987.5

Année 1993 Satellite 3 P = 7.1663872 jours T0 = 0.0 DT = 366. jours

	EC.D		EC.F		OM.D		OM.F
0	61.102478	0	63.753009	0	146.947546	0	149.562905
1	-0.004763	1	-0.395929	1	-0.131225	1	-0.506674
2	-0.135075	2	-0.131702	2	0.069909	2	0.254771
3	-0.436459	3	-0.387208	3	-0.737095	3	-0.893543
4	0.908500	4	0.908849	4	-0.196490	4	-0.655363
5	-0.625251	5	-0.735272	5	1.411609	5	2.001082
6	-2.158310	6	-2.081733	6	0.628344	6	0.972553
7	1.274715	7	1.415320	7	-2.069920	7	-2.774718
8	2.294215	8	2.157181	8	-0.459787	8	-0.447104
9	-0.644765	9	-0.704676	9	1.099090	9	1.376839
10	-0.885970	10	-0.818474	10	0.015264	10	-0.057820

	OC.D		OC.F		PA.D		PA.F
0	55.828330	0	58.777568	0	141.705852	0	144.614717
1	0.779203	1	0.894395	1	0.636252	1	0.762597
2	20.732070	2	19.308576	2	20.565001	2	19.394680
3	-13.567303	3	-12.912234	3	-13.842230	3	-13.259846
4	-5.764462	4	-5.061493	4	-5.308986	4	-5.440056
5	24.249087	5	21.303503	5	26.411299	5	23.719919
6	-19.184572	6	-17.302759	6	-19.520281	6	-16.466065
7	-15.932144	7	-13.241388	7	-19.515837	7	-17.148366
8	21.642071	8	18.944835	8	21.827406	8	18.316372
9	3.687358	9	2.858010	9	5.551139	9	4.852008
10	-7.384657	10	-6.359911	10	-7.524557	10	-6.271966

TO = O CORRESPOND AU O JANVIER 1993 à O H SOIT LA DATE JULIENNE 2448987.5

SATELLITES DE SATURNE

SATELLITES OF SATURN

DONNÉES SUR LES SATELLITES DE SATURNE

DATA ON THE SATELLITES OF SATURN

	NOM	masse	rayon	période rotation sidérale	albédo géométrique	magnitude visuelle	période orbitale	élongation maximale	1/2 grand axe	excentricité	inclinaison sur l'équateur de Saturne
	unité →	masse de Saturne	km	jour			jour	(') (")	10^3 km		degré
I	Mimas	6.5×10^{-8}	199	(S)	0.53	12.9	0.942 421 95	30	184.85	0.0191	1.56
II	Enceladus	2.1×10^{-7}	251	(S)	0.99	11.7	1.370 218 081	38	237.39	0.0049	0.026
III	Tethys	1.09×10^{-6}	524	(S)	0.88	10.2	1.887 802 524	48	293.99	0.	1.098
IV	Dione	1.95×10^{-6}	559	(S)	0.65	10.4	2.736 915 55	1 01	376.37	0.00216	0.014
V	Rhea	4.1×10^{-6}	764	(S)	0.67	9.7	4.517 502 66	1 25	525.58	0.000 27 (6)	0.347
VI	Titan	2.367×10^{-4}	2 575	(S)	0.21	8.28	15.945 446 3	3 17	1 217.66	0.029 09	0.30
VII	Hyperion	$3. \times 10^{-8}$	370 x 280 x 225		0.3	14.19	21.276 673 3	3 59	1 476.0	0.103 46	0.644
VIII	Iapetus	2.8×10^{-6}	718	(S)	0.5-0.05	11.2	79.330 954	9 34	3 549.77	0.028 30	18.460 (1)
IX	Phoebe	$7. \times 10^{-10}$	221 x 212	0.4	0.06	16.45	(R) 550.48	34 51	12 952.	0.163 2	177. (1)
X	Janus (5)		110 x 100 x 80	(S)	0.4	14.	0.694 5	24	151.472	0.007	0.14
XI	Epimetheus (5)		70 x 60 x 50	(S)	0.4	15.	0.694 2	24	151.422	0.009	0.34
XII	Hélène (2)		18 x 16 x 15		0.5	17.	2.736 9	1 01	377.40	0.005	0.2
XIII	Telesto (3)		17 x 14 x 13		0.6	18.	1.887 8	48	294.66		
XIV	Calypso (3)		17 x 11 x 11		0.8	18.5	1.887 8	48	294.66		
XV	Atlas		20 x 10		0.4	18.	0.601 9	22	137.670		0.3
XVI	Prometheus (4)		70 x 11 x 40		0.6	15.	0.613 0	23	139.353		0.
XVII	Pandora (4)		55 x 45 x 35		0.6	15.5	0.628 5	23	141.700	0.004	0.1

	NAME	*mass*	*radius*	*sidereal period*	*geometrical albedo*	*visual magnitude*	*orbital period*	*greatest elongation*	*semi major axis*	*eccentricity*	*inclination on Saturn's equator*
	unit →	*Saturn's mass*	*km*	*day*			*day*	*(') (")*	*10^3 km*		*degree*

NOTES

(S) : révolution synchrone
(R) : révolution rétrograde
(1) : inclinaison par rapport à l'écliptique. Les éphémérides de Phœbé sont données sous la forme de coefficients de Tchébycheff dans le *« Supplément à la Connaissance des Temps : Satellites faibles... »*
(2) : Hélène : même orbite que Dioné
(3) : Telesto et Calypso : même orbite que Téthys
(4) : satellites coorbitaux « gardiens » de l'anneau F
(5) : Janus et Epimetheus : même orbite
(6) : excentricité propre. L'excentricité forcée due à Titan est de 0,0010

(S) : synchronous revolution
(R) : retrograde revolution
(1) : inclination on the ecliptic. The ephemerides of Phœbe are given as Chebychev coefficients in the « Supplément à la Connaissance des Temps : Faint Satellites... »
(2) : Helene : same orbit as Dione
(3) : Telesto and Calypso : same orbit as Tethys
(4) : satellites on the same orbit « shepherding » F ring
(5) : Janus and Epimetheus : same orbit
(6) : proper eccentricity. The forced eccentricity due to Titan is 0.0010

ÉPHÉMÉRIDES DES HUIT PREMIERS SATELLITES DE SATURNE

EPHEMERIDES OF THE FIRST EIGHT SATELLITES OF SATURN

Coordonnées différentielles tangentielles données en secondes de degré dans le repère équatorial moyen J2000. On a, au premier ordre (voir note) :

Differential tangential coordinates given in arcsecond in the mean equatorial frame J2000. We have, at the first order (cf. note) :

$$\Delta\alpha \cos\delta = X$$
$$\Delta\delta = Y$$

$$\left.\begin{matrix} X \\ Y \end{matrix}\right\} = A0 + A1 \cdot t + B0 \sin(Nt + F0) + B1 \cdot t \sin(Nt + F1) + B2 \cdot t^2 \sin(Nt + F2) + C0 \sin(2Nt + P0)$$

où $t = T - T0$ avec $T0$ date du début de l'intervalle et T date du calcul

where $t = T - T0$ with $T0$ date of the beginning of the interval and T the date for the calculation

satellite	intervalle Δt (jours)	N (rad/j)	page
Mimas	4	6.667 0	58
Encelade	16	4.586 0	64
Téthys	16	3.328 0	66
Dioné	16	2.296 0	68
Rhéa	16	1.391 0	70
Titan	11	0.394 0	72
Hypérion	8	0.394 0	75
Japet	16	0.079 0	78
	(days)	*(rad/d)*	

Note : le premier ordre n'est pas suffisant lorsque le satellite s'éloigne beaucoup de la planète (tel Japet). On a alors :

Note : the first order is not sufficient for satellite with large elongation (such as Iapetus). So, we have then :

$$\Delta\alpha \cos\delta - \Delta\alpha\,\Delta\delta \sin\delta = X$$
$$\Delta\delta + \frac{(\Delta\alpha)^2}{2} \sin\delta \cos\delta = Y$$

ou bien :

or :

$$\Delta\alpha \cos\delta = X + XY \operatorname{tg}\delta$$
$$\Delta\delta = Y - \frac{X^2}{2} \operatorname{tg}\delta$$

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE SATURNE: MIMAS N=6.667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN. 1 (0H) (2448988.6)	X:	+0.6826	-0.00250	+23.9412 1.755134	+0.06089 6.0386	+0.001617 2.5685	+0.2264 4.9656
A JAN. 5 (0H)	Y:	-0.0729	-0.00240	+ 6.6729 3.629912	+0.02230 1.4067	+0.000342 4.8838	+0.0631 0.5457
JAN. 5 (0H) (2448992.6)	X:	+0.6728	-0.00180	+23.8540 3.281821	+0.05764 1.4342	+0.001258 5.5834	+0.2269 1.6712
A JAN. 9 (0H)	Y:	-0.0827	-0.00246	+ 6.6210 5.155146	+0.02029 2.9314	+0.000093 0.3294	+0.0624 3.5396
JAN. 9 (0H) (2448996.6)	X:	+0.6655	-0.00355	+23.7784 4.808207	+0.05060 2.9944	+0.001173 2.2907	+0.2264 4.6564
A JAN.13 (0H)	Y:	-0.0924	-0.00229	+ 6.5720 0.397725	+0.01931 4.4519	+0.000127 1.3440	+0.0621 0.2522
JAN.13 (0H) (2449000.6)	X:	+0.6510	-0.00288	+23.7193 0.051437	+0.04866 4.4078	+0.001500 5.3045	+0.2246 1.3608
A JAN.17 (0H)	Y:	-0.1017	-0.00217	+ 6.5259 1.923867	+0.01765 5.9451	+0.000107 1.8745	+0.0619 3.2428
JAN.17 (0H) (2449004.6)	X:	+0.6395	-0.00471	+23.6659 1.578318	+0.05683 5.9790	+0.001532 2.2440	+0.2230 4.3544
A JAN.21 (0H)	Y:	-0.1104	-0.00211	+ 6.4830 3.450780	+0.01741 1.1699	+0.000302 4.0787	+0.0616 6.2288
JAN.21 (0H) (2449008.6)	X:	+0.6209	-0.00402	+23.6124 3.104968	+0.05411 1.3890	+0.001061 5.4990	+0.2229 1.0676
A JAN.25 (0H)	Y:	-0.1189	-0.00193	+ 6.4416 4.976327	+0.01631 2.7205	+0.000296 6.1744	+0.0610 2.9339
JAN.25 (0H) (2449012.6)	X:	+0.6043	-0.00550	+23.5724 4.631488	+0.04834 2.9297	+0.000805 2.5526	+0.2238 4.0602
A JAN.29 (0H)	Y:	-0.1266	-0.00191	+ 6.4020 0.223308	+0.01491 4.2736	+0.000315 1.7591	+0.0603 5.9297
JAN.29 (0H) (2449016.6)	X:	+0.5825	-0.00520	+23.5441 6.158144	+0.04649 4.4243	+0.001031 5.1735	+0.2242 0.7641
A FEV. 2 (0H)	Y:	-0.1344	-0.00160	+ 6.3648 1.751879	+0.01213 5.7437	+0.000100 4.8327	+0.0599 2.6464
FEV. 2 (0H) (2449020.6)	X:	+0.5616	-0.00642	+23.5252 1.401964	+0.05061 5.9521	+0.001182 1.7785	+0.2233 3.7508
A FEV. 6 (0H)	Y:	-0.1408	-0.00170	+ 6.3321 3.281378	+0.01215 0.8451	+0.000313 3.4043	+0.0599 5.6431
FEV. 6 (0H) (2449024.6)	X:	+0.5361	-0.00617	+23.5086 2.929008	+0.05023 1.3306	+0.000636 4.8097	+0.2220 0.4603
A FEV.10 (0H)	Y:	-0.1476	-0.00131	+ 6.2997 4.811883	+0.01177 2.4523	+0.000468 6.0317	+0.0598 2.3512
FEV.10 (0H) (2449028.6)	X:	+0.5108	-0.00711	+23.5038 4.456077	+0.04658 2.8824	+0.000317 3.4480	+0.2218 3.4586
A FEV.14 (0H)	Y:	-0.1529	-0.00139	+ 6.2682 0.059777	+0.00965 4.0111	+0.000397 1.9542	+0.0594 5.3427
FEV.14 (0H) (2449032.6)	X:	+0.4829	-0.00735	+23.5063 5.983334	+0.04561 4.4708	+0.000272 5.3997	+0.2228 0.1721
A FEV.18 (0H)	Y:	-0.1586	-0.00096	+ 6.2390 1.591369	+0.00693 5.3535	+0.000211 4.7820	+0.0588 2.0571
FEV.18 (0H) (2449036.6)	X:	+0.4532	-0.00774	+23.5216 1.227569	+0.04387 5.9918	+0.000780 1.0455	+0.2240 3.1624
A FEV.22 (0H)	Y:	-0.1624	-0.00110	+ 6.2141 3.123928	+0.00768 0.2896	+0.000300 2.8860	+0.0584 5.0606
FEV.22 (0H) (2449040.6)	X:	+0.4224	-0.00821	+23.5434 2.755362	+0.04600 1.2841	+0.000863 3.5803	+0.2240 6.1499
A FEV.26 (0H)	Y:	-0.1668	-0.00060	+ 6.1891 4.657694	+0.00741 1.9726	+0.000512 5.8738	+0.0584 1.7804
FEV.26 (0H) (2449044.6)	X:	+0.3892	-0.00842	+23.5721 4.283303	+0.04536 2.8671	+0.000589 5.2937	+0.2232 2.8591
A MAR. 2 (0H)	Y:	-0.1694	-0.00071	+ 6.1645 6.191966	+0.00494 3.3687	+0.000380 2.0832	+0.0585 4.7786
MAR. 2 (0H) (2449048.6)	X:	+0.3561	-0.00918	+23.6066 5.811414	+0.04489 4.5453	+0.000515 1.7191	+0.2227 5.8582
A MAR. 6 (0H)	Y:	-0.1722	-0.00025	+ 6.1424 1.443695	+0.00435 4.3193	+0.000186 4.8100	+0.0583 1.4912

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE SATURNE: MIMAS N=6.667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
MAR. 6 (OH) (2449052.6)	X:	+0.3188	-0.00883	+23.6557 1.056403	+0.03851 6.1169	+0.000707 6.1905	+0.2236 2.5747
A MAR.10 (OH)	Y:	-0.1732	-0.00032	+ 6.1237 2.979522	+0.00619 5.6365	+0.000250 2.4851	+0.0578 4.4913
MAR.10 (OH) (2449056.6)	X:	+0.2836	-0.00997	+23.7154 2.585229	+0.04095 1.2823	+0.001359 3.0510	+0.2254 5.5688
A MAR.14 (OH)	Y:	-0.1746	+0.00016	+ 6.1053 4.516540	+0.00558 0.9999	+0.000438 5.6289	+0.0574 1.2150
MAR.14 (OH) (2449060.6)	X:	+0.2437	-0.00945	+23.7757 4.114308	+0.04427 2.9412	+0.001185 5.6322	+0.2265 2.2755
A MAR.18 (OH)	Y:	-0.1740	+0.00011	+ 6.0870 6.054053	+0.00501 2.0781	+0.000299 2.0514	+0.0574 4.2244
MAR.18 (OH) (2449064.6)	X:	+0.2061	-0.01059	+23.8428 5.643476	+0.04359 4.6445	+0.000952 1.9556	+0.2262 5.2679
A MAR.22 (OH)	Y:	-0.1735	+0.00052	+ 6.0712 1.309071	+0.00672 3.3980	+0.000072 5.1009	+0.0576 0.9463
MAR.22 (OH) (2449068.6)	X:	+0.1632	-0.00978	+23.9246 0.889560	+0.03615 0.0052	+0.000987 5.5225	+0.2257 1.9836
A MAR.26 (OH)	Y:	-0.1714	+0.00057	+ 6.0575 2.648070	+0.00816 4.8884	+0.000161 2.2959	+0.0576 3.9471
MAR.26 (OH) (2449072.6)	X:	+0.1242	-0.01125	+24.0193 2.419603	+0.03596 1.3619	+0.001599 2.6866	+0.2266 4.9856
A MAR.30 (OH)	Y:	-0.1691	+0.00096	+ 6.0452 4.388052	+0.00800 0.1635	+0.000316 5.2438	+0.0572 0.6666
MAR.30 (OH) (2449076.6)	X:	+0.0793	-0.01023	+24.1104 3.950011	+0.04297 3.0267	+0.001522 5.6529	+0.2289 1.7009
A AVR. 3 (OH)	Y:	-0.1653	+0.00101	+ 6.0332 5.928586	+0.00848 1.4948	+0.000206 1.6138	+0.0568 3.6769
AVR. 3 (OH) (2449080.6)	X:	+0.0382	-0.01151	+24.2096 5.480445	+0.04202 4.7651	+0.001041 2.1906	+0.2309 4.6943
A AVR. 7 (OH)	Y:	-0.1611	+0.00134	+ 6.0236 1.186545	+0.00995 2.9959	+0.000058 1.3498	+0.0568 0.4083
AVR. 7 (OH) (2449084.6)	X:	-0.0080	-0.01055	+24.3221 0.727946	+0.03642 0.1494	+0.001051 5.3183	+0.2313 1.4043
A AVR.11 (OH)	Y:	-0.1559	+0.00151	+ 6.0150 2.728325	+0.01082 4.4659	+0.000050 2.8727	+0.0571 3.4194
AVR.11 (OH) (2449088.6)	X:	-0.0501	-0.01186	+24.4467 2.259339	+0.03320 1.5368	+0.001540 2.3454	+0.2311 4.4028
A AVR.15 (OH)	Y:	-0.1498	+0.00174	+ 6.0090 4.270751	+0.01149 6.0193	+0.000192 4.6560	+0.0572 0.1411
AVR.15 (OH) (2449092.6)	X:	-0.0975	-0.01071	+24.5673 3.791201	+0.04141 3.1286	+0.001471 5.4589	+0.2320 1.1237
A AVR.19 (OH)	Y:	-0.1429	+0.00191	+ 6.0037 5.813793	+0.01160 1.2122	+0.000203 0.7721	+0.0570 3.1465
AVR.19 (OH) (2449096.6)	X:	-0.1409	-0.01183	+24.6958 5.323089	+0.04129 4.8813	+0.000838 2.3552	+0.2345 4.1270
A AVR.23 (OH)	Y:	-0.1351	+0.00211	+ 6.0002 1.074070	+0.01244 2.7166	+0.000133 1.9137	+0.0567 6.1591
AVR.23 (OH) (2449100.6)	X:	-0.1879	-0.01096	+24.8352 0.572209	+0.03817 0.2339	+0.000709 5.4338	+0.2371 0.8415
A AVR.27 (OH)	Y:	-0.1268	+0.00235	+ 5.9977 2.617948	+0.01308 4.1693	+0.000100 4.5848	+0.0566 2.8937
AVR.27 (OH) (2449104.6)	X:	-0.2318	-0.01172	+24.9837 2.105050	+0.03486 1.7498	+0.001184 2.0485	+0.2384 3.8362
A MAI 1 (OH)	Y:	-0.1174	+0.00241	+ 5.9983 4.162108	+0.01439 5.7276	+0.000126 3.5198	+0.0569 5.9085
MAI 1 (OH) (2449108.6)	X:	-0.2787	-0.01080	+25.1315 3.638444	+0.04010 3.2591	+0.001191 5.0276	+0.2386 0.5519
A MAI 5 (OH)	Y:	-0.1077	+0.00269	+ 6.0006 5.706867	+0.01382 0.9912	+0.000257 0.1681	+0.0572 2.6334
MAI 5 (OH) (2449112.6)	X:	-0.3224	-0.01138	+25.2844 5.171972	+0.04176 4.9681	+0.000400 2.0502	+0.2394 3.5580
A MAI 9 (OH)	Y:	-0.0969	+0.00273	+ 6.0038 0.968628	+0.01402 2.4619	+0.000183 2.3685	+0.0571 5.6406

