

Ephémérides des satellites de Jupiter, Saturne et Uranus pour 1987

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SUPPLEMENT A LA CONNAISSANCE DES TEMPS - PARIS 1986
BUREAU DES LONGITUDES

ÉPHÉMÉRIDES DES SATELLITES DE JUPITER, SATURNE ET URANUS POUR 1987

EPHEMERIDES OF THE SATELLITES OF JUPITER, SATURN AND URANUS FOR 1987

les éditions de physique

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PUBLICATIONS DU BUREAU DES LONGITUDES

• La *Connaissance des Temps* (Ephémérides Astronomiques de la Lune et des planètes pour 1987). Editée par l'EPSHOM, BP426, F-29275 Brest Cedex, France

Autres suppléments à la *Connaissance des Temps* :

• Ephémérides des satellites faibles de Jupiter (VI, VII, VIII, IX) et de Saturne (IX) pour 1987

• Phénomènes et configurations des satellites Galiléens de Jupiter pour 1987

• Configurations des huit premiers satellites de Saturne pour 1987

Autres publications du Bureau des Longitudes, éditées par Gauthier-Villars, Paris :

PUBLICATIONS OF THE BUREAU DES LONGITUDES

• *The Connaissance des Temps (Astronomical Ephemerides of the Moon and the Planets for 1987). Published by EPSHOM, BP426, F-29275 Brest Cedex, France*

Other supplements to the Connaissance des Temps :

• *Ephemerides of the Faint Satellites of Jupiter (VI, VII, VIII, IX) and of Saturn (IX) for 1987*

• *Phenomena and configurations of the Galilean Satellites of Jupiter for 1987*

• *Configurations of the First Eight Satellites of Saturn for 1987*

Other publications of the Bureau des Longitudes, published by Gauthier-Villars, Paris (in French) :

- Annuaire du Bureau des Longitudes, Ephémérides pour 1987
- Ephémérides nautiques pour l'an 1987
- Encyclopédie Scientifique de l'Univers :
  - La galaxie, l'univers extra-galactique (1980)
  - La physique (1981)
  - La terre, les eaux, l'atmosphère (réédition, 1984)
  - Les étoiles, le système solaire (réédition, 1985)

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. 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 Jupiter, Saturne et Uranus et présente un formulaire permettant de calculer les phénomènes des satellites Galiléens de Jupiter

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. 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 Jupiter, Saturn and Uranus. We will also present, a formula which permits the calculation of the phenomena of the Galilean Satellites.

J. CHAPRONT

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J.-E. ARLOT

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TABLE DES MATIERES

page :

PRÉSENTATION DES ÉPHÉMÉRIDES 7

Contenu 8
Représentation des coordonnées 8
Description des éphémérides 9
Echelles de temps 9
Exemple de calcul d'une position 10
Précision des éphémérides 11
Phénomènes des satellites Galiléens de Jupiter 11
Références bibliographiques 11

LES SATELLITES DE JUPITER 13

Données sur les satellites Galiléens 14
Données sur l'ensemble des satellites de Jupiter 16
Ephémérides des satellites Galiléens 17
Io (I) 18
Europe (II) 26
Ganymède (III) 34
Callisto (IV) 38
Phénomènes des satellites Galiléens 42

LES SATELLITES DE SATURNE 47

Données sur les satellites de Saturne 48
Ephémérides des huit premiers satellites de Saturne 49
Mimas (I) 50
Encelade (II) 65
Téthys (III) 67
Dioné (IV) 69
Rhéa (V) 71
Titan (VI) 73
Hypérion (VII) 76
Japet (VIII) 80

LES SATELLITES D'URANUS 83

Données sur les satellites d'Uranus 84
Ephémérides des cinq satellites d'Uranus 85
Miranda (V) 86
Ariel (I) 90
Umbriel (II) 91
Titania (III) 92
Obéron (IV) 93

TABLE OF CONTENTS

page :

PRESENTATION OF THE EPHEMERIDES 7

Contents 8
Representation of the coordinates 8
Description of the ephemerides 9
Time-scales 9
Example of a position calculation 10
Accuracy of the ephemerides 11
Phenomena of the Galilean satellites of Jupiter 11
References 11

SATELLITES OF JUPITER 13

Data on the Galilean satellites 14
Data on the Galilean and other satellites of Jupiter 16
Ephemerides of the Galilean satellites 17
Io (I) 18
Europa (II) 26
Ganymede (III) 34
Callisto (IV) 38
Phenomena of the Galilean satellites 42

SATELLITES OF SATURN 47

Data on the satellites of Saturn 48
Ephemerides of the First Eight satellites of Saturn 49
Mimas (I) 50
Enceladus (II) 65
Tethys (III) 67
Dione (IV) 69
Rhea (V) 71
Titan (VI) 73
Hyperion (VII) 76
Iapetus (VIII) 80

SATELLITES OF URANUS 83

Data on the satellites of Uranus 84
Ephemerides of the five satellites of Uranus 85
Miranda (V) 86
Ariel (I) 90
Umbriel (II) 91
Titania (III) 92
Oberon (IV) 93

PRÉSENTATION DES ÉPHÉMÉRIDES
PRESENTATION OF THE EPHEMERIDES

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'observation effectués sur ces satellites, ainsi que des données (en général recommandées par l'UAI) sur l'ensemble des satellites de Jupiter, Saturne et Uranus, extraites de l'*Encyclopédie du Bureau des Longitudes ;*

— des tables permettant de calculer les positions 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 :

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

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 de la date pour les satellites Galiléens de Jupiter et à l'équateur 1950.0 pour les satellites de Saturne et Uranus. 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 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 Rapaport (1977), de Kozaï (1959) et de Struve (1930) ;

— satellites d'Uranus : la théorie issue du travail de Veillet (1983).

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 Jupiter, Saturn and Uranus. These data are found in the Encyclopédie du Bureau des Longitudes ;

— tables which allow the computation of the positions of 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 :

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

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 of the date for the Galilean satellites and equator of 1950.0 for the satellites of Saturn and Uranus). 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 :

— 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 Rapaport (1977), Kozaï (1959) and Struve (1930) ;

— satellites of Uranus : theory from Veillet's thesis (1983).

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 $T0$, $T0 + \Delta t$. The coordinates of the satellites for the date T are given by the formula :

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

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 2 jours pour Mimas à 32 jours pour les gros satellites d'Uranus ;

— 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 2 days (in the case of Mimas) to 32 days (in the case of the larger satellites of Uranus) ;

— 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 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 janvier 1979 et le 1 juillet 1986) entre TDT et UTC (d'après la relation entre TAI et UTC publiée par le BIH).

Astronomical events are measured in the time-scale UTC (coordinate universal time). The table below gives the correspondence (from 1979 January 1 to 1986 July 1) between TDT and UTC (using the relationship between TAI and UTC published by BIH).

	TDT-UTC
1979 Jan. 1 - 1980 Jan. 1	50.184 s
1980 Jan. 1 - 1981 Juil. 1	51.184 s
1981 Juil. 1 - 1982 Juil. 1	52.184 s
1982 Juil. 1 - 1983 Juil. 1	53.184 s
1983 Juil. 1 - 1985 Jan. 1	54.184 s
1985 Jan. 1 - 1985 Juil. 1	55.184 s
1985 Juil. 1 - 1986 Juil. 1	56.184 s

Pour 1987, on ne sait pas encore quelle en sera la valeur ; on peut cependant prendre 57 secondes, l'erreur commise n'ayant que peu d'influence sur la valeur des positions calculées des satellites.

For 1987 the value of TDT-UTC is not yet known ; one may take 57 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 1987 à 23 h 30 min UTC.

On effectue d'abord une correction pour se ramener à l'échelle TDB. Pour 1987 nous avons choisi 57 secondes ; la date T est donc le 5 janvier 1987 à 23 h 30 min 57 s TDB.

Les coefficients nécessaires au calcul de X et Y sont ceux de la page 67 correspondant à l'intervalle du 1er janvier à 0 h au 17 janvier à 0 h. On a, pour X :

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 1987 January 5, 23 h 30 min UTC.

First, the date must be corrected in order to fit with the TDB time-scale. For 1987, we choose 57 seconds ; so, the date T is 1987 January 5, 23 h 30 min 57 s TDB.

The coefficients necessary to compute X and Y are given on page 67 (interval from January 1, 0 h to January 17, 0 h). We read for X :

$$A0 = 0.,\ A1 = 0.,\ B0 = 37.2506,\ B1 = 0.06507,\ B2 = 0.000456,\ C0 = 0.0031$$
$$F0 = 4.916073,\ F1 = 3.7153,\ F2 = 5.5260,\ P0 = 0.3440$$

et pour Y : *and for Y :*

$$A0 = -0.0013,\ A1 = 0.,\ B0 = 16.7889,\ B1 = 0.02751,\ B2 = 0.000168,\ C0 = 0.0014$$
$$F0 = 0.293251,\ F1 = 5.6891,\ F2 = 0.9776,\ P0 = 2.0195$$

On applique ensuite la formule (1) : *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 min 57 s, soit 4,979 826 jours.

On obtient finalement :

$$X = + 18{,}25"$$
$$Y = - 15{,}42"$$

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 d'obtenir en réalité qu'une précision de 0,05" ; cette précision peut n'être que de 1" pour certains satellites de Saturne.

La représentation en fonctions mixtes publiée ici a été déterminée de façon à ce que l'écart avec la théorie-source soit toujours inférieur à 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 42 à 45.

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 min 57 s. Hence t = 4.979 826 days.

Finally, we get :

$$X = + 18.25"$$
$$Y = - 15.42"$$

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, allow a precision of only 0.05" which may reach 1" for some satellites of Saturn.

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 below 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 42 to 45.

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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 JUPITER

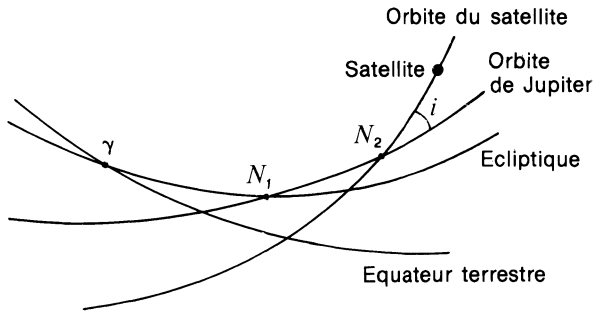
SATELLITES OF JUPITER

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
Pionneer 11 (1976) :	4.68	2.52	7.80	5.66
Rayons (km)				
Danjon (1954) :	1650	1400	2450	2300
Dollfus (1961) :	1775	1550	2800	2525
Pionneer 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 1987.5 (minutes et secondes de degré)				
Sampson (1921) :	1′ 37″	26′ 24″	11′ 15″	20′ 06″
Valeur moyenne de l'excentricité pour 1987.5				
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 :

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

	$\gamma N_1 + N_1 N_2 + N_2 M$	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

(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) : inclination on Jupiter's orbit

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

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 de la date.

Differential tangential coordinates given in arcsecond in the mean equatorial frame of the date.

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

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

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	4	3.551 6	18
Europe	4	1.769 3	26
Ganymède	8	0.878 2	34
Callisto	8	0.376 5	38
	(days)	*(rad/d)*	

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE JUPITER: IO N=3.5516

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN. 1 (OH)	X:	+0.3066	+0.00992	+100.1789	+0.42773	+0.000588	+0.1842
(2446796.5)				6.218687	3.9151	5.4431	0.4877
A JAN. 5 (OH)	Y:	+0.1248	+0.00484	+ 47.0933	+0.18225		+0.0866
				0.007065	4.0681		0.5586
JAN. 5 (OH)	X:	+0.3377	+0.00820	+ 99.0565	+0.43489	+0.002427	+0.1827
(2446800.5)				1.562766	5.5936	2.7601	3.8075
A JAN. 9 (OH)	Y:	+0.1399	+0.00420	+ 46.6578	+0.18172		+0.0859
				1.634719	5.7321		3.8745
JAN. 9 (OH)	X:	+0.3711	+0.00622	+ 97.9918	+0.43809	+0.004246	+0.1839
(2446804.5)				3.189399	0.9674	4.1322	0.8461
A JAN.13 (OH)	Y:	+0.1566	+0.00307	+ 46.2441	+0.18099		+0.0863
				3.261910	1.1136		0.9214
JAN.13 (OH)	X:	+0.3962	+0.00521	+ 96.9773	+0.41829	+0.002031	+0.1820
(2446808.5)				4.815370	2.6089	4.2051	4.1671
A JAN.17 (OH)	Y:	+0.1699	+0.00273	+ 45.8532	+0.18020		+0.0863
				4.888611	2.7688		4.2389
JAN.17 (OH)	X:	+0.4255	+0.00275	+ 96.0184	+0.41167	+0.003052	+0.1821
(2446812.5)				0.157858	4.2699	5.3722	1.2019
A JAN.21 (OH)	Y:	+0.1852	+0.00152	+ 45.4804	+0.18028		+0.0857
				0.231835	4.4337		1.2750
JAN.21 (OH)	X:	+0.4407	+0.00546	+ 95.1182	+0.40772	+0.003849	+0.1809
(2446816.5)				1.783102	5.9312	0.5900	4.5230
A JAN.25 (OH)	Y:	+0.1944	+0.00293	+ 45.1311	+0.18186		+0.0861
				1.857898	6.0912		4.6037
JAN.25 (OH)	X:	+0.4643	+0.00346	+ 94.2711	+0.40652	+0.002605	+0.1811
(2446820.5)				3.407983	1.3301	1.6995	1.5575
A JAN.29 (OH)	Y:	+0.2061	+0.00214	+ 44.7990	+0.18156		+0.0865
				3.483569	1.4634		1.6302
JAN.29 (OH)	X:	+0.4765	+0.00699	+ 93.4909	+0.41975	+0.001363	+0.1809
(2446824.5)				5.032568	2.9928	5.6654	4.8784
A FEV. 2 (OH)	Y:	+0.2134	+0.00366	+ 44.4883	+0.18207		+0.0864
				5.108976	3.1151		4.9555
FEV. 1 (OH)	X:	+0.4969	+0.00204	+ 92.9339	+0.40240	+0.002876	+0.1808
(2446827.5)				3.108973	1.0892	1.6208	1.0769
A FEV. 5 (OH)	Y:	+0.2241	+0.00147	+ 44.2648	+0.18119		+0.0867
				3.186196	1.2129		1.1536
FEV. 5 (OH)	X:	+0.5049	+0.00585	+ 92.2497	+0.41426	+0.001085	+0.1812
(2446831.5)				4.733003	2.7602	5.7850	4.3978
A FEV. 9 (OH)	Y:	+0.2293	+0.00316	+ 43.9852	+0.18104		+0.0866
				4.811147	2.8625		4.4781
FEV. 9 (OH)	X:	+0.5201	+0.00367	+ 91.6249	+0.41747	+0.002521	+0.1814
(2446835.5)				0.073479	4.4145	1.2502	1.4289
A FEV.13 (OH)	Y:	+0.2379	+0.00220	+ 43.7240	+0.18085		+0.0870
				0.152679	4.5062		1.5063
FEV.13 (OH)	X:	+0.5329	+0.00375	+ 91.0503	+0.41794	+0.003704	+0.1829
(2446839.5)				1.696896	6.0794	3.1455	4.7465
A FEV.17 (OH)	Y:	+0.2447	+0.00214	+ 43.4767	+0.17861		+0.0868
				1.777155	6.1521		4.8236
FEV.17 (OH)	X:	+0.5415	+0.00212	+ 90.5354	+0.40600	+0.002307	+0.1825
(2446843.5)				3.319974	1.4349	3.9939	1.7729
A FEV.21 (OH)	Y:	+0.2505	+0.00129	+ 43.2465	+0.17732		+0.0871
				3.401519	1.5165		1.8584

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE JUPITER: IO N=3.5516

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
FEV.21 (OH) (2446847.5)	X:	+0.5550	-0.00078	+ 90.0738 4.942857	+0.38688 3.0822	+0.003086 3.8604	+0.1844 5.0889
A FEV.25 (OH)	Y:	+0.2582	-0.00011	+ 43.0329 5.025760	+0.17637 3.1585		+0.0879 5.1696
FEV.25 (OH) (2446851.5)	X:	+0.5551	-0.00017	+ 89.6662 0.282644	+0.38953 4.7485	+0.002288 5.5550	+0.1839 2.1199
A FEV.29 (OH)	Y:	+0.2601	+0.00021	+ 42.8319 0.366805	+0.17611 4.8098		+0.0875 2.2082
MAR. 1 (OH) (2446855.5)	X:	+0.5613	-0.00257	+ 89.3142 1.905435	+0.38842 0.1286	+0.002184 0.8167	+0.1850 5.4269
A MAR. 5 (OH)	Y:	+0.2646	-0.00089	+ 42.6480 1.990937	+0.17595 0.1722		+0.0885 5.5143
MAR. 5 (OH) (2446859.5)	X:	+0.5548	-0.00016	+ 89.0178 3.528111	+0.38731 1.7986	+0.001512 1.6226	+0.1857 2.4644
A MAR. 9 (OH)	Y:	+0.2626	+0.00036	+ 42.4789 3.614964	+0.17432 1.8125		+0.0885 2.5489
MAR. 9 (OH) (2446863.5)	X:	+0.5522	-0.00091	+ 88.7850 5.150877	+0.40328 3.4448	+0.002860 0.1790	+0.1860 5.7721
A MAR.13 (OH)	Y:	+0.2630	-0.00007	+ 42.3252 5.239035	+0.17335 3.4524		+0.0891 5.8605
MAR.13 (OH) (2446867.5)	X:	+0.5456	+0.00052	+ 88.5973 0.490243	+0.40094 5.1021	+0.003121 1.8456	+0.1880 2.8047
A MAR.17 (OH)	Y:	+0.2607	+0.00064	+ 42.1845 0.579873	+0.17162 5.0915		+0.0895 2.8865
MAR.17 (OH) (2446871.5)	X:	+0.5399	-0.00112	+ 88.4617 2.112709	+0.39102 0.4774	+0.001797 3.3592	+0.1888 6.1117
A MAR.21 (OH)	Y:	+0.2588	-0.00023	+ 42.0537 2.203882	+0.16828 0.4566		+0.0894 6.2040
MAR.21 (OH) (2446875.5)	X:	+0.5342	-0.00201	+ 88.3901 3.735235	+0.38330 2.1086	+0.002946 3.8454	+0.1903 3.1376
A MAR.25 (OH)	Y:	+0.2575	-0.00082	+ 41.9406 3.828009	+0.16652 2.0963		+0.0905 3.2316
MAR.25 (OH) (2446879.5)	X:	+0.5240	-0.00434	+ 88.3573 5.357813	+0.37319 3.7892	+0.002209 4.0627	+0.1911 0.1654
A MAR.29 (OH)	Y:	+0.2536	-0.00178	+ 41.8389 5.452230	+0.16515 3.7370		+0.0902 0.2615
MAR.29 (OH) (2446883.5)	X:	+0.5143	-0.00551	+ 88.3799 0.697355	+0.37260 5.4587	+0.002699 5.3671	+0.1925 3.4726
A AVR. 2 (OH)	Y:	+0.2506	-0.00247	+ 41.7481 0.793405	+0.16425 5.3877		+0.0911 3.5743
AVR. 1 (OH) (2446886.5)	X:	+0.4995	-0.00511	+ 88.4405 5.055966	+0.37041 3.5469	+0.002391 3.8667	+0.1938 5.9590
A AVR. 5 (OH)	Y:	+0.2439	-0.00216	+ 41.6927 5.153242	+0.16164 3.4705		+0.0910 6.0574
AVR. 5 (OH) (2446890.5)	X:	+0.4860	-0.00614	+ 88.5545 0.395667	+0.36902 5.2206	+0.003151 5.0699	+0.1951 2.9810
A AVR. 9 (OH)	Y:	+0.2389	-0.00279	+ 41.6244 0.494632	+0.16028 5.1217		+0.0917 3.0867

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE JUPITER: IO N=3.5516

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
AVR. 9 (OH)	X:	+0.4633	-0.00642	+ 88.7289	+0.37433	+0.001898	+0.1963
(2446894.5)				2.018713	0.5854	0.9090	0.0137
A AVR.13 (OH)	Y:	+0.2295	-0.00270	+ 41.5724	+0.15865		+0.0920
				2.119352	0.4819		0.1145
AVR.13 (OH)	X:	+0.4455	-0.00738	+ 88.9545	+0.38377	+0.001013	+0.1983
(2446898.5)				3.641919	2.2460	5.6588	3.3207
A AVR.17 (OH)	Y:	+0.2220	-0.00318	+ 41.5344	+0.15589		+0.0925
				3.744211	2.1182		3.4277
AVR.17 (OH)	X:	+0.4139	-0.00419	+ 89.2366	+0.39286	+0.003667	+0.2000
(2446902.5)				5.265324	3.8818	0.2768	0.3541
A AVR.21 (OH)	Y:	+0.2088	-0.00167	+ 41.5067	+0.15361		+0.0932
				5.369304	3.7655		0.4545
AVR.21 (OH)	X:	+0.3941	-0.00643	+ 89.5637	+0.38683	+0.003220	+0.2016
(2446906.5)				0.605559	5.5379	1.5770	3.6583
A AVR.25 (OH)	Y:	+0.1997	-0.00259	+ 41.4927	+0.15058		+0.0926
				0.711369	5.4107		3.7603
AVR.25 (OH)	X:	+0.3625	-0.00375	+ 89.9388	+0.38144	+0.001905	+0.2044
(2446910.5)				2.229174	0.9313	3.4435	0.6870
A AVR.29 (OH)	Y:	+0.1858	-0.00156	+ 41.4889	+0.14630		+0.0939
				2.336826	0.7828		0.7979
AVR.29 (OH)	X:	+0.3398	-0.00713	+ 90.3765	+0.37115	+0.002151	+0.2050
(2446914.5)				3.853059	2.5842	3.5823	3.9976
A MAI 3 (OH)	Y:	+0.1762	-0.00310	+ 41.5025	+0.14403		+0.0940
				3.962633	2.4304		4.1064
MAI 1 (OH)	X:	+0.3220	-0.00639	+ 90.6095	+0.39353	+0.003583	+0.2059
(2446916.5)				4.665361	3.4142	6.2309	5.6558
A MAI 5 (OH)	Y:	+0.1693	-0.00267	+ 41.5144	+0.14401		+0.0947
				4.775709	3.2521		5.7642
MAI 5 (OH)	X:	+0.2961	-0.00821	+ 91.1236	+0.38932	+0.003789	+0.2081
(2446920.5)				0.006466	5.0625	1.1470	2.6795
A MAI 9 (OH)	Y:	+0.1581	-0.00339	+ 41.5471	+0.14129		+0.0944
				0.118744	4.9064		2.7859
MAI 9 (OH)	X:	+0.2578	-0.00500	+ 91.6850	+0.38024	+0.001913	+0.2108
(2446924.5)				1.630979	0.4541	2.5185	5.9905
A MAI 13 (OH)	Y:	+0.1408	-0.00199	+ 41.5934	+0.13623		+0.0952
				1.745170	0.2802		6.1095
MAI 13 (OH)	X:	+0.2296	-0.00781	+ 92.3011	+0.37524	+0.001758	+0.2120
(2446928.5)				3.255893	2.1181	3.4475	3.0167
A MAI 17 (OH)	Y:	+0.1290	-0.00335	+ 41.6549	+0.13359		+0.0956
				3.372061	1.9389		3.1337
MAI 17 (OH)	X:	+0.1973	-0.00813	+ 92.9669	+0.36270	+0.004415	+0.2154
(2446932.5)				4.881086	3.8021	3.7074	0.0413
A MAI 21 (OH)	Y:	+0.1150	-0.00355	+ 41.7314	+0.13181		+0.0960
				4.999314	3.5961		0.1626
MAI 21 (OH)	X:	+0.1640	-0.01027	+ 93.6811	+0.37495	+0.002461	+0.2162
(2446936.5)				0.223657	5.4676	5.1443	3.3552
A MAI 25 (OH)	Y:	+0.1013	-0.00443	+ 41.8209	+0.12988		+0.0965
				0.343766	5.2650		3.4795
MAI 25 (OH)	X:	+0.1314	-0.01175	+ 94.4547	+0.38809	+0.001340	+0.2188
(2446940.5)				1.849794	0.8274	2.8551	0.3787
A MAI 29 (OH)	Y:	+0.0874	-0.00505	+ 41.9292	+0.12714		+0.0968
				1.971760	0.6470		0.5046

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE JUPITER: IO N=3.5516

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
MAI 29 (OH)	X:	+0.0894	-0.01079	+ 95.2797	+0.38930	+0.001198	+0.2214
(2446944.5)				3.476174	2.5012	5.6469	3.6979
A JUN. 2 (OH)	Y:	+0.0696	-0.00446	+ 42.0558	+0.12358		+0.0977
				3.600124	2.3075		3.8261
JUN. 1 (OH)	X:	+0.0648	-0.01160	+ 95.9290	+0.39069	+0.001013	+0.2233
(2446947.5)				1.554704	0.6076	3.0730	6.1772
A JUN. 5 (OH)	Y:	+0.0594	-0.00497	+ 42.1575	+0.12201		+0.0977
				1.680127	0.4332		0.0223
JUN. 5 (OH)	X:	+0.0238	-0.01159	+ 96.8498	+0.38826	+0.000456	+0.2258
(2446951.5)				3.181853	2.2738	4.9765	3.2132
A JUN. 9 (OH)	Y:	+0.0420	-0.00475	+ 42.3152	+0.11886		+0.0985
				3.309284	2.1000		3.3434
JUN. 9 (OH)	X:	-0.0154	-0.01099	+ 97.8198	+0.39746	+0.004074	+0.2272
(2446955.5)				4.809615	3.9111	6.1844	0.2393
A JUN.13 (OH)	Y:	+0.0266	-0.00465	+ 42.4880	+0.11568		+0.0985
				4.938904	3.7859		0.3619
JUN.13 (OH)	X:	-0.0611	-0.00865	+ 98.8396	+0.39632	+0.005710	+0.2312
(2446959.5)				0.154566	5.5656	1.2697	3.5555
A JUN.17 (OH)	Y:	+0.0072	-0.00329	+ 42.6802	+0.11380		+0.0986
				0.285860	5.4755		3.6843
JUN.17 (OH)	X:	-0.0993	-0.00889	+ 99.9028	+0.38588	+0.001789	+0.2326
(2446963.5)				1.783044	0.9967	2.3178	0.5850
A JUN.21 (OH)	Y:	-0.0092	-0.00355	+ 42.8908	+0.11021		+0.0998
				1.916380	0.9005		0.7228
JUN.21 (OH)	X:	-0.1427	-0.00675	+101.0236	+0.38184	+0.002300	+0.2359
(2446967.5)				3.412242	2.6738	3.1976	3.8984
A JUN.25 (OH)	Y:	-0.0270	-0.00277	+ 43.1237	+0.10976		+0.1004
				3.547602	2.5982		4.0314
JUN.25 (OH)	X:	-0.1751	-0.01061	+102.1901	+0.38170	+0.002991	+0.2372
(2446971.5)				5.042020	4.3641	4.0127	0.9293
A JUN.29 (OH)	Y:	-0.0402	-0.00444	+ 43.3795	+0.10913		+0.1001
				5.179354	4.2945		1.0695
JUN.29 (OH)	X:	-0.2153	-0.00955	+103.3985	+0.39449	+0.001768	+0.2397
(2446975.5)				0.389282	6.0432	4.6790	4.2451
A JUL. 3 (OH)	Y:	-0.0561	-0.00410	+ 43.6558	+0.10964		+0.1011
				0.528507	6.0038		4.3855
JUL. 1 (OH)	X:	-0.2379	-0.00919	+104.0349	+0.38897	+0.002727	+0.2412
(2446977.5)				1.204674	0.5649	1.8818	5.9066
A JUL. 5 (OH)	Y:	-0.0659	-0.00359	+ 43.8056	+0.10715		+0.1013
				1.344760	0.5879		6.0540
JUL. 5 (OH)	X:	-0.2839	-0.00588	+105.3165	+0.38951	+0.001122	+0.2452
(2446981.5)				2.835975	2.2626	3.0893	2.9386
A JUL. 9 (OH)	Y:	-0.0848	-0.00234	+ 44.1176	+0.10819		+0.1026
				2.977988	2.3065		3.0792
JUL. 9 (OH)	X:	-0.3142	-0.00981	+106.6485	+0.38432	+0.002729	+0.2468
(2446985.5)				4.467990	3.9484	3.7248	6.2567
A JUL.13 (OH)	Y:	-0.0973	-0.00410	+ 44.4572	+0.10994		+0.1023
				4.611892	4.0068		0.1178
JUL.13 (OH)	X:	-0.3543	-0.00788	+108.0091	+0.39329	+0.002265	+0.2490
(2446989.5)				6.100713	5.6394	4.6453	3.2884
A JUL.17 (OH)	Y:	-0.1129	-0.00346	+ 44.8179	+0.11311		+0.1033
				6.246388	5.7256		3.4386

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE JUPITER: IO N=3.5516

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JUL.17 (0H) (2446993.5)	X:	-0.3865	-0.01213	+109.4167 1.451029	+0.40123 1.0050	+0.002108 3.0108	+0.2519 0.3303
A JUL.21 (0H)	Y:	-0.1267	-0.00498	+ 45.2082 1.598328	+0.11538 1.1635		+0.1040 0.4826
JUL.21 (0H) (2446997.5)	X:	-0.4230	-0.01071	+110.8692 3.085232	+0.39862 2.6644	+0.004544 4.5552	+0.2542 3.6483
A JUL.25 (0H)	Y:	-0.1420	-0.00456	+ 45.6276 3.234172	+0.11757 2.8725		+0.1051 3.7989
JUL.25 (0H) (2447001.5)	X:	-0.4650	-0.00967	+112.3404 4.720231	+0.40330 4.3295	+0.007405 0.0282	+0.2573 0.6916
A JUL.29 (0H)	Y:	-0.1581	-0.00404	+ 46.0702 4.870633	+0.12128 4.6020		+0.1049 0.8321
JUL.29 (0H) (2447005.5)	X:	-0.4968	-0.00912	+113.8390 0.072660	+0.39355 6.0446	+0.005663 1.3857	+0.2594 4.0079
A AOU. 2 (0H)	Y:	-0.1718	-0.00369	+ 46.5399 0.224687	+0.12706 0.0327		+0.1051 4.1629
AOU. 1 (0H) (2447008.5)	X:	-0.5242	-0.00963	+114.9766 4.441703	+0.40001 4.1506	+0.007494 6.1113	+0.2613 0.2240
A AOU. 5 (0H)	Y:	-0.1832	-0.00413	+ 46.9129 4.594692	+0.12946 4.4564		+0.1063 0.3650
AOU. 5 (0H) (2447012.5)	X:	-0.5543	-0.00890	+116.5048 6.078784	+0.39175 5.8671	+0.006251 1.2704	+0.2639 3.5432
A AOU. 9 (0H)	Y:	-0.1962	-0.00371	+ 47.4275 6.233214	+0.13681 6.1651		+0.1065 3.6981
AOU. 9 (0H) (2447016.5)	X:	-0.5965	-0.00466	+118.0483 1.433451	+0.38017 1.3420	+0.002137 2.1716	+0.2669 0.5867
A AOU.13 (0H)	Y:	-0.2153	-0.00187	+ 47.9726 1.589178	+0.14164 1.6026		+0.1090 0.7459
AOU.13 (0H) (2447020.5)	X:	-0.6200	-0.00572	+119.5835 3.072401	+0.38357 3.0427	+0.001594 4.7552	+0.2674 3.9101
A AOU.17 (0H)	Y:	-0.2261	-0.00273	+ 48.5395 3.229258	+0.14814 3.2953		+0.1086 4.0654
AOU.17 (0H) (2447024.5)	X:	-0.6522	-0.00355	+121.1129 4.712183	+0.38177 4.7659	+0.000697 2.7951	+0.2701 0.9512
A AOU.21 (0H)	Y:	-0.2403	-0.00195	+ 49.1301 4.870061	+0.15426 4.9853		+0.1093 1.1110
AOU.21 (0H) (2447028.5)	X:	-0.6705	-0.00693	+122.6227 0.069695	+0.38479 0.1842	+0.002108 3.1851	+0.2708 4.2850
A AOU.25 (0H)	Y:	-0.2492	-0.00345	+ 49.7409 0.228403	+0.16033 0.3968		+0.1099 4.4444
AOU.25 (0H) (2447032.5)	X:	-0.6944	-0.00656	+124.1167 1.711409	+0.37259 1.8353	+0.007069 3.5833	+0.2728 1.3257
A AOU.29 (0H)	Y:	-0.2616	-0.00331	+ 50.3719 1.870660	+0.16506 2.0983		+0.1114 1.4913
AOU.29 (0H) (2447036.5)	X:	-0.7150	-0.00823	+125.5660 3.353821	+0.36582 3.5642	+0.007081 5.3384	+0.2747 4.6622
A SEP. 2 (0H)	Y:	-0.2719	-0.00404	+ 51.0182 3.513664	+0.16790 3.7930		+0.1128 4.8193
SEP. 1 (0H) (2447039.5)	X:	-0.7337	-0.00520	+126.6128 1.444646	+0.36430 1.7142	+0.007439 3.5103	+0.2755 0.8701
A SEP. 5 (0H)	Y:	-0.2817	-0.00291	+ 51.5034 1.604764	+0.17272 1.9247		+0.1125 1.0380

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE JUPITER: IO N=3.5516

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
SEP. 5 (OH) (2447043.5)	X:	-0.7483	-0.00775	+127.9688 3.088569	+0.35176 3.4571	+0.006875 5.1367	+0.2771 4.2109
A SEP. 9 (OH)	Y:	-0.2902	-0.00398	+ 52.1624 3.249006	+0.17376 3.6177		+0.1141 4.3717
SEP. 9 (OH) (2447047.5)	X:	-0.7686	-0.00504	+129.2407 4.733311	+0.34408 5.1973	+0.007151 0.4561	+0.2775 1.2574
A SEP.13 (OH)	Y:	-0.2999	-0.00297	+ 52.8141 4.893806	+0.17774 5.3208		+0.1131 1.4125
SEP.13 (OH) (2447051.5)	X:	-0.7868	-0.00424	+130.4327 0.095641	+0.33180 0.6739	+0.007272 1.8571	+0.2799 4.5912
A SEP.17 (OH)	Y:	-0.3120	-0.00213	+ 53.4639 0.256108	+0.17853 0.7367		+0.1139 4.7563
SEP.17 (OH) (2447055.5)	X:	-0.8002	-0.00129	+131.5202 1.741800	+0.34465 2.4755	+0.003500 4.6261	+0.2786 1.6466
A SEP.21 (OH)	Y:	-0.3209	-0.00142	+ 54.0985 1.902147	+0.17807 2.4412		+0.1146 1.8085
SEP.21 (OH) (2447059.5)	X:	-0.8169	+0.00116	+132.4892 3.388799	+0.34769 4.2303	+0.005040 0.6259	+0.2797 4.9804
A SEP.25 (OH)	Y:	-0.3307	-0.00035	+ 54.7108 3.548794	+0.17538 4.1367		+0.1158 5.1439
SEP.25 (OH) (2447063.5)	X:	-0.8157	-0.00070	+133.3387 5.036434	+0.33919 5.9832	+0.004753 2.2096	+0.2779 2.0372
A SEP.29 (OH)	Y:	-0.3348	-0.00128	+ 55.2938 5.195904	+0.17083 5.8347		+0.1162 2.1929
SEP.29 (OH) (2447067.5)	X:	-0.8262	+0.00179	+134.0515 0.401425	+0.32934 1.4335	+0.007271 3.4258	+0.2782 5.3742
A OCT. 3 (OH)	Y:	-0.3435	-0.00042	+ 55.8422 0.560098	+0.16474 1.2789		+0.1154 5.5312
OCT. 1 (OH) (2447069.5)	X:	-0.8239	+0.00029	+134.3634 1.225564	+0.32774 2.3678	+0.003820 4.2955	+0.2771 0.7606
A OCT. 5 (OH)	Y:	-0.3444	-0.00085	+ 56.0974 1.383863	+0.16314 2.1454		+0.1155 0.9186
OCT. 5 (OH) (2447073.5)	X:	-0.8326	+0.00321	+134.8436 2.874303	+0.33828 4.1237	+0.007161 0.2895	+0.2770 4.0977
A OCT. 9 (OH)	Y:	-0.3506	+0.00041	+ 56.5714 3.031747	+0.15388 3.8689		+0.1165 4.2617
OCT. 9 (OH) (2447077.5)	X:	-0.8237	+0.00170	+135.1776 4.523418	+0.32842 5.8996	+0.006117 1.9373	+0.2739 1.1569
A OCT.13 (OH)	Y:	-0.3520	-0.00020	+ 56.9844 4.679830	+0.14435 5.5889		+0.1170 1.3139
OCT.13 (OH) (2447081.5)	X:	-0.8270	+0.00508	+135.3479 6.172690	+0.32122 1.3826	+0.006691 3.3679	+0.2724 4.4958
A OCT.17 (OH)	Y:	-0.3583	+0.00106	+ 57.3399 0.044687	+0.13397 1.0731		+0.1151 4.6444
OCT.17 (OH) (2447085.5)	X:	-0.8068	-0.00085	+135.3528 1.538948	+0.29944 3.1673	+0.007141 4.2948	+0.2697 1.5576
A OCT.21 (OH)	Y:	-0.3534	-0.00164	+ 57.6194 1.692786	+0.12390 2.8367		+0.1144 1.7187
OCT.21 (OH) (2447089.5)	X:	-0.8034	+0.00240	+135.1926 3.188226	+0.29942 4.9812	+0.005820 5.7571	+0.2672 4.8989
A OCT.25 (OH)	Y:	-0.3542	-0.00019	+ 57.8283 3.340685	+0.11400 4.6482		+0.1158 5.0496