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE SATURNE: MIMAS N=6.667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
MAI 9 (0H) (2449116.6)	X:	-0.3673	-0.01074	+25.4444 0.422796	+0.04067 0.2790	+0.000297 0.3038	+0.2418 0.2823
A MAI 13 (0H)	Y:	-0.0861	+0.00300	+ 6.0082 2.513693	+0.01470 3.9220	+0.000163 4.9842	+0.0569 2.3705
MAI 13 (0H) (2449120.6)	X:	-0.4107	-0.01069	+25.6096 1.957151	+0.04034 1.9035	+0.000533 1.7752	+0.2448 3.2840
A MAI 17 (0H)	Y:	-0.0740	+0.00292	+ 6.0159 4.058719	+0.01620 5.4864	+0.000197 2.5142	+0.0568 5.3891
MAI 17 (0H) (2449124.6)	X:	-0.4534	-0.01025	+25.7793 3.492091	+0.04022 3.4234	+0.000955 4.3478	+0.2468 6.2810
A MAI 21 (0H)	Y:	-0.0623	+0.00324	+ 6.0261 5.604193	+0.01504 0.7875	+0.000292 5.9394	+0.0572 2.1224
MAI 21 (0H) (2449128.6)	X:	-0.4946	-0.00999	+25.9491 5.027367	+0.04307 5.0251	+0.000583 0.3639	+0.2474 2.9976
A MAI 25 (0H)	Y:	-0.0494	+0.00311	+ 6.0362 0.866456	+0.01465 2.2165	+0.000225 2.6342	+0.0576 5.1325
MAI 25 (0H) (2449132.6)	X:	-0.5341	-0.00963	+26.1217 0.279877	+0.04395 0.3225	+0.000670 1.7163	+0.2480 6.0049
A MAI 29 (0H)	Y:	-0.0370	+0.00337	+ 6.0482 2.411668	+0.01550 3.6931	+0.000196 5.4710	+0.0577 1.8568
MAI 29 (0H) (2449136.6)	X:	-0.5733	-0.00874	+26.2955 1.815787	+0.04698 1.9945	+0.000317 5.1799	+0.2499 2.7316
A JUN. 2 (0H)	Y:	-0.0234	+0.00319	+ 6.0631 3.956613	+0.01661 5.2607	+0.000292 2.1686	+0.0576 4.8683
JUN. 2 (0H) (2449140.6)	X:	-0.6080	-0.00877	+26.4774 3.352259	+0.04254 3.6031	+0.000837 3.5075	+0.2531 5.7372
A JUN. 6 (0H)	Y:	-0.0107	+0.00348	+ 6.0809 5.501719	+0.01510 0.5772	+0.000313 5.3996	+0.0575 1.6021
JUN. 6 (0H) (2449144.6)	X:	-0.6432	-0.00753	+26.6537 4.889284	+0.04390 5.0816	+0.001264 0.0347	+0.2557 2.4536
A JUN.10 (0H)	Y:	+0.0031	+0.00322	+ 6.0980 0.763447	+0.01419 1.9754	+0.000222 2.6639	+0.0580 4.6189
JUN.10 (0H) (2449148.6)	X:	-0.6732	-0.00746	+26.8273 0.143368	+0.04735 0.3815	+0.001168 2.1764	+0.2567 5.4544
A JUN.14 (0H)	Y:	+0.0160	+0.00343	+ 6.1169 2.307784	+0.01515 3.4690	+0.000241 5.9310	+0.0585 1.3464
JUN.14 (0H) (2449152.6)	X:	-0.7037	-0.00586	+26.9997 1.660795	+0.05194 2.0618	+0.001023 4.9898	+0.2569 2.1784
A JUN.18 (0H)	Y:	+0.0298	+0.00319	+ 6.1383 3.851719	+0.01546 5.0334	+0.000326 2.1459	+0.0588 4.3524
JUN.18 (0H) (2449156.6)	X:	-0.7268	-0.00612	+27.1799 3.218709	+0.04641 3.7570	+0.000895 2.6316	+0.2584 5.1899
A JUN.22 (0H)	Y:	+0.0425	+0.00337	+ 6.1623 5.395460	+0.01393 0.3375	+0.000332 4.8998	+0.0587 1.0773
JUN.22 (0H) (2449160.6)	X:	-0.7513	-0.00405	+27.3499 4.757325	+0.04353 5.1749	+0.001628 6.1479	+0.2614 1.9150
A JUN.26 (0H)	Y:	+0.0560	+0.00305	+ 6.1854 0.655702	+0.01265 1.7202	+0.000157 2.4042	+0.0588 4.0914
JUN.26 (0H) (2449164.6)	X:	-0.7677	-0.00418	+27.5106 0.012813	+0.04938 0.4639	+0.001565 2.4631	+0.2644 4.9177
A JUN.30 (0H)	Y:	+0.0683	+0.00319	+ 6.2097 2.198326	+0.01343 3.2206	+0.000263 6.1440	+0.0592 0.8238
JUN.30 (0H) (2449168.6)	X:	-0.7846	-0.00210	+27.6685 1.551617	+0.05327 2.1452	+0.001362 5.0430	+0.2655 1.6358
A JUL. 4 (0H)	Y:	+0.0809	+0.00292	+ 6.2357 3.740467	+0.01286 4.7716	+0.000281 2.2111	+0.0598 3.8336
JUL. 4 (0H) (2449172.6)	X:	-0.7927	-0.00225	+27.8288 3.090791	+0.04922 3.8719	+0.001075 1.9778	+0.2654 4.6423
A JUL. 8 (0H)	Y:	+0.0926	+0.00294	+ 6.2629 5.282086	+0.01171 0.0384	+0.000300 4.4168	+0.0602 0.5539
JUL. 8 (0H) (2449176.6)	X:	-0.8018	+0.00019	+27.9767 4.630639	+0.04195 5.3236	+0.001502 5.9265	+0.2662 1.3708
A JUL.12 (0H)	Y:	+0.1044	+0.00266	+ 6.2896 0.540113	+0.01025 1.4362	+0.000079 1.3082	+0.0603 3.5576

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE SATURNE: MIMAS N=6.667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JUL.12 (OH) (2449180.6)	X:	-0.8014	+0.00008	+28.1090 6.170420	+0.04818 0.5724	+0.001686 2.5756	+0.2689 4.3820
A JUL.16 (OH)	Y:	+0.1151	+0.00264	+ 6.3162 2.080502	+0.01042 2.9118	+0.000188 6.1547	+0.0602 0.2844
JUL.16 (OH) (2449184.6)	X:	-0.8008	+0.00230	+28.2370 1.427100	+0.05055 2.2644	+0.001281 5.1840	+0.2717 1.1039
A JUL.20 (OH)	Y:	+0.1255	+0.00240	+ 6.3432 3.620322	+0.00938 4.4129	+0.000161 2.2562	+0.0606 3.2974
JUL.20 (OH) (2449188.6)	X:	-0.7915	+0.00251	+28.3589 2.967208	+0.04859 3.9643	+0.001053 1.5117	+0.2728 4.1056
A JUL.24 (OH)	Y:	+0.1352	+0.00223	+ 6.3698 5.159393	+0.00900 5.9150	+0.000234 3.6349	+0.0612 0.0221
JUL.24 (OH) (2449192.6)	X:	-0.7815	+0.00474	+28.4682 4.507773	+0.04026 5.5251	+0.000954 5.5871	+0.2724 0.8273
A JUL.28 (OH)	Y:	+0.1441	+0.00207	+ 6.3963 0.414799	+0.00735 1.0923	+0.000147 6.0435	+0.0617 3.0225
JUL.28 (OH) (2449196.6)	X:	-0.7629	+0.00491	+28.5576 6.048243	+0.04306 0.7370	+0.001364 2.5132	+0.2724 3.8369
A AOU. 1 (OH)	Y:	+0.1524	+0.00184	+ 6.4209 1.952749	+0.00667 2.4449	+0.000042 5.3265	+0.0618 6.0217
AOU. 1 (OH) (2449200.6)	X:	-0.7425	+0.00684	+28.6392 1.305498	+0.04435 2.4346	+0.000909 5.3281	+0.2741 0.5684
A AOU. 5 (OH)	Y:	+0.1596	+0.00169	+ 6.4439 3.490017	+0.00603 3.8213	+0.000063 0.4212	+0.0617 2.7434
AOU. 5 (OH) (2449204.6)	X:	-0.7156	+0.00750	+28.7065 2.846017	+0.04335 4.0690	+0.000743 0.8983	+0.2764 3.5753
A AOU. 9 (OH)	Y:	+0.1666	+0.00133	+ 6.4647 5.026428	+0.00630 5.3467	+0.000312 2.6890	+0.0618 5.7522
AOU. 9 (OH) (2449208.6)	X:	-0.6855	+0.00894	+28.7628 4.386635	+0.03889 5.7450	+0.000290 4.4349	+0.2773 0.2932
A AOU.13 (OH)	Y:	+0.1718	+0.00131	+ 6.4857 0.279130	+0.00408 0.5896	+0.000291 5.4314	+0.0622 2.4743
AOU.13 (OH) (2449212.6)	X:	-0.6499	+0.00961	+28.7994 5.927220	+0.03622 1.0124	+0.000718 2.1295	+0.2764 3.2962
A AOU.17 (OH)	Y:	+0.1771	+0.00086	+ 6.5029 1.814656	+0.00372 1.4171	+0.000143 3.2442	+0.0627 5.4720
AOU.17 (OH) (2449216.6)	X:	-0.6109	+0.01077	+28.8223 1.184445	+0.03651 2.6788	+0.000397 4.9811	+0.2754 0.0229
A AOU.21 (OH)	Y:	+0.1805	+0.00084	+ 6.5163 3.349370	+0.00454 2.7784	+0.000273 6.1500	+0.0626 2.1838
AOU.21 (OH) (2449220.6)	X:	-0.5685	+0.01178	+28.8265 2.724722	+0.03520 4.2457	+0.000790 6.0814	+0.2757 3.0354
A AOU.25 (OH)	Y:	+0.1840	+0.00035	+ 6.5267 4.883220	+0.00425 4.4079	+0.000474 2.3208	+0.0625 5.1824
AOU.25 (OH) (2449224.6)	X:	-0.5210	+0.01214	+28.8214 4.264715	+0.03727 5.9701	+0.000844 2.5504	+0.2771 6.0423
A AOU.29 (OH)	Y:	+0.1853	+0.00042	+ 6.5364 0.133350	+0.00227 5.2326	+0.000421 5.0384	+0.0624 1.9028
AOU.29 (OH) (2449228.6)	X:	-0.4725	+0.01331	+28.8005 5.804741	+0.03243 1.4367	+0.000408 0.3893	+0.2777 2.7592
A SEP. 2 (OH)	Y:	+0.1869	-0.00016	+ 6.5411 1.666515	+0.00556 0.0436	+0.000217 2.9069	+0.0626 4.9051
SEP. 2 (OH) (2449232.6)	X:	-0.4191	+0.01337	+28.7600 1.061263	+0.02969 3.0514	+0.000596 3.4106	+0.2764 5.7595
A SEP. 6 (OH)	Y:	+0.1863	-0.00007	+ 6.5400 3.198788	+0.00632 1.7217	+0.000424 6.1190	+0.0630 1.6181
SEP. 6 (OH) (2449236.6)	X:	-0.3662	+0.01454	+28.7015 2.600578	+0.02807 4.5740	+0.001322 5.6620	+0.2742 2.4826
A SEP.10 (OH)	Y:	+0.1860	-0.00060	+ 6.5359 4.730258	+0.00560 3.1318	+0.000525 2.2494	+0.0630 4.6092
SEP.10 (OH) (2449240.6)	X:	-0.3074	+0.01387	+28.6361 4.139342	+0.03514 6.2226	+0.001630 2.1913	+0.2732 5.4923
A SEP.14 (OH)	Y:	+0.1835	-0.00051	+ 6.5297 6.261211	+0.00646 4.2124	+0.000458 4.7430	+0.0626 1.3185

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE SATURNE: MIMAS N=6.667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
SEP.14 (0H) (2449244.6)	X:	-0.2520	+0.01531	+28.5609 5.678144	+0.03514 1.8581	+0.000930 5.6596	+0.2736 2.2149
A SEP.18 (0H)	Y:	+0.1814	-0.00107	+ 6.5185 1.508844	+0.01009 5.7504	+0.000177 2.4614	+0.0621 4.3161
SEP.18 (0H) (2449248.6)	X:	-0.1909	+0.01427	+28.4620 0.933363	+0.02863 3.5414	+0.001136 3.1429	+0.2739 5.2138
A SEP.22 (0H)	Y:	+0.1772	-0.00096	+ 6.5010 3.038825	+0.01038 1.0999	+0.000409 6.0574	+0.0621 1.0328
SEP.22 (0H) (2449252.6)	X:	-0.1339	+0.01541	+28.3498 2.471108	+0.02707 5.0369	+0.001675 5.6840	+0.2724 1.9274
A SEP.26 (0H)	Y:	+0.1731	-0.00141	+ 6.4805 4.568101	+0.01054 2.4979	+0.000416 2.2700	+0.0622 4.0280
SEP.26 (0H) (2449256.6)	X:	-0.0718	+0.01404	+28.2330 4.008200	+0.03424 0.2662	+0.002044 2.0331	+0.2695 4.9283
A SEP.30 (0H)	Y:	+0.1675	-0.00140	+ 6.4566 6.096883	+0.01190 3.9115	+0.000346 4.4078	+0.0621 0.7335
SEP.30 (0H) (2449260.6)	X:	-0.0158	+0.01531	+28.1121 5.545216	+0.04107 2.1359	+0.001356 5.1736	+0.2673 1.6507
A OCT. 4 (0H)	Y:	+0.1618	-0.00175	+ 6.4290 1.342176	+0.01453 5.4259	+0.000100 1.2851	+0.0617 3.7206
OCT. 4 (0H) (2449264.5)	X:	+0.0451	+0.01358	+27.9688 0.798644	+0.03479 3.9158	+0.001215 2.9647	+0.2670 4.6549
A OCT. 8 (0H)	Y:	+0.1549	-0.00174	+ 6.3961 2.670055	+0.01526 0.7199	+0.000214 5.8303	+0.0610 0.4296
OCT. 8 (0H) (2449268.6)	X:	+0.0999	+0.01447	+27.8180 2.334426	+0.03281 5.3975	+0.001665 5.8326	+0.2670 1.3696
A OCT.12 (0H)	Y:	+0.1477	-0.00198	+ 6.3604 4.397351	+0.01603 2.1962	+0.000180 2.1817	+0.0606 3.4265
OCT.12 (0H) (2449272.6)	X:	+0.1577	+0.01288	+27.6649 3.869617	+0.03763 0.6140	+0.001854 1.9689	+0.2656 4.3629
A OCT.16 (0H)	Y:	+0.1399	-0.00210	+ 6.3208 5.924154	+0.01673 3.7252	+0.000193 3.4993	+0.0604 0.1380
OCT.16 (0H) (2449276.6)	X:	+0.2092	+0.01354	+27.5107 5.404521	+0.04623 2.3088	+0.001472 4.7534	+0.2625 1.0750
A OCT.20 (0H)	Y:	+0.1314	-0.00215	+ 6.2795 1.167268	+0.01782 5.1898	+0.000178 6.0848	+0.0603 3.1253
OCT.20 (0H) (2449280.6)	X:	+0.2631	+0.01177	+27.3415 0.655870	+0.04408 4.0807	+0.000750 2.5768	+0.2597 4.0758
A OCT.24 (0H)	Y:	+0.1228	-0.00232	+ 6.2351 2.693347	+0.01953 0.4473	+0.000092 3.5880	+0.0598 6.1088
OCT.24 (0H) (2449284.6)	X:	+0.3108	+0.01213	+27.1687 2.189566	+0.04181 5.5994	+0.001205 5.9905	+0.2586 0.7952
A OCT.28 (0H)	Y:	+0.1133	-0.00229	+ 6.1874 4.218989	+0.02027 1.9957	+0.000129 6.1762	+0.0590 2.8127
OCT.28 (0H) (2449288.6)	X:	+0.3587	+0.01077	+26.9958 3.722776	+0.04506 0.8719	+0.001112 2.0727	+0.2583 3.7926
A NOV. 1 (0H)	Y:	+0.1043	-0.00253	+ 6.1368 5.744124	+0.01938 3.5548	+0.000285 2.4212	+0.0582 5.8057
NOV. 1 (0H) (2449292.6)	X:	+0.4021	+0.01054	+26.8231 5.255475	+0.04917 2.4407	+0.001202 4.2734	+0.2572 0.5003
A NOV. 5 (0H)	Y:	+0.0940	-0.00233	+ 6.0866 0.985521	+0.01959 4.9865	+0.000305 5.5382	+0.0578 2.5158
NOV. 5 (0H) (2449296.6)	X:	+0.4441	+0.00936	+26.6469 0.504677	+0.05188 4.1178	+0.000421 0.9101	+0.2545 3.4907
A NOV. 9 (0H)	Y:	+0.0847	-0.00265	+ 6.0357 2.510280	+0.02205 0.2200	+0.000286 2.8727	+0.0576 5.5032
NOV. 9 (0H) (2449300.6)	X:	+0.4820	+0.00893	+26.4688 2.036429	+0.05106 5.7011	+0.000342 6.2198	+0.2514 0.2038
A NOV.13 (0H)	Y:	+0.0741	-0.00239	+ 5.9812 4.034796	+0.02231 1.8190	+0.000345 5.9014	+0.0572 2.2021
NOV.13 (0H) (2449304.6)	X:	+0.5169	+0.00811	+26.2913 3.567738	+0.05290 1.0142	+0.000201 2.6513	+0.2495 3.2041
A NOV.17 (0H)	Y:	+0.0645	-0.00269	+ 5.9255 5.558834	+0.02095 3.3651	+0.000384 2.1980	+0.0564 5.1851