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE JUPITER: IO N=3.5516

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
OCT.25 (OH)	X:	-0.7885	-0.00052	+134.8564	+0.30627	+0.006211	+0.2661
(2447093.5)				4.837278	0.4642	1.3141	1.9606
A OCT.29 (OH)	Y:	-0.3524	-0.00085	+ 57.9498	+0.10738		+0.1151
				4.988334	0.1703		2.1016
OCT.29 (OH)	X:	-0.7796	+0.00315	+134.3692	+0.32720	+0.003957	+0.2622
(2447097.5)				0.202823	2.2426	3.6774	5.2976
A NOV. 2 (OH)	Y:	-0.3536	+0.00062	+ 57.9965	+0.10303		+0.1129
				0.352422	2.0213		5.4439
NOV. 1 (OH)	X:	-0.7640	+0.00065	+133.8953	+0.31468	+0.005007	+0.2604
(2447100.5)				4.580911	0.4457	1.1604	1.5236
A NOV. 5 (OH)	Y:	-0.3478	-0.00034	+ 57.9737	+0.09787		+0.1136
				4.729327	0.2709		1.6649
NOV. 5 (OH)	X:	-0.7499	+0.00384	+133.1407	+0.33344	+0.003854	+0.2559
(2447104.5)				6.228882	2.1981	3.5338	4.8623
A NOV. 9 (OH)	Y:	-0.3466	+0.00104	+ 57.8769	+0.09879		+0.1109
				0.092608	2.1389		5.0052
NOV. 9 (OH)	X:	-0.7372	+0.00619	+132.2512	+0.35893	+0.008860	+0.2543
(2447108.5)				1.593092	3.9213	6.0285	1.9241
A NOV.13 (OH)	Y:	-0.3422	+0.00201	+ 57.6983	+0.09931		+0.1094
				1.738630	4.0112		2.0728
NOV.13 (OH)	X:	-0.7140	+0.00724	+131.2225	+0.34980	+0.007903	+0.2485
(2447112.5)				3.240054	5.6852	1.2147	5.2640
A NOV.17 (OH)	Y:	-0.3344	+0.00260	+ 57.4407	+0.10436		+0.1091
				3.383935	5.8506		5.4176
NOV.17 (OH)	X:	-0.6962	+0.01009	+130.0863	+0.34712	+0.006348	+0.2454
(2447116.5)				4.886212	1.1720	2.7262	2.3175
A NOV.21 (OH)	Y:	-0.3314	+0.00413	+ 57.1122	+0.11026		+0.1090
				5.028593	1.4032		2.4492
NOV.21 (OH)	X:	-0.6626	+0.00739	+128.8561	+0.35204	+0.007407	+0.2408
(2447120.5)				0.248280	2.9152	4.2895	5.6675
A NOV.25 (OH)	Y:	-0.3190	+0.00242	+ 56.7188	+0.12228		+0.1055
				0.389101	3.1842		5.7987
NOV.25 (OH)	X:	-0.6352	+0.00784	+127.5445	+0.35769	+0.002389	+0.2361
(2447124.5)				1.892842	4.7370	5.0119	2.7191
A NOV.29 (OH)	Y:	-0.3078	+0.00276	+ 56.2622	+0.13240		+0.1043
				2.032144	4.9701		2.8653
NOV.29 (OH)	X:	-0.6006	+0.00453	+126.1504	+0.36758	+0.000954	+0.2334
(2447128.5)				3.536269	0.1933	6.0801	6.0637
A DEC. 3 (OH)	Y:	-0.2942	+0.00153	+ 55.7464	+0.14231		+0.1035
				3.674150	0.4228		6.1978
DEC. 1 (OH)	X:	-0.5987	+0.01061	+125.4189	+0.36389	+0.006921	+0.2305
(2447130.5)				4.357502	0.9837	2.3480	1.4425
A DEC. 5 (OH)	Y:	-0.2951	+0.00468	+ 55.4655	+0.14471		+0.1036
				4.494892	1.2976		1.5776
DEC. 5 (OH)	X:	-0.5621	+0.00991	+123.9554	+0.37540	+0.006732	+0.2254
(2447134.5)				5.999482	2.7171	4.2047	4.7879
A DEC. 9 (OH)	Y:	-0.2809	+0.00385	+ 54.8849	+0.15698		+0.0999
				6.135552	3.0168		4.9153
DEC. 9 (OH)	X:	-0.5292	+0.00968	+122.4473	+0.37961	+0.001645	+0.2213
(2447138.5)				1.357443	4.5103	4.6081	1.8378
A DEC.13 (OH)	Y:	-0.2666	+0.00385	+ 54.2595	+0.16609		+0.0979
				1.492222	4.7348		1.9768

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE JUPITER: IO N=3.5516

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
DEC.13 (0H)	X:	-0.4873	+0.00606	+120.9152	+0.39240	+0.001172	+0.2188
(2447142.5)				2.997397	6.2348	4.1503	5.1828
A DEC.17 (0H)	Y:	-0.2491	+0.00234	+ 53.6010	+0.17444		+0.0973
				3.131064	0.1508		5.3134
DEC.17 (0H)	X:	-0.4556	+0.00786	+119.3614	+0.39289	+0.002340	+0.2143
(2447146.5)				4.636181	1.6208	3.2791	2.2302
A DEC.21 (0H)	Y:	-0.2361	+0.00333	+ 52.9127	+0.18067		+0.0954
				4.768938	1.8376		2.3597
DEC.21 (0H)	X:	-0.4175	+0.00588	+117.8126	+0.40026	+0.002914	+0.2119
(2447150.5)				6.274092	3.3230	5.2915	5.5646
A DEC.25 (0H)	Y:	-0.2202	+0.00259	+ 52.2051	+0.18728		+0.0940
				0.122767	3.5215		5.6916
DEC.25 (0H)	X:	-0.3864	+0.01038	+116.2666	+0.39821	+0.006787	+0.2076
(2447154.5)				1.627779	4.9969	0.2366	2.6194
A DEC.29 (0H)	Y:	-0.2054	+0.00444	+ 51.4817	+0.19450		+0.0910
				1.758995	5.2172		2.7557
DEC.29 (0H)	X:	-0.3514	+0.01023	+114.7266	+0.38961	+0.007657	+0.2043
(2447158.5)				3.263735	0.4212	1.6294	5.9481
A DEC.33 (0H)	Y:	-0.1911	+0.00479	+ 50.7410	+0.19774		+0.0907
				3.394258	0.6148		6.0915

1987 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:	-1.1488	+0.06508	+158.8787	+0.81741	+0.051789	+0.7637
(2446796.5)				2.849987	0.3567	3.4856	3.0200
A JAN. 5 (OH)	Y:	-0.4237	-0.01122	+ 76.2407	+0.27550		+0.3724
				2.923391	0.6321		3.0993
JAN. 5 (OH)	X:	-0.3273	-0.44824	+157.4439	+1.30857	+0.187540	+0.7500
(2446800.5)				3.636989	1.9015	6.0105	4.6302
A JAN. 9 (OH)	Y:	-0.4939	-0.00961	+ 75.5332	+0.27637		+0.3665
				3.705990	1.4608		4.7340
JAN. 9 (OH)	X:	-2.7022	+0.72702	+153.8127	+0.90705	+0.350969	+0.7947
(2446804.5)				4.412141	5.5698	2.8312	6.2402
A JAN.13 (OH)	Y:	-0.4832	-0.03889	+ 74.9070	+0.30046		+0.3646
				4.488547	2.2474		0.0630
JAN.13 (OH)	X:	-0.4580	-0.43507	+154.4074	+1.42536	+0.199053	+0.7693
(2446808.5)				5.190846	2.4343	5.6756	1.6362
A JAN.17 (OH)	Y:	-0.6227	+0.00632	+ 74.2125	+0.28189		+0.3590
				5.270639	3.1596		1.7023
JAN.17 (OH)	X:	-1.5958	+0.01042	+152.3637	+1.05840	+0.097756	+0.7522
(2446812.5)				5.977517	3.9751	1.2781	3.2756
A JAN.21 (OH)	Y:	-0.6301	-0.00988	+ 73.6013	+0.28238		+0.3531
				6.052053	3.9844		3.3266
JAN.21 (OH)	X:	-2.1519	+0.33528	+151.0029	+1.16771	+0.165555	+0.7306
(2446816.5)				0.476045	5.1587	3.0037	4.8987
A JAN.25 (OH)	Y:	-0.6586	-0.01739	+ 73.0210	+0.26168		+0.3498
				0.549397	4.7530		4.9448
JAN.25 (OH)	X:	-0.3707	-0.61757	+148.1734	+0.60740	+0.266230	+0.6881
(2446820.5)				1.250162	2.1036	5.8538	0.2645
A JAN.29 (OH)	Y:	-0.7333	-0.00285	+ 72.5218	+0.27663		+0.3418
				1.330043	5.5289		0.2990
JAN.29 (OH)	X:	-2.6125	+0.46721	+148.9883	+1.44002	+0.208302	+0.6706
(2446824.5)				2.026786	5.6724	2.6869	1.8061
A FEV. 2 (OH)	Y:	-0.7517	-0.00679	+ 72.0014	+0.27477		+0.3383
				2.110729	0.0699		1.9022
FEV. 1 (OH)	X:	-0.5113	-0.58871	+146.1181	+0.56746	+0.252891	+0.6689
(2446827.5)				1.041365	2.0983	5.7747	6.2409
A FEV. 5 (OH)	Y:	-0.7889	-0.00541	+ 71.6430	+0.27589		+0.3346
				1.124845	5.3906		6.2810
FEV. 5 (OH)	X:	-2.5686	+0.38774	+146.9854	+1.31560	+0.173232	+0.6599
(2446831.5)				1.819964	5.6046	2.5916	1.5015
A FEV. 9 (OH)	Y:	-0.8121	-0.00446	+ 71.1808	+0.27355		+0.3316
				1.904940	6.1960		1.6011
FEV. 9 (OH)	X:	-1.5743	-0.09647	+145.2239	+0.79947	+0.054411	+0.6683
(2446835.5)				2.602705	0.9182	5.1117	3.1358
A FEV.13 (OH)	Y:	-0.8478	-0.00277	+ 70.7525	+0.27178		+0.3283
				2.684413	0.7136		3.2377
FEV.13 (OH)	X:	-1.5717	-0.17684	+144.2500	+0.69830	+0.095355	+0.6745
(2446839.5)				3.380862	1.9747	0.4519	4.7355
A FEV.17 (OH)	Y:	-0.8323	-0.01781	+ 70.3749	+0.28984		+0.3250
				3.464448	1.5071		4.8548
FEV.17 (OH)	X:	-2.7503	+0.45318	+142.7189	+0.31197	+0.208360	+0.6844
(2446843.5)				4.153544	5.7101	2.8954	0.0866
A FEV.21 (OH)	Y:	-0.8746	-0.01077	+ 69.9855	+0.27704		+0.3220
				4.243324	2.3085		0.1964

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 2 DE JUPITER: EUROPE N=1.7693

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
FEV.21 (OH)	X:	-0.3761	-0.74233	+144.2366	+2.03435	+0.344875	+0.7004
(2446847.5)				4.930439	2.4298	5.8024	1.7693
A FEV.25 (OH)	Y:	-0.9551	+0.02376	+ 69.5811	+0.29308		+0.3217
				5.023627	3.2464		1.8322
FEV.25 (OH)	X:	-2.5912	+0.31558	+141.9169	+1.08400	+0.147742	+0.6451
(2446851.5)				5.716611	4.5754	2.4389	3.3923
A FEV.29 (OH)	Y:	-0.9015	-0.00745	+ 69.2786	+0.26056		+0.3135
				5.801349	3.9384		3.4487
MAR. 1 (OH)	X:	-2.1064	+0.13319	+141.4646	+0.75908	+0.086852	+0.6410
(2446855.5)				0.207304	5.1918	3.3723	5.0205
A MAR. 5 (OH)	Y:	-0.8896	-0.01676	+ 68.9508	+0.25579		+0.3120
				0.297107	4.7805		5.0845
MAR. 5 (OH)	X:	-1.4654	-0.23936	+140.7536	+0.12640	+0.112774	+0.6179
(2446859.5)				0.980823	5.1531	6.1456	0.3293
A MAR. 9 (OH)	Y:	-0.9379	+0.00431	+ 68.7185	+0.26572		+0.3077
				1.076156	5.5168		0.4102
MAR. 9 (OH)	X:	-2.7913	+0.45359	+141.6204	+1.35574	+0.200481	+0.6018
(2446863.5)				1.757712	5.7694	2.7832	1.9286
A MAR.13 (OH)	Y:	-0.9199	-0.00422	+ 68.4467	+0.26523		+0.3037
				1.855057	0.0671		2.0468
MAR.13 (OH)	X:	-0.7447	-0.56693	+139.9193	+1.39819	+0.260275	+0.6411
(2446867.5)				2.544238	1.8318	5.9333	3.5064
A MAR.17 (OH)	Y:	-0.9451	+0.01401	+ 68.2267	+0.25873		+0.3031
				2.633672	0.8079		3.6527
MAR.17 (OH)	X:	-2.4269	+0.26524	+139.9694	+0.17814	+0.127890	+0.6402
(2446871.5)				3.309571	0.1646	2.4153	5.1834
A MAR.21 (OH)	Y:	-0.8983	-0.00767	+ 68.0231	+0.26866		+0.3015
				3.412756	1.6286		5.2959
MAR.21 (OH)	X:	-1.8964	+0.09617	+140.2236	+0.55147	+0.096617	+0.6434
(2446875.5)				4.089340	1.8776	3.8990	0.5364
A MAR.25 (OH)	Y:	-0.9135	+0.00508	+ 67.8081	+0.27290		+0.2978
				4.191897	2.4629		0.6382
MAR.25 (OH)	X:	-1.0861	-0.36079	+140.7967	+1.21356	+0.172805	+0.6372
(2446879.5)				4.866612	2.7999	6.0567	2.1800
A MAR.29 (OH)	Y:	-0.9155	+0.01475	+ 67.6237	+0.25921		+0.2977
				4.970616	3.2923		2.2632
MAR.29 (OH)	X:	-2.8740	+0.57106	+139.5932	+1.52091	+0.249658	+0.6132
(2446883.5)				5.652083	4.9192	2.6390	3.8523
A AVR. 2 (OH)	Y:	-0.8455	-0.00565	+ 67.4693	+0.24257		+0.2926
				5.748870	4.0650		3.9066
AVR. 1 (OH)	X:	-0.8067	-0.44228	+141.1481	+1.39746	+0.208482	+0.6345
(2446886.5)				4.656161	2.6291	5.9472	1.8914
A AVR. 5 (OH)	Y:	-0.8848	+0.01842	+ 67.3693	+0.25456		+0.2941
				4.763040	3.1309		1.9735
AVR. 5 (OH)	X:	-2.6437	+0.49824	+139.7975	+1.36850	+0.214616	+0.6073
(2446890.5)				5.439720	4.7710	2.5331	3.5512
A AVR. 9 (OH)	Y:	-0.8163	+0.00188	+ 67.2633	+0.24350		+0.2892
				5.541599	3.8945		3.6128

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 2 DE JUPITER: EUROPE N=1.7693

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
AVR. 9 (OH)	X:	-1.0130	-0.24643	+140.5869	+0.21633	+0.119746	+0.5875
(2446894.5)				6.206317	3.4734	5.6361	5.1149
A AVR.13 (OH)	Y:	-0.8101	+0.00791	+ 67.1913	+0.24400		+0.2882
				0.037922	4.6717		5.2228
AVR.13 (OH)	X:	-1.4475	-0.01928	+141.1028	+0.53117	+0.032199	+0.5957
(2446898.5)				0.703878	5.4100	0.6994	0.4674
A AVR.17 (OH)	Y:	-0.7670	+0.00556	+ 67.1139	+0.23657		+0.2870
				0.817052	5.4741		0.5838
AVR.17 (OH)	X:	-1.7742	+0.23170	+141.8657	+0.95377	+0.097264	+0.5998
(2446902.5)				1.482841	6.2027	3.3147	2.0510
A AVR.21 (OH)	Y:	-0.7644	+0.02045	+ 67.0909	+0.23759		+0.2867
				1.596735	6.2194		2.1988
AVR.21 (OH)	X:	-0.5053	-0.39581	+141.4523	+1.10266	+0.186503	+0.6165
(2446906.5)				2.263466	1.7737	5.9887	3.6804
A AVR.25 (OH)	Y:	-0.7071	+0.01348	+ 67.0389	+0.22690		+0.2851
				2.376263	0.7692		3.8365
AVR.25 (OH)	X:	-2.5512	+0.66761	+142.6107	+0.87246	+0.300751	+0.6555
(2446910.5)				3.027917	5.6283	2.6554	5.3428
A AVR.29 (OH)	Y:	-0.6163	-0.01268	+ 67.0726	+0.26557		+0.2890
				3.157358	1.5426		5.4662
AVR.29 (OH)	X:	-0.7184	-0.15708	+143.7494	+0.96889	+0.089786	+0.6207
(2446914.5)				3.816845	2.2498	5.3528	0.7121
A MAI 3 (OH)	Y:	-0.6278	+0.01329	+ 67.0223	+0.22633		+0.2835
				3.936700	2.4309		0.8188
MAI 1 (OH)	X:	-1.9306	+0.46877	+144.4953	+1.38799	+0.192435	+0.6004
(2446916.5)				1.065504	5.7715	2.9360	1.4551
A MAI 5 (OH)	Y:	-0.6109	+0.01589	+ 67.0678	+0.22521		+0.2829
				1.185299	5.9220		1.6239
MAI 5 (OH)	X:	-0.1542	-0.36770	+143.7982	+1.03409	+0.177702	+0.6263
(2446920.5)				1.843395	1.5652	5.8078	3.1072
A MAI 9 (OH)	Y:	-0.5584	+0.01775	+ 67.1101	+0.21095		+0.2838
				1.965381	0.4297		3.2646
MAI 9 (OH)	X:	-1.5689	+0.34283	+145.6293	+0.35934	+0.164264	+0.6479
(2446924.5)				2.614617	5.8981	2.2923	4.7672
A MAI 13 (OH)	Y:	-0.4677	-0.00349	+ 67.1980	+0.24556		+0.2858
				2.747471	1.2404		4.9024
MAI 13 (OH)	X:	-0.9996	+0.18514	+146.4562	+0.34054	+0.091233	+0.6367
(2446928.5)				3.396550	1.7241	3.2757	0.1155
A MAI 17 (OH)	Y:	-0.4386	+0.00456	+ 67.2631	+0.21607		+0.2834
				3.527827	2.0826		0.2462
MAI 17 (OH)	X:	+0.4553	-0.50873	+148.5181	+1.66231	+0.258024	+0.6539
(2446932.5)				4.181273	2.5571	5.9120	1.7923
A MAI 21 (OH)	Y:	-0.4525	+0.04105	+ 67.3233	+0.22285		+0.2859
				4.309620	3.0199		1.8935
MAI 21 (OH)	X:	-1.2352	+0.39529	+147.9264	+1.04528	+0.160491	+0.6173
(2446936.5)				4.959361	4.7116	2.6922	3.4128
A MAI 25 (OH)	Y:	-0.3386	+0.00927	+ 67.5095	+0.19849		+0.2832
				5.090840	3.7402		3.5181
MAI 25 (OH)	X:	+0.1644	-0.20914	+150.0425	+0.28844	+0.105058	+0.6168
(2446940.5)				5.733525	3.7826	5.7280	5.0233
A MAI 29 (OH)	Y:	-0.2744	+0.01081	+ 67.6792	+0.19509		+0.2842
				5.872820	4.5570		5.1639

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 2 DE JUPITER: EUROPE N=1.7693

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
MAI 29 (OH)	X:	-0.6718	+0.23288	+151.4321	+1.04780	+0.096063	+0.6361
(2446944.5)				0.236949	5.3889	2.4832	0.3310
A JUN. 2 (OH)	Y:	-0.2279	+0.00814	+ 67.8694	+0.19030		+0.2855
				0.372437	5.3956		0.4935
JUN. 1 (OH)	X:	+0.1066	-0.05966	+152.3241	+0.41782	+0.043969	+0.6342
(2446947.5)				5.530331	4.4069	5.4205	4.7441
A JUN. 5 (OH)	Y:	-0.1747	+0.01096	+ 68.0361	+0.18672		+0.2862
				5.671669	4.4365		4.8848
JUN. 5 (OH)	X:	-0.1200	+0.07316	+153.8108	+0.75544	+0.040923	+0.6432
(2446951.5)				0.030731	5.2470	1.7834	0.0587
A JUN. 9 (OH)	Y:	-0.1251	+0.00781	+ 68.2749	+0.18213		+0.2875
				0.172009	5.2855		0.2166
JUN. 9 (OH)	X:	-0.3589	+0.31916	+155.6492	+1.12107	+0.132759	+0.6494
(2446955.5)				0.813486	5.9355	3.0097	1.6941
A JUN.13 (OH)	Y:	-0.0615	+0.01127	+ 68.5595	+0.17834		+0.2894
				0.955539	6.0855		1.8696
JUN.13 (OH)	X:	+1.6376	-0.65328	+155.5134	+1.55954	+0.324877	+0.7011
(2446959.5)				1.594210	1.9143	5.9776	3.2958
A JUN.17 (OH)	Y:	-0.0556	+0.03590	+ 68.9000	+0.17472		+0.2928
				1.739884	0.5291		3.4875
JUN.17 (OH)	X:	-0.3610	+0.41462	+159.0488	+0.43884	+0.185240	+0.7024
(2446963.5)				2.370762	5.9625	2.5483	4.9939
A JUN.21 (OH)	Y:	+0.0855	-0.00549	+ 69.1991	+0.19207		+0.2949
				2.525010	1.4662		5.1420
JUN.21 (OH)	X:	+0.7267	+0.01797	+160.6533	+0.82243	+0.093824	+0.7098
(2446967.5)				3.159966	1.8803	4.3430	0.3602
A JUN.25 (OH)	Y:	+0.0981	+0.01554	+ 69.5568	+0.19488		+0.2954
				3.310181	2.3245		0.4979
JUN.25 (OH)	X:	+1.1263	-0.18446	+162.4898	+0.99776	+0.102941	+0.7036
(2446971.5)				3.943844	2.9337	6.1063	1.9940
A JUN.29 (OH)	Y:	+0.1462	+0.02065	+ 69.9400	+0.18038		+0.2987
				4.095426	3.2737		2.1330
JUN.29 (OH)	X:	-0.0924	+0.51900	+163.1795	+1.32075	+0.205659	+0.6982
(2446975.5)				4.727168	4.8395	2.6924	3.6651
A JUL. 3 (OH)	Y:	+0.2267	+0.01676	+ 70.4089	+0.17621		+0.3007
				4.881470	4.0855		3.7856
JUL. 1 (OH)	X:	+0.7485	+0.09555	+165.3298	+0.29403	+0.072628	+0.7284
(2446977.5)				1.975035	1.2712	1.6797	4.4263
A JUL. 5 (OH)	Y:	+0.2824	+0.00053	+ 70.6470	+0.18095		+0.3031
				2.133599	1.3352		4.5938
JUL. 5 (OH)	X:	+0.1762	+0.53037	+167.6577	+0.50421	+0.246960	+0.7645
(2446981.5)				2.757310	6.2362	3.0443	6.0706
A JUL. 9 (OH)	Y:	+0.3407	-0.00299	+ 71.1571	+0.20125		+0.3078
				2.921375	2.1105		6.2279
JUL. 9 (OH)	X:	+2.1891	-0.45091	+169.8350	+1.51837	+0.217221	+0.7518
(2446985.5)				3.552515	2.5256	5.8585	1.4571
A JUL.13 (OH)	Y:	+0.3456	+0.02231	+ 71.6505	+0.18539		+0.3101
				3.708114	3.1692		1.5916
JUL.13 (OH)	X:	+0.3800	+0.50815	+170.4769	+1.27138	+0.196685	+0.7339
(2446989.5)				4.333124	4.6670	2.5532	3.1080
A JUL.17 (OH)	Y:	+0.4108	+0.02438	+ 72.2491	+0.19147		+0.3132
				4.496537	3.9850		3.2388

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 2 DE JUPITER: EUROPE N=1.7693

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JUL.17 (0H) (2446993.5)	X:	+2.2285	-0.32631	+174.3748 5.118326	+0.41217 3.1935	+0.157879 5.8039	+0.7386 4.6792
A JUL.21 (0H)	Y:	+0.4760	+0.01481	+ 72.8807 5.285479	+0.18749 4.8707		+0.3169 4.8615
JUL.21 (0H) (2446997.5)	X:	+1.4361	+0.10764	+176.1175 5.910028	+0.86107 5.2806	+0.065095 1.8970	+0.7671 0.0454
A JUL.25 (0H)	Y:	+0.5621	+0.00436	+ 73.5531 6.074685	+0.18540 5.7691		+0.3234 0.2303
JUL.25 (0H) (2447001.5)	X:	+1.2124	+0.35798	+178.4927 0.417187	+1.24007 6.1650	+0.165697 3.3649	+0.7900 1.6510
A JUL.29 (0H)	Y:	+0.5593	+0.02650	+ 74.3016 0.582444	+0.18480 0.2389		+0.3274 1.8642
JUL.29 (0H) (2447005.5)	X:	+3.1860	-0.63105	+179.5652 1.201191	+1.55732 1.9291	+0.298600 5.9877	+0.8351 3.3015
A AOU. 2 (0H)	Y:	+0.6382	+0.01994	+ 75.0476 1.373063	+0.18934 1.1533		+0.3333 3.5047
AOU. 1 (0H) (2447008.5)	X:	+0.9041	+0.61369	+182.7981 0.231111	+1.68180 5.8850	+0.270768 3.0751	+0.8127 1.3664
A AOU. 5 (0H)	Y:	+0.6681	+0.01762	+ 75.6354 0.396339	+0.20200 0.2269		+0.3358 1.5926
AOU. 5 (0H) (2447012.5)	X:	+3.5404	-0.69149	+183.7316 1.012588	+1.68281 1.8898	+0.324185 5.9034	+0.8667 3.0340
A AOU. 9 (0H)	Y:	+0.7210	+0.02282	+ 76.4821 1.188294	+0.20071 1.0917		+0.3436 3.2365
AOU. 9 (0H) (2447016.5)	X:	+0.6742	+0.73337	+188.9605 1.803896	+1.08802 5.3380	+0.344825 2.4369	+0.9022 4.7254
A AOU.13 (0H)	Y:	+0.8433	-0.01484	+ 77.3006 1.982731	+0.24983 1.8066		+0.3511 4.8931
AOU.13 (0H) (2447020.5)	X:	+2.4874	-0.01423	+190.0463 2.601820	+0.71609 2.0589	+0.077885 4.3963	+0.8759 0.0846
A AOU.17 (0H)	Y:	+0.8525	+0.00081	+ 78.2227 2.775397	+0.24304 2.7912		+0.3532 0.2434
AOU.17 (0H) (2447024.5)	X:	+3.5288	-0.54876	+192.6588 3.399864	+1.64344 2.6816	+0.278834 5.9699	+0.9062 1.7562
A AOU.21 (0H)	Y:	+0.8241	+0.03906	+ 79.1115 3.569651	+0.27751 3.6904		+0.3632 1.9024
AOU.21 (0H) (2447028.5)	X:	+1.5496	+0.51636	+193.8629 4.186079	+1.34781 5.0072	+0.209155 2.8178	+0.8687 3.3737
A AOU.25 (0H)	Y:	+0.9183	+0.01491	+ 80.1473 4.364872	+0.26539 4.5502		+0.3659 3.5280
AOU.25 (0H) (2447032.5)	X:	+3.8570	-0.60172	+198.3186 4.980833	+0.67898 2.4537	+0.275691 5.9334	+0.8735 4.9866
A AOU.29 (0H)	Y:	+0.9723	+0.01482	+ 81.1711 5.160823	+0.27118 5.3846		+0.3727 5.1872
AOU.29 (0H) (2447036.5)	X:	+1.0893	+0.80190	+198.8948 5.787609	+2.14228 5.5229	+0.369324 2.6908	+0.9420 0.2976
A SEP. 2 (0H)	Y:	+1.0548	-0.01277	+ 82.2061 5.957184	+0.27357 0.0417		+0.3817 0.5236
SEP. 1 (0H) (2447039.5)	X:	+3.9175	-0.55378	+202.2781 4.804949	+0.61179 2.3937	+0.256141 5.8709	+0.9062 4.7206
A SEP. 5 (0H)	Y:	+1.0412	+0.01655	+ 82.9867 4.984807	+0.28602 5.2951		+0.3852 4.9227

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 2 DE JUPITER: EUROPE N=1.7693

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
SEP. 5 (OH)	X:	+1.6030	+0.58746	+202.6965	+1.73575	+0.282996	+0.9666
(2447043.5)				5.610103	5.4842	2.5682	0.0462
A SEP. 9 (OH)	Y:	+1.1310	-0.01681	+ 84.0537	+0.28302		+0.3949
				5.782309	6.2476		0.2616
SEP. 9 (OH)	X:	+2.7595	+0.13465	+205.0872	+0.94647	+0.113046	+0.9788
(2447047.5)				0.120315	0.5173	3.8065	1.7174
A SEP.13 (OH)	Y:	+1.1164	+0.01166	+ 85.1304	+0.27611		+0.4021
				0.298236	0.7299		1.9253
SEP.13 (OH)	X:	+4.7281	-0.95014	+205.7731	+2.30238	+0.456158	+1.0434
(2447051.5)				0.913878	2.2779	6.1129	3.3474
A SEP.17 (OH)	Y:	+1.1087	+0.03305	+ 86.2075	+0.25212		+0.4097
				1.097928	1.5387		3.5578
SEP.17 (OH)	X:	+1.0867	+0.94834	+210.8044	+1.47188	+0.434449	+1.0557
(2447055.5)				1.716785	5.2796	2.7212	5.0589
A SEP.21 (OH)	Y:	+1.2452	-0.02058	+ 87.1450	+0.29555		+0.4197
				1.898060	2.3331		5.2150
SEP.21 (OH)	X:	+4.3973	-0.62030	+209.9766	+1.64747	+0.302085	+1.0268
(2447059.5)				2.527586	2.2135	5.4596	0.4507
A SEP.25 (OH)	Y:	+1.1935	+0.01365	+ 88.1238	+0.29483		+0.4212
				2.697915	3.2411		0.5842
SEP.25 (OH)	X:	+2.6424	+0.16529	+211.4482	+0.95651	+0.081898	+1.0023
(2447063.5)				3.320123	4.4683	1.8729	2.0588
A SEP.29 (OH)	Y:	+1.2193	+0.01796	+ 89.0754	+0.29366		+0.4275
				3.498569	4.1618		2.2186
SEP.29 (OH)	X:	+2.4726	+0.31848	+212.4097	+1.10580	+0.127729	+1.0139
(2447067.5)				4.122308	5.3773	2.9173	3.7179
A OCT. 3 (OH)	Y:	+1.2575	+0.01411	+ 89.9683	+0.28079		+0.4339
				4.299863	5.0207		3.8789
OCT. 1 (OH)	X:	+1.4689	+0.75702	+215.1176	+1.24456	+0.353654	+1.0827
(2447069.5)				1.383324	5.0213	2.5437	4.5457
A OCT. 5 (OH)	Y:	+1.3197	-0.01576	+ 90.3673	+0.26865		+0.4416
				1.559680	2.2409		4.6975
OCT. 5 (OH)	X:	+3.1770	+0.02558	+214.2675	+0.26099	+0.148070	+1.0769
(2447073.5)				2.188680	1.6627	4.1174	6.1944
A OCT. 9 (OH)	Y:	+1.3093	-0.00771	+ 91.1271	+0.25106		+0.4453
				2.361501	3.0873		0.0558
OCT. 9 (OH)	X:	+3.7575	-0.38051	+214.4848	+0.83204	+0.194266	+1.0530
(2447077.5)				2.992844	3.1847	6.1627	1.5540
A OCT.13 (OH)	Y:	+1.2705	+0.02259	+ 91.7967	+0.26115		+0.4493
				3.162688	4.1060		1.6979
OCT.13 (OH)	X:	+1.5886	+0.72740	+213.8549	+1.97594	+0.306897	+1.0242
(2447081.5)				3.787975	5.3389	2.7193	3.2156
A OCT.17 (OH)	Y:	+1.3088	+0.01053	+ 92.3844	+0.23609		+0.4516
				3.964882	4.9979		3.3566
OCT.17 (OH)	X:	+4.7040	-0.86360	+216.6555	+1.33870	+0.366569	+1.0252
(2447085.5)				4.596744	2.0308	6.0222	4.7760
A OCT.21 (OH)	Y:	+1.3551	-0.00981	+ 92.8732	+0.21492		+0.4553
				4.767072	5.9912		4.9865
OCT.21 (OH)	X:	+1.5136	+0.71313	+213.6915	+1.47004	+0.340839	+1.0813
(2447089.5)				5.405548	5.6582	2.6443	0.1465
A OCT.25 (OH)	Y:	+1.3871	-0.02929	+ 93.1963	+0.22010		+0.4626
				5.568591	0.6930		0.3527

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 2 DE JUPITER: EUROPE N=1.7693

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
OCT.25 (0H) (2447093.5)	X:	+4.0205	-0.46148	+213.8351 6.198314	+1.75981 1.8328	+0.259006 5.2997	+1.1159 1.8121
A OCT.29 (0H)	Y:	+1.2661	+0.02387	+ 93.4643 0.088688	+0.14664 1.7307		+0.4682 2.0003
OCT.29 (0H) (2447097.5)	X:	+3.7148	-0.47676	+212.9695 0.720181	+1.50508 2.7193	+0.237718 0.0390	+1.1066 3.4638
A NOV. 2 (0H)	Y:	+1.2967	+0.00896	+ 93.4853 0.889688	+0.16732 2.6155		+0.4678 3.6400
NOV. 1 (0H) (2447100.5)	X:	+3.0879	-0.03830	+212.3559 6.036678	+1.05483 1.4763	+0.155353 4.4397	+1.0987 1.5415
A NOV. 5 (0H)	Y:	+1.2740	+0.01025	+ 93.4845 6.203481	+0.15206 1.9126		+0.4687 1.7352
NOV. 5 (0H) (2447104.5)	X:	+4.1662	-0.74399	+210.7254 0.551757	+2.01370 2.5601	+0.345322 6.1167	+1.1133 3.1940
A NOV. 9 (0H)	Y:	+1.2628	+0.01328	+ 93.3064 0.720734	+0.16627 2.8474		+0.4707 3.3716
NOV. 9 (0H) (2447108.5)	X:	+0.1796	+1.24210	+212.6479 1.360689	+2.73252 5.1579	+0.585973 2.7032	+1.1340 4.8992
A NOV.13 (0H)	Y:	+1.3527	-0.04446	+ 92.9089 1.521838	+0.12523 3.6087		+0.4739 5.0238
NOV.13 (0H) (2447112.5)	X:	+4.1729	-0.73178	+207.2461 2.166647	+1.15817 2.3319	+0.333608 5.6671	+1.0437 0.2611
A NOV.17 (0H)	Y:	+1.2119	+0.01520	+ 92.5597 2.320239	+0.19550 4.6436		+0.4652 0.3751
NOV.17 (0H) (2447116.5)	X:	+2.3495	+0.03809	+206.3002 2.960148	+0.73546 5.0238	+0.074749 1.2336	+1.0345 1.8833
A NOV.21 (0H)	Y:	+1.1808	+0.01519	+ 92.0063 3.119314	+0.19451 5.5677		+0.4657 2.0200
NOV.21 (0H) (2447120.5)	X:	+2.2327	+0.13922	+204.5355 3.760042	+0.91841 6.2315	+0.086029 3.2424	+1.0146 3.4909
A NOV.25 (0H)	Y:	+1.2175	-0.01307	+ 91.4222 3.918111	+0.21294 0.3422		+0.4601 3.6431
NOV.25 (0H) (2447124.5)	X:	+3.4130	-0.57182	+203.5499 4.560820	+1.30653 1.9154	+0.233517 6.0858	+1.0010 5.1157
A NOV.29 (0H)	Y:	+1.1803	-0.01877	+ 90.6800 4.715428	+0.23127 1.2496		+0.4584 5.2946
NOV.29 (0H) (2447128.5)	X:	+0.2455	+1.01570	+198.7470 5.365658	+1.58358 5.6323	+0.486780 2.8651	+1.0543 0.4234
A DEC. 3 (0H)	Y:	+1.1731	-0.04026	+ 89.8646 5.512153	+0.26058 2.1527		+0.4556 0.6290
DEC. 1 (0H) (2447130.5)	X:	+3.2928	-0.60047	+198.5402 2.620455	+0.61069 2.4509	+0.275592 6.0499	+1.0229 1.3576
A DEC. 5 (0H)	Y:	+1.0404	+0.01616	+ 89.3506 2.768185	+0.23976 5.6440		+0.4560 1.4725
DEC. 5 (0H) (2447134.5)	X:	+0.9433	+0.57608	+196.3876 3.406675	+1.64411 5.7394	+0.267618 2.8064	+0.9659 2.9515
A DEC. 9 (0H)	Y:	+1.0773	-0.01640	+ 88.4588 3.564395	+0.26143 0.3584		+0.4478 3.0877
DEC. 9 (0H) (2447138.5)	X:	+3.3269	-0.70158	+195.7252 4.210407	+1.65372 1.8520	+0.290005 5.8836	+0.9650 4.5510
A DEC.13 (0H)	Y:	+1.0092	-0.01286	+ 87.4307 4.358730	+0.27095 1.2074		+0.4436 4.7325

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 2 DE JUPITER: EUROPE N=1.7693

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
DEC.13 (0H)	X:	+0.2306	+0.77008	+190.4430	+1.15513	+0.383730	+1.0201
(2447142.5)				5.007035	5.5181	2.6968	6.1636
A DEC.17 (0H)	Y:	+1.0262	-0.04914	+ 86.4106	+0.31149		+0.4426
				5.152241	2.0497		0.0650
DEC.17 (0H)	X:	+2.1351	-0.18402	+189.4908	+0.99950	+0.119348	+0.9958
(2447146.5)				5.793800	2.2008	5.0506	1.5553
A DEC.21 (0H)	Y:	+0.8689	+0.00138	+ 85.2645	+0.29674		+0.4364
				5.945700	2.9819		1.7162
DEC.21 (0H)	X:	+2.6541	-0.62939	+186.9178	+1.64531	+0.300253	+1.0136
(2447150.5)				0.300912	2.9725	6.2831	3.1874
A DEC.25 (0H)	Y:	+0.8250	-0.00160	+ 84.1262	+0.31381		+0.4319
				0.454743	3.8797		3.3388
DEC.25 (0H)	X:	-0.0835	+0.75824	+186.0503	+2.02143	+0.355579	+0.9860
(2447154.5)				1.101169	5.1743	2.7931	4.8614
A DEC.29 (0H)	Y:	+0.8207	-0.02800	+ 82.8828	+0.28609		+0.4277
				1.245412	4.6437		4.9740
DEC.29 (0H)	X:	+2.8943	-0.78010	+180.7370	+1.00623	+0.336292	+0.9254
(2447158.5)				1.893687	1.9622	5.6684	0.2315
A DEC.33 (0H)	Y:	+0.7002	-0.00433	+ 81.7313	+0.31370		+0.4163
				2.034998	5.4328		0.3280

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 3 DE JUPITER: GANYMEDE N=0.8782

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN. 1 (OH)	X:	+0.4832	+0.00436	+254.4567	+1.07595	+0.005267	+0.2221
(2446796.5)				5.883187	3.5652	0.8764	1.4910
A JAN. 9 (OH)	Y:	+0.2218	+0.00461	+119.1013	+0.43433		+0.1064
				5.945384	3.7026		1.5317
JAN. 9 (OH)	X:	+0.4425	+0.02830	+248.7651	+0.99584	+0.008712	+0.2001
(2446804.5)				0.318561	4.4202	3.6593	2.8411
A JAN.17 (OH)	Y:	+0.2363	+0.00000	+116.9660	+0.43181		+0.0976
				0.381509	4.5012		2.9347
JAN.17 (OH)	X:	+0.3336	+0.05042	+244.0190	+1.08704	+0.006142	+0.2136
(2446812.5)				1.034574	5.1321	2.2569	4.2498
A JAN.25 (OH)	Y:	+0.2039	+0.01154	+115.1056	+0.43890		+0.0995
				1.099049	5.2708		4.3041
JAN.25 (OH)	X:	+0.8233	-0.04492	+239.1841	+0.92744	+0.011689	+0.2256
(2446820.5)				1.749229	6.0174	5.7117	5.6343
A FEV. 2 (OH)	Y:	+0.2677	+0.00531	+113.3828	+0.43573		+0.1098
				1.814915	6.0533		5.6803
FEV. 1 (OH)	X:	+0.5371	+0.02689	+236.0876	+1.05743	+0.006455	+0.2559
(2446827.5)				1.587311	5.8184	2.4989	5.3405
A FEV. 9 (OH)	Y:	+0.3019	-0.00003	+112.0368	+0.43989		+0.1204
				1.655177	5.9599		5.4080
FEV. 9 (OH)	X:	+0.6014	-0.00221	+232.6160	+0.93535	+0.010430	+0.2579
(2446835.5)				2.298283	0.2833	1.4896	0.5395
A FEV.17 (OH)	Y:	+0.3219	-0.00510	+110.6885	+0.43573		+0.1279
				2.368714	0.4411		0.6237
FEV.17 (OH)	X:	+0.5123	+0.01929	+229.9146	+0.99550	+0.008972	+0.2587
(2446843.5)				3.008860	1.0624	3.3168	2.0553
A FEV.25 (OH)	Y:	+0.2842	-0.00383	+109.5149	+0.43278		+0.1240
				3.081283	1.1935		2.1529
FEV.25 (OH)	X:	+0.1561	+0.08955	+227.3672	+0.77191	+0.024824	+0.2474
(2446851.5)				3.717592	1.8289	2.6734	3.5887
A MAR. 5 (OH)	Y:	+0.2913	-0.00962	+108.5215	+0.43930		+0.1185
				3.793603	1.9406		3.6139
MAR. 1 (OH)	X:	+0.4322	+0.03291	+226.7807	+1.03818	+0.010349	+0.2337
(2446855.5)				0.932318	5.4961	3.3673	4.2570
A MAR. 9 (OH)	Y:	+0.2698	-0.00510	+108.0177	+0.42586		+0.1149
				1.007630	5.4788		4.3040
MAR. 9 (OH)	X:	+1.0044	-0.12019	+224.9027	+0.75603	+0.032077	+0.2242
(2446863.5)				1.640554	0.1320	6.1577	5.5864
A MAR.17 (OH)	Y:	+0.2158	+0.01179	+107.2744	+0.42587		+0.1147
				1.718955	6.1984		5.6973
MAR.17 (OH)	X:	+0.4638	+0.03418	+224.6736	+0.97474	+0.011447	+0.2702
(2446871.5)				2.348367	0.6214	2.7274	0.6968
A MAR.25 (OH)	Y:	+0.3068	-0.00599	+106.5801	+0.42429		+0.1272
				2.430566	0.6949		0.8007
MAR.25 (OH)	X:	+0.7313	-0.03659	+224.2450	+1.02214	+0.007123	+0.3005
(2446879.5)				3.057671	1.5476	5.7333	2.2305
A AVR. 2 (OH)	Y:	+0.2639	+0.00329	+106.0284	+0.40992		+0.1398
				3.141511	1.4492		2.3214