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE SATURNE: MIMAS N=6.667

		AO	A1	BO FO	B1 F1	B2 F2	CO PO
NOV.17 (OH) (2449308.6)	X:	+0.5499	+0.00702	+26.1149 5.098378	+0.05070 2.5491	+0.000886 3.4145	+0.2488 6.2010
A NOV.21 (OH)	Y:	+0.0536	-0.00236	+ 5.8713 0.799328	+0.02008 4.7872	+0.000351 5.2428	+0.0555 1.8905
NOV.21 (OH) (2449312.6)	X:	+0.5778	+0.00670	+25.9470 0.345572	+0.05609 4.0970	+0.001030 6.1661	+0.2481 2.9075
A NOV.25 (OH)	Y:	+0.0442	-0.00272	+ 5.8180 2.323448	+0.02250 0.0046	+0.000366 2.5695	+0.0549 4.8525
NOV.25 (OH) (2449316.6)	X:	+0.6048	+0.00539	+25.7774 1.875658	+0.05851 5.7404	+0.000676 2.7268	+0.2461 5.8946
A NOV.29 (OH)	Y:	+0.0333	-0.00236	+ 5.7616 3.847577	+0.02221 1.6236	+0.000417 5.7444	+0.0547 1.5886
NOV.29 (OH) (2449320.6)	X:	+0.6259	+0.00525	+25.6082 3.405259	+0.05775 1.0789	+0.000639 5.3006	+0.2431 2.6031
A DEC. 3 (OH)	Y:	+0.0238	-0.00264	+ 5.7056 5.371386	+0.02033 3.1405	+0.000334 2.1663	+0.0544 4.5724
DEC. 3 (OH) (2449324.6)	X:	+0.6475	+0.00355	+25.4431 4.934182	+0.05149 2.6153	+0.001136 2.5594	+0.2406 5.6001
A DEC. 7 (OH)	Y:	-0.0132	-0.00233	+ 5.6514 0.612032	+0.01957 4.5811	+0.000259 5.0852	+0.0538 1.2709
DEC. 7 (OH) (2449328.6)	X:	+0.6614	+0.00396	+25.2940 0.179719	+0.05654 4.0550	+0.001533 5.7265	+0.2396 2.3132
A DEC.11 (OH)	Y:	+0.0038	-0.00257	+ 5.5987 2.136377	+0.02101 6.0716	+0.000315 2.2893	+0.0529 4.2566
DEC.11 (OH) (2449332.6)	X:	+0.6772	+0.00199	+25.1435 1.708492	+0.06271 5.7273	+0.001375 2.6616	+0.2394 5.3031
A DEC.15 (OH)	Y:	-0.0063	-0.00226	+ 5.5442 3.661043	+0.02051 1.3887	+0.000346 5.4259	+0.0523 0.9652
DEC.15 (OH) (2449336.6)	X:	+0.6852	+0.00242	+24.9927 3.236709	+0.05900 1.0893	+0.001130 5.5585	+0.2384 2.0056
A DEC.19 (OH)	Y:	-0.0156	-0.00243	+ 5.4907 5.185699	+0.01879 2.8817	+0.000173 1.9750	+0.0519 3.9583
DEC.19 (OH) (2449340.6)	X:	+0.6951	+0.00049	+24.8506 4.764367	+0.05196 2.6200	+0.001379 2.3064	+0.2358 4.9932
A DEC.23 (OH)	Y:	-0.0252	-0.00223	+ 5.4386 0.427580	+0.01823 4.3594	+0.000051 5.1926	+0.0517 0.6635
DEC.23 (OH) (2449344.6)	X:	+0.6968	+0.00118	+24.7260 0.008711	+0.05482 4.0211	+0.001716 5.3998	+0.2332 1.7033
A DEC.27 (OH)	Y:	-0.0342	-0.00227	+ 5.3879 1.953116	+0.01813 5.8380	+0.000177 2.0476	+0.0513 3.6472
DEC.27 (OH) (2449348.6)	X:	+0.7015	-0.00095	+24.6023 1.536503	+0.06300 5.6780	+0.001558 2.4300	+0.2321 4.6990
A DEC.31 (OH)	Y:	-0.0433	-0.00211	+ 5.3374 3.479314	+0.01780 1.1010	+0.000250 4.7455	+0.0506 0.3496
DEC.31 (OH) (2449352.6)	X:	+0.6980	-0.00027	+24.4783 3.063772	+0.05782 1.0556	+0.001198 5.6538	+0.2323 1.4079
A JAN. 4 (OH)	Y:	-0.0519	-0.00210	+ 5.2875 5.005931	+0.01664 2.5975	+0.000128 0.3541	+0.0498 3.3425

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DU SATELLITE 2 DE SATURNE: ENCELADE N=4.586

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN. 1 (0H) (2448988.9)	X:	+0.0709	+0.00086	+30.6606 1.105815	+0.08374 5.4726	+0.000280 1.0907	+0.0757 4.9676
A JAN.17 (0H)	Y:	+0.0495	-0.00035	+ 9.0695 3.051051	+0.03297 0.3911	+0.000077 4.2398	+0.0220 0.6382
JAN.17 (0H) (2449004.9)	X:	+0.0829	+0.00072	+30.3032 5.325239	+0.08151 3.5431	+0.000284 5.5104	+0.0748 0.7798
A FEV. 2 (0H)	Y:	+0.0442	-0.00036	+ 8.6122 1.002489	+0.03089 4.6045	+0.000099 2.0034	+0.0208 2.7475
FEV. 1 (0H) (2449019.9)	X:	+0.0936	+0.00078	+30.1306 4.961014	+0.07881 3.3167	+0.000291 5.4024	+0.0745 6.2779
A FEV.17 (0H)	Y:	+0.0387	-0.00034	+ 8.2115 0.654520	+0.02819 4.2257	+0.000110 1.4762	+0.0199 1.9821
FEV.17 (0H) (2449035.9)	X:	+0.1073	+0.00068	+30.1287 2.898168	+0.07560 1.3998	+0.000342 3.4667	+0.0748 2.0967
A MAR. 5 (0H)	Y:	+0.0334	-0.00031	+ 7.8232 4.894063	+0.02476 2.1478	+0.000129 5.5709	+0.0189 4.1028
MAR. 1 (0H) (2449047.9)	X:	+0.1148	+0.00090	+30.2506 1.352475	+0.07208 6.2532	+0.000347 1.8629	+0.0752 5.2439
A MAR.17 (0H)	Y:	+0.0293	-0.00031	+ 7.5640 3.363807	+0.02175 0.5938	+0.000141 3.9776	+0.0184 0.9830
MAR.17 (0H) (2449063.9)	X:	+0.1283	+0.00082	+30.5639 5.577869	+0.06855 4.3756	+0.000357 6.2205	+0.0761 1.0703
A AVR. 2 (0H)	Y:	+0.0246	-0.00030	+ 7.2695 1.326987	+0.01734 4.8011	+0.000151 1.7778	+0.0176 3.1122
AVR. 1 (0H) (2449078.9)	X:	+0.1408	+0.00094	+31.0124 5.223561	+0.06621 4.2037	+0.000388 6.0453	+0.0772 0.3034
A AVR.17 (0H)	Y:	+0.0201	-0.00029	+ 7.0543 0.991913	+0.01274 4.4365	+0.000158 1.2670	+0.0172 2.3644
AVR.17 (0H) (2449094.9)	X:	+0.1575	+0.00096	+31.6448 3.175217	+0.06395 2.3595	+0.000421 4.1407	+0.0790 2.4263
A MAI 3 (0H)	Y:	+0.0153	-0.00026	+ 6.8987 5.245709	+0.00753 2.4340	+0.000177 5.4185	+0.0169 4.5056
MAI 1 (0H) (2449108.9)	X:	+0.1701	+0.00114	+32.3067 4.529293	+0.06283 3.9167	+0.000411 5.7694	+0.0806 5.0737
A MAI 17 (0H)	Y:	+0.0113	-0.00027	+ 6.8335 0.330477	+0.00275 4.0840	+0.000190 0.3745	+0.0168 0.8811
MAI 17 (0H) (2449124.9)	X:	+0.1879	+0.00107	+33.1654 2.492604	+0.06151 2.1019	+0.000438 3.9623	+0.0827 0.9240
A JUN. 2 (0H)	Y:	+0.0071	-0.00028	+ 6.8467 4.588041	+0.00405 4.2890	+0.000199 4.5465	+0.0170 3.0235
JUN. 1 (0H) (2449139.9)	X:	+0.2041	+0.00113	+34.0281 2.160031	+0.05970 1.9914	+0.000428 3.9128	+0.0847 0.1831
A JUN.17 (0H)	Y:	+0.0029	-0.00030	+ 6.9500 4.260196	+0.00987 4.1246	+0.000196 4.1846	+0.0173 2.2833
JUN.17 (0H) (2449155.9)	X:	+0.2237	+0.00099	+34.9492 0.136237	+0.05716 0.2086	+0.000459 2.2673	+0.0865 2.3279
A JUL. 3 (0H)	Y:	-0.0019	-0.00029	+ 7.1565 2.234493	+0.01606 2.1320	+0.000162 2.1254	+0.0179 4.4239

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 2 DE SATURNE: ENCELADE N=4.586

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JUL. 1 (OH) (2449169.9)	X:	+0.2371	+0.00099	+35.7029 1.512137	+0.05257 1.8037	+0.000475 3.8997	+0.0880 4.9954
A JUL.17 (OH)	Y:	-0.0063	-0.00034	+ 7.4115 3.603188	+0.02072 3.5013	+0.000107 3.5771	+0.0185 0.7977
JUL.17 (OH) (2449185.9)	X:	+0.2521	+0.00064	+36.4197 5.782042	+0.04659 0.0846	+0.000552 2.3219	+0.0890 0.8675
A AOU. 2 (OH)	Y:	-0.0116	-0.00037	+ 7.7675 1.576552	+0.02420 1.4849	+0.000013 1.7101	+0.0193 2.9347
AOU. 1 (OH) (2449200.9)	X:	+0.2620	+0.00038	+36.8660 5.468577	+0.03881 0.1090	+0.000616 2.2989	+0.0894 0.1353
A AOU.17 (OH)	Y:	-0.0172	-0.00040	+ 8.1305 1.247449	+0.02477 1.1617	+0.000093 4.3712	+0.0201 2.1681
AOU.17 (OH) (2449216.9)	X:	+0.2694	-0.00006	+37.1064 3.459846	+0.03128 4.9272	+0.000642 0.6371	+0.0895 2.2879
A SEP. 2 (OH)	Y:	-0.0239	-0.00038	+ 8.5006 5.504416	+0.02195 5.4068	+0.000197 2.3942	+0.0208 4.3213
SEP. 1 (OH) (2449231.9)	X:	+0.2691	-0.00039	+37.0182 3.146229	+0.02932 5.2708	+0.000667 0.5657	+0.0884 1.5486
A SEP.17 (OH)	Y:	-0.0299	-0.00038	+ 8.7832 5.175461	+0.01621 5.0336	+0.000269 2.1486	+0.0214 3.5691
SEP.17 (OH) (2449247.9)	X:	+0.2646	-0.00063	+36.6261 1.132362	+0.03600 3.9087	+0.000647 5.1142	+0.0869 3.6650
A OCT. 3 (OH)	Y:	-0.0366	-0.00031	+ 8.9716 3.148171	+0.00816 2.7526	+0.000303 0.1731	+0.0215 5.6946
OCT. 1 (OH) (2449261.9)	X:	+0.2540	-0.00076	+36.0710 2.506832	+0.04599 5.6560	+0.000640 0.4402	+0.0851 0.0502
A OCT.17 (OH)	Y:	-0.0410	-0.00029	+ 9.0197 4.514378	+0.00466 2.7411	+0.000280 1.5617	+0.0214 2.0528
OCT.17 (OH) (2449277.9)	X:	+0.2424	-0.00102	+35.2599 0.480310	+0.05773 3.9393	+0.000555 4.9224	+0.0827 2.1690
A NOV. 2 (OH)	Y:	-0.0454	-0.00018	+ 8.9351 2.482575	+0.01179 6.1865	+0.000241 5.8159	+0.0210 4.1717
NOV. 1 (OH) (2449292.9)	X:	+0.2273	-0.00103	+34.4101 0.143870	+0.06784 3.8150	+0.000470 4.8557	+0.0804 1.4009
A NOV.17 (OH)	Y:	-0.0482	-0.00011	+ 8.7329 2.145672	+0.01881 5.7228	+0.000189 5.3877	+0.0203 3.4024
NOV.17 (OH) (2449308.9)	X:	+0.2127	-0.00098	+33.4642 4.384907	+0.07598 1.9574	+0.000378 3.1216	+0.0782 3.5034
A DEC. 3 (OH)	Y:	-0.0504	+0.00000	+ 8.4132 0.107869	+0.02479 3.6259	+0.000120 3.1660	+0.0195 5.5154
DEC. 1 (OH) (2449322.9)	X:	+0.1968	-0.00087	+32.7123 5.733717	+0.08104 3.4525	+0.000285 4.8606	+0.0763 6.1232
A DEC.17 (OH)	Y:	-0.0507	+0.00001	+ 8.0671 1.464418	+0.02794 4.9455	+0.000093 4.2861	+0.0186 1.8626
DEC.17 (OH) (2449338.9)	X:	+0.1834	-0.00096	+31.9296 3.679043	+0.08408 1.5370	+0.000273 3.2265	+0.0746 1.9344
A JAN. 2 (OH)	Y:	-0.0501	+0.00008	+ 7.6250 5.706776	+0.03013 2.8649	+0.000065 1.5986	+0.0175 3.9716

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 3 DE SATURNE: TETHYS N=3.328

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN. 1 (OH)	X:	-0.0005	+0.00000	+37.8999	+0.07437	+0.000373	+0.0033
(2448988.9)				4.657932	2.6025	4.4845	0.0019
A JAN.17 (OH)	Y:	-0.0009	+0.00001	+11.8537	+0.03868	+0.000077	+0.0010
				0.347461	3.6569	1.0426	1.9928
JAN.17 (OH)	X:	-0.0004	+0.00000	+37.4549	+0.07167	+0.000386	+0.0033
(2449004.9)				1.328727	5.7443	1.3906	5.9231
A FEV. 2 (OH)	Y:	-0.0008	+0.00000	+11.2592	+0.03657	+0.000112	+0.0010
				3.321925	0.3217	3.9627	1.6248
FEV. 1 (OH)	X:	-0.0004	+0.00000	+37.2412	+0.06850	+0.000397	+0.0032
(2449019.9)				0.955793	5.5575	1.1937	5.1798
A FEV.17 (OH)	Y:	-0.0007	+0.00000	+10.7367	+0.03366	+0.000134	+0.0009
				2.970651	6.2109	3.5592	0.9120
FEV.17 (OH)	X:	-0.0004	+0.00000	+37.2343	+0.06531	+0.000425	+0.0033
(2449035.9)				3.909709	2.4417	4.3137	4.7989
A MAR. 5 (OH)	Y:	-0.0007	+0.00000	+10.2295	+0.02995	+0.000156	+0.0009
				5.949649	2.8419	0.1631	0.5724
MAR. 1 (OH)	X:	-0.0004	+0.00000	+37.3787	+0.06318	+0.000439	+0.0033
(2449047.9)				6.126387	4.8333	0.3526	2.9527
A MAR.17 (OH)	Y:	-0.0007	+0.00000	+ 9.8901	+0.02672	+0.000166	+0.0008
				1.903409	5.0153	2.3301	5.0300
MAR.17 (OH)	X:	-0.0004	+0.00000	+37.7650	+0.06156	+0.000471	+0.0034
(2449063.9)				2.801443	1.7581	3.4621	2.5986
A AVR. 2 (OH)	Y:	-0.0006	+0.00000	+ 9.5016	+0.02208	+0.000183	+0.0008
				4.889101	1.6085	5.1931	4.7031
AVR. 1 (OH)	X:	-0.0004	+0.00000	+38.3202	+0.06136	+0.000492	+0.0035
(2449078.9)				2.436843	1.6430	3.2400	1.8677
A AVR.17 (OH)	Y:	-0.0006	+0.00000	+ 9.2133	+0.01729	+0.000197	+0.0008
				4.549930	1.1254	4.7411	4.0064
AVR.17 (OH)	X:	-0.0005	+0.00000	+39.1004	+0.06305	+0.000522	+0.0037
(2449094.9)				5.403790	4.8798	0.1104	1.5277
A MAI 3 (OH)	Y:	-0.0006	+0.00000	+ 8.9977	+0.01201	+0.000216	+0.0008
				1.258889	3.8659	1.3328	3.6673
MAI 1 (OH)	X:	-0.0004	+0.00000	+39.9221	+0.06571	+0.000541	+0.0039
(2449108.9)				1.721393	1.4302	2.8902	0.4370
A MAI 17 (OH)	Y:	-0.0006	+0.00000	+ 8.8958	+0.00789	+0.000228	+0.0006
				3.878564	6.0203	3.8688	2.6048
MAI 17 (OH)	X:	-0.0005	+0.00000	+40.9827	+0.06991	+0.000570	+0.0041
(2449124.9)				4.699670	4.6640	6.1309	0.1347
A JUN. 2 (OH)	Y:	-0.0006	+0.00000	+ 8.8866	+0.00725	+0.000237	+0.0009
				0.589776	1.7076	0.5125	2.3041
JUN. 1 (OH)	X:	-0.0006	+0.00000	+42.0476	+0.07386	+0.000597	+0.0042
(2449139.9)				4.356323	4.5517	6.0601	5.7280
A JUN.17 (OH)	Y:	-0.0006	+0.00000	+ 8.9677	+0.01187	+0.000227	+0.0009
				0.254712	0.7697	0.1448	1.6172
JUN.17 (OH)	X:	-0.0005	+0.00000	+43.1866	+0.07758	+0.000639	+0.0046
(2449155.9)				1.064470	1.5034	3.1179	5.4241
A JUL. 3 (OH)	Y:	-0.0007	+0.00000	+ 9.2107	+0.01836	+0.000185	+0.0010
				3.246707	3.5134	3.1405	1.3455

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 3 DE SATURNE: TETHYS N=3.328

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JUL. 1 (0H)	X:	-0.0007	+0.00000	+44.1146	+0.07929	+0.000687	+0.0047
(2449169.9)				3.687143	4.3426	6.0464	4.3774
A JUL.17 (0H)	Y:	-0.0007	+0.00000	+ 9.4946	+0.02345	+0.000121	+0.0010
				5.863143	6.0382	5.7952	0.2920
JUL.17 (0H)	X:	-0.0006	+0.00000	+45.0028	+0.07948	+0.000753	+0.0049
(2449185.9)				0.406382	1.3252	3.1403	4.1340
A AOU. 2 (0H)	Y:	-0.0008	+0.00000	+ 9.8942	+0.02737	+0.000012	+0.0011
				2.568877	2.7025	3.3998	6.2407
AOU. 1 (0H)	X:	-0.0007	+0.00000	+45.5812	+0.07743	+0.000809	+0.0049
(2449200.9)				0.083136	1.2714	3.1394	3.4906
A AOU.17 (0H)	Y:	-0.0009	+0.00000	+10.3023	+0.02784	+0.000113	+0.0011
				2.228892	2.3654	5.2283	5.5706
AOU.17 (0H)	X:	-0.0008	+0.00000	+45.8519	+0.07407	+0.000853	+0.0049
(2449216.9)				3.091055	4.6023	0.2110	3.1870
A SEP. 2 (0H)	Y:	-0.0009	+0.00000	+10.7141	+0.02437	+0.000241	+0.0012
				5.217446	5.3922	2.0342	5.3481
SEP. 1 (0H)	X:	-0.0008	+0.00000	+45.7456	+0.07055	+0.000861	+0.0049
(2449231.9)				2.768706	4.6144	0.1775	2.5453
A SEP.17 (0H)	Y:	-0.0009	+0.00000	+11.0196	+0.01742	+0.000324	+0.0012
				4.877921	5.1396	1.7643	4.6664
SEP.17 (0H)	X:	-0.0009	+0.00001	+45.2633	+0.06834	+0.000832	+0.0047
(2449247.9)				5.772652	1.7190	3.4888	2.2977
A OCT. 3 (0H)	Y:	-0.0010	+0.00000	+11.2059	+0.00758	+0.000363	+0.0012
				1.583464	2.1689	4.8164	4.3664
OCT. 1 (0H)	X:	-0.0008	+0.00000	+44.5765	+0.06809	+0.000777	+0.0046
(2449261.9)				2.113378	4.6771	0.0708	1.2485
A OCT.17 (0H)	Y:	-0.0009	+0.00000	+11.2237	+0.00507	+0.000352	+0.0011
				4.197811	0.3489	1.1923	3.3323
OCT.17 (0H)	X:	-0.0009	+0.00001	+43.5774	+0.06990	+0.000690	+0.0043
(2449277.9)				5.105491	1.7427	3.3506	0.9443
A NOV. 2 (0H)	Y:	-0.0009	+0.00001	+11.0734	+0.01519	+0.000298	+0.0011
				0.900795	3.9255	4.2111	3.0138
NOV. 1 (0H)	X:	-0.0009	+0.00001	+42.5271	+0.07230	+0.000603	+0.0041
(2449292.9)				4.761842	1.6907	3.2607	0.2471
A NOV.17 (0H)	Y:	-0.0009	+0.00001	+10.7813	+0.02395	+0.000231	+0.0011
				0.556737	3.6873	3.8644	2.3455
NOV.17 (0H)	X:	-0.0008	+0.00000	+41.3857	+0.07478	+0.000513	+0.0039
(2449308.9)				1.455510	4.9368	0.2564	6.2243
A DEC. 3 (0H)	Y:	-0.0007	+0.00000	+10.3405	+0.03122	+0.000150	+0.0009
				3.538734	0.4286	0.4960	1.9975
DEC. 1 (0H)	X:	-0.0009	+0.00000	+40.4377	+0.07592	+0.000453	+0.0038
(2449322.9)				4.054284	1.4560	3.1093	5.1212
A DEC.17 (0H)	Y:	-0.0007	+0.00001	+ 9.8746	+0.03550	+0.000091	+0.0009
				6.146760	3.0470	2.9078	0.9682
DEC.17 (0H)	X:	-0.0008	+0.00000	+39.4728	+0.07601	+0.000405	+0.0036
(2449338.9)				0.735350	4.6311	0.1102	4.7782
A JAN. 2 (0H)	Y:	-0.0006	+0.00000	+ 9.2844	+0.03836	+0.000045	+0.0008
				2.843804	6.0180	5.1248	0.6005

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 4 DE SATURNE: DIONE N=2.296

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN. 1 (0H)	X:	-0.0157	-0.00004	+48.6089	+0.11821	+0.000434	+0.0575
(2448988.9)				5.429459	3.4760	5.1821	1.5008
A JAN.17 (0H)	Y:	+0.0434	-0.00013	+14.3910	+0.05042	+0.000094	+0.0168
				1.090273	4.6353	1.9800	3.4442
JAN.17 (0H)	X:	-0.0166	-0.00007	+48.0429	+0.11681	+0.000421	+0.0575
(2449004.9)				4.429255	2.6311	4.4068	5.7852
A FEV. 2 (0H)	Y:	+0.0411	-0.00012	+13.6679	+0.04767	+0.000141	+0.0158
				0.105371	3.6414	0.8867	1.4727
FEV. 1 (0H)	X:	-0.0178	-0.00009	+47.7742	+0.11497	+0.000458	+0.0573
(2449019.9)				1.134383	5.7632	1.3444	5.4890
A FEV.17 (0H)	Y:	+0.0392	-0.00011	+13.0332	+0.04379	+0.000172	+0.0151
				3.110062	0.3447	3.7824	1.1882
FEV.17 (0H)	X:	-0.0193	-0.00009	+47.7694	+0.11175	+0.000478	+0.0571
(2449035.9)				0.133388	4.9234	0.4733	3.4912
A MAR. 5 (0H)	Y:	+0.0372	-0.00010	+12.4185	+0.03862	+0.000200	+0.0145
				2.128422	5.6206	2.6945	5.5047
MAR. 1 (0H)	X:	-0.0206	-0.00007	+47.9556	+0.10959	+0.000482	+0.0578
(2449047.9)				2.525247	1.1621	3.0226	2.0075
A MAR.17 (0H)	Y:	+0.0359	-0.00009	+12.0085	+0.03406	+0.000215	+0.0140
				4.535712	1.7249	5.0372	4.0215
MAR.17 (0H)	X:	-0.0219	-0.00005	+48.4544	+0.10663	+0.000539	+0.0585
(2449063.9)				1.527937	0.3387	2.1612	0.0129
A AVR. 2 (0H)	Y:	+0.0343	-0.00007	+11.5426	+0.02736	+0.000239	+0.0136
				3.559529	0.7199	3.9232	2.0654
AVR. 1 (0H)	X:	-0.0230	-0.00002	+49.1677	+0.10384	+0.000544	+0.0597
(2449078.9)				4.523261	3.5138	5.2927	6.0107
A AVR.17 (0H)	Y:	+0.0331	-0.00005	+11.2016	+0.02025	+0.000256	+0.0133
				0.291195	3.7193	0.5320	1.7951
AVR.17 (0H)	X:	-0.0235	+0.00001	+50.1689	+0.10174	+0.000587	+0.0607
(2449094.9)				3.534052	2.7232	4.5063	4.0416
A MAI 3 (0H)	Y:	+0.0322	-0.00003	+10.9549	+0.01201	+0.000282	+0.0131
				5.604316	2.7886	5.7383	6.1186
MAI 1 (0H)	X:	-0.0235	+0.00006	+51.2233	+0.09981	+0.000613	+0.0628
(2449108.9)				4.243816	3.6158	5.4016	5.4585
A MAI 17 (0H)	Y:	+0.0316	+0.00000	+10.8507	+0.00451	+0.000302	+0.0131
				0.044899	3.8446	0.0894	1.2682
MAI 17 (0H)	X:	-0.0225	+0.00013	+52.5832	+0.09777	+0.000669	+0.0642
(2449124.9)				3.265607	2.8551	4.7008	3.4952
A JUN. 2 (0H)	Y:	+0.0314	+0.00001	+10.8708	+0.00661	+0.000311	+0.0133
				5.361210	5.0038	5.3450	5.5952
JUN. 1 (0H)	X:	-0.0204	+0.00021	+53.9493	+0.09467	+0.000721	+0.0662
(2449139.9)				6.281602	6.0854	1.6956	3.2350
A JUN.17 (0H)	Y:	+0.0315	+0.00004	+11.0338	+0.01576	+0.000304	+0.0136
				2.098845	1.9441	2.0556	5.3363
JUN.17 (0H)	X:	-0.0170	+0.00031	+55.4098	+0.09004	+0.000777	+0.0681
(2449155.9)				5.316453	5.3715	1.0689	1.2924
A JUL. 3 (0H)	Y:	+0.0321	+0.00006	+11.3602	+0.02551	+0.000251	+0.0140
				1.132012	1.0222	1.1004	3.3812

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 4 DE SATURNE: DIONE N=2.296

		AO	A1	BO FO	B1 F1	B2 F2	CO PO
JUL. 1 (OH)	X:	-0.0126	+0.00039	+56.5994	+0.08423	+0.000854	+0.0697
(2449169.9)				6.048149	0.0592	2.1014	2.7307
A JUL.17 (OH)	Y:	+0.0329	+0.00008	+11.7641	+0.03266	+0.000171	+0.0147
				1.856626	1.7664	1.8818	4.8222
JUL.17 (OH)	X:	-0.0063	+0.00047	+57.7381	+0.07589	+0.000935	+0.0708
(2449185.9)				5.094494	5.7124	1.5131	0.7965
A AOU. 2 (OH)	Y:	+0.0341	+0.00007	+12.3270	+0.03809	+0.000031	+0.0154
				0.889790	0.8201	1.6762	2.8591
AOU. 1 (OH)	X:	+0.0005	+0.00052	+58.4793	+0.06719	+0.001007	+0.0717
(2449200.9)				1.848152	2.8321	4.8628	0.5545
A AOU.17 (OH)	Y:	+0.0352	+0.00006	+12.9009	+0.03885	+0.000141	+0.0161
				3.911169	3.8617	0.5515	2.6057
AOU.17 (OH)	X:	+0.0088	+0.00052	+58.8262	+0.06036	+0.001043	+0.0716
(2449216.9)				0.900752	2.3771	4.2582	4.9059
A SEP. 2 (OH)	Y:	+0.0362	+0.00004	+13.4851	+0.03436	+0.000308	+0.0167
				2.946336	2.9189	6.0377	0.6593
SEP. 1 (OH)	X:	+0.0168	+0.00047	+58.6890	+0.05932	+0.001046	+0.0712
(2449231.9)				3.939286	5.9355	1.3022	4.6593
A SEP.17 (OH)	Y:	+0.0369	+0.00000	+13.9304	+0.02518	+0.000416	+0.0171
				5.969616	5.9523	2.8656	0.3970
SEP.17 (OH)	X:	+0.0244	+0.00040	+58.0694	+0.06577	+0.000994	+0.0701
(2449247.9)				2.988798	5.5137	0.6591	2.7214
A OCT. 3 (OH)	Y:	+0.0370	-0.00002	+14.2264	+0.01173	+0.000468	+0.0173
				5.005705	4.9256	1.9682	4.7318
OCT. 1 (OH)	X:	+0.0302	+0.00031	+57.1664	+0.07535	+0.000930	+0.0683
(2449261.9)				3.723698	0.3382	1.6430	4.1527
A OCT.17 (OH)	Y:	+0.0365	-0.00005	+14.2990	+0.00270	+0.000454	+0.0173
				5.732183	3.6299	2.7343	6.1592
OCT.17 (OH)	X:	+0.0352	+0.00022	+55.9027	+0.08795	+0.000819	+0.0666
(2449277.9)				2.762072	5.9974	0.9793	2.2028
A NOV. 2 (OH)	Y:	+0.0355	-0.00008	+14.1628	+0.01650	+0.000383	+0.0168
				4.765262	1.9071	1.7936	4.1986
NOV. 1 (OH)	X:	+0.0383	+0.00013	+54.5525	+0.09841	+0.000733	+0.0647
(2449292.9)				5.780567	2.9798	4.2592	1.9290
A NOV.17 (OH)	Y:	+0.0341	-0.00011	+13.8409	+0.02802	+0.000303	+0.0164
				1.500086	4.8865	4.8094	3.9267
NOV.17 (OH)	X:	+0.0404	+0.00005	+53.0633	+0.10714	+0.000615	+0.0631
(2449308.9)				4.804022	2.2285	3.5485	6.2332
A DEC. 3 (OH)	Y:	+0.0322	-0.00012	+13.3311	+0.03756	+0.000199	+0.0156
				0.527869	3.9035	3.7506	1.9699
DEC. 1 (OH)	X:	+0.0410	+0.00000	+51.8636	+0.11261	+0.000549	+0.0610
(2449322.9)				5.514370	3.1059	4.5271	1.3621
A DEC.17 (OH)	Y:	+0.0305	-0.00012	+12.7814	+0.04311	+0.000129	+0.0150
				1.246148	4.6118	4.2594	3.3601
DEC.17 (OH)	X:	+0.0409	-0.00004	+50.6196	+0.11607	+0.000473	+0.0601
(2449338.9)				4.525129	2.2939	3.8223	5.6600
A JAN. 2 (OH)	Y:	+0.0283	-0.00012	+12.0779	+0.04682	+0.000075	+0.0139
				0.270725	3.6182	2.5396	1.4127

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 5 DE SATURNE: RHEA N=1.391

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN. 1 (0H)	X:	-0.0167	+0.00026	+67.8517	+0.15360	+0.000636	+0.0316
(2448988.9)				4.380943	2.3975	4.0876	2.2830
A JAN.17 (0H)	Y:	-0.0365	+0.00011	+20.4568	+0.06935	+0.000127	+0.0093
				0.046285	3.5348	0.7738	4.2405
JAN.17 (0H)	X:	-0.0127	+0.00024	+67.0612	+0.15255	+0.000629	+0.0313
(2449004.9)				1.469937	5.9369	1.3995	2.7827
A FEV. 2 (0H)	Y:	-0.0347	+0.00009	+19.4414	+0.06557	+0.000192	+0.0089
				3.434446	0.6345	4.1040	4.7573
FEV. 1 (0H)	X:	-0.0090	+0.00025	+66.6838	+0.15039	+0.000631	+0.0312
(2449019.9)				3.451944	1.7932	3.5596	0.5024
A FEV.17 (0H)	Y:	-0.0334	+0.00009	+18.5514	+0.06015	+0.000233	+0.0085
				5.433567	2.6188	6.0430	2.4926
FEV.17 (0H)	X:	-0.0050	+0.00023	+66.6757	+0.14786	+0.000662	+0.0311
(2449035.9)				0.539517	5.3350	0.8348	1.0017
A MAR. 5 (0H)	Y:	-0.0319	+0.00007	+17.6914	+0.05305	+0.000275	+0.0081
				2.541287	5.9857	3.0560	3.0163
MAR. 1 (0H)	X:	-0.0023	+0.00025	+66.9369	+0.14561	+0.000683	+0.0313
(2449047.9)				4.639143	3.2837	5.0486	2.9494
A MAR.17 (0H)	Y:	-0.0311	+0.00007	+17.1191	+0.04671	+0.000294	+0.0078
				0.373771	3.7961	0.8153	4.9781
MAR.17 (0H)	X:	+0.0015	+0.00020	+67.6309	+0.14306	+0.000726	+0.0315
(2449063.9)				1.729786	0.5576	2.3124	3.4536
A AVR. 2 (0H)	Y:	-0.0299	+0.00005	+16.4705	+0.03742	+0.000332	+0.0075
				3.769578	0.8781	4.0931	5.5054
AVR. 1 (0H)	X:	+0.0046	+0.00021	+68.6261	+0.14084	+0.000766	+0.0319
(2449078.9)				3.717726	2.7253	4.4644	1.1819
A AVR.17 (0H)	Y:	-0.0292	+0.00004	+15.9982	+0.02755	+0.000360	+0.0073
				5.777802	2.8647	5.9944	3.2503
AVR.17 (0H)	X:	+0.0079	+0.00014	+70.0231	+0.13903	+0.000823	+0.0323
(2449094.9)				0.815955	0.0243	1.7735	1.6941
A MAI 3 (0H)	Y:	-0.0286	+0.00001	+15.6596	+0.01601	+0.000400	+0.0071
				2.895931	6.2800	3.0066	3.7848
MAI 1 (0H)	X:	+0.0102	+0.00011	+71.4943	+0.13717	+0.000870	+0.0327
(2449108.9)				1.422879	0.8148	2.5738	2.9306
A MAI 17 (0H)	Y:	-0.0284	+0.00000	+15.5202	+0.00517	+0.000422	+0.0070
				3.517452	0.8921	3.5514	5.0328
MAI 17 (0H)	X:	+0.0119	+0.00007	+73.3921	+0.13497	+0.000943	+0.0334
(2449124.9)				4.815021	4.4281	6.2415	3.4558
A JUN. 2 (0H)	Y:	-0.0285	-0.00002	+15.5565	+0.00937	+0.000438	+0.0070
				0.638307	0.4124	0.6167	5.5635
JUN. 1 (0H)	X:	+0.0133	-0.00001	+75.2978	+0.13147	+0.001026	+0.0339
(2449139.9)				0.539930	0.3721	2.2351	1.1968
A JUN.17 (0H)	Y:	-0.0290	-0.00004	+15.7918	+0.02244	+0.000420	+0.0071
				2.651616	2.5459	2.6083	3.3086
JUN.17 (0H)	X:	+0.0130	-0.00002	+77.3361	+0.12607	+0.001127	+0.0342
(2449155.9)				3.945195	4.0342	5.9693	1.7279
A JUL. 3 (0H)	Y:	-0.0299	-0.00009	+16.2555	+0.03611	+0.000343	+0.0073
				6.055447	5.9738	6.0372	3.8341

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 5 DE SATURNE: RHEA N=1.391

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JUL. 1 (OH)	X:	+0.0127	-0.00013	+78.9962	+0.11936	+0.001226	+0.0348
(2449169.9)				4.574122	4.9131	0.6094	2.9815
A JUL.17 (OH)	Y:	-0.0310	-0.00011	+16.8258	+0.04600	+0.000230	+0.0075
				0.394194	0.3263	0.4646	5.0759
JUL.17 (OH)	X:	+0.0103	-0.00011	+80.5854	+0.11016	+0.001348	+0.0351
(2449185.9)				1.708082	2.3763	4.3695	3.5095
A AOU. 2 (OH)	Y:	-0.0329	-0.00007	+17.6171	+0.05341	+0.000049	+0.0078
				3.798053	3.7519	4.8517	5.5862
AOU. 1 (OH)	X:	+0.0083	-0.00022	+81.6210	+0.10110	+0.001414	+0.0352
(2449200.9)				3.737743	4.7714	0.4262	1.2630
A AOU.17 (OH)	Y:	-0.0340	-0.00011	+18.4210	+0.05436	+0.000208	+0.0081
				5.812023	5.7923	2.3894	3.3319
AOU.17 (OH)	X:	+0.0044	-0.00015	+82.1045	+0.09503	+0.001463	+0.0355
(2449216.9)				0.878617	2.3649	4.1924	1.7971
A SEP. 2 (OH)	Y:	-0.0360	-0.00004	+19.2372	+0.04786	+0.000436	+0.0085
				2.935142	2.9522	5.9848	3.8447
SEP. 1 (OH)	X:	+0.0017	-0.00021	+81.9137	+0.09452	+0.001441	+0.0354
(2449231.9)				2.910677	4.8530	0.2410	5.8267
A SEP.17 (OH)	Y:	-0.0369	-0.00004	+19.8562	+0.03490	+0.000584	+0.0087
				4.951631	5.0105	1.8125	1.5621
SEP.17 (OH)	X:	-0.0019	-0.00009	+81.0487	+0.10110	+0.001381	+0.0351
(2449247.9)				0.049213	2.4555	3.9927	0.0797
A OCT. 3 (OH)	Y:	-0.0376	+0.00000	+20.2635	+0.01596	+0.000654	+0.0089
				2.076467	2.2013	5.2974	2.1001
OCT. 1 (OH)	X:	-0.0040	-0.00004	+79.8162	+0.11012	+0.001292	+0.0348
(2449261.9)				0.683107	3.4417	4.8825	1.3242
A OCT.17 (OH)	Y:	-0.0376	+0.00003	+20.3576	+0.00262	+0.000633	+0.0089
				2.701768	5.6258	5.9747	3.3402
OCT.17 (OH)	X:	-0.0050	-0.00003	+78.0238	+0.12228	+0.001156	+0.0345
(2449277.9)				4.094289	0.9112	2.3130	1.8437
A NOV. 2 (OH)	Y:	-0.0372	+0.00008	+20.1571	+0.02294	+0.000536	+0.0089
				6.107599	3.0602	3.1413	3.8581
NOV. 1 (OH)	X:	-0.0058	+0.00007	+76.1393	+0.13274	+0.001035	+0.0338
(2449292.9)				6.107394	3.1893	4.5937	5.8642
A NOV.17 (OH)	Y:	-0.0360	+0.00008	+19.6969	+0.03913	+0.000414	+0.0087
				1.837162	5.1103	5.1527	1.5978
NOV.17 (OH)	X:	-0.0046	+0.00008	+74.0892	+0.14171	+0.000900	+0.0333
(2449308.9)				3.220744	0.5465	1.9928	0.0969
A DEC. 3 (OH)	Y:	-0.0348	+0.00012	+18.9733	+0.05243	+0.000270	+0.0085
				5.238335	2.2453	2.2086	2.1146
DEC. 1 (OH)	X:	-0.0035	+0.00015	+72.3857	+0.14720	+0.000803	+0.0329
(2449322.9)				3.830555	1.3434	2.8446	1.3248
A DEC.17 (OH)	Y:	-0.0333	+0.00013	+18.1958	+0.06019	+0.000166	+0.0081
				5.856488	2.8656	2.6520	3.3578
DEC.17 (OH)	X:	-0.0011	+0.00017	+70.6497	+0.15099	+0.000720	+0.0323
(2449336.9)				0.931114	4.9220	0.2348	1.8300
A JAN. 2 (OH)	Y:	-0.0312	+0.00011	+17.2027	+0.06531	+0.000085	+0.0077
				2.971526	6.2544	5.3044	3.8789

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 6 DE SATURNE: TITAN N=0.394