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 3 DE JUPITER: GANYMEDE N=0.8782

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
AVR. 1 (0H)	X:	+0.5728	-0.00495	+224.4408	+0.94677	+0.001528	+0.3056
(2446886.5)				2.891192	1.3952	2.1791	1.9773
A AVR. 9 (0H)	Y:	+0.2706	-0.00077	+105.6931	+0.40218		+0.1437
				2.978616	1.3130		2.0668
AVR. 9 (0H)	X:	+0.4275	+0.01869	+225.2343	+0.91348	+0.011188	+0.2885
(2446894.5)				3.599183	2.0965	3.4902	3.4996
A AVR.17 (0H)	Y:	+0.2500	-0.00562	+105.4389	+0.39823		+0.1390
				3.690443	2.0542		3.5966
AVR.17 (0H)	X:	+0.6360	-0.04777	+226.6467	+1.04814	+0.012304	+0.2792
(2446902.5)				4.308914	2.8653	5.5647	4.9267
A AVR.25 (0H)	Y:	+0.1882	+0.00515	+105.2511	+0.39192		+0.1326
				4.403039	2.8308		5.0292
AVR.25 (0H)	X:	+0.3074	+0.03350	+228.1071	+0.93815	+0.006945	+0.2897
(2446910.5)				5.017964	3.7864	3.3440	0.0671
A MAI 3 (0H)	Y:	+0.1948	+0.00304	+105.2499	+0.37584		+0.1312
				5.115730	3.5808		0.1706
MAI 1 (0H)	X:	+1.0351	-0.14094	+230.4316	+1.28226	+0.036578	+0.2891
(2446916.5)				3.981412	2.6099	5.7791	4.1728
A MAI 9 (0H)	Y:	+0.1493	+0.01658	+105.2763	+0.36998		+0.1358
				4.080362	2.6141		4.3390
MAI 9 (0H)	X:	+0.3302	+0.02843	+232.4714	+0.98427	+0.008595	+0.3264
(2446924.5)				4.690677	3.6121	2.3529	5.6803
A MAI 17 (0H)	Y:	+0.2329	-0.00216	+105.5678	+0.35380		+0.1463
				4.794675	3.3395		5.8076
MAI 17 (0H)	X:	+0.5573	-0.03293	+235.9748	+0.96128	+0.008797	+0.3478
(2446932.5)				5.402050	4.2395	5.8991	0.9487
A MAI 25 (0H)	Y:	+0.1948	+0.00408	+105.9311	+0.34782		+0.1562
				5.510664	4.1264		1.0484
MAI 25 (0H)	X:	+0.4715	-0.03032	+239.6644	+0.96199	+0.006571	+0.3539
(2446940.5)				6.115408	5.0660	6.1105	2.4525
A JUN. 2 (0H)	Y:	+0.1908	-0.00268	+106.4562	+0.33689		+0.1551
				6.227766	4.9140		2.5602
JUN. 1 (0H)	X:	+0.0842	+0.05031	+243.3203	+1.10451	+0.011061	+0.3387
(2446947.5)				5.956330	5.0414	2.7393	2.1898
A JUN. 9 (0H)	Y:	+0.1568	-0.00208	+107.0429	+0.31980		+0.1510
				6.070806	4.8405		2.3080
JUN. 9 (0H)	X:	+0.5624	-0.07280	+247.9878	+0.87840	+0.016621	+0.3340
(2446955.5)				0.387311	5.8611	5.9435	3.6117
A JUN.17 (0H)	Y:	+0.1426	-0.00146	+107.8982	+0.31069		+0.1426
				0.507702	5.6552		3.7581
JUN.17 (0H)	X:	+0.2206	+0.01571	+253.4761	+1.03206	+0.002123	+0.3385
(2446963.5)				1.106557	0.2872	2.6707	5.0811
A JUN.25 (0H)	Y:	+0.1411	-0.00066	+108.9489	+0.30400		+0.1444
				1.229771	0.2017		5.2085
JUN.25 (0H)	X:	+0.4978	-0.05249	+259.0596	+1.03250	+0.008992	+0.3549
(2446971.5)				1.826472	1.1871	0.2091	0.2191
A JUL. 3 (0H)	Y:	+0.1881	-0.00980	+110.1905	+0.30137		+0.1533
				1.953668	1.0674		0.3521

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 3 DE JUPITER: GANYMEDE N=0.8782

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JUL. 1 (OH)	X:	+0.1850	+0.00650	+264.1374	+0.96660	+0.018717	+0.4025
(2446977.5)				0.797162	0.0031	1.4344	4.4553
A JUL. 9 (OH)	Y:	+0.1847	-0.00838	+111.2703	+0.30147		+0.1604
				0.927280	0.1480		4.6168
JUL. 9 (OH)	X:	+0.3460	-0.02601	+270.4350	+1.06612	+0.002606	+0.4109
(2446985.5)				1.521560	0.9707	4.0017	6.0028
A JUL.17 (OH)	Y:	+0.1807	-0.01485	+112.9348	+0.30613		+0.1706
				1.655190	1.0401		6.1386
JUL.17 (OH)	X:	+0.2996	-0.04773	+277.4809	+1.07892	+0.003263	+0.4102
(2446993.5)				2.248671	1.7978	5.4558	1.2580
A JUL.25 (OH)	Y:	+0.1357	-0.01743	+114.8827	+0.31651		+0.1692
				2.385700	1.9101		1.4001
JUL.25 (OH)	X:	-0.1799	+0.06040	+284.9367	+0.9097	+0.013482	+0.4007
(2447001.5)				2.977380	2.6880	2.7528	2.7638
A AOU. 2 (OH)	Y:	+0.0742	-0.00760	+117.0918	+0.32693		+0.1678
				3.118851	2.7943		2.8998
AOU. 1 (OH)	X:	-0.1399	+0.06164	+291.7224	+0.89818	+0.015987	+0.3856
(2447008.5)				2.833555	2.5613	3.4179	2.4346
A AOU. 9 (OH)	Y:	+0.0606	-0.00549	+119.2216	+0.34868		+0.1616
				2.977232	2.7967		2.6080
AOU. 9 (OH)	X:	+0.5214	-0.07855	+299.7697	+1.03308	+0.031375	+0.3943
(2447016.5)				3.571680	3.1694	5.3468	3.8318
A AOU.17 (OH)	Y:	+0.0047	+0.01375	+121.8801	+0.38280		+0.1694
				3.715909	3.6802		4.0111
AOU.17 (OH)	X:	+0.6226	-0.12463	+307.6033	+0.99726	+0.039920	+0.4164
(2447024.5)				4.310962	4.0233	0.0035	5.2836
A AOU.25 (OH)	Y:	+0.0187	+0.01724	+124.8230	+0.41293		+0.1756
				4.457731	4.5508		5.4721
AOU.25 (OH)	X:	-0.4861	+0.16600	+314.2273	+1.27656	+0.036668	+0.4871
(2447032.5)				5.054038	5.2926	2.7220	0.5278
A SEP. 2 (OH)	Y:	+0.0777	+0.00234	+128.0293	+0.42456		+0.1946
				5.202330	5.4225		0.7092
SEP. 1 (OH)	X:	-0.6703	+0.20103	+320.4158	+1.31807	+0.045676	+0.5041
(2447039.5)				4.922065	5.3268	2.7915	0.3175
A SEP. 9 (OH)	Y:	+0.0711	-0.00234	+130.9141	+0.43788		+0.1986
				5.071404	5.3828		0.4993
SEP. 9 (OH)	X:	+0.6794	-0.16376	+328.2017	+0.65671	+0.034843	+0.4921
(2447047.5)				5.669890	0.2167	6.1892	1.9402
A SEP.17 (OH)	Y:	+0.0276	+0.00297	+134.2243	+0.45139		+0.1962
				5.821986	6.2397		2.0520
SEP.17 (OH)	X:	-0.4112	+0.11221	+333.7122	+0.85889	+0.041333	+0.4257
(2447055.5)				0.143373	0.5170	2.6860	3.4559
A SEP.25 (OH)	Y:	+0.1346	-0.02641	+137.3959	+0.46912		+0.1785
				0.291505	0.8570		3.5614
SEP.25 (OH)	X:	+0.1991	-0.02023	+338.1416	+0.92264	+0.014497	+0.4153
(2447063.5)				0.898250	1.8434	4.4637	4.8712
A OCT. 3 (OH)	Y:	+0.0215	+0.00119	+140.5328	+0.42839		+0.1767
				1.047415	1.7413		4.9920

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 3 DE JUPITER: GANYMEDE N=0.8782

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
OCT. 1 (OH) (2447069.5)	X:	+0.2141	-0.01194	+340.8970 6.179533	+0.79993 1.0438	+0.012066 2.4246	+0.4368 2.8184
A OCT. 9 (OH)	Y:	+0.1711	-0.02354	+142.5036 0.043958	+0.42331 0.8766		+0.1845 2.9516
OCT. 9 (OH) (2447077.5)	X:	+0.4760	-0.07970	+342.8592 0.656020	+0.94259 2.1497	+0.011721 5.7313	+0.4579 4.2835
A OCT.17 (OH)	Y:	+0.0907	-0.00650	+144.7966 0.802755	+0.36547 1.8037		+0.1954 4.4350
OCT.17 (OH) (2447085.5)	X:	-0.0406	+0.06390	+343.6169 1.418217	+0.67529 3.1199	+0.025535 3.7507	+0.4822 5.8803
A OCT.25 (OH)	Y:	+0.0365	+0.00375	+146.3881 1.561346	+0.33166 2.8220		+0.1988 5.9712
OCT.25 (OH) (2447093.5)	X:	+0.8959	-0.20288	+341.5133 2.180542	+0.89517 3.5679	+0.061758 5.8875	+0.4500 1.2481
A NOV. 2 (OH)	Y:	-0.1254	+0.04101	+147.2361 2.319106	+0.32336 3.9528		+0.1882 1.3178
NOV. 1 (OH) (2447100.5)	X:	+1.0098	-0.22817	+338.9079 2.060874	+0.88108 3.5614	+0.070883 5.8717	+0.4161 1.0355
A NOV. 9 (OH)	Y:	-0.1579	+0.04836	+147.3072 2.196753	+0.31552 4.1547		+0.1765 1.0811
NOV. 9 (OH) (2447108.5)	X:	-0.5313	+0.15912	+335.6874 2.816475	+1.23964 5.1866	+0.030441 2.3046	+0.3328 2.4289
A NOV.17 (OH)	Y:	-0.0022	+0.01848	+146.5443 2.953695	+0.29798 5.2484		+0.1503 2.5133
NOV.17 (OH) (2447116.5)	X:	+0.7842	-0.13115	+330.5096 3.576966	+0.75885 0.1776	+0.031567 6.0109	+0.3338 3.7454
A NOV.25 (OH)	Y:	+0.0721	+0.01156	+145.0272 3.707713	+0.31748 0.0460		+0.1422 3.9265
NOV.25 (OH) (2447124.5)	X:	+0.1758	+0.02792	+323.5205 4.328767	+0.95435 0.6952	+0.018527 2.5153	+0.3425 5.2572
A DEC. 3 (OH)	Y:	+0.2316	-0.02385	+142.9218 4.458215	+0.38089 1.0528		+0.1467 5.4043
DEC. 1 (OH) (2447130.5)	X:	+0.7338	-0.10988	+318.3905 3.322499	+0.80916 0.1146	+0.025532 6.2256	+0.3584 3.1958
A DEC. 9 (OH)	Y:	+0.1168	+0.00746	+140.8106 3.448523	+0.39197 0.1660		+0.1502 3.3296
DEC. 9 (OH) (2447138.5)	X:	-0.1009	+0.08242	+310.3326 4.067859	+0.94496 0.5722	+0.035327 2.4867	+0.3530 4.7808
A DEC.17 (OH)	Y:	+0.2494	-0.03100	+137.8444 4.193526	+0.45595 1.0916		+0.1470 4.9029
DEC.17 (OH) (2447146.5)	X:	+0.4585	-0.05744	+303.1441 4.811580	+1.13585 1.7509	+0.013471 5.0018	+0.2957 0.0523
A DEC.25 (OH)	Y:	+0.1143	-0.00879	+134.3230 4.934964	+0.46740 1.9480		+0.1296 0.1454
DEC.25 (OH) (2447154.5)	X:	+0.1844	-0.00364	+295.0373 5.551764	+1.01314 2.6875	+0.003969 0.9487	+0.2454 1.4599
A DEC.33 (OH)	Y:	+0.1003	-0.00516	+130.6533 5.672741	+0.48644 2.7862		+0.1113 1.5671

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 4 DE JUPITER: CALLISTO N=0.3765

		A0	A1	B0 F0	B1 F1	C0 P0
JAN. 1 (OH)	X:	- 8.4342	+ 2.42869	+440.7056	+ 1.92265	+0.6989
(2446796.5)				4.515059	1.1981	2.3942
A JAN. 9 (OH)	Y:	- 3.8058	+ 1.06091	+206.0183	+ 0.73875	+0.3300
				4.586424	1.2432	2.5152
JAN. 9 (OH)	X:	+ 4.5386	- 0.78603	+434.4495	+ 1.35275	+1.3624
(2446804.5)				1.235076	4.9903	2.5747
A JAN.17 (OH)	Y:	+ 1.9865	- 0.37491	+203.8001	+ 0.52171	+0.6383
				1.305371	5.1316	2.6332
JAN.17 (OH)	X:	+10.6895	- 2.54846	+434.0323	+ 3.08524	+1.5165
(2446812.5)				4.256326	2.6753	2.6770
A JAN.25 (OH)	Y:	+ 4.7935	- 1.19501	+204.8288	+ 1.44111	+0.7275
				4.326427	2.7699	2.7271
JAN.25 (OH)	X:	- 5.1525	+ 1.22982	+424.1389	+ 2.44583	+0.8859
(2446820.5)				0.943764	5.4382	1.8594
A FEV. 2 (OH)	Y:	- 3.0146	+ 0.69268	+200.8354	+ 1.17010	+0.4071
				1.018520	5.5937	1.8794
FEV. 1 (OH)	X:	- 3.0267	+ 0.88440	+416.1811	+ 1.84301	+1.1835
(2446827.5)				3.527818	1.1469	0.8213
A FEV. 9 (OH)	Y:	- 2.2042	+ 0.56000	+197.1768	+ 0.82744	+0.5818
				3.598213	1.0924	0.8576
FEV. 9 (OH)	X:	- 5.2810	+ 1.55918	+406.0951	+ 1.86239	+1.3750
(2446835.5)				0.254468	5.2078	0.6484
A FEV.17 (OH)	Y:	- 2.3659	+ 0.67817	+193.0977	+ 0.83966	+0.6383
				0.329357	5.2739	0.7219
FEV.17 (OH)	X:	+ 3.6209	- 0.31716	+404.4728	+ 1.99665	+1.0455
(2446843.5)				3.223773	1.5201	0.6443
A FEV.25 (OH)	Y:	+ 1.5449	- 0.16826	+192.2456	+ 0.88717	+0.5029
				3.302250	1.5966	0.7266
FEV.25 (OH)	X:	+12.5070	- 2.90732	+411.5379	+ 3.29963	+0.3585
(2446851.5)				6.171226	3.7438	0.1852
A MAR. 5 (OH)	Y:	+ 5.8394	- 1.39563	+195.2357	+ 1.51218	+0.1685
				6.249545	3.7305	0.3960
MAR. 1 (OH)	X:	+ 8.6630	- 2.01582	+393.1752	+ 0.91887	+1.4802
(2446855.5)				1.381934	4.8880	3.2768
A MAR. 9 (OH)	Y:	+ 3.6677	- 0.88368	+186.7442	+ 0.39166	+0.6858
				1.466706	4.9183	3.3381
MAR. 9 (OH)	X:	- 7.8462	+ 2.18895	+390.0780	+ 0.69253	+0.6141
(2446863.5)				4.357149	1.4888	2.7648
A MAR.17 (OH)	Y:	- 4.0202	+ 1.05990	+184.6169	+ 0.32103	+0.2898
				4.442831	1.2504	2.9059
MAR.17 (OH)	X:	+ 0.5063	+ 0.40936	+395.0727	+ 1.91805	+1.0626
(2446871.5)				1.080621	5.9100	2.4518
A MAR.25 (OH)	Y:	+ 0.3543	+ 0.13683	+186.7859	+ 0.79047	+0.5058
				1.166853	5.8888	2.5531
MAR.25 (OH)	X:	+ 5.8425	- 0.90165	+396.4473	+ 2.37400	+1.3310
(2446879.5)				4.065039	2.6532	2.4556
A AVR. 2 (OH)	Y:	+ 2.8870	- 0.53379	+187.1004	+ 1.09534	+0.6509
				4.157951	2.6778	2.5692

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 4 DE JUPITER: CALLISTO N=0.3765