		A0	A1	B0 F0	B1 F1	C0 P0
JAN. 1 (OH) (2448988.7)	X:	- 7.8685	+ 1.15362	+162.5301 1.068373	+ 1.30453 5.5459	+1.6784 1.8780
A JAN.12 (OH)	Y:	- 1.2239	- 0.03345	+ 45.9031 2.989066	+ 0.20491 0.5431	+0.5390 3.8381
JAN.12 (OH) (2448999.7)	X:	- 7.4991	+ 1.19081	+149.1612 5.365243	+ 0.84051 5.4660	+2.4825 4.4063
A JAN.23 (OH)	Y:	- 0.1546	- 0.22642	+ 42.7010 0.995534	+ 0.16644 2.9710	+0.6386 0.0995
JAN.23 (OH) (2449010.7)	X:	- 6.4692	+ 1.07449	+156.0936 3.340327	+ 0.80136 6.1941	+2.3893 0.1135
A FEV. 3 (OH)	Y:	- 0.0381	- 0.25861	+ 43.9776 5.322438	+ 0.36463 2.4255	+0.6841 2.1650
FEV. 1 (OH) (2449019.7)	X:	- 3.6371	+ 0.35016	+156.9047 0.637256	+ 0.71413 5.0774	+1.8411 1.1446
A FEV.12 (OH)	Y:	- 2.7260	+ 0.24383	+ 42.4794 2.576579	+ 0.34556 5.9438	+0.4868 3.2492
FEV.12 (OH) (2449030.7)	X:	- 5.8379	+ 0.80730	+149.0821 4.942603	+ 0.67137 4.9136	+2.3951 3.6047
A FEV.23 (OH)	Y:	- 2.0421	+ 0.14109	+ 39.7406 0.654966	+ 0.11710 5.2886	+0.6333 5.5370
FEV.23 (OH) (2449041.7)	X:	- 6.4541	+ 0.98304	+156.8091 2.925942	+ 0.64721 5.8187	+2.4084 5.6396
A MAR. 6 (OH)	Y:	- 1.5296	+ 0.04665	+ 38.4538 4.951800	+ 0.12503 1.4781	+0.5505 1.4153
MAR. 1 (OH) (2449047.7)	X:	- 6.5355	+ 1.14136	+148.6176 5.328349	+ 0.96094 5.4564	+2.4612 4.4299
A MAR.12 (OH)	Y:	- 0.0443	- 0.22153	+ 36.7136 1.012857	+ 0.16857 2.7960	+0.5505 0.1986
MAR.12 (OH) (2449058.7)	X:	- 5.6261	+ 1.04735	+157.5999 3.308787	+ 0.65041 6.1190	+2.4353 0.1478
A MAR.23 (OH)	Y:	+ 0.0658	- 0.25496	+ 38.3336 5.345439	+ 0.30632 2.4491	+0.6051 2.2473
MAR.23 (OH) (2449069.7)	X:	- 2.5537	+ 0.57073	+159.4512 1.394346	+ 0.84953 0.0860	+1.8446 2.6729
A AVR. 3 (OH)	Y:	+ 0.0872	- 0.25954	+ 35.9911 3.454443	+ 0.20425 2.2026	+0.3936 4.6579
AVR. 1 (OH) (2449078.7)	X:	- 5.8355	+ 0.91539	+153.0188 4.913609	+ 0.90299 5.0663	+2.4795 3.6507
A AVR.12 (OH)	Y:	- 1.6329	+ 0.08752	+ 35.1229 0.682516	+ 0.06899 5.8454	+0.5551 5.6403
AVR.12 (OH) (2449089.7)	X:	- 6.6707	+ 1.12868	+163.8957 2.901582	+ 0.66989 5.6181	+2.5653 5.6788
A AVR.23 (OH)	Y:	- 1.1320	- 0.00653	+ 34.8682 4.989954	+ 0.08542 1.4848	+0.5116 1.5214
AVR.23 (OH) (2449100.7)	X:	- 6.4890	+ 1.21106	+168.3758 1.013787	+ 1.24850 5.9197	+1.7741 1.9441
A MAI 4 (OH)	Y:	- 0.4463	- 0.12539	+ 34.2829 3.075052	+ 0.12054 1.8992	+0.4049 3.9866

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 6 DE SATURNE: TITAN N=0.394

		A0	A1	B0 F0	B1 F1	C0 P0
MAI 1 (0H) (2449108.7)	X:	+ 7.7243	- 1.39009	+171.3670 4.161129	+ 1.36172 2.7505	+2.9317 1.9594
A MAI 12 (0H)	Y:	- 2.3686	+ 0.15669	+ 34.0878 6.231335	+ 0.15027 5.2250	+0.5617 4.0964
MAI 12 (0H) (2449119.7)	X:	+ 6.6947	- 1.24663	+161.3941 2.174306	+ 1.31272 2.4904	+2.1481 4.1175
A MAI 23 (0H)	Y:	- 2.4783	+ 0.16926	+ 33.0489 4.226881	+ 0.17243 5.3382	+0.4724 6.2206
MAI 23 (0H) (2449130.7)	X:	+ 3.1428	- 0.65286	+173.4302 0.188817	+ 0.32122 2.7344	+2.1999 0.5887
A JUN. 3 (0H)	Y:	- 2.6880	+ 0.24917	+ 35.7196 2.279011	+ 0.17686 5.7758	+0.4029 2.7009
JUN. 1 (0H) (2449139.7)	X:	+ 4.9293	- 0.69906	+177.7335 3.774870	+ 0.70910 2.5165	+2.9137 1.2261
A JUN.12 (0H)	Y:	- 0.6775	- 0.15942	+ 35.5013 5.831496	+ 0.09562 3.2070	+0.5640 3.2384
JUN.12 (0H) (2449150.7)	X:	+ 6.9378	- 1.11050	+170.5304 1.806013	+ 1.25948 2.2613	+2.3124 3.4339
A JUN.23 (0H)	Y:	- 1.3047	- 0.04952	+ 35.0736 3.900836	+ 0.15733 3.7257	+0.4516 5.6032
JUN.23 (0H) (2449161.7)	X:	+ 7.4884	- 1.29033	+184.1242 6.098713	+ 0.93745 2.2704	+2.2946 6.2379
A JUL. 4 (0H)	Y:	- 2.2132	+ 0.11773	+ 37.0373 1.932803	+ 0.02566 6.0066	+0.4606 1.9435
JUL. 1 (0H) (2449169.7)	X:	- 8.2439	+ 1.48697	+186.6557 2.965109	+ 1.17037 5.4218	+2.9838 5.8594
A JUL.12 (0H)	Y:	- 0.7336	- 0.09579	+ 37.6715 5.081926	+ 0.01363 0.0377	+0.5803 1.7121
JUL.12 (0H) (2449180.7)	X:	- 5.9719	+ 1.17849	+190.3778 1.099213	+ 0.86737 6.0471	+2.0620 2.1638
A JUL.23 (0H)	Y:	- 0.1625	- 0.22081	+ 38.0665 3.181867	+ 0.28844 2.6349	+0.4482 4.1289
JUL.23 (0H) (2449191.7)	X:	- 4.7781	+ 1.01951	+181.9953 5.421298	+ 1.16570 6.0709	+2.9377 4.7142
A AOU. 3 (0H)	Y:	+ 0.1354	- 0.29657	+ 38.0188 1.169094	+ 0.31196 2.0774	+0.5910 0.5410
AOU. 1 (0H) (2449200.7)	X:	- 4.0869	+ 0.53631	+190.5938 2.665914	+ 0.74184 4.7344	+2.8441 5.2396
A AOU.12 (0H)	Y:	- 2.7104	+ 0.23581	+ 39.4461 4.725262	+ 0.28515 5.5906	+0.5722 0.9267
AOU.12 (0H) (2449211.7)	X:	- 6.0831	+ 0.97221	+194.1688 0.780061	+ 0.60876 5.4776	+2.1598 1.5003
A AOU.23 (0H)	Y:	- 1.6959	+ 0.04254	+ 42.3538 2.797418	+ 0.06990 2.1287	+0.5155 3.5679
AOU.23 (0H) (2449222.7)	X:	- 9.0299	+ 1.56300	+180.6370 5.109628	+ 1.44621 5.8064	+3.0689 4.0912
A SEP. 3 (0H)	Y:	- 0.8889	- 0.10188	+ 42.3880 0.839883	+ 0.19040 1.4491	+0.6558 6.0367

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 6 DE SATURNE: TITAN N=0.394

		A0	A1	B0 F0	B1 F1	C0 P0
SEP. 1 (OH) (2449231.7)	X:	+ 3.3559	- 0.84870	+185.1879 2.380900	+ 0.84113 3.2598	+2.4661 4.5541
A SEP.12 (OH)	Y:	- 3.6826	+ 0.35315	+ 42.1458 4.369653	+ 0.34997 5.4841	+0.6154 0.2041
SEP.12 (OH) (2449242.7)	X:	- 0.3361	- 0.20098	+190.4325 0.435863	+ 0.57755 3.2592	+2.3605 0.9297
A SEP.23 (OH)	Y:	- 3.3137	+ 0.29311	+ 46.2515 2.432621	+ 0.21409 5.6971	+0.5284 2.9961
SEP.23 (OH) (2449253.7)	X:	- 4.6407	+ 0.57410	+182.2592 4.790959	+ 0.47933 5.5611	+2.9234 3.3481
A OCT. 4 (OH)	Y:	- 2.9169	+ 0.25067	+ 45.1424 0.539940	+ 0.21558 6.0446	+0.7611 5.2890
OCT. 1 (OH) (2449261.7)	X:	+ 2.1532	- 0.35940	+182.0585 1.667130	+ 0.23109 2.5126	+2.3098 3.1505
A OCT.12 (OH)	Y:	- 0.6950	- 0.21919	+ 45.2325 3.690510	+ 0.17354 2.8068	+0.5189 5.1767
OCT.12 (OH) (2449272.7)	X:	+ 6.2135	- 1.11739	+185.1639 5.965048	+ 1.26244 2.3770	+2.3274 5.8494
A OCT.23 (OH)	Y:	- 1.4026	- 0.10537	+ 44.5804 1.703507	+ 0.14696 3.6393	+0.6260 1.5114
OCT.23 (OH) (2449283.7)	X:	+ 7.4712	- 1.40543	+185.0682 4.093136	+ 1.25180 2.2105	+3.1042 1.7584
A NOV. 3 (OH)	Y:	- 2.0857	+ 0.03366	+ 44.6504 6.063302	+ 0.11282 3.6961	+0.7124 3.7442
NOV. 1 (OH) (2449292.7)	X:	- 4.8065	+ 0.86432	+180.1889 1.339366	+ 0.89298 5.6154	+1.9944 2.5667
A NOV.12 (OH)	Y:	- 0.1120	- 0.26979	+ 43.7523 3.354933	+ 0.18887 2.0390	+0.4824 4.4738
NOV.12 (OH) (2449303.7)	X:	- 0.7381	+ 0.20349	+171.6571 5.644753	+ 0.27364 1.4434	+2.4928 5.0885
A NOV.23 (OH)	Y:	+ 0.1890	- 0.33956	+ 40.9398 1.338975	+ 0.27902 3.0190	+0.6324 0.8955
NOV.23 (OH) (2449314.7)	X:	+ 1.4620	- 0.18278	+172.1739 3.702819	+ 0.65804 1.2660	+2.6701 0.9856
A DEC. 4 (OH)	Y:	- 0.2051	- 0.26734	+ 42.7628 5.677745	+ 0.36421 2.6940	+0.6725 2.9284
DEC. 1 (OH) (2449322.7)	X:	- 2.6695	+ 0.26556	+170.1285 0.567373	+ 0.69268 4.5248	+2.0071 1.1062
A DEC.12 (OH)	Y:	- 2.7674	+ 0.24553	+ 41.6100 2.546339	+ 0.35255 5.8290	+0.4747 3.2320
DEC.12 (OH) (2449333.7)	X:	- 5.7163	+ 0.84901	+159.2125 4.884066	+ 0.45824 5.1832	+2.5416 3.5738
A DEC.23 (OH)	Y:	- 1.9602	+ 0.13043	+ 38.6815 0.630609	+ 0.09275 4.8983	+0.6164 5.5319
DEC.23 (OH) (2449344.7)	X:	- 6.1948	+ 1.00368	+164.8369 2.879186	+ 0.95194 5.8397	+2.5030 5.6175
A JAN. 3 (OH)	Y:	- 1.4590	+ 0.04277	+ 37.1461 4.933939	+ 0.17601 1.5001	+0.5292 1.4224

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DU SATELLITE 7 DE SATURNE: HYPERION N=0.394

		A0	A1	B0 F0	B1 F1	C0 P0
JAN. 1 (OH)	X:	+52.0465	- 5.94988	+154.8677	+ 8.00638	+2.1835
(2448988.7)				0.611026	5.1126	3.8769
A JAN. 9 (OH)	Y:	+ 8.9869	- 2.44073	+ 38.1545	+ 2.16840	+0.3755
				2.780550	1.3479	5.8922
JAN. 9 (OH)	X:	-40.1684	+ 0.69647	+175.3631	+11.04372	+0.4792
(2448996.7)				3.075310	0.9660	3.0194
A JAN.17 (OH)	Y:	- 2.7020	+ 2.65941	+ 40.0260	+ 2.01274	+0.2794
				5.042569	2.9168	5.6274
JAN.17 (OH)	X:	-21.5649	+ 6.56836	+142.0863	+11.48470	+0.3304
(2449004.7)				5.544743	3.8265	4.6562
A JAN.25 (OH)	Y:	+15.3763	- 0.96868	+ 40.4614	+ 3.23506	+0.0899
				1.178118	5.6717	5.6975
JAN.25 (OH)	X:	+36.8217	- 8.08040	+150.3725	+ 7.72500	+2.7567
(2449012.7)				1.414414	5.8660	5.7906
A FEV. 2 (OH)	Y:	- 3.2088	+ 0.20966	+ 42.9814	+ 2.47489	+0.7858
				3.446442	1.5933	1.5168
FEV. 1 (OH)	X:	-51.2919	+ 4.29788	+173.1061	+12.29674	+0.3531
(2449019.7)				3.503680	1.3737	0.2513
A FEV. 9 (OH)	Y:	+ 5.7496	+ 1.13794	+ 41.8221	+ 2.85091	+0.0088
				5.595444	3.5227	0.6495
FEV. 9 (OH)	X:	-15.4683	+ 7.31038	+136.5550	+11.14140	+0.4141
(2449027.7)				6.024300	4.4737	6.2083
A FEV.17 (OH)	Y:	+15.4517	- 1.63577	+ 34.3706	+ 2.50529	+0.0592
				1.611845	6.2542	3.5021
FEV.17 (OH)	X:	+32.2833	-10.70609	+136.4952	+ 5.85562	+2.3282
(2449035.7)				1.896663	0.1738	0.8705
A FEV.25 (OH)	Y:	- 4.6033	+ 0.75249	+ 39.0597	+ 2.14884	+0.6554
				3.914577	2.0526	2.7204
FEV.25 (OH)	X:	-45.5636	+ 5.52171	+157.7808	+12.19810	+0.4800
(2449043.7)				4.289494	2.3031	1.8731
A MAR. 5 (OH)	Y:	+10.1784	+ 0.28345	+ 38.7765	+ 3.07270	+0.1336
				0.104081	4.4170	4.2573
MAR. 1 (OH)	X:	-25.5104	+ 6.81933	+140.2158	+11.38329	+0.3238
(2449047.7)				5.539549	3.8625	4.9596
A MAR. 9 (OH)	Y:	+13.6535	- 0.88274	+ 34.9094	+ 2.78897	+0.0614
				1.224109	5.7518	5.8613
MAR. 9 (OH)	X:	+32.4717	- 7.73280	+153.3978	+ 8.09761	+2.9062
(2449055.7)				1.424674	5.8895	5.9890
A MAR.17 (OH)	Y:	- 2.1137	+ 0.05691	+ 37.4737	+ 2.18351	+0.7062
				3.520410	1.7046	1.7857
MAR.17 (OH)	X:	-51.3077	+ 4.59425	+169.1897	+12.75040	+0.4912
(2449063.7)				3.826801	1.7703	1.1163
A MAR.25 (OH)	Y:	+ 7.7247	+ 0.59962	+ 37.1093	+ 2.79191	+0.0853
				5.961727	3.9385	3.6062
MAR.25 (OH)	X:	-10.7231	+ 7.55998	+139.9182	+11.11287	+0.4281
(2449071.7)				0.034907	4.8848	1.1825
A AVR. 2 (OH)	Y:	+15.0202	- 2.30955	+ 26.7559	+ 1.61517	+0.2128
				1.925413	0.5303	3.8367
AVR. 1 (OH)	X:	+33.9392	-12.10868	+136.5716	+ 5.23354	+2.2926
(2449078.7)				1.876600	0.1639	1.1199
A AVR. 9 (OH)	Y:	- 5.0118	+ 0.96756	+ 34.6733	+ 1.82203	+0.5312
				3.931607	2.0260	2.9275
AVR. 9 (OH)	X:	-49.7254	+ 5.62725	+163.2033	+12.77587	+0.5087
(2449086.7)				4.286868	2.3262	1.9947
A AVR.17 (OH)	Y:	+ 9.5845	+ 0.20009	+ 34.8954	+ 2.80794	+0.1282
				0.150312	4.4868	4.3987
AVR.17 (OH)	X:	+24.2983	+ 0.43387	+160.0712	+ 9.74211	+1.6537
(2449094.7)				0.301580	5.0028	3.3992
A AVR.25 (OH)	Y:	+11.5232	- 2.49907	+ 25.2061	+ 1.38145	+0.2567
				2.446205	1.2409	4.9597
AVR.25 (OH)	X:	-23.4338	- 5.00277	+171.9719	+ 9.65195	+1.2128
(2449102.7)				2.687361	0.6820	2.6360
A MAI 3 (OH)	Y:	- 5.4167	+ 2.47879	+ 29.6384	+ 1.35156	+0.2566
				4.629659	2.3828	5.3798

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DU SATELLITE 7 DE SATURNE: HYPERION N=0.394