		A0	A1	B0 F0	B1 F1	C0 P0
AVR. 1 (OH) (2446886.5)	X:	+ 5.4033	- 0.83612	+396.3940 0.364041	+ 1.51195 4.7437	+1.0707 1.5830
A AVR. 9 (OH)	Y:	+ 2.6908	- 0.47769	+185.9004 0.454832	+ 0.67954 4.5148	+0.5038 1.7189
AVR. 9 (OH) (2446894.5)	X:	+11.5516	- 2.51528	+390.1990 3.381089	+ 2.77945 2.6502	+0.7148 1.4889
A AVR.17 (OH)	Y:	+ 4.7721	- 1.08666	+182.5984 3.476522	+ 1.11021 2.6309	+0.3638 1.5583
AVR.17 (OH) (2446902.5)	X:	- 7.3794	+ 2.10970	+393.3630 0.073108	+ 2.72033 5.5297	+1.4273 0.4421
A AVR.25 (OH)	Y:	- 3.6644	+ 1.00341	+182.4904 0.174573	+ 1.11728 5.5357	+0.6476 0.5228
AVR.25 (OH) (2446910.5)	X:	- 1.7859	+ 1.15721	+406.5173 3.018263	+ 1.97801 1.2661	+1.4716 0.3882
A MAI 3 (OH)	Y:	- 0.8478	+ 0.48896	+186.4000 3.121606	+ 0.84692 1.1229	+0.6734 0.4959
MAI 1 (OH) (2446916.5)	X:	- 5.1381	+ 1.64378	+395.9677 5.261700	+ 1.53262 4.7768	+1.4054 5.1959
A MAI 9 (OH)	Y:	- 3.1388	+ 0.89163	+179.9071 5.369915	+ 0.53169 5.0245	+0.6651 5.3313
MAI 9 (OH) (2446924.5)	X:	+ 0.3673	+ 0.69417	+412.4202 1.962631	+ 2.27198 0.6943	+1.0594 4.8121
A MAI 17 (OH)	Y:	+ 0.2313	+ 0.26064	+186.0686 2.071774	+ 0.85668 0.5858	+0.4785 4.9282
MAI 17 (OH) (2446932.5)	X:	+ 1.0004	+ 0.56626	+413.3924 4.935446	+ 1.36894 3.9067	+1.0559 4.4546
A MAI 25 (OH)	Y:	+ 0.5235	+ 0.15693	+185.0943 5.050586	+ 0.49738 3.6369	+0.4845 4.5482
MAI 25 (OH) (2446940.5)	X:	+16.9558	- 3.50275	+407.1976 1.613375	+ 1.44362 2.4785	+1.8442 3.7696
A JUN. 2 (OH)	Y:	+ 7.1637	- 1.52301	+179.6239 1.735372	+ 0.61742 2.8391	+0.7880 3.8608
JUN. 1 (OH) (2446947.5)	X:	+18.4842	- 3.84268	+437.1616 4.290765	+ 4.65420 3.2336	+2.0871 3.1464
A JUN. 9 (OH)	Y:	+ 7.6690	- 1.66452	+192.0385 4.408360	+ 1.81205 3.1863	+0.9115 3.2324
JUN. 9 (OH) (2446955.5)	X:	- 3.9410	+ 1.47983	+440.5722 0.968156	+ 2.91614 6.2361	+0.8924 2.8453
A JUN.17 (OH)	Y:	- 2.3841	+ 0.75906	+191.1567 1.094492	+ 1.13004 6.1570	+0.3627 3.0148
JUN.17 (OH) (2446963.5)	X:	+ 0.7414	+ 0.72032	+446.2911 3.930808	+ 1.27946 3.0367	+1.2049 2.3492
A JUN.25 (OH)	Y:	+ 0.2598	+ 0.26709	+190.7282 4.060250	+ 0.35631 2.7803	+0.5178 2.4978
JUN.25 (OH) (2446971.5)	X:	- 1.1261	+ 1.32450	+455.2360 0.658533	+ 2.77635 0.0491	+1.3741 2.0652
A JUL. 3 (OH)	Y:	- 0.0730	+ 0.38895	+192.7616 0.786460	+ 0.79873 0.0404	+0.5806 2.2710

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 4 DE JUPITER: CALLISTO N=0.3765

		A0	A1	B0 F0	B1 F1	C0 P0
JUL. 1 (OH)	X:	- 2.0826	+ 1.33187	+470.1544	+ 1.38909	+1.7460
(2446977.5)				2.878644	1.6375	0.3431
A JUL. 9 (OH)	Y:	- 1.2667	+ 0.62257	+197.2317	+ 0.46237	+0.7426
				3.011680	1.2030	0.4715
JUL. 9 (OH)	X:	- 3.8133	+ 2.17170	+466.4280	+ 2.79103	+1.8764
(2446985.5)				5.889072	5.8932	0.3781
A JUL.17 (OH)	Y:	- 1.2619	+ 0.73968	+194.5936	+ 0.87799	+0.7505
				6.028138	5.9984	0.5084
JUL.17 (OH)	X:	+21.5846	- 4.27399	+468.0448	+ 4.41524	+0.5093
(2446993.5)				2.611362	2.8043	5.9558
A JUL.25 (OH)	Y:	+ 8.6353	- 1.76392	+193.1891	+ 1.70171	+0.1949
				2.759467	2.9100	0.0547
JUL.25 (OH)	X:	+ 1.8571	+ 0.21184	+500.5846	+ 2.18285	+1.5083
(2447001.5)				5.597559	5.2079	5.8772
A AOU. 2 (OH)	Y:	- 0.1059	+ 0.20877	+204.0133	+ 0.78608	+0.6376
				5.744436	5.4279	6.0469
AOU. 1 (OH)	X:	+ 6.5177	- 0.65485	+510.4946	+ 1.78303	+1.6806
(2447008.5)				1.933242	2.0256	4.7976
A AOU. 9 (OH)	Y:	+ 1.5114	- 0.07222	+208.4094	+ 0.56773	+0.6878
				2.082418	2.0749	4.9852
AOU. 9 (OH)	X:	- 0.5872	+ 0.90420	+521.8376	+ 2.20909	+1.6839
(2447016.5)				4.940101	5.1432	4.8950
A AOU.17 (OH)	Y:	- 0.7893	+ 0.44829	+210.8573	+ 0.89579	+0.6865
				5.090810	5.3951	5.0911
AOU.17 (OH)	X:	- 4.3693	+ 2.67535	+550.3444	+ 2.84520	+1.3018
(2447024.5)				1.683836	0.9417	4.8461
A AOU.25 (OH)	Y:	- 1.4911	+ 0.92975	+222.1463	+ 0.99991	+0.5522
				1.832069	1.1284	4.9272
AOU.25 (OH)	X:	+21.0427	- 4.23743	+570.5691	+ 3.43457	+2.2937
(2447032.5)				4.705403	3.7220	3.8741
A SEP. 2 (OH)	Y:	+ 8.4228	- 1.77748	+231.6754	+ 1.35602	+0.8944
				4.855462	3.7882	3.9865
SEP. 1 (OH)	X:	+22.3646	- 3.98771	+556.3587	+ 3.21867	+2.5190
(2447039.5)				1.001758	2.5453	3.2009
A SEP. 9 (OH)	Y:	+ 8.7933	- 1.66578	+224.2032	+ 1.44083	+1.0339
				1.158344	2.5161	3.2944
SEP. 9 (OH)	X:	+ 5.6608	- 0.71008	+575.5615	+ 2.11805	+1.8741
(2447047.5)				4.061493	4.3621	3.1015
A SEP.17 (OH)	Y:	+ 1.4598	- 0.15847	+234.2042	+ 0.98939	+0.7358
				4.214433	4.5030	3.2570
SEP.17 (OH)	X:	+ 1.5117	+ 0.80785	+587.8889	+ 1.58352	+1.2977
(2447055.5)				0.802075	1.1493	2.7849
A SEP.25 (OH)	Y:	- 0.4475	+ 0.51046	+241.2179	+ 0.92072	+0.5100
				0.960452	1.0352	2.8951
SEP.25 (OH)	X:	- 5.5416	+ 2.61782	+596.2776	+ 2.37901	+1.6366
(2447063.5)				3.798465	5.7986	2.1460
A OCT. 3 (OH)	Y:	- 1.5729	+ 0.83736	+245.6369	+ 0.81755	+0.6778
				3.957773	5.4556	2.3667

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 4 DE JUPITER: CALLISTO N=0.3765

		A0	A1	B0 F0	B1 F1	C0 P0
OCT. 1 (0H) (2447069.5)	X:	+ 1.9889	+ 0.59355	+597.5578 6.095226	+ 1.69457 0.7416	+1.6888 0.6147
A OCT. 9 (0H)	Y:	- 0.0068	+ 0.36813	+248.1103 6.250576	+ 0.94247 0.5148	+0.7226 0.7452
OCT. 9 (0H) (2447077.5)	X:	-13.6550	+ 4.56057	+623.4061 2.817487	+ 3.01974 5.9424	+2.8097 0.4585
A OCT.17 (0H)	Y:	- 5.9215	+ 1.86841	+260.5851 2.964840	+ 1.01182 5.9504	+1.1605 0.5560
OCT.17 (0H) (2447085.5)	X:	+22.0108	- 3.77156	+621.2806 5.848636	+ 3.12429 2.4867	+0.9112 0.7957
A OCT.25 (0H)	Y:	+ 9.6159	- 1.76808	+263.1646 5.991900	+ 1.19921 2.5685	+0.4007 1.0618
OCT.25 (0H) (2447093.5)	X:	+ 7.3095	- 1.22190	+596.2050 2.615041	+ 2.28628 4.2289	+1.2810 6.2085
A NOV. 2 (0H)	Y:	+ 1.9539	- 0.37042	+255.6183 2.760463	+ 0.85754 4.1385	+0.5778 0.0731
NOV. 1 (0H) (2447100.5)	X:	+ 5.8522	- 0.35513	+599.9004 5.267151	+ 1.47200 1.3649	+1.6179 5.1708
A NOV. 9 (0H)	Y:	+ 1.5204	- 0.00255	+257.6932 5.410535	+ 0.46760 1.0418	+0.7139 5.3304
NOV. 9 (0H) (2447108.5)	X:	+ 4.0616	- 0.41546	+589.9236 2.008549	+ 2.08921 4.3803	+1.6457 5.0307
A NOV.17 (0H)	Y:	+ 0.8522	- 0.04897	+256.5983 2.149604	+ 0.67074 4.4965	+0.7153 5.2093
NOV.17 (0H) (2447116.5)	X:	-11.5503	+ 4.23115	+561.9643 5.022300	+ 4.08992 0.5655	+1.7031 5.3857
A NOV.25 (0H)	Y:	- 5.0076	+ 1.77105	+245.4303 5.164636	+ 1.57457 0.5475	+0.7704 5.4651
NOV.25 (0H) (2447124.5)	X:	+18.5159	- 3.51502	+552.9704 1.765525	+ 3.22302 3.6541	+1.6320 4.0221
A DEC. 3 (0H)	Y:	+ 8.2852	- 1.67904	+241.6406 1.903164	+ 1.34288 3.6011	+0.6921 4.1008
DEC. 1 (0H) (2447130.5)	X:	-14.1479	+ 4.65129	+556.6915 4.002130	+ 4.99379 0.3105	+0.8299 2.1581
A DEC. 9 (0H)	Y:	- 6.4878	+ 2.01631	+243.5961 4.136569	+ 2.04266 0.3606	+0.3331 2.3895
DEC. 9 (0H) (2447138.5)	X:	+12.2899	- 2.06865	+545.3746 0.758333	+ 3.02663 3.5174	+1.7900 2.5859
A DEC.17 (0H)	Y:	+ 5.7739	- 1.07006	+239.5822 0.885768	+ 1.36650 3.5818	+0.8147 2.7138
DEC.17 (0H) (2447146.5)	X:	+ 7.6366	- 1.01538	+533.0588 3.800628	+ 1.24616 1.1540	+1.5498 2.4573
A DEC.25 (0H)	Y:	+ 2.6359	- 0.38600	+235.1408 3.927307	+ 0.61884 1.2574	+0.6832 2.5704
DEC.25 (0H) (2447154.5)	X:	+ 4.6484	- 0.69334	+521.7728 0.512337	+ 2.40505 3.9032	+1.1672 2.0354
A DEC.33 (0H)	Y:	+ 1.0710	- 0.11077	+229.5143 0.642491	+ 1.02435 4.0950	+0.5004 2.0982

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'ombres 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 44 et 45 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 $C14$ 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 1987.

PHENOMENA OF THE GALILEAN SATELLITES

DESCRIPTION :

The Galilean satellites which orbits have low inclinations over 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. 44 and 45 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 $C14$, 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 1987.

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 1987, 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 :

$$\begin{aligned}\tau = {} & 26.024\,472 + 1.065\,090\,x - 4.664\,918\,x^2 - 3.248\,679\,x^3 \\ & + 0.015\,011\,x^4 + 1.760\,088\,x^5 + 3.150\,051\,x^6 + 5.102\,810\,x^7 \\ & + 3.157\,156\,x^8 - 8.531\,700\,x^9 - 10.596\,137\,x^{10} + 5.176\,694\,x^{11} \\ & + 8.737\,050\,x^{12} - 1.173\,900\,x^{13} - 2.489\,881\,x^{14}\end{aligned}$$

d'où : $\tau = 26.012\,278\,72$

On a d'autre part :

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

La formule (2) donne alors :

$T1 = 102 \times 1{,}769\,860\,5 + 26{,}012\,278\,72/24 + 0$

$T1 = 181{,}609\,615\,9$ jours depuis le 0 janvier (début de l'intervalle pour les occultations) soit OC.D le 30 Juin 1987 à 14 h 37 min 51 s TDT. Le calcul réitéré donne $T2 = 181{,}609\,775\,7$ jours soit le 30 juin 1987 à 14 h 38 min 05 s TDT.

On trouverait de même pour les autres phénomènes :

OC.F : le 30 juin à 16 h 49 min 41 s TDT
EC.D : le 30 juin à 13 h 16 min 49 s TDT
EC.F : le 30 juin à 15 h 29 min 42 s TDT
PA.D : le 29 juin à 17 h 21 min 44 s TDT
PA.F : le 29 juin à 19 h 31 min 04 s TDT
OM.D : le 29 juin à 16 h 03 min 28 s TDT
OM.F : le 29 juin à 18 h 13 min 54 s TDT

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 :

EC.D : le 30 juin à 13 h 16 min 49 s observable
OC.D : le 30 juin à 14 h 37 min 51 s inobservable car déjà éclipsé
EC.F : le 30 juin à 15 h 29 min 42 s inobservable car encore occulté
OC.F : le 30 juin à 16 h 49 min 41 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 30th 1987, 181 days have elapsed

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

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

Formula (3) then gives :

$$\begin{aligned}\tau = {} & 26.024\,472 + 1.065\,090\,x - 4.664\,918\,x^2 - 3.248\,679\,x^3 \\ & + 0.015\,011\,x^4 + 1.760\,088\,x^5 + 3.150\,051\,x^6 + 5.102\,810\,x^7 \\ & + 3.157\,156\,x^8 - 8.531\,700\,x^9 - 10.596\,137\,x^{10} + 5.176\,694\,x^{11} \\ & + 8.737\,050\,x^{12} - 1.173\,900\,x^{13} - 2.489\,881\,x^{14}\end{aligned}$$

therefore $\tau = 26.012\,278\,72$

On the other hand,

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

Formula (2) then gives :

$T1 = 102 \times 1.769\,860\,5 + 26.012\,278\,72/24 + 0$

$T1 = 181.609\,615\,9$ *days from January 0 (beginning of the interval for the occultations) that is June the 30th 1987 at 14 h 37 min 51 s TDT. Another iteration gives* $T2 = 181.609\,775\,7$ *days that is June the 30th 1987 at 14 h 38 min 05 s TDT.*

One would find as well for the other phenomena :

OC.F : June the 30th at 16 h 49 min 41 s TDT
EC.D : June the 30th at 13 h 16 min 49 s TDT
EC.F : June the 30th at 15 h 29 min 42 s TDT
PA.D : June the 29th at 17 h 21 min 44 s TDT
PA.F : June the 29th at 19 h 31 min 04 s TDT
OM.D : June the 29th at 16 h 03 min 28 s TDT
OM.F : June the 29th at 18 h 13 min 54 s TDT

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 :

EC.D : June the 30th at 13 h 16 min 49 s observable
OC.D : June the 30th at 14 h 37 min 51 s unobservable as already eclipsed
EC.F : June the 30th at 15 h 29 min 42 s unobservable as yet occulted
OC.F. : June the 30th at 16 h 49 min 41 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.

AN 1987 SATELLITE 1 P = 1.7698605 JOURS TO = 0.0 DT = 366.JOURS

	EC.D		EC.F		OM.D		OM.F
0	24.661757	0	26.876033	0	3.435668	0	5.608918
1	-0.019363	1	-0.060305	1	-0.281694	1	-0.348490
2	-0.162701	2	-0.193690	2	-0.259820	2	-0.095751
3	0.200368	3	0.214051	3	0.360001	3	0.604249
4	0.293909	4	0.398016	4	0.312022	4	0.145473
5	0.275702	5	0.270472	5	0.270952	5	-0.317280
6	-0.813485	6	-1.255899	6	0.939210	6	0.619145
7	-0.690671	7	-0.717298	7	0.457188	7	0.970116
8	2.568232	8	3.648706	8	-3.380253	8	-2.725030
9	0.776612	9	0.831886	9	-2.048065	9	-2.023053
10	-4.257918	10	-5.649194	10	4.484675	10	4.158446
11	-0.479097	11	-0.519271	11	2.062926	11	1.798657
12	3.305849	12	4.204654	12	-2.873174	12	-2.894681
13	0.123126	13	0.133270	13	-0.686597	13	-0.583913
14	-0.972703	14	-1.202568	14	0.739346	14	0.775630

	OC.D		OC.F		PA.D		PA.F
0	26.024472	0	28.216546	0	4.754027	0	6.907445
1	1.065090	1	0.949598	1	0.763250	1	0.633765
2	-4.664918	2	-4.673968	2	-4.486850	2	-4.308550
3	-3.248679	3	-3.152718	3	-2.808193	3	-2.533085
4	0.015011	4	0.179085	4	-0.087780	4	-0.203437
5	1.760088	5	1.962408	5	1.163631	5	0.718385
6	3.150051	6	2.965328	6	1.970183	6	1.917630
7	5.102810	7	4.533863	7	6.187305	7	6.743210
8	3.157156	8	3.204484	8	6.732881	8	6.553110
9	-8.531700	9	-7.954239	9	-9.670956	9	-10.233394
10	-10.596137	10	-10.569269	10	-14.854217	10	-14.280436
11	5.176694	11	4.894700	11	5.727715	11	6.117719
12	8.737050	12	8.719050	12	10.996979	12	10.537223
13	-1.173900	13	-1.118699	13	-1.263838	13	-1.385348
14	-2.489881	14	-2.485051	14	-2.916368	14	-2.799424

TO = 0 CORRESPOND AU 0 JANVIER 1987 à 0 H SOIT LA DATE JULIENNE 2446795.5

AN 1987 SATELLITE 2 P = 3.5540942 JOURS TO = 0.0 DT = 366.JOURS

	EC.D		EC.F		OM.D		OM.F
0	71.950380	0	74.429208	0	29.424130	0	31.899866
1	-0.587970	1	-0.759955	1	0.765236	1	0.527705
2	0.004363	2	0.067219	2	-0.586523	2	-0.467715
3	1.241420	3	1.225381	3	-0.319876	3	-0.024966
4	0.078456	4	0.069922	4	1.766947	4	1.654029
5	-0.785495	5	-0.851498	5	-1.390226	5	-1.919685
6	-0.069789	6	-0.203938	6	-3.829356	6	-4.416797
7	2.095667	7	2.434069	7	6.630738	7	6.737162
8	0.780550	8	1.196517	8	5.551237	8	6.747852
9	-4.132481	9	-4.696054	9	-11.606343	9	-10.805341
10	-1.577267	10	-2.203985	10	-5.007827	10	-5.724968
11	3.703536	11	4.112262	11	9.210133	11	8.297096
12	0.907949	12	1.380014	12	2.539783	12	2.532707
13	-1.239295	13	-1.346673	13	-2.765668	13	-2.459520
14	-0.067170	14	-0.207985	14	-0.555087	14	-0.454865

AN 1987 SATELLITE 2 P = 3.5540942 JOURS TO = -1.0 DT = 367.JOURS

	OC.D		OC.F		PA.D		PA.F
0	13.345572	0	15.720898	0	56.188636	0	58.554704
1	1.717215	1	1.244876	1	3.070436	1	2.524010
2	-8.538127	2	-8.385182	2	-9.757868	2	-9.489338
3	-5.740631	3	-5.515978	3	-7.463371	3	-7.065654
4	-1.982439	4	-1.658880	4	1.901299	4	1.967714
5	1.829091	5	2.821142	5	2.662419	5	4.429000
6	9.192762	6	10.161112	6	-0.054729	6	0.238120
7	13.497258	7	11.671739	7	13.411432	7	7.775247
8	1.790897	8	-2.298021	8	18.168902	8	16.652266
9	-20.715855	9	-19.730790	9	-21.090526	9	-13.707599
10	-14.841556	10	-9.497438	10	-32.619997	10	-30.906739
11	12.543351	11	12.599108	11	12.817298	11	8.026060
12	12.405104	12	9.185113	12	22.805507	12	22.109810
13	-2.902499	13	-3.043178	13	-2.948709	13	-1.694005
14	-3.355413	14	-2.592704	14	-5.905534	14	-5.844018

TO = 0 CORRESPOND AU 0 JANVIER 1987 à 0 H SOIT LA DATE JULIENNE 2446795.5

AN 1987 SATELLITE 3 P = 7.1663872 JOURS TO = 0.0 DT = 366.JOURS

	EC.D		EC.F		OM.D		OM.F
0	38.997083	0	41.721749	0	125.127127	0	127.807673
1	0.699239	1	0.253097	1	0.572222	1	0.082906
2	-0.008429	2	-0.017104	2	-0.341868	2	-0.165731
3	0.581771	3	0.522795	3	-0.091551	3	0.173394
4	-1.935178	4	-1.841173	4	0.939701	4	0.814693
5	-2.649610	5	-1.993317	5	2.624701	5	2.279632
6	11.346416	6	11.049978	6	-1.679719	6	-2.462694
7	9.521700	7	7.426775	7	-7.055902	7	-7.410449
8	-28.458032	8	-27.695610	8	0.933389	8	2.484162
9	-16.350592	9	-13.043446	9	10.048995	9	11.412222
10	35.430237	10	34.189548	10	3.517220	10	2.703298
11	13.138096	11	10.593678	11	-7.282389	11	-8.508701
12	-21.219636	12	-20.187654	12	-6.439077	12	-6.639933
13	-4.002418	13	-3.241311	13	2.069510	13	2.436951
14	4.810928	14	4.479914	14	3.020922	14	3.234587

	OC.D		OC.F		PA.D		PA.F
0	44.584975	0	47.021997	0	130.655425	0	133.056320
1	5.470144	1	3.975065	1	5.281604	1	3.773870
2	-17.895881	2	-18.032618	2	-17.916974	2	-17.886726
3	-13.642869	3	-12.797134	3	-13.967302	3	-13.093093
4	-4.398237	4	-2.649966	4	-1.260288	4	-0.144951
5	1.082291	5	6.394017	5	6.200317	5	11.298462
6	26.866801	6	30.898547	6	7.789217	6	13.878604
7	38.572236	7	25.685552	7	19.249139	7	7.548319
8	-21.838048	8	-39.597117	8	27.537104	8	4.188061
9	-60.030101	9	-47.284737	9	-26.404893	9	-16.318280
10	5.690684	10	28.976988	10	-56.310766	10	-24.364650
11	39.373361	11	33.303098	11	11.988568	11	8.473851
12	1.691064	12	-12.060387	12	38.405083	12	17.994087
13	-10.049260	13	-8.902603	13	-1.623517	13	-1.363432
14	-1.079415	14	2.042768	14	-9.136950	14	-4.020889

TO = 0 CORRESPOND AU 0 JANVIER 1987 à 0 H SOIT LA DATE JULIENNE 2446795.5

AN 1987 SATELLITE 4 P = 16.7535520 JOURS TO =-70.0 DT = 93.JOURS

	EC.D		EC.F		OM.D		OM.F
0	216.896557	0	218.911297	0	16.337707	0	18.153160
1	0.887873	1	0.024236	1	1.066683	1	0.070008
2	0.105481	2	-0.046346	2	0.176108	2	-0.042019
3	0.004884	3	-0.163519	3	0.219103	3	0.048609
4	0.149943	4	-0.296863	4	-0.233323	4	-1.232315
5	0.111822	5	0.837779	5	-0.068525	5	-0.171337
6	-0.970551	6	1.216219	6	1.759488	6	5.798227
7	0.002195	7	-2.952504	7	-0.116025	7	-1.001754
8	3.477041	8	-3.539551	8	-4.137488	8	-14.815066
9	-0.322754	9	4.984997	9	0.373762	9	2.765796
10	-5.953224	10	5.445804	10	5.116737	10	20.135058
11	0.456341	11	-4.109572	11	-0.313583	11	-2.887683
12	4.880023	12	-4.147948	12	-3.227345	12	-14.113877
13	-0.191240	13	1.315610	13	0.087040	13	1.045659
14	-1.537143	14	1.230770	14	0.816475	14	3.977748

AN 1987 SATELLITE 4 P = 16.7535520 JOURS TO =-70.0 DT = 160.JOURS

	OC.D		OC.F		PA.D		PA.F
0	205.789465	0	208.973265	0	4.962563	0	8.067451
1	8.588370	1	7.804625	1	9.072658	1	8.302512
2	7.104223	2	6.057589	2	7.126971	2	6.094714
3	-2.599047	3	-2.352974	3	-3.087667	3	-3.704892
4	0.940705	4	1.155561	4	3.085919	4	1.659449
5	-0.393231	5	-3.883841	5	0.969296	5	3.435023
6	-3.476691	6	-6.721364	6	-13.324842	6	-5.178342
7	-0.631513	7	11.211734	7	-1.763630	7	-8.446150
8	8.238408	8	19.905421	8	32.240779	8	8.036343
9	3.484897	9	-15.563592	9	3.622205	9	11.128530
10	-10.187243	10	-30.125723	10	-41.202821	10	-7.372982
11	-3.351668	11	10.460334	11	-3.385340	11	-7.701655
12	6.472256	12	21.719003	12	26.695488	12	3.383658
13	1.102851	13	-2.817467	13	1.155630	13	2.155777
14	-1.612981	14	-6.082906	14	-6.936843	14	-0.597432

TO = 0 CORRESPOND AU 0 JANVIER 1987 à 0 H SOIT LA DATE JULIENNE 2446795.5

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	8.0×10^{-8}	196	(S)	0.53	12.9	0.942 421	30	185.52	0.020 2	1.53
II	Enceladus	1.3×10^{-7}	250	(S)	0.99	11.7	1.370 217	38	238.02	0.004 5	0.
III	Tethys	1.3×10^{-6}	530	(S)	0.88	10.2	1.887 802	48	294.66	0.	1.86
IV	Dione	1.85×10^{-6}	560	(S)	0.65	10.4	2.736 914	1 01	377.40	0.002 2	0.02
V	Rhea	4.4×10^{-6}	765	(S)	0.67	9.7	4.517 500	1 25	527.04	0.001 0	0.35
VI	Titan	2.41×10^{-4}	2 575	(S)	0.21	8.28	15.945 420	3 17	1 221.83	0.029 1	0.33
VII	Hyperion	$3. \times 10^{-8}$	205 × 130 × 110		0.3	14.19	21.276 608	3 59	1 481.1	0.104	0.43
VIII	Iapetus	3.3×10^{-6}	730	(S)	0.5-0.05	11.2	79.330 182	9 35	3 561.3	0.028 2	14.72
IX	Phoebe	$7. \times 10^{-10}$	110	0.4	0.06	16.45	(R)550.48	34 51	12 952.	0.163 2	177. (1)
X	Janus (5)		110 × 100 × 80	(S)	0.4	14.	0.694 5	24	151.472	0.007	0.14
XI	Epimetheus (5)		70 × 60 × 50	(S)	0.4	15.	0.694 2	24	151.422	0.009	0.34
XII	Hélène (2)		18 × 16 × 15		0.5	17.	2.736 9	1 01	377.40	0.005	0.2
XIII	Telesto (3)		17 × 14 × 13		0.6	18.	1.887 8	48	294.66		
XIV	Calypso (3)		17 × 11 × 11		0.8	18.5	1.887 8	48	294.66		
XV	Atlas		20 × 10		0.4	18.	0.601 9	22	137.670		0.3
XVI	Prometheus (4)		70 × 50 × 40		0.6	15.	0.613 0	23	139.353		0.
XVII	Pandora (4)		55 × 45 × 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

(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

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

Data from the Encyclopédie du Bureau des Longitudes

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 1950.0

Differential tangential coordinates given in arcsecond in the mean equatorial frame 1950.0

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

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

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	2	6.667 0	50
Encelade	16	4.586 0	65
Téthys	16	3.328 0	67
Dioné	16	2.296 0	69
Rhéa	16	1.391 0	71
Titan	11	0.394 0	73
Hypérion	8	0.394 0	76
Japet	16	0.079 0	80
	(days)	*(rad/d)*	

1987 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)	X:	+0.5625	-0.00551	+23.4008	+0.04681	+0.003578	+0.2358
(2446796.5)				3.356704	2.2333	5.9478	1.3324
A JAN. 3 (0H)	Y:	-0.2238	-0.00318	+10.1298	+0.02209	+0.000185	+0.1019
				5.088514	3.6020	2.6626	3.0628
JAN. 3 (0H)	X:	+0.5505	-0.00695	+23.4344	+0.04012	+0.001457	+0.2362
(2446798.5)				4.120973	2.9298	2.9554	2.8285
A JAN. 5 (0H)	Y:	-0.2298	-0.00325	+10.1340	+0.02174	+0.000718	+0.1022
				5.851790	4.4581	3.2122	4.5611
JAN. 5 (0H)	X:	+0.5370	-0.00693	+23.4681	+0.04159	+0.001087	+0.2366
(2446800.5)				4.885358	3.6933	4.6530	4.3282
A JAN. 7 (0H)	Y:	-0.2362	-0.00282	+10.1410	+0.02189	+0.000886	+0.1022
				0.331964	5.1459	6.2533	6.0577
JAN. 7 (0H)	X:	+0.5232	-0.00708	+23.5028	+0.04329	+0.001113	+0.2371
(2446802.5)				5.649793	4.5096	0.1723	5.8268
A JAN. 9 (0H)	Y:	-0.2418	-0.00307	+10.1481	+0.02459	+0.000989	+0.1022
				1.095404	5.9798	2.2983	1.2726
JAN. 9 (0H)	X:	+0.5098	-0.00806	+23.5372	+0.04806	+0.002762	+0.2369
(2446804.5)				0.131129	5.4246	2.5490	1.0419
A JAN.11 (0H)	Y:	-0.2481	-0.00259	+10.1565	+0.02186	+0.000672	+0.1024
				1.858600	0.6010	5.6463	2.7698
JAN.11 (0H)	X:	+0.4932	-0.00686	+23.5812	+0.03513	+0.003224	+0.2376
(2446806.5)				0.895507	6.2353	5.8028	2.5403
A JAN.13 (0H)	Y:	-0.2538	-0.00254	+10.1665	+0.02232	+0.000607	+0.1022
				2.621975	1.4300	5.9528	4.2670
JAN.13 (0H)	X:	+0.4780	-0.00779	+23.6228	+0.03839	+0.000465	+0.2372
(2446808.5)				1.660171	0.7396	0.0890	4.0379
A JAN.15 (0H)	Y:	-0.2584	-0.00311	+10.1816	+0.01860	+0.002124	+0.1025
				3.385325	1.9870	2.7679	5.7626
JAN.15 (0H)	X:	+0.4638	-0.00930	+23.6724	+0.03897	+0.004811	+0.2384
(2446810.5)				2.425095	1.2153	2.8382	5.5349
A JAN.17 (0H)	Y:	-0.2642	-0.00233	+10.1938	+0.02267	+0.000871	+0.1024
				4.148896	2.8956	5.6818	0.9768
JAN.17 (0H)	X:	+0.4460	-0.00781	+23.7150	+0.04286	+0.002687	+0.2383
(2446812.5)				3.189883	2.2858	5.7839	0.7504
A JAN.19 (0H)	Y:	-0.2696	-0.00213	+10.2094	+0.02404	+0.001320	+0.1028
				4.912570	3.6082	5.9904	2.4717
JAN.19 (0H)	X:	+0.4289	-0.00839	+23.7631	+0.04265	+0.001230	+0.2395
(2446814.5)				3.954879	3.0294	6.0555	2.2478
A JAN.21 (0H)	Y:	-0.2739	-0.00267	+10.2246	+0.02225	+0.001235	+0.1029
				5.676013	4.5811	2.8987	3.9703
JAN.21 (0H)	X:	+0.4122	-0.00942	+23.8143	+0.03726	+0.002010	+0.2398
(2446816.5)				4.719813	3.8789	3.2383	3.7478
A JAN.23 (0H)	Y:	-0.2789	-0.00217	+10.2428	+0.02192	+0.000571	+0.1033
				0.156497	5.2630	5.9436	5.4670
JAN.23 (0H)	X:	+0.3936	-0.00884	+23.8671	+0.03964	+0.002099	+0.2405
(2446818.5)				5.484985	4.5467	5.8634	5.2473
A JAN.25 (0H)	Y:	-0.2832	-0.00217	+10.2618	+0.02320	+0.000605	+0.1034
				0.920232	6.0489	1.3548	0.6823
JAN.25 (0H)	X:	+0.3763	-0.00992	+23.9174	+0.04583	+0.002232	+0.2409
(2446820.5)				6.250179	5.4743	2.2663	0.4631
A JAN.27 (0H)	Y:	-0.2875	-0.00213	+10.2821	+0.02374	+0.000574	+0.1036
				1.683967	0.5848	2.7367	2.1812

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE SATURNE: MIMAS N=6.667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN.27 (OH)	X:	+0.3569	-0.00955	+23.9752 0.732220	+0.04129 0.0054	+0.000169 4.7711	+0.2413 1.9641
A JAN.29 (OH)	Y:	-0.2923	-0.00160	+10.3025 2.447647	+0.02406 1.5675	+0.001345 5.7505	+0.1037 3.6774
JAN.29 (OH)	X:	+0.3362	-0.00900	+24.0336 1.497388	+0.03740 1.0183	+0.003421 5.8694	+0.2415 3.4605
A JAN.31 (OH)	Y:	-0.2955	-0.00216	+10.3285 3.211529	+0.02057 2.1911	+0.001346 2.7150	+0.1040 5.1768
JAN.31 (OH)	X:	+0.3183	-0.01110	+24.0977 2.263099	+0.03683 1.4159	+0.004319 2.7705	+0.2423 4.9616
A FEV. 2 (OH)	Y:	-0.2991	-0.00196	+10.3540 3.975405	+0.01990 3.0462	+0.000873 3.0125	+0.1040 0.3882
FEV. 2 (OH)	X:	+0.2979	-0.01052	+24.1607 3.028642	+0.03615 2.3349	+0.001004 3.4791	+0.2426 0.1744
A FEV. 4 (OH)	Y:	-0.3034	-0.00115	+10.3805 4.739750	+0.02482 3.6812	+0.002156 5.9134	+0.1045 1.8872
FEV. 4 (OH)	X:	+0.2758	-0.00966	+24.2206 3.794461	+0.04570 3.1313	+0.003863 5.9452	+0.2438 1.6755
A FEV. 6 (OH)	Y:	-0.3063	-0.00169	+10.4083 5.503795	+0.02285 4.6296	+0.000571 2.6071	+0.1046 3.3632
FEV. 6 (OH)	X:	+0.2557	-0.01127	+24.2879 4.560173	+0.03748 4.0416	+0.002002 2.9337	+0.2443 3.1740
A FEV. 8 (OH)	Y:	-0.3092	-0.00159	+10.4369 6.268063	+0.02381 5.4381	+0.000556 2.9903	+0.1052 4.8822
FEV. 8 (OH)	X:	+0.2337	-0.01093	+24.3551 5.326120	+0.03816 4.7535	+0.000996 5.1879	+0.2453 4.6751
A FEV.10 (OH)	Y:	-0.3123	-0.00113	+10.4683 0.749225	+0.02197 6.1828	+0.000906 0.1915	+0.1055 0.0974
FEV.10 (OH)	X:	+0.2120	-0.01115	+24.4226 6.092155	+0.04075 5.5438	+0.001124 0.7570	+0.2460 6.1755
A FEV.12 (OH)	Y:	-0.3146	-0.00136	+10.5002 1.513760	+0.02436 0.6459	+0.001070 2.4506	+0.1058 1.5971
FEV.12 (OH)	X:	+0.1903	-0.01188	+24.4909 0.575138	+0.04607 0.0584	+0.002540 2.5898	+0.2463 1.3934
A FEV.14 (OH)	Y:	-0.3175	-0.00082	+10.5323 2.278178	+0.02508 1.6101	+0.000828 5.4764	+0.1062 3.0952
FEV.14 (OH)	X:	+0.1657	-0.01064	+24.5644 1.341114	+0.04039 1.1353	+0.003494 5.7605	+0.2472 2.8926
A FEV.16 (OH)	Y:	-0.3196	-0.00088	+10.5674 3.042853	+0.02476 2.3824	+0.000205 5.7071	+0.1063 4.5952
FEV.16 (OH)	X:	+0.1434	-0.01193	+24.6386 2.107552	+0.03996 1.7611	+0.001009 2.6998	+0.2472 4.3938
A FEV.18 (OH)	Y:	-0.3207	-0.00128	+10.6060 3.807457	+0.01968 3.2412	+0.001922 2.8057	+0.1067 6.0910
FEV.18 (OH)	X:	+0.1213	-0.01291	+24.7195 2.874056	+0.03113 2.4636	+0.004198 2.9001	+0.2485 5.8911
A FEV.20 (OH)	Y:	-0.3230	-0.00034	+10.6430 4.572577	+0.02438 3.8675	+0.001566 5.8220	+0.1069 1.3084
FEV.20 (OH)	X:	+0.0956	-0.01118	+24.7908 3.640707	+0.04518 3.2703	+0.004002 5.8433	+0.2490 1.1101
A FEV.22 (OH)	Y:	-0.3246	-0.00033	+10.6830 5.337666	+0.02321 4.6446	+0.001021 6.1508	+0.1075 2.8038

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE SATURNE: MIMAS N=6.667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
FEV.22 (OH)	X:	+0.0717	-0.01216	+24.8698	+0.04074	+0.000513	+0.2502
(2446848.5)				4.407432	4.1009	0.1070	2.6083
A FEV.24 (OH)	Y:	-0.3250	-0.00077	+10.7214	+0.02626	+0.001457	+0.1080
				6.102774	5.5845	2.7829	4.3050
FEV.24 (OH)	X:	+0.0478	-0.01287	+24.9483	+0.04114	+0.001834	+0.2511
(2446850.5)				5.174173	5.0139	3.1518	4.1111
A FEV.26 (OH)	Y:	-0.3262	-0.00010	+10.7638	+0.02321	+0.000731	+0.1085
				0.584898	0.0573	6.2115	5.8030
FEV.26 (OH)	X:	+0.0224	-0.01214	+25.0295	+0.03803	+0.002116	+0.2520
(2446852.5)				5.941170	5.6957	6.1322	5.6122
A FEV.28 (OH)	Y:	-0.3265	-0.00013	+10.8064	+0.02426	+0.000660	+0.1089
				1.350376	0.8112	1.7890	1.0207
FEV.28 (OH)	X:	-0.0015	-0.01317	+25.1074	+0.04628	+0.002717	+0.2526
(2446854.5)				0.425097	0.1658	2.3609	0.8305
A MAR. 2 (OH)	Y:	-0.3268	+0.00002	+10.8498	+0.02534	+0.000514	+0.1094
				2.115920	1.6344	3.2681	2.5211
MAR. 2 (OH)	X:	-0.0278	-0.01243	+25.1911	+0.04391	+0.000935	+0.2535
(2446856.5)				1.192141	1.1215	5.3187	2.3330
A MAR. 4 (OH)	Y:	-0.3272	+0.00051	+10.8931	+0.02854	+0.001285	+0.1096
				2.881589	2.5053	5.6708	4.0204
MAR. 4 (OH)	X:	-0.0542	-0.01219	+25.2730	+0.04790	+0.002579	+0.2537
(2446858.5)				1.959317	2.0167	5.8029	3.8326
A MAR. 6 (OH)	Y:	-0.3260	-0.00003	+10.9418	+0.02296	+0.001552	+0.1102
				3.647319	3.3702	2.7259	5.5207
MAR. 6 (OH)	X:	-0.0778	-0.01410	+25.3643	+0.03335	+0.004851	+0.2550
(2446860.5)				2.726865	2.6922	2.8091	5.3344
A MAR. 8 (OH)	Y:	-0.3254	+0.00047	+10.9888	+0.02483	+0.000167	+0.1103
				4.413315	4.1421	3.8065	0.7361
MAR. 8 (OH)	X:	-0.1045	-0.01282	+25.4476	+0.04193	+0.001257	+0.2552
(2446862.5)				3.494387	3.4999	5.4198	0.5510
A MAR.10 (OH)	Y:	-0.3251	+0.00120	+11.0385	+0.02370	+0.002254	+0.1112
				5.179708	4.7225	6.0045	2.2354
MAR.10 (OH)	X:	-0.1317	-0.01226	+25.5320	+0.04425	+0.003741	+0.2570
(2446864.5)				4.262224	4.1408	6.0211	2.0524
A MAR.12 (OH)	Y:	-0.3230	+0.00058	+11.0863	+0.02719	+0.001221	+0.1114
				5.945915	5.6917	2.5816	3.7354
MAR.12 (OH)	X:	-0.1566	-0.01382	+25.6188	+0.04552	+0.002728	+0.2575
(2446866.5)				5.029873	5.1799	2.8277	3.5544
A MAR.14 (OH)	Y:	-0.3213	+0.00095	+11.1363	+0.02670	+0.000428	+0.1123
				0.429246	0.1763	2.7613	5.2353
MAR.14 (OH)	X:	-0.1835	-0.01298	+25.7065	+0.04155	+0.001139	+0.2589
(2446868.5)				5.797843	5.8990	5.7605	5.0567
A MAR.16 (OH)	Y:	-0.3194	+0.00143	+11.1879	+0.02513	+0.000811	+0.1127
				1.195822	1.0229	0.2858	0.4538
MAR.16 (OH)	X:	-0.2095	-0.01322	+25.7926	+0.04393	+0.001276	+0.2597
(2446870.5)				0.282729	0.3575	1.4279	0.2762
A MAR.18 (OH)	Y:	-0.3166	+0.00125	+11.2396	+0.02566	+0.001111	+0.1133
				1.962668	1.7236	2.7323	1.9555
MAR.18 (OH)	X:	-0.2355	-0.01353	+25.8796	+0.04620	+0.002179	+0.2604
(2446872.5)				1.050911	1.1141	2.7786	1.7799
A MAR.20 (OH)	Y:	-0.3143	+0.00190	+11.2903	+0.02983	+0.001162	+0.1138
				2.729526	2.5919	5.4432	3.4561