		A0	A1	B0 F0	B1 F1	C0 P0
MAI 1 (OH)	X:	-50.3435	+ 6.08249	+164.8431	+13.01510	+0.4800
(2449108.7)				4.446189	2.5313	2.3441
A MAI 9 (OH)	Y:	+10.2102	+ 0.01625	+ 33.8649	+ 2.77339	+0.1320
				0.313425	4.6842	4.6659
MAI 9 (OH)	X:	+40.2004	- 3.87980	+171.9503	+ 9.25187	+2.5694
(2449116.7)				0.359808	4.8933	3.7128
A MAI 17 (OH)	Y:	+ 7.7905	- 1.92474	+ 27.6569	+ 1.48968	+0.3235
				2.611299	1.2237	5.7525
MAI 17 (OH)	X:	-40.7476	- 1.69672	+189.9570	+11.93812	+0.5851
(2449124.7)				2.827123	0.7492	2.8584
A MAI 25 (OH)	Y:	- 2.3140	+ 2.09039	+ 30.7192	+ 1.59966	+0.1975
				4.873772	2.7297	5.6429
MAI 25 (OH)	X:	-39.5772	+ 7.27329	+158.6184	+12.76649	+0.3198
(2449132.7)				5.241607	3.5435	4.5254
A JUN. 2 (OH)	Y:	+12.0100	- 0.62978	+ 32.0903	+ 2.63209	+0.0756
				1.034104	5.5659	5.8929
JUN. 1 (OH)	X:	+48.6024	- 8.99104	+178.5916	+ 8.91110	+3.3288
(2449139.7)				0.770972	5.1263	4.7569
A JUN. 9 (OH)	Y:	- 0.9421	- 0.15875	+ 35.1539	+ 2.02360	+0.6610
				2.997958	1.1818	0.7208
JUN. 9 (OH)	X:	-60.1852	+ 3.15173	+202.5804	+14.56926	+0.3801
(2449147.7)				3.277148	1.1754	0.2879
A JUN.17 (OH)	Y:	+ 4.5909	+ 1.07837	+ 35.0637	+ 2.41532	+0.0056
				5.445747	3.4015	5.6574
JUN.17 (OH)	X:	-35.9465	+ 9.42812	+154.7687	+12.21567	+0.5907
(2449155.7)				5.758443	4.2621	0.1201
A JUN.25 (OH)	Y:	+13.3957	- 1.27897	+ 30.9663	+ 2.32172	+0.0540
				1.459787	6.1403	3.0980
JUN.25 (OH)	X:	+37.6615	-12.25124	+165.0169	+ 6.78163	+2.7618
(2449163.7)				1.633938	6.1232	0.6984
A JUL. 3 (OH)	Y:	- 3.7601	+ 0.58225	+ 36.3897	+ 2.02392	+0.6353
				3.782178	1.9751	2.6537
JUL. 1 (OH)	X:	-62.0378	+ 3.85612	+205.9310	+15.17283	+0.5079
(2449169.7)				3.478459	1.4028	0.6528
A JUL. 9 (OH)	Y:	+ 6.6136	+ 0.86277	+ 37.5453	+ 2.73530	+0.0497
				5.638080	3.6217	3.4786
JUL. 9 (OH)	X:	-34.2277	+10.53429	+157.3375	+12.33302	+0.7497
(2449177.7)				5.980689	4.5721	0.6179
A JUL.17 (OH)	Y:	+15.0608	- 1.83313	+ 31.0834	+ 2.10955	+0.1559
				1.609042	0.1045	3.4826
JUL.17 (OH)	X:	+39.1124	-14.99140	+157.9187	+ 5.11486	+2.6070
(2449185.7)				1.846655	0.0980	1.4108
A JUL.25 (OH)	Y:	- 6.8668	+ 1.50325	+ 38.1770	+ 1.91165	+0.5075
				3.883414	1.9316	3.1049
JUL.25 (OH)	X:	-57.9312	+ 5.91980	+192.1957	+15.01998	+0.5602
(2449193.7)				4.308124	2.3782	2.1282
A AOU. 2 (OH)	Y:	+11.5932	+ 0.11037	+ 39.9985	+ 3.26343	+0.1509
				0.139401	4.5192	4.5594
AOU. 1 (OH)	X:	- 1.1379	+ 6.16218	+177.2623	+11.86893	+1.1541
(2449200.7)				0.139222	4.9800	2.8535
A AOU. 9 (OH)	Y:	+16.5147	- 3.15114	+ 28.6664	+ 1.48581	+0.3496
				2.089280	0.9696	4.2958
AOU. 9 (OH)	X:	- 3.9274	-10.02777	+182.8096	+ 8.46122	+2.0613
(2449208.7)				2.454579	0.5363	2.4462
A AOU.17 (OH)	Y:	- 9.5742	+ 3.22715	+ 37.2664	+ 1.66779	+0.3093
				4.275261	1.9695	4.9338
AOU.17 (OH)	X:	-51.2229	+ 6.96059	+182.8679	+14.42475	+0.3786
(2449216.7)				4.845848	3.0399	3.2768
A AOU.25 (OH)	Y:	+13.8963	- 0.34268	+ 41.5613	+ 3.43512	+0.1386
				0.611104	5.0795	5.2769
AOU.25 (OH)	X:	+50.9632	- 9.02170	+196.0850	+ 9.69839	+3.6275
(2449224.7)				0.707971	5.0437	4.6412
A SEP. 2 (OH)	Y:	+ 0.4101	- 0.52907	+ 43.6827	+ 2.46967	+0.8074
				2.873931	1.0959	0.5493

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DU SATELLITE 7 DE SATURNE: HYPERION N=0.394

		A0	A1	B0 F0	B1 F1	C0 P0
SEP. 1 (OH)	X:	-52.4412	+ 0.32514	+217.4851	+14.32568	+0.1941
(2449231.7)				2.941713	0.8260	3.4424
A SEP. 9 (OH)	Y:	- 0.9577	+ 2.31895	+ 41.3900	+ 2.35744	+0.1832
				4.952919	2.8505	5.7739
SEP. 9 (OH)	X:	-43.8694	+ 8.42768	+170.3376	+13.23150	+0.2870
(2449239.7)				5.397984	3.7547	5.4777
A SEP.17 (OH)	Y:	+15.3251	- 0.79718	+ 41.7095	+ 3.34591	+0.0594
				1.094098	5.6751	6.1511
SEP.17 (OH)	X:	+32.8035	- 7.99113	+188.7816	+ 9.82079	+3.5673
(2449247.7)				1.340252	5.7939	6.0827
A SEP.25 (OH)	Y:	- 1.1062	- 0.28150	+ 45.3195	+ 2.63269	+0.8775
				3.432213	1.6836	1.8712
SEP.25 (OH)	X:	-58.6081	+ 4.08116	+202.3356	+15.23720	+0.5765
(2449255.7)				3.787010	1.7505	1.1603
A OCT. 3 (OH)	Y:	+ 6.7927	+ 0.82770	+ 45.9327	+ 3.46765	+0.1052
				5.863219	3.8751	3.6893
OCT. 1 (OH)	X:	-41.4022	+ 9.49384	+160.3624	+12.27296	+0.4797
(2449261.7)				5.647655	4.1018	0.0449
A OCT. 9 (OH)	Y:	+16.3887	- 1.17717	+ 40.9618	+ 3.10953	+0.0246
				1.286552	5.9178	3.3414
OCT. 9 (OH)	X:	+36.5744	-10.64095	+171.7093	+ 7.66174	+2.8681
(2449269.7)				1.551167	5.9980	0.4297
A OCT.17 (OH)	Y:	- 2.3658	- 0.01121	+ 45.3538	+ 2.57264	+0.6337
				3.648390	1.8772	2.4109
OCT.17 (OH)	X:	-55.9656	+ 4.41795	+190.9045	+14.67111	+0.5665
(2449277.7)				4.020368	2.0248	1.5637
A OCT.25 (OH)	Y:	+ 9.5647	+ 0.66780	+ 45.0920	+ 3.50585	+0.1311
				6.093418	4.1367	4.0326
OCT.25 (OH)	X:	- 0.7103	+ 5.61128	+167.4273	+10.93131	+1.1664
(2449285.7)				0.142730	4.9470	2.9947
A NOV. 2 (OH)	Y:	+18.8097	- 3.43997	+ 31.4396	+ 1.46239	+0.3841
				2.036834	0.8529	4.3894
NOV. 1 (OH)	X:	+25.9463	-13.60910	+149.3825	+ 5.07744	+2.3301
(2449292.7)				2.124557	0.3295	2.0221
A NOV. 9 (OH)	Y:	-10.2053	+ 2.44696	+ 41.9267	+ 1.98820	+0.3424
				3.973311	1.7703	3.8311
NOV. 9 (OH)	X:	-51.7583	+ 5.66894	+171.5657	+13.44463	+0.4450
(2449300.7)				4.543626	2.6592	2.5091
A NOV.17 (OH)	Y:	+11.4427	+ 0.22225	+ 42.3740	+ 3.44207	+0.1487
				0.326146	4.7348	4.7958
NOV.17 (OH)	X:	+42.8140	- 5.77781	+178.7501	+ 9.24450	+3.0757
(2449308.7)				0.426830	4.8036	4.0590
A NOV.25 (OH)	Y:	+ 7.4189	- 1.83928	+ 37.4303	+ 1.93373	+0.5625
				2.602534	0.9910	6.2250
NOV.25 (OH)	X:	-45.5041	- 0.09425	+191.9188	+12.88049	+0.0753
(2449316.7)				2.944779	0.8339	3.5835
A DEC. 3 (OH)	Y:	- 1.3716	+ 1.96994	+ 38.9122	+ 2.29252	+0.1421
				4.951558	2.8230	5.9485
DEC. 1 (OH)	X:	-48.7991	+ 5.97144	+160.5612	+12.61674	+0.3317
(2449322.7)				4.759131	2.9373	3.0141
A DEC. 9 (OH)	Y:	+11.3304	+ 0.06011	+ 39.1607	+ 3.19516	+0.1274
				0.544110	4.9949	5.1185
DEC. 9 (OH)	X:	+41.0717	- 6.84333	+171.4831	+ 8.85888	+3.0766
(2449330.7)				0.635906	4.9776	4.5973
A DEC.17 (OH)	Y:	+ 2.6856	- 0.88730	+ 38.2838	+ 2.12651	+0.6860
				2.808408	1.0200	0.5210
DEC.17 (OH)	X:	-49.9573	+ 1.32639	+185.4844	+13.19764	+0.2815
(2449338.7)				3.151912	1.0519	0.1900
A DEC.25 (OH)	Y:	+ 1.6343	+ 1.34532	+ 37.2923	+ 2.46167	+0.0393
				5.228207	3.1467	0.4084
DEC.25 (OH)	X:	-41.8244	+ 8.98835	+136.6076	+10.22316	+0.4917
(2449346.7)				5.602433	4.0967	0.2794
A JAN. 2 (OH)	Y:	+13.5182	- 0.96867	+ 32.8264	+ 2.38052	+0.0625
				1.283530	5.9097	3.6981

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DU SATELLITE 8 DE SATURNE: JAPET N=0.079

		A0	A1	B0 F0	C0 P0
JAN. 1 (0H) (2448988.9)	X:	+12.9226	- 4.11043	+395.2903 3.206008	+ 1.2250 0.4744
A JAN.17 (0H)	Y:	+ 1.2841	- 1.30579	+ 28.4604 5.499613	+ 2.6116 1.8526
JAN.17 (0H) (2449004.9)	X:	-22.5583	- 1.12059	+444.7713 4.400014	+ 9.4442 1.4730
A FEV. 2 (0H)	Y:	-29.6792	+ 2.91778	+ 41.8662 2.458999	+ 5.8280 4.9563
FEV. 1 (0H) (2449019.9)	X:	+ 2.0024	- 2.43410	+494.4378 5.525229	+10.4321 2.4657
A FEV.17 (0H)	Y:	- 0.5688	+ 0.66563	+ 2.5632 3.222639	+ 0.2688 5.0019
FEV.17 (0H) (2449035.9)	X:	+19.1305	- 2.37675	+465.3344 0.366330	+ 7.0737 1.3467
A MAR. 5 (0H)	Y:	+ 5.8939	- 0.42447	+ 18.0888 0.121593	+ 2.2841 3.2544
MAR. 1 (0H) (2449047.9)	X:	+ 5.5610	- 0.79446	+439.5245 1.365352	+ 5.0730 2.1764
A MAR.17 (0H)	Y:	+ 6.9281	- 1.02965	+ 23.5891 0.301791	+ 2.1528 2.8333
MAR.17 (0H) (2449063.9)	X:	-22.4151	+ 0.48368	+468.5492 2.617282	+ 9.4676 5.0436
A AVR. 2 (0H)	Y:	- 6.8899	+ 0.42223	+ 27.8649 2.295611	+ 2.1980 5.4433
AVR. 1 (0H) (2449078.9)	X:	-39.9056	+ 2.05091	+475.0652 3.709072	+ 9.5366 0.1188
A AVR.17 (0H)	Y:	+12.7229	- 2.25606	+ 28.3566 5.058523	+ 6.4013 1.7219
AVR.17 (0H) (2449094.9)	X:	-27.0055	+ 3.06850	+445.1438 4.942978	+ 4.6625 3.4051
A MAI 3 (0H)	Y:	-10.1697	+ 0.95266	+ 22.6616 3.979077	+ 1.6403 3.7858
MAI 1 (0H) (2449108.9)	X:	- 2.1084	+ 0.66743	+473.2802 6.115668	+ 9.4336 4.9296
A MAI 17 (0H)	Y:	- 2.2114	+ 0.95711	+ 16.6540 5.316585	+ 2.6450 5.0645
MAI 17 (0H) (2449124.9)	X:	- 6.6820	- 0.66205	+500.6749 1.080301	+ 4.0384 0.9758
A JUN. 2 (0H)	Y:	+25.3682	- 3.00783	+ 71.1276 6.120042	+ 6.8769 1.7847
JUN. 1 (0H) (2449139.9)	X:	-20.7818	- 0.80405	+507.0794 2.261595	+ 3.2810 4.1468
A JUN.17 (0H)	Y:	- 6.3090	+ 0.42858	+ 44.3137 1.868419	+ 1.0055 4.4392
JUN.17 (0H) (2449155.9)	X:	-33.0448	+ 2.12338	+549.6786 3.493655	+ 7.4766 0.0315
A JUL. 3 (0H)	Y:	+ 6.7113	- 0.12284	+ 39.8290 3.308619	+ 2.2770 0.7247

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 8 DE SATURNE: JAPET N=0.079

		AO	A1	BO FO	CO PO
JUL. 1 (OH) (2449169.9)	X:	- 9.7732	+ 1.03367	+538.8486 4.634332	+ 8.4080 2.7351
A JUL.17 (OH)	Y:	+22.5863	- 2.28081	+ 62.1822 4.929939	+ 5.6445 1.7850
JUL.17 (OH) (2449185.9)	X:	-17.4272	+ 0.61076	+537.6231 5.961976	+15.6187 4.8190
A AOU. 2 (OH)	Y:	-13.4886	+ 1.18163	+ 12.9952 5.745220	+ 4.6971 4.9982
AOU. 1 (OH) (2449200.9)	X:	-36.7943	+ 0.97821	+566.1060 0.908010	+ 8.4293 0.4062
A AOU.17 (OH)	Y:	- 9.2969	+ 1.17584	+ 27.3977 1.317448	+ 4.0362 6.0333
AOU.17 (OH) (2449216.9)	X:	-41.4008	+ 2.89247	+605.6136 2.188217	+ 7.2174 3.9008
A SEP. 2 (OH)	Y:	+ 9.4835	- 1.14294	+ 14.5077 1.243168	+ 4.3971 2.0438
SEP. 1 (OH) (2449231.9)	X:	-26.5215	+ 2.41426	+584.2201 3.317791	+ 8.7889 5.0806
A SEP.17 (OH)	Y:	-16.4559	+ 2.56881	+ 66.5910 2.824945	+ 6.8064 4.9252
SEP.17 (OH) (2449247.9)	X:	-15.2321	- 0.05844	+544.6204 4.654113	+ 4.4272 3.0712
A OCT. 3 (OH)	Y:	+10.3346	- 0.60440	+ 34.5442 4.792867	+ 2.0296 0.4883
OCT. 1 (OH) (2449261.9)	X:	-36.9463	+ 0.03752	+538.1803 5.808850	+ 9.2134 4.5471
A OCT.17 (OH)	Y:	+ 6.5505	- 1.20291	+ 41.5813 5.804568	+ 2.4381 1.7705
OCT.17 (OH) (2449277.9)	X:	-37.9097	+ 1.62715	+528.6365 0.812369	+ 7.6747 0.9857
A NOV. 2 (OH)	Y:	-25.5747	+ 3.02926	+ 55.1951 2.141644	+ 6.6869 5.0088
NOV. 1 (OH) (2449292.9)	X:	-15.4355	+ 1.16109	+525.3027 1.972711	+11.2309 3.2936
A NOV.17 (OH)	Y:	+ 0.7827	+ 0.22540	+ 21.2487 2.305970	+ 1.1512 5.4080
NOV.17 (OH) (2449308.9)	X:	+11.3668	- 2.76345	+459.0144 3.274358	+ 2.5870 5.1389
A DEC. 3 (OH)	Y:	- 4.3097	- 0.27777	+ 11.7702 2.999102	+ 1.0001 3.8630
DEC. 1 (OH) (2449322.9)	X:	+ 1.9915	- 3.36993	+492.9464 4.422949	+11.4637 1.5200
A DEC.17 (OH)	Y:	-24.7832	+ 2.26236	+ 40.3733 2.849474	+ 5.0121 4.9031
DEC.17 (OH) (2449338.9)	X:	- 2.6206	- 3.00747	+526.2753 5.578501	+ 8.2416 2.3630
A JAN. 2 (OH)	Y:	+ 3.4925	- 0.04871	+ 24.7872 5.178530	+ 1.3291 1.7994

SATELLITES D'URANUS

SATELLITES OF URANUS

DONNÉES SUR LES SATELLITES D'URANUS

DATA ON THE SATELLITES OF URANUS

NOM	masse	rayon	période rotation sidérale	albédo géométrique	magnitude visuelle	période orbitale	élongation maximale	1/2 grand axe	excentricité	inclinaison sur l'équateur d'Uranus
unité →	masse d'Uranus	km	jour			jour	(")	10^3 km		degré
I Ariel	1.49×10^{-5}	580		0.40	14.4	2.520 379 05	14	190.945	0.001 78	0.071
II Umbriel	1.45×10^{-5}	595		0.19	15.3	4.144 176 46	20	265.998	0.004 33	0.128
III Titania	3.97×10^{-5}	805		0.28	14.0	8.705 866 94	33	436.298	0.002 15	0.047
IV Oberon	3.45×10^{-5}	775	(S)	0.24	14.2	13.463 234 20	44	583.519	0.001 56	0.117
V Miranda	0.075×10^{-5}	242		0.34	16.5	1.413 479 41	10	129.872	0.001 52	4.339
NAME	*mass*	*radius*	*sidereal rotation*	*geometrical albedo*	*visual magnitude*	*orbital period*	*greatest elongation*	*semi major axis*	*eccentricity*	*inclination on Uranus' equator*
unit →	*Uranus' mass*	*km*	*day*			*day*	*(")*	*10^3 km*		*degree*

NOTES

(S) : rotation synchrone

Données extraites de *Science* (vol. 233, 1986, p. 41) pour les valeurs des rayons et des albédos, et de *Astronomy and Astrophysics* (vol. 188, 1987, p. 212 : GUST86, J. Laskar et R.A. Jacobson) pour les autres données.

(S) synchronous rotation

Data from Science (vol. 233, 1986, p. 41) for the values of the radii and the albedoes, and from Astronomy and Astrophysics (vol. 188, 1987, p. 212 : GUST86, J. Laskar and R.A. Jacobson) for the other data.

ÉPHÉMÉRIDES DES CINQ PREMIERS SATELLITES D'URANUS

EPHEMERIDES OF THE FIRST FIVE SATELLITES OF URANUS

Coordonnées différentielles tangentielles données en secondes de degré dans le repère équatorial moyen J2000. On a, au premier ordre :

Differential tangential coordinates given in arcsecond in the mean equatorial frame J2000. We have, at the first order :

$$\Delta\alpha \cos\delta = X$$
$$\Delta\delta = Y$$

$$\left.\begin{matrix} X \\ Y \end{matrix}\right\} = A0 + A1 \cdot t + B0 \sin(Nt + F0) + B1 \cdot t \sin(Nt + F1) + B2 \cdot t^2 \sin(Nt + F2) + C0 \sin(2Nt + P0)$$

où $t = T - T0$ avec $T0$ date du début de l'intervalle et T date du calcul

where $t = T - T0$ with $T0$ date of the beginning of the interval and T the date for the calculation

satellite	intervalle Δt (jours)	N (rad/j)	page
Miranda	9	4.488 0	84
Ariel	31	2.493 0	87
Umbriel	27	1.516 2	88
Titania	17	0.721 7	89
Obéron	22	0.466 7	91
	(days)	*(rad/d)*	

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 5 D'URANUS: MIRANDA N=4.4880

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN. 1 (0H) (2448988.5)	X:	-0.0016	-0.00007	+ 7.2070 5.620491	+0.31668 4.0287	+0.006682 2.2586	+0.0043 4.4789
A JAN.10 (0H)	Y:	-0.0137	-0.00059	+ 8.7095 0.889914	+0.38168 5.5991	+0.008097 3.8296	+0.0058 5.9074
JAN.10 (0H) (2448997.5)	X:	-0.0035	+0.00027	+ 7.1600 1.640012	+0.31502 0.0509	+0.006651 4.5508	+0.0046 2.8294
A JAN.19 (0H)	Y:	-0.0142	-0.00032	+ 8.7079 3.194618	+0.38123 1.6213	+0.007993 6.1320	+0.0056 4.1656
JAN.19 (0H) (2449006.5)	X:	-0.0042	+0.00029	+ 7.1189 3.943184	+0.31323 2.3602	+0.006720 0.5742	+0.0051 1.0817
A JAN.28 (0H)	Y:	-0.0184	+0.00056	+ 8.7148 5.499817	+0.37936 3.9295	+0.007960 2.1829	+0.0048 2.5791
JAN.28 (0H) (2449015.5)	X:	-0.0016	-0.00028	+ 7.0892 6.246713	+0.31084 4.6625	+0.006493 2.8877	+0.0045 5.6745
A FEV. 6 (0H)	Y:	-0.0178	+0.00026	+ 8.7300 1.522793	+0.38014 6.2388	+0.007961 4.4828	+0.0053 0.8952
FEV. 6 (0H) (2449024.5)	X:	+0.0000	-0.00051	+ 7.0673 2.267787	+0.30912 0.6879	+0.006500 5.2014	+0.0052 3.8516
A FEV.15 (0H)	Y:	-0.0153	-0.00030	+ 8.7538 3.829653	+0.38145 2.2679	+0.008103 0.5001	+0.0048 5.6869
FEV.15 (0H) (2449033.5)	X:	-0.0036	+0.00028	+ 7.0535 4.572831	+0.30802 2.9963	+0.006457 1.2296	+0.0044 2.2201
A FEV.24 (0H)	Y:	-0.0139	-0.00046	+ 8.7685 6.136830	+0.38050 4.5766	+0.008022 2.8382	+0.0055 3.9294
FEV.24 (0H) (2449042.5)	X:	-0.0047	+0.00039	+ 7.0494 0.595511	+0.30778 5.3051	+0.006421 3.5324	+0.0046 0.5413
A MAR. 5 (0H)	Y:	-0.0159	+0.00000	+ 8.8319 2.162020	+0.38316 0.6027	+0.008016 5.1303	+0.0054 2.2730
MAR. 5 (0H) (2449051.5)	X:	-0.0025	-0.00015	+ 7.0540 2.901730	+0.30595 1.3353	+0.006498 5.8735	+0.0037 5.1533
A MAR.14 (0H)	Y:	-0.0194	+0.00064	+ 8.8813 4.470775	+0.38492 2.9146	+0.008097 1.1591	+0.0064 0.5655
MAR.14 (0H) (2449060.5)	X:	-0.0013	-0.00035	+ 7.0704 5.209277	+0.30699 3.6428	+0.006384 1.8852	+0.0044 3.5504
A MAR.23 (0H)	Y:	-0.0167	-0.00007	+ 8.9388 0.496804	+0.38606 5.2235	+0.008036 3.4819	+0.0056 5.0750
MAR.23 (0H) (2449069.5)	X:	-0.0018	-0.00016	+ 7.0940 1.234321	+0.30824 5.9558	+0.006445 4.1677	+0.0038 1.9977
A AVR. 1 (0H)	Y:	-0.0134	-0.00072	+ 8.9994 2.806487	+0.38817 1.2551	+0.008239 5.7968	+0.0066 3.3701
AVR. 1 (0H) (2449078.5)	X:	-0.0049	+0.00043	+ 7.1274 3.542813	+0.30770 1.9855	+0.006470 0.2455	+0.0045 0.3032
A AVR.10 (0H)	Y:	-0.0158	-0.00006	+ 9.0671 5.116673	+0.39031 3.5638	+0.008180 1.8281	+0.0056 1.6591
AVR.10 (0H) (2449087.5)	X:	-0.0048	+0.00027	+ 7.1704 5.852516	+0.30991 4.2961	+0.006453 2.5462	+0.0044 4.8639
A AVR.19 (0H)	Y:	-0.0182	+0.00038	+ 9.1361 1.144449	+0.39444 5.8743	+0.008236 4.1218	+0.0058 0.0737
AVR.19 (0H) (2449096.5)	X:	-0.0014	-0.00049	+ 7.2197 1.879270	+0.31099 0.3260	+0.006483 4.8717	+0.0051 3.2213
A AVR.28 (0H)	Y:	-0.0185	+0.00027	+ 9.2041 3.455084	+0.39621 1.9070	+0.008491 0.1654	+0.0049 4.6070
AVR.28 (0H) (2449105.5)	X:	-0.0021	-0.00023	+ 7.2762 4.189993	+0.31309 2.6383	+0.006536 0.9016	+0.0047 1.3923
A MAI 7 (0H)	Y:	-0.0157	-0.00037	+ 9.2781 5.766252	+0.39938 4.2121	+0.008332 2.4685	+0.0058 3.1038

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 5 D'URANUS: MIRANDA N=4.4880

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
MAI 7 (OH)	X:	-0.0047	+0.00032	+ 7.3351	+0.31594	+0.006734	+0.0052
(2449114.5)				0.217923	4.9550	3.2098	6.0297
A MAI 16 (OH)	Y:	-0.0136	-0.00067	+ 9.3465	+0.40270	+0.008409	+0.0051
				1.794360	0.2395	4.7750	1.4779
MAI 16 (OH)	X:	-0.0055	+0.00033	+ 7.4014	+0.31764	+0.006678	+0.0048
(2449123.5)				2.529149	0.9812	5.5336	4.2831
A MAI 25 (OH)	Y:	-0.0180	+0.00034	+ 9.4106	+0.40455	+0.008552	+0.0058
				4.105292	2.5511	0.8122	6.1088
MAI 25 (OH)	X:	-0.0043	-0.00003	+ 7.4694	+0.32161	+0.006706	+0.0045
(2449132.5)				4.841251	3.2910	1.5442	2.7177
A JUN. 3 (OH)	Y:	-0.0198	+0.00057	+ 9.4706	+0.40814	+0.008632	+0.0061
				0.133366	4.8598	3.1108	4.3542
JUN. 3 (OH)	X:	-0.0018	-0.00050	+ 7.5340	+0.32427	+0.006873	+0.0043
(2449141.5)				0.869711	5.6056	3.8598	0.9720
A JUN.12 (OH)	Y:	-0.0165	-0.00027	+ 9.5219	+0.40927	+0.008692	+0.0066
				2.444000	0.8860	5.4356	2.7285
JUN.12 (OH)	X:	-0.0039	+0.00001	+ 7.6007	+0.32667	+0.006838	+0.0045
(2449150.5)				3.181343	1.6296	6.1736	5.7725
A JUN.21 (OH)	Y:	-0.0150	-0.00047	+ 9.5669	+0.41261	+0.008743	+0.0066
				4.754796	3.1928	1.4399	0.9184
JUN.21 (OH)	X:	-0.0073	+0.00063	+ 7.6613	+0.32907	+0.006936	+0.0044
(2449159.5)				5.492855	3.9399	2.2088	4.1210
A JUN.30 (OH)	Y:	-0.0158	-0.00013	+ 9.5977	+0.41556	+0.008915	+0.0065
				0.782060	5.5026	3.7346	5.5051
JUN.30 (OH)	X:	-0.0055	+0.00004	+ 7.7151	+0.33178	+0.007019	+0.0046
(2449168.5)				1.520768	6.2491	4.5121	2.4442
A JUL. 9 (OH)	Y:	-0.0193	+0.00053	+ 9.6206	+0.41558	+0.008827	+0.0065
				3.091604	1.5240	6.0529	3.8174
JUL. 9 (OH)	X:	-0.0034	-0.00037	+ 7.7610	+0.33530	+0.007164	+0.0053
(2449177.5)				3.831778	2.2745	0.5198	0.7337
A JUL.18 (OH)	Y:	-0.0195	+0.00042	+ 9.6333	+0.41725	+0.008806	+0.0055
				5.401166	3.6278	2.0640	2.1622
JUL.18 (OH)	X:	-0.0038	-0.00018	+ 7.7968	+0.33623	+0.007235	+0.0052
(2449186.5)				6.141683	4.5822	2.8440	5.3233
A JUL.27 (OH)	Y:	-0.0145	-0.00060	+ 9.6292	+0.41761	+0.008826	+0.0057
				1.426740	6.1341	4.3702	0.5076
JUL.27 (OH)	X:	-0.0061	+0.00026	+ 7.8243	+0.33899	+0.007215	+0.0054
(2449195.5)				2.168072	0.6020	5.1249	3.5892
A AOU. 5 (OH)	Y:	-0.0147	-0.00033	+ 9.6148	+0.41751	+0.008844	+0.0054
				3.734893	2.1557	0.3677	5.2219
AOU. 5 (OH)	X:	-0.0082	+0.00053	+ 7.8376	+0.34091	+0.007281	+0.0052
(2449204.5)				4.476942	2.9069	1.1365	1.7844
A AOU.14 (OH)	Y:	-0.0186	+0.00054	+ 9.5877	+0.41594	+0.008941	+0.0055
				6.042289	4.4624	2.7068	3.6316
AOU.14 (OH)	X:	-0.0050	-0.00023	+ 7.8389	+0.34083	+0.007251	+0.0053
(2449213.5)				0.501380	5.2096	3.4480	0.2158
A AOU.23 (OH)	Y:	-0.0188	+0.00043	+ 9.5505	+0.41560	+0.008824	+0.0056
				2.066041	0.4815	4.9969	1.8690
AOU.23 (OH)	X:	-0.0031	-0.00053	+ 7.8284	+0.34108	+0.007314	+0.0045
(2449222.5)				2.808324	1.2300	5.7472	4.7040
A SEP. 1 (OH)	Y:	-0.0167	-0.00002	+ 9.5032	+0.41599	+0.008892	+0.0064
				4.372613	2.7860	0.9973	0.2556
SEP. 1 (OH)	X:	-0.0065	+0.00024	+ 7.8054	+0.34040	+0.007237	+0.0045
(2449231.5)				5.114380	3.5307	1.7703	3.1641
A SEP.10 (OH)	Y:	-0.0137	-0.00049	+ 9.4467	+0.41265	+0.008866	+0.0062
				0.394736	5.0903	3.3205	4.7307

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 5 D'URANUS: MIRANDA N=4.4880

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
SEP.10 (OH) (2449240.5)	X:	-0.0079	+0.00041	+ 7.7707 1.136607	+0.34060 5.8329	+0.007269 4.0519	+0.0043 1.4779
A SEP.19 (OH)	Y:	-0.0153	-0.00001	+ 9.3856 2.699697	+0.41147 1.1081	+0.008739 5.6067	+0.0063 3.0723
SEP.19 (OH) (2449249.5)	X:	-0.0066	+0.00003	+ 7.7245 3.440791	+0.33856 1.8550	+0.007391 0.0818	+0.0043 6.2625
A SEP.28 (OH)	Y:	-0.0195	+0.00084	+ 9.3189 5.004011	+0.40887 3.4106	+0.008672 1.6288	+0.0065 1.2038
SEP.28 (OH) (2449258.5)	X:	-0.0045	-0.00036	+ 7.6728 5.744465	+0.33707 4.1516	+0.007195 2.3750	+0.0045 4.4220
A OCT. 7 (OH)	Y:	-0.0168	+0.00014	+ 9.2477 1.024535	+0.40585 5.7129	+0.008576 3.9353	+0.0058 5.9718
OCT. 7 (OH) (2449267.5)	X:	-0.0042	-0.00032	+ 7.6127 1.764439	+0.33605 0.1686	+0.007167 4.6566	+0.0049 2.8669
A OCT.16 (OH)	Y:	-0.0133	-0.00050	+ 9.1730 3.327872	+0.40359 1.7367	+0.008699 6.2337	+0.0055 4.0964
OCT.16 (OH) (2449276.5)	X:	-0.0079	+0.00044	+ 7.5456 4.066449	+0.33247 2.4704	+0.007147 0.6902	+0.0051 1.0134
A OCT.25 (OH)	Y:	-0.0143	-0.00009	+ 9.1026 5.630673	+0.39953 4.0369	+0.008484 2.2673	+0.0050 2.5833
OCT.25 (OH) (2449285.5)	X:	-0.0081	+0.00034	+ 7.4748 0.085096	+0.33045 4.7700	+0.007073 2.9775	+0.0048 5.6266
A NOV. 3 (OH)	Y:	-0.0163	+0.00036	+ 9.0330 1.650489	+0.39819 0.0561	+0.008403 4.5493	+0.0052 0.8758
NOV. 3 (OH) (2449294.5)	X:	-0.0045	-0.00046	+ 7.4018 2.366153	+0.32656 0.7871	+0.006990 5.2903	+0.0054 3.8127
A NOV.12 (OH)	Y:	-0.0176	+0.00054	+ 8.9634 3.952906	+0.39507 2.3643	+0.008517 0.5766	+0.0046 5.6557
NOV.12 (OH) (2449303.5)	X:	-0.0045	-0.00031	+ 7.3276 4.687228	+0.32369 3.0865	+0.006887 1.3020	+0.0043 2.2117
A NOV.21 (OH)	Y:	-0.0143	-0.00017	+ 8.9043 6.255364	+0.39182 4.6638	+0.008262 2.8861	+0.0054 3.8379
NOV.21 (OH) (2449312.5)	X:	-0.0064	+0.00013	+ 7.2505 0.705119	+0.32184 5.3914	+0.006965 3.5860	+0.0045 0.4036
A NOV.30 (OH)	Y:	-0.0116	-0.00061	+ 8.8487 2.274808	+0.38941 0.6851	+0.008205 5.1905	+0.0054 2.2482
NOV.30 (OH) (2449321.5)	X:	-0.0078	+0.00034	+ 7.1793 3.005488	+0.31703 1.4067	+0.006764 5.9085	+0.0039 5.0971
A DEC. 9 (OH)	Y:	-0.0152	+0.00029	+ 8.7990 4.577370	+0.38638 2.9915	+0.008196 1.2213	+0.0061 0.4728
DEC. 9 (OH) (2449330.5)	X:	-0.0069	+0.00004	+ 7.1107 5.306481	+0.31461 3.7066	+0.006646 1.9145	+0.0041 3.4798
A DEC.18 (OH)	Y:	-0.0168	+0.00056	+ 8.7576 0.597474	+0.38541 5.2968	+0.008173 3.5139	+0.0056 4.9920
DEC.18 (OH) (2449339.5)	X:	-0.0037	-0.00056	+ 7.0430 1.324216	+0.31182 6.0116	+0.006647 4.2150	+0.0035 1.8605
A DEC.27 (OH)	Y:	-0.0145	-0.00005	+ 8.7237 2.900537	+0.38202 1.3215	+0.008157 5.8424	+0.0064 3.3020
DEC.27 (OH) (2449348.5)	X:	-0.0052	-0.00010	+ 6.9837 3.625236	+0.30813 2.0288	+0.006493 0.2457	+0.0042 0.1499
A JAN. 5 (OH)	Y:	-0.0124	-0.00039	+ 8.7019 5.204567	+0.38107 3.6257	+0.008040 1.8572	+0.0053 1.5754

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 D'URANUS: ARIEL N=2.4930

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN. 1 (0H) (2448988.5)	X:	+0.0280	-0.00003	+11.0148 5.715408	+0.00992 3.1485	+0.000082 6.0846	+0.0100 0.4597
A FEV. 1 (0H)	Y:	+0.0014	+0.00000	+12.7765 0.958353	+0.00473 5.4193	+0.000092 1.2204	+0.0108 1.8743
FEV. 1 (0H) (2449019.5)	X:	+0.0264	+0.00003	+10.8315 1.304253	+0.00526 5.2789	+0.000092 1.7445	+0.0096 4.1487
A MAR. 4 (0H)	Y:	+0.0017	+0.00000	+12.8247 2.533923	+0.00519 2.2635	+0.000082 3.2995	+0.0114 5.7828
MAR. 4 (0H) (2449050.5)	X:	+0.0264	+0.00000	+10.8021 3.181196	+0.00236 2.5008	+0.000085 3.5710	+0.0093 1.7085
A AVR. 4 (0H)	Y:	+0.0000	+0.00009	+13.0298 4.714743	+0.00896 4.6574	+0.000056 5.3867	+0.0111 3.2058
AVR. 4 (0H) (2449081.5)	X:	+0.0280	-0.00005	+10.9344 5.064534	+0.00691 5.1677	+0.000063 5.5169	+0.0088 5.3832
A MAI 5 (0H)	Y:	+0.0007	+0.00000	+13.3475 0.317588	+0.01182 0.4535	+0.000021 2.1519	+0.0120 0.7650
MAI 5 (0H) (2449112.5)	X:	+0.0283	+0.00000	+11.1996 0.670970	+0.01061 0.8969	+0.000029 2.0124	+0.0096 3.0616
A JUN. 5 (0H)	Y:	+0.0013	-0.00003	+13.7034 2.207441	+0.01181 2.4521	+0.000064 5.2751	+0.0116 4.3438
JUN. 5 (0H) (2449143.5)	X:	+0.0290	-0.00001	+11.5244 2.564321	+0.01131 2.8951	+0.000060 5.8251	+0.0105 0.3091
A JUL. 6 (0H)	Y:	+0.0009	-0.00003	+13.9969 4.098713	+0.00842 4.5400	+0.000107 1.2023	+0.0109 2.0796
JUL. 6 (0H) (2449174.5)	X:	+0.0295	+0.00000	+11.7975 4.458207	+0.00752 4.8927	+0.000111 1.5943	+0.0091 4.2113
A AOU. 6 (0H)	Y:	+0.0017	-0.00010	+14.1340 5.989717	+0.00233 0.8546	+0.000109 3.0891	+0.0125 5.6967
AOU. 6 (0H) (2449205.5)	X:	+0.0281	+0.00006	+11.9072 0.065505	+0.00125 1.5437	+0.000120 3.6039	+0.0097 1.6612
A SEP. 6 (0H)	Y:	+0.0009	-0.00004	+14.0622 1.594149	+0.00588 4.7170	+0.000084 5.1555	+0.0111 3.2016
SEP. 6 (0H) (2449236.5)	X:	+0.0281	+0.00000	+11.8066 1.949772	+0.00709 5.3146	+0.000082 5.5933	+0.0091 5.4056
A OCT. 7 (0H)	Y:	-0.0011	+0.00003	+13.8066 3.476653	+0.01073 0.5346	+0.000049 1.2977	+0.0111 0.5693
OCT. 7 (0H) (2449267.5)	X:	+0.0284	-0.00005	+11.5251 3.827117	+0.01236 1.0393	+0.000026 1.3492	+0.0100 2.7992
A NOV. 7 (0H)	Y:	-0.0006	-0.00002	+13.4554 5.353752	+0.01283 2.5679	+0.000033 4.7070	+0.0103 4.3760
NOV. 7 (0H) (2449298.5)	X:	+0.0265	+0.00001	+11.1469 5.698606	+0.01412 2.9703	+0.000015 5.6051	+0.0087 0.2171
A DEC. 8 (0H)	Y:	-0.0007	-0.00002	+13.1093 0.943459	+0.01159 4.6033	+0.000063 1.0321	+0.0112 1.8918
DEC. 8 (0H) (2449329.5)	X:	+0.0260	-0.00001	+10.7626 1.283683	+0.01304 4.8795	+0.000048 1.4243	+0.0083 4.1129
A JAN. 8 (0H)	Y:	-0.0015	+0.00002	+12.8600 2.814894	+0.00830 0.4064	+0.000093 3.0920	+0.0111 5.4825

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 2 D'URANUS: UMBRIEL N=1.5162

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN. 1 (OH) (2448986.5)	X:	+0.0497	+0.00071	+15.3355 3.166430	+0.01403 0.6213	+0.000117 3.5652	+0.0272 2.3270
A JAN.28 (OH)	Y:	+0.0624	-0.00003	+17.7990 4.693700	+0.00748 2.9376	+0.000129 5.1234	+0.0302 3.8430
JAN.28 (OH) (2449015.5)	X:	+0.0724	-0.00023	+15.0975 0.109509	+0.00792 4.1038	+0.000099 0.4599	+0.0315 2.5322
A FEV.24 (OH)	Y:	+0.0653	+0.00095	+17.8482 1.639489	+0.00618 0.9057	+0.000127 1.7579	+0.0363 4.0537
FEV.24 (OH) (2449042.5)	X:	+0.0603	-0.00053	+15.0255 3.338848	+0.00432 2.0119	+0.000104 3.7363	+0.0293 2.8274
A MAR.26 (OH)	Y:	+0.0910	-0.00049	+18.0629 4.872377	+0.01091 4.6122	+0.000098 5.2451	+0.0349 4.3545
MAR.26 (OH) (2449069.5)	X:	+0.0445	+0.00077	+15.1281 0.288371	+0.00693 0.0550	+0.000109 0.5948	+0.0266 2.8913
A AVR.19 (OH)	Y:	+0.0717	-0.00040	+18.4122 1.824598	+0.01515 1.8081	+0.000024 2.3967	+0.0310 4.4294
AVR.19 (OH) (2449096.5)	X:	+0.0692	+0.00015	+15.3846 3.525456	+0.01206 3.6031	+0.000073 4.1320	+0.0318 3.0627
A MAI 16 (OH)	Y:	+0.0653	+0.00095	+18.8367 5.063341	+0.01675 5.1046	+0.000069 1.0804	+0.0382 4.5932
MAI 16 (OH) (2449123.5)	X:	+0.0698	-0.00071	+15.7526 0.483905	+0.01511 0.7231	+0.000010 2.3668	+0.0319 3.3982
A JUN.12 (OH)	Y:	+0.0960	-0.00027	+19.2535 2.021396	+0.01482 2.1430	+0.000120 4.7760	+0.0388 4.9040
JUN.12 (OH) (2449150.5)	X:	+0.0493	+0.00056	+16.1425 3.728604	+0.01460 4.0040	+0.000095 0.5529	+0.0276 3.5388
A JUL. 9 (OH)	Y:	+0.0827	-0.00076	+19.5663 5.263400	+0.00966 5.6559	+0.000157 2.3262	+0.0336 5.0360
JUL. 9 (OH) (2449177.5)	X:	+0.0712	+0.00039	+16.4492 0.690585	+0.00952 1.0235	+0.000159 3.8030	+0.0323 3.6488
A AOU. 5 (OH)	Y:	+0.0625	+0.00087	+19.6950 2.222457	+0.00288 3.6444	+0.000150 5.5645	+0.0390 5.1552
AOU. 5 (OH) (2449204.5)	X:	+0.0804	-0.00083	+16.5795 3.933913	+0.00266 5.3508	+0.000164 1.1621	+0.0341 3.9682
A SEP. 1 (OH)	Y:	+0.0901	+0.00008	+19.5978 5.463394	+0.00806 2.0171	+0.000149 2.9522	+0.0400 5.4623
SEP. 1 (OH) (2449231.5)	X:	+0.0536	+0.00023	+16.4796 0.890810	+0.00790 4.1204	+0.000132 4.4015	+0.0281 4.1516
A SEP.28 (OH)	Y:	+0.0858	-0.00097	+19.3080 2.418848	+0.01429 5.6663	+0.000063 0.0381	+0.0328 5.6468
SEP.28 (OH) (2449258.5)	X:	+0.0645	+0.00058	+16.1797 4.125527	+0.01442 1.1749	+0.000094 1.6949	+0.0298 4.1960
A OCT.25 (OH)	Y:	+0.0576	+0.00055	+18.8962 5.653411	+0.01796 2.7825	+0.000042 5.7666	+0.0359 5.7139
OCT.25 (OH) (2449285.5)	X:	+0.0788	-0.00072	+15.7476 1.073129	+0.01835 4.5002	+0.000039 5.7290	+0.0319 4.4644
A NOV.21 (OH)	Y:	+0.0786	+0.00034	+18.4566 2.601428	+0.01661 6.0880	+0.000072 2.3642	+0.0385 5.9953
NOV.21 (OH) (2449312.5)	X:	+0.0538	-0.00013	+15.2708 4.300815	+0.01938 1.5834	+0.000049 4.6770	+0.0259 4.6873
A DEC.18 (OH)	Y:	+0.0861	-0.00100	+18.0850 5.830694	+0.01347 3.2373	+0.000095 5.9464	+0.0322 6.2253
DEC.18 (OH) (2449339.5)	X:	+0.0542	+0.00059	+14.8303 1.242090	+0.01737 4.8485	+0.000092 1.4117	+0.0264 4.7089
A JAN.14 (OH)	Y:	+0.0571	+0.00022	+17.8412 2.775596	+0.00823 0.4902	+0.000095 2.8742	+0.0330 6.2490

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 3 D'URANUS: TITANIA N=0.7217

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN. 1 (OH) (2448988.5)	X:	-0.0436	+0.00033	+25.1439 5.279833	+0.01969 2.4737	+0.000199 4.7461	+0.0224 1.7113
A JAN.18 (OH)	Y:	+0.0619	+0.00034	+29.1915 0.522202	+0.00496 4.6018	+0.000297 6.2239	+0.0266 3.2452
JAN.18 (OH) (2449005.5)	X:	-0.0523	-0.00155	+24.8850 4.978643	+0.02553 2.8111	+0.000630 6.2498	+0.0288 1.3728
A FEV. 4 (OH)	Y:	+0.0408	+0.00298	+29.2283 0.221948	+0.01437 4.8376	+0.000629 0.7901	+0.0323 2.9103
FEV. 4 (OH) (2449022.5)	X:	-0.0684	-0.00011	+24.7012 4.672951	+0.00934 2.2197	+0.000199 4.6873	+0.0299 0.6730
A FEV.21 (OH)	Y:	+0.0970	-0.00281	+29.3144 6.202183	+0.01632 6.2155	+0.000318 4.3258	+0.0355 2.2531
FEV.21 (OH) (2449039.5)	X:	-0.0967	-0.00010	+24.6352 4.370251	+0.00421 2.7921	+0.000196 4.1145	+0.0350 0.4235
A MAR.10 (OH)	Y:	+0.0461	+0.00076	+29.5753 5.901826	+0.01612 5.7445	+0.000195 5.9014	+0.0429 1.9417
MAR.10 (OH) (2449056.5)	X:	-0.0893	+0.00029	+24.6831 4.070769	+0.01693 2.9905	+0.000621 5.5456	+0.0285 0.0197
A MAR.27 (OH)	Y:	+0.0447	-0.00238	+29.9074 5.604199	+0.02647 5.0046	+0.000703 0.8592	+0.0340 1.5365
MAR.27 (OH) (2449073.5)	X:	-0.1095	+0.00256	+24.8287 3.769150	+0.01778 3.9721	+0.000335 1.9751	+0.0292 5.7032
A AVR.13 (OH)	Y:	+0.0299	-0.00076	+30.2851 5.303436	-0.02942 5.6781	+0.000616 3.6586	+0.0350 0.9504
AVR.13 (OH) (2449090.5)	X:	-0.0584	-0.00095	+25.1145 3.471071	+0.01639 3.5132	+0.000247 3.8318	+0.0204 5.3201
A AVR.30 (OH)	Y:	+0.0026	+0.00006	+30.7372 5.007108	+0.02714 5.0283	+0.000127 0.7140	+0.0255 0.5703
AVR.30 (OH) (2449107.5)	X:	-0.0710	+0.00286	+25.4403 3.175412	+0.02742 3.0347	+0.000499 5.3021	+0.0169 4.1955
A MAI 17 (OH)	Y:	+0.0261	+0.00074	+31.1683 4.710838	+0.02582 4.5964	+0.000464 0.1872	+0.0214 5.6658
MAI 17 (OH) (2449124.5)	X:	-0.0406	-0.00099	+25.8495 2.879517	+0.02636 3.2754	+0.000335 1.3065	+0.0188 3.6351
A JUN. 3 (OH)	Y:	+0.0192	+0.00202	+31.5954 4.414372	+0.02925 5.0106	+0.000812 2.6830	+0.0227 5.1255
JUN. 3 (OH) (2449141.5)	X:	-0.0422	-0.00023	+26.2644 2.586282	+0.02386 2.8052	+0.000210 4.5203	+0.0237 2.6338
A JUN.20 (OH)	Y:	+0.0736	-0.00035	+31.9514 4.120251	+0.01820 4.3726	+0.000264 0.3293	+0.0293 4.1505
JUN.20 (OH) (2449158.5)	X:	-0.0812	+0.00004	+26.6340 2.292481	+0.02522 2.8185	+0.000260 6.0596	+0.0357 2.2695
A JUL. 7 (OH)	Y:	+0.0657	+0.00210	+32.1882 3.825877	+0.01275 4.1570	+0.000434 0.1627	+0.0423 3.8217
JUL. 7 (OH) (2449175.5)	X:	-0.0649	-0.00249	+26.9474 2.001959	+0.01714 2.5683	+0.000296 6.0448	+0.0311 1.8102
A JUL.24 (OH)	Y:	+0.1117	-0.00521	+32.3332 3.532103	+0.01242 5.7976	+0.000459 2.8058	+0.0393 3.3532
JUL.24 (OH) (2449192.5)	X:	-0.1134	+0.00061	+27.1350 1.708881	+0.00963 2.5688	+0.000220 4.6151	+0.0389 1.3839
A AOU.10 (OH)	Y:	+0.0584	-0.00012	+32.2602 3.238046	+0.00837 5.8351	+0.000276 5.8030	+0.0460 2.8985
AOU.10 (OH) (2449209.5)	X:	-0.0956	-0.00031	+27.1783 1.414917	+0.00920 3.1784	+0.000306 5.1878	+0.0321 1.1095
A AOU.27 (OH)	Y:	+0.0158	-0.00033	+32.0746 2.942408	+0.01803 5.5166	+0.000294 0.8777	+0.0371 2.6309

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 3 D'URANUS: TITANIA N=0.7217

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
AOU.27 (OH) (2449226.5)	X:	-0.1043	+0.00363	+27.0842 1.122196	+0.01160 4.4022	+0.000171 3.9033	+0.0242 0.3037
A SEP.13 (OH)	Y:	+0.0455	-0.00305	+31.8076 2.649263	+0.03129 6.0530	+0.000578 3.5341	+0.0281 1.9071
SEP.13 (OH) (2449243.5)	X:	-0.0582	-0.00082	+26.8295 0.825120	+0.01577 3.9584	+0.000336 3.8592	+0.0208 6.2249
A SEP.30 (OH)	Y:	-0.0066	+0.00194	+31.3712 2.350620	+0.02554 5.2736	+0.000282 0.6805	+0.0255 1.4550
SEP.30 (OH) (2449260.5)	X:	-0.0419	+0.00039	+26.4799 0.526610	+0.02433 3.6067	+0.000224 4.9491	+0.0161 4.9899
A OCT.17 (OH)	Y:	+0.0423	-0.00043	+30.9301 2.052747	+0.02669 5.1440	+0.000207 0.4729	+0.0183 0.2031
OCT.17 (OH) (2449277.5)	X:	-0.0547	+0.00017	+26.0516 0.228943	+0.03217 3.7889	+0.000390 1.7126	+0.0251 4.3622
A NOV. 3 (OH)	Y:	+0.0435	+0.00205	+30.4841 1.756050	+0.03214 5.5316	+0.000690 3.3608	+0.0289 5.8636
NOV. 3 (OH) (2449294.5)	X:	-0.0273	-0.00269	+25.5361 6.209188	+0.02343 3.0093	+0.000581 4.1636	+0.0244 3.6980
A NOV.20 (OH)	Y:	+0.0706	-0.00079	+30.0460 1.453367	+0.02288 4.5983	+0.000335 0.0683	+0.0276 5.2046
NOV.20 (OH) (2449311.5)	X:	-0.0837	+0.00084	+25.0734 5.907367	+0.03144 3.0211	+0.000142 5.9526	+0.0337 3.1994
A DEC. 7 (OH)	Y:	+0.0726	+0.00056	+29.6799 1.152423	+0.01992 4.5183	+0.000203 0.5812	+0.0399 4.7358
DEC. 7 (OH) (2449328.5)	X:	-0.0708	-0.00217	+24.5876 5.604951	+0.02866 3.0280	+0.000319 1.1318	+0.0315 2.9095
A DEC.24 (OH)	Y:	+0.0662	-0.00224	+29.3949 0.852330	+0.02209 4.9992	+0.000682 2.4349	+0.0378 4.4237
DEC.24 (OH) (2449345.5)	X:	-0.0940	+0.00061	+24.1571 5.299424	+0.02095 2.2421	+0.000552 3.7432	+0.0310 2.3046
A JAN.10 (OH)	Y:	+0.0631	-0.00226	+29.2021 0.549073	+0.00582 3.3062	+0.000616 5.4847	+0.0372 3.8191

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 4 D'URANUS: OBERON N=0.4667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN. 1 (0H) (2448988.5)	X:	-0.0923	+0.00075	+33.6755 5.074562	+0.02862 2.5132	+0.000170 5.3314	+0.0283 2.6634
A JAN.23 (0H)	Y:	-0.0191	-0.00182	+39.0194 0.316697	+0.01255 5.0736	+0.000130 6.1123	+0.0336 4.2260
JAN.23 (0H) (2449010.5)	X:	-0.0387	-0.00049	+33.2546 2.767436	+0.02604 0.4670	+0.000390 3.5173	+0.0230 4.9380
A FEV.14 (0H)	Y:	-0.0515	-0.00107	+39.0998 4.294023	+0.01238 3.2511	+0.000370 4.3315	+0.0252 0.1540
FEV.14 (0H) (2449032.5)	X:	-0.0511	+0.00362	+33.0626 0.458640	+0.01676 4.2080	+0.000670 0.5526	+0.0109 1.0333
A MAR. 8 (0H)	Y:	-0.0720	+0.00335	+39.4229 1.988634	+0.01279 1.9613	+0.000635 1.5061	+0.0143 2.3788
MAR. 8 (0H) (2449054.5)	X:	+0.0086	-0.00121	+33.0713 4.435375	+0.00471 4.6182	+0.000452 3.8239	+0.0026 5.6196
A MAR.30 (0H)	Y:	+0.0155	-0.00077	+39.8945 5.967621	+0.03262 0.0828	+0.000744 4.6751	+0.0043 0.1477
MAR.30 (0H) (2449076.5)	X:	-0.0072	-0.00277	+33.3115 2.132831	+0.02442 2.1645	+0.000103 6.0766	+0.0132 1.7629
A AVR.21 (0H)	Y:	-0.0302	+0.00580	+40.5329 3.667649	+0.05297 3.7881	+0.000813 1.0394	+0.0177 3.3069
AVR.21 (0H) (2449098.5)	X:	-0.0589	-0.00049	+33.8552 6.116943	+0.03187 5.8863	+0.000530 1.6179	+0.0227 3.9653
A MAI 13 (0H)	Y:	+0.1022	-0.00650	+41.3247 1.370140	+0.05303 1.2098	+0.000937 4.0732	+0.0286 5.4808
MAI 13 (0H) (2449120.5)	X:	-0.0713	-0.00190	+34.5299 3.819514	+0.02647 3.7138	+0.000588 4.9472	-0.0282 6.0902
A JUN. 4 (0H)	Y:	-0.0130	+0.00009	+42.1604 5.355568	+0.03302 4.9595	+0.000834 0.9187	+0.0357 1.4102
JUN. 4 (0H) (2449142.5)	X:	-0.1230	+0.00418	+35.2494 1.523602	+0.02339 1.8808	+0.000349 1.9080	+0.0300 2.0439
A JUN.26 (0H)	Y:	-0.0348	-0.00156	+42.7811 3.058169	+0.01738 3.0655	+0.000287 4.7640	+0.0335 3.5839
JUN.26 (0H) (2449164.5)	X:	-0.0302	-0.00064	+35.8442 5.513528	+0.02817 6.0259	+0.000281 3.3021	+0.0218 4.3415
A JUL.18 (0H)	Y:	-0.0742	+0.00057	+43.1231 0.762421	+0.01133 1.2279	+0.000361 3.8320	+0.0263 5.7815
JUL.18 (0H) (2449186.5)	X:	-0.0084	+0.00052	+36.2710 3.221239	+0.01703 3.7554	+0.000398 0.2820	+0.0081 0.4452
A AOU. 9 (0H)	Y:	-0.0516	+0.00229	+43.1674 4.750715	+0.00373 0.2084	+0.000544 1.5940	+0.0111 2.0259
AOU. 9 (0H) (2449208.5)	X:	-0.0079	-0.00034	+36.4109 0.927474	+0.00616 2.8611	+0.000320 4.2455	+0.0080 5.1623
A AOU.31 (0H)	Y:	+0.0260	-0.00003	+42.9111 2.455308	+0.01767 5.5654	+0.000355 5.3807	+0.0108 0.3230
AOU.31 (0H) (2449230.5)	X:	-0.0306	-0.00236	+36.2171 4.914742	+0.02118 1.4813	+0.000239 3.0223	+0.0211 1.2564
A SEP.22 (0H)	Y:	+0.0120	+0.00257	+42.4215 0.157650	+0.03957 3.2547	+0.000231 0.1873	+0.0252 2.8104
SEP.22 (0H) (2449252.5)	X:	-0.0944	+0.00079	+35.7037 2.615041	+0.03351 5.3811	+0.000632 1.0692	+0.0283 3.4934
A OCT.14 (0H)	Y:	+0.0652	-0.00461	+41.6937 4.141022	+0.04761 0.7812	+0.000681 3.3551	+0.0335 5.0232
OCT.14 (0H) (2449274.5)	X:	-0.0445	-0.00364	+34.9199 0.314822	+0.02349 3.1054	+0.000967 4.3545	+0.0293 5.6288
A NOV. 5 (0H)	Y:	-0.0228	-0.00124	+40.8477 1.840037	+0.03666 4.7492	+0.000566 0.4987	+0.0334 0.9558

1993 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 4 D'URANUS: OBERON N=0.4667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
NOV. 5 (0H) (2449296.5)	X:	-0.1385	+0.00743	+34.0834 4.296601	+0.02474 1.7056	+0.000796 1.1566	+0.0256 1.5673
A NOV.27 (0H)	Y:	-0.0522	+0.00006	+40.0928 5.822411	+0.02526 3.0782	+0.000224 2.2905	+0.0265 3.0121
NOV.27 (0H) (2449318.5)	X:	+0.0017	-0.00203	+33.3095 1.991674	+0.04286 5.8420	+0.000679 3.9239	+0.0138 3.8094
A DEC.19 (0H)	Y:	-0.0436	-0.00058	+39.5512 3.518860	+0.03562 0.9667	+0.000733 4.4112	+0.0198 5.1872
DEC.19 (0H) (2449340.5)	X:	-0.0118	+0.00056	+32.5617 5.965873	+0.04309 3.3176	+0.000490 0.4112	+0.0029 6.1964
A JAN.10 (0H)	Y:	-0.0719	+0.00588	+39.1870 1.213143	+0.03119 4.8209	+0.000982 1.5339	+0.0054 1.9160

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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 pour 1993 avec une précision de 0.01 seconde de degré ('). Elles sont ainsi très utiles aux astronomes pour préparer ou réduire des observations de haute précision ainsi que pour étudier les mouvements des satellites naturels des planètes.

Les positions sont données sous forme de coefficients de fonctions élémentaires dépendant directement du temps. Les calculs sont faciles à programmer sur une calculatrice de poche ou sur un micro-ordinateur.

Cet ouvrage donne aussi une méthode pour effectuer les prédictions des phénomènes des satellites de Jupiter en 1993.

De telles éphémérides, uniques par leur contenu, méritent de figurer dans les bibliothèques des Universités et des Observatoires.

These ephemerides give the positions of the satellites of Mars, of the Galilean satellites of Jupiter, of the first eight satellites of Saturn and of the five satellites of Uranus for 1993 with an accuracy of 0.01 arcsecond (').

Thus, they are very useful to astronomers in order to prepare or reduce precise observations and to study the motions of the natural satellites of the planets.

The positions are given as coefficients of elementary functions depending directly on time. The calculations are easy to program on a pocket calculator or on a micro-computer.

This booklet also contains a method of calculation to predict the phenomena of the satellites of Jupiter in 1993.

Such ephemerides of unique nature, have their place in the libraries of Universities and Observatories.

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