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE SATURNE: MIMAS N=6.667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
MAR.20 (OH)	X:	-0.2636	-0.01218	+25.9662	+0.05358	+0.003793	+0.2612
(2446874.5)				1.818951	2.1304	5.7026	3.2805
A MAR.22 (OH)	Y:	-0.3107	+0.00175	+11.3446	+0.02781	+0.000095	+0.1142
				3.496580	3.4188	2.4067	4.9590
MAR.22 (OH)	X:	-0.2885	-0.01366	+26.0582	+0.04333	+0.002232	+0.2618
(2446876.5)				2.587457	2.8660	2.7666	4.7847
A MAR.24 (OH)	Y:	-0.3065	+0.00160	+11.3994	+0.02730	+0.001536	+0.1147
				4.263627	4.3665	2.7458	0.1739
MAR.24 (OH)	X:	-0.3139	-0.01379	+26.1505	+0.04118	+0.002839	+0.2626
(2446878.5)				3.355916	3.7869	2.9485	0.0003
A MAR.26 (OH)	Y:	-0.3034	+0.00269	+11.4548	+0.02540	+0.002140	+0.1153
				5.031298	4.9092	5.9540	1.6771
MAR.26 (OH)	X:	-0.3420	-0.01186	+26.2349	+0.04643	+0.005059	+0.2638
(2446880.5)				4.124760	4.2666	5.9466	1.5048
A MAR.28 (OH)	Y:	-0.2988	+0.00249	+11.5104	+0.02623	+0.000489	+0.1157
				5.798826	5.7923	0.6654	3.1752
MAR.28 (OH)	X:	-0.3671	-0.01312	+26.3245	+0.04693	+0.001051	+0.2647
(2446882.5)				4.893460	5.2482	2.2374	3.0050
A MAR.30 (OH)	Y:	-0.2933	+0.00225	+11.5639	+0.03017	+0.001721	+0.1166
				0.283415	0.2662	2.7693	4.6786
MAR.30 (OH)	X:	-0.3925	-0.01318	+26.4110	+0.04948	+0.001651	+0.2661
(2446884.5)				5.662313	6.0542	3.0065	4.5095
A MAR.32 (OH)	Y:	-0.2885	+0.00309	+11.6210	+0.02731	+0.000916	+0.1171
				1.051243	1.1723	6.1400	6.1795
AVR. 1 (OH)	X:	-0.4187	-0.01221	+26.5000	+0.04414	+0.001930	+0.2670
(2446886.5)				0.148163	0.5849	0.0585	6.0126
A AVR. 3 (OH)	Y:	-0.2826	+0.00300	+11.6771	+0.02712	+0.000671	+0.1178
				1.819342	1.8960	2.3189	1.3997
AVR. 3 (OH)	X:	-0.4429	-0.01302	+26.5847	+0.04686	+0.003022	+0.2677
(2446888.5)				0.917366	1.2180	2.5511	1.2334
A AVR. 5 (OH)	Y:	-0.2766	+0.00331	+11.7326	+0.02894	+0.000520	+0.1184
				2.587523	2.6887	4.2098	2.9024
AVR. 5 (OH)	X:	-0.4691	-0.01173	+26.6703	+0.05343	+0.002083	+0.2687
(2446890.5)				1.686414	2.1756	5.4066	2.7370
A AVR. 7 (OH)	Y:	-0.2704	+0.00375	+11.7880	+0.03141	+0.001288	+0.1187
				3.355891	3.4599	5.7650	4.4053
AVR. 7 (OH)	X:	-0.4940	-0.01170	+26.7547	+0.05484	+0.001741	+0.2688
(2446892.5)				2.455729	2.9576	5.7896	4.2402
A AVR. 9 (OH)	Y:	-0.2625	+0.00325	+11.8464	+0.03002	+0.001715	+0.1194
				4.124172	4.4629	2.6074	5.9068
AVR. 9 (OH)	X:	-0.5160	-0.01307	+26.8470	+0.04512	+0.004743	+0.2702
(2446894.5)				3.225146	3.9788	2.7769	5.7420
A AVR.11 (OH)	Y:	-0.2555	+0.00406	+11.9029	+0.02906	+0.000640	+0.1196
				4.892936	5.1370	6.0209	1.1267
AVR.11 (OH)	X:	-0.5413	-0.01097	+26.9270	+0.04861	+0.003037	+0.2705
(2446896.5)				3.994792	4.5146	5.8851	0.9626
A AVR.13 (OH)	Y:	-0.2482	+0.00460	+11.9617	+0.02497	+0.001888	+0.1205
				5.661851	5.9220	6.1301	2.6266
AVR.13 (OH)	X:	-0.5651	-0.01071	+27.0107	+0.04495	+0.002789	+0.2721
(2446898.5)				4.764566	5.2923	6.2473	2.4638
A AVR.15 (OH)	Y:	-0.2390	+0.00394	+12.0155	+0.03126	+0.002003	+0.1210
				0.147614	0.3779	2.6882	4.1309

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE SATURNE: MIMAS N=6.667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
AVR.15 (OH)	X:	-0.5863	-0.01185	+27.0895	+0.05516	+0.003618	+0.2728
(2446900.5)				5.534195	6.1621	2.7810	3.9689
A AVR.17 (OH)	Y:	-0.2305	+0.00460	+12.0722	+0.02924	+0.000145	+0.1218
				0.916737	1.2316	3.7447	5.6319
AVR.17 (OH)	X:	-0.6092	-0.01034	+27.1711	+0.04790	+0.001468	+0.2740
(2446902.5)				0.020913	0.7333	5.9544	5.4721
A AVR.19 (OH)	Y:	-0.2215	+0.00498	+12.1280	+0.02960	+0.000666	+0.1224
				1.685927	2.0791	0.1008	0.8536
AVR.19 (OH)	X:	-0.6301	-0.01051	+27.2480	+0.04759	+0.001484	+0.2748
(2446904.5)				0.790917	1.4382	2.0308	0.6938
A AVR.21 (OH)	Y:	-0.2116	+0.00483	+12.1834	+0.02784	+0.000972	+0.1230
				2.455370	2.8205	3.0441	2.3574
AVR.21 (OH)	X:	-0.6508	-0.01015	+27.3240	+0.04914	+0.001407	+0.2755
(2446906.5)				1.560938	2.2284	3.2663	2.1990
A AVR.23 (OH)	Y:	-0.2022	+0.00552	+12.2361	+0.03184	+0.001554	+0.1234
				3.224894	3.5457	5.6237	3.8608
AVR.23 (OH)	X:	-0.6723	-0.00866	+27.3948	+0.06040	+0.004127	+0.2759
(2446908.5)				2.330918	3.0276	5.7365	3.7015
A AVR.25 (OH)	Y:	-0.1912	+0.00523	+12.2915	+0.03109	+0.000612	+0.1240
				3.994426	4.4713	2.1230	5.3657
AVR.25 (OH)	X:	-0.6896	-0.01006	+27.4741	+0.05048	+0.003226	+0.2768
(2446910.5)				3.101153	4.0147	2.6425	5.2069
A AVR.27 (OH)	Y:	-0.1800	+0.00531	+12.3447	+0.03304	+0.001211	+0.1242
				4.764077	5.3117	2.5694	0.5839
AVR.27 (OH)	X:	-0.7078	-0.00910	+27.5454	+0.05332	+0.001101	+0.2770
(2446912.5)				3.871389	4.7935	2.7514	0.4249
A AVR.29 (OH)	Y:	-0.1696	+0.00638	+12.4000	+0.02553	+0.002305	+0.1250
				5.534184	6.0736	6.0164	2.0882
AVR.29 (OH)	X:	-0.7273	-0.00708	+27.6134	+0.04296	+0.005149	+0.2784
(2446914.5)				4.642017	5.3985	6.0756	1.9296
A AVR.31 (OH)	Y:	-0.1577	+0.00586	+12.4508	+0.02972	+0.000875	+0.1253
				0.020970	0.5559	2.4156	3.5901
MAI 1 (OH)	X:	-0.7425	-0.00837	+27.6788	+0.05391	+0.002876	+0.2788
(2446916.5)				5.412337	6.2801	2.5635	3.4324
A MAI 3 (OH)	Y:	-0.1452	+0.00583	+12.5006	+0.02965	+0.001649	+0.1262
				0.791223	1.2665	2.9478	5.0940
MAI 3 (OH)	X:	-0.7580	-0.00752	+27.7417	+0.05191	+0.001304	+0.2802
(2446918.5)				6.182875	0.7951	3.1481	4.9371
A MAI 5 (OH)	Y:	-0.1335	+0.00667	+12.5510	+0.03101	+0.001313	+0.1266
				1.561348	2.2168	5.9357	0.3150
MAI 5 (OH)	X:	-0.7731	-0.00637	+27.8043	+0.04978	+0.001611	+0.2807
(2446920.5)				0.670269	1.6779	0.0678	0.1588
A MAI 7 (OH)	Y:	-0.1204	+0.00636	+12.5999	+0.02810	+0.000653	+0.1273
				2.331774	2.9747	2.6754	1.8197
MAI 7 (OH)	X:	-0.7857	-0.00677	+27.8616	+0.04503	+0.002709	+0.2813
(2446922.5)				1.440996	2.3648	2.7544	1.6642
A MAI 9 (OH)	Y:	-0.1077	+0.00674	+12.6462	+0.02952	+0.000731	+0.1278
				3.102237	3.7086	5.1605	3.3244
MAI 9 (OH)	X:	-0.7997	-0.00492	+27.9137	+0.05676	+0.003414	+0.2819
(2446924.5)				2.211518	3.1358	5.6000	3.1681
A MAI 11 (OH)	Y:	-0.0945	+0.00696	+12.6919	+0.02982	+0.001064	+0.1281
				3.872797	4.4803	6.1169	4.8300

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE SATURNE: MIMAS N=6.667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
MAI 11 (OH)	X:	-0.8106	-0.00508	+27.9676	+0.05334	+0.000797	+0.2819
(2446926.5)				2.982267	3.9851	0.2333	4.6738
A MAI 13 (OH)	Y:	-0.0800	+0.00643	+12.7369	+0.03402	+0.002060	+0.1285
				4.643181	5.4246	2.5236	0.0491
MAI 13 (OH)	X:	-0.8190	-0.00563	+28.0227	+0.05736	+0.004400	+0.2826
(2446928.5)				3.752894	4.9913	2.6489	6.1750
A MAI 15 (OH)	Y:	-0.0669	+0.00735	+12.7816	+0.02795	+0.001124	+0.1288
				5.414057	6.2012	5.9921	1.5552
MAI 15 (OH)	X:	-0.8301	-0.00289	+28.0672	+0.04440	+0.004217	+0.2829
(2446930.5)				4.523930	5.5953	6.0363	1.3979
A MAI 17 (OH)	Y:	-0.0532	+0.00747	+12.8252	+0.02742	+0.001074	+0.1293
				6.184836	0.8023	6.1418	3.0558
MAI 17 (OH)	X:	-0.8378	-0.00300	+28.1125	+0.04655	+0.001158	+0.2836
(2446932.5)				5.294785	0.1839	0.6543	2.8989
A MAI 19 (OH)	Y:	-0.0379	+0.00672	+12.8629	+0.02815	+0.002434	+0.1298
				0.672652	1.3667	2.8739	4.5621
MAI 19 (OH)	X:	-0.8430	-0.00348	+28.1488	+0.05205	+0.004039	+0.2844
(2446934.5)				6.065612	0.8565	2.8924	4.4051
A MAI 21 (OH)	Y:	-0.0239	+0.00748	+12.9024	+0.02918	+0.000796	+0.1303
				1.443531	2.3163	5.4617	6.0644
MAI 21 (OH)	X:	-0.8494	-0.00148	+28.1884	+0.05018	+0.002123	+0.2849
(2446936.5)				0.553319	1.8440	5.8594	5.9087
A MAI 23 (OH)	Y:	-0.0093	+0.00752	+12.9389	+0.02903	+0.000661	+0.1308
				2.214520	3.1170	6.2424	1.2874
MAI 23 (OH)	X:	-0.8525	-0.00163	+28.2208	+0.04446	+0.001491	+0.2854
(2446938.5)				1.324307	2.5850	2.3418	1.1310
A MAI 25 (OH)	Y:	+0.0056	+0.00727	+12.9743	+0.02675	+0.000645	+0.1312
				2.985621	3.9368	3.2074	2.7924
MAI 25 (OH)	X:	-0.8557	-0.00062	+28.2490	+0.04746	+0.000903	+0.2858
(2446940.5)				2.095168	3.3369	4.7617	2.6363
A MAI 27 (OH)	Y:	+0.0199	+0.00779	+13.0059	+0.02666	+0.001637	+0.1314
				3.756802	4.5833	5.8673	4.2975
MAI 27 (OH)	X:	-0.8582	+0.00074	+28.2711	+0.05090	+0.003870	+0.2854
(2446942.5)				2.866048	4.0018	5.9255	4.1401
A MAI 29 (OH)	Y:	+0.0356	+0.00717	+13.0377	+0.03054	+0.001419	+0.1319
				4.527754	5.5183	2.3060	5.8025
MAI 29 (OH)	X:	-0.8560	-0.00049	+28.3005	+0.05519	+0.004475	+0.2861
(2446944.5)				3.636840	5.0989	2.5219	5.6442
A MAI 31 (OH)	Y:	+0.0507	+0.00735	+13.0666	+0.02999	+0.000892	+0.1318
				5.298925	0.0169	2.6400	1.0235
MAI 31 (OH)	X:	-0.8555	+0.00138	+28.3179	+0.04942	+0.000461	+0.2855
(2446946.5)				4.407786	5.8079	0.6892	0.8644
A JUN. 2 (OH)	Y:	+0.0647	+0.00809	+13.0975	+0.02608	+0.002167	+0.1324
				6.070200	1.0413	5.9042	2.5265
JUN. 2 (OH)	X:	-0.8545	+0.00306	+28.3362	+0.03949	+0.004115	+0.2865
(2446948.5)				5.178870	0.4703	6.1211	2.3670
A JUN. 4 (OH)	Y:	+0.0805	+0.00714	+13.1207	+0.02603	+0.001617	+0.1324
				0.558308	1.6055	2.8597	4.0313
JUN. 4 (OH)	X:	-0.8488	+0.00177	+28.3435	+0.04694	+0.004239	+0.2863
(2446950.5)				5.949640	1.0301	2.7961	3.8715
A JUN. 6 (OH)	Y:	+0.0956	+0.00720	+13.1442	+0.02438	+0.001048	+0.1330
				1.329667	2.4344	3.3596	5.5339

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE SATURNE: MIMAS N=6.667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JUN. 6 (0H)	X:	-0.8440	+0.00329	+28.3519	+0.04535	+0.000886	+0.2871
(2446952.5)				0.437329	1.9547	4.3395	5.3747
A JUN. 8 (0H)	Y:	+0.1099	+0.00772	+13.1648	+0.02828	+0.001750	+0.1332
				2.100820	3.2610	5.9639	0.7567
JUN. 8 (0H)	X:	-0.8376	+0.00423	+28.3562	+0.04587	+0.001611	+0.2871
(2446954.5)				1.208128	2.8160	0.0221	0.5967
A JUN.10 (0H)	Y:	+0.1251	+0.00709	+13.1846	+0.02488	+0.000726	+0.1335
				2.872167	4.1600	2.6086	2.2611
JUN.10 (0H)	X:	-0.8290	+0.00412	+28.3559	+0.03991	+0.001817	+0.2871
(2446956.5)				1.978963	3.6530	2.8065	2.1016
A JUN.12 (0H)	Y:	+0.1392	+0.00737	+13.2002	+0.02343	+0.000904	+0.1337
				3.643505	4.8441	5.6181	3.7662
JUN.12 (0H)	X:	-0.8215	+0.00607	+28.3464	+0.04281	+0.004090	+0.2869
(2446958.5)				2.749603	4.1775	5.8121	3.6047
A JUN.14 (0H)	Y:	+0.1537	+0.00714	+13.2148	+0.02415	+0.000543	+0.1338
				4.414739	5.6650	0.6966	5.2723
JUN.14 (0H)	X:	-0.8099	+0.00546	+28.3422	+0.04535	+0.001697	+0.2867
(2446960.5)				3.520229	5.1791	1.9711	5.1103
A JUN.16 (0H)	Y:	+0.1687	+0.00651	+13.2259	+0.02887	+0.002256	+0.1337
				5.185815	0.1327	2.6397	0.4915
JUN.16 (0H)	X:	-0.7970	+0.00555	+28.3323	+0.05235	+0.004049	+0.2862
(2446962.5)				4.290675	5.9883	2.6078	0.3275
A JUN.18 (0H)	Y:	+0.1817	+0.00731	+13.2393	+0.02486	+0.001642	+0.1339
				5.957156	1.1868	5.7393	1.9972
JUN.18 (0H)	X:	-0.7864	+0.00828	+28.3193	+0.03738	+0.004581	+0.2865
(2446964.5)				5.061492	0.7467	5.9878	1.8325
A JUN.20 (0H)	Y:	+0.1954	+0.00683	+13.2476	+0.02555	+0.000414	+0.1338
				0.445142	1.9439	5.5411	3.4984
JUN.20 (0H)	X:	-0.7715	+0.00751	+28.3003	+0.04124	+0.001208	+0.2860
(2446966.5)				5.831910	1.4045	2.5697	3.3331
A JUN.22 (0H)	Y:	+0.2096	+0.00599	+13.2524	+0.01964	+0.002215	+0.1342
				1.216554	2.6557	3.0218	5.0034
JUN.22 (0H)	X:	-0.7553	+0.00745	+28.2744	+0.03687	+0.003379	+0.2865
(2446968.5)				0.319179	2.1070	3.1170	4.8375
A JUN.24 (0H)	Y:	+0.2220	+0.00663	+13.2562	+0.02471	+0.001576	+0.1341
				1.987590	3.4697	5.7822	0.2232
JUN.24 (0H)	X:	-0.7400	+0.00932	+28.2506	+0.04440	+0.003008	+0.2862
(2446970.5)				1.089452	3.0411	5.9148	0.0572
A JUN.26 (0H)	Y:	+0.2348	+0.00619	+13.2577	+0.02326	+0.000548	+0.1344
				2.758739	4.3293	0.4706	1.7280
JUN.26 (0H)	X:	-0.7216	+0.00888	+28.2208	+0.03823	+0.001490	+0.2861
(2446972.5)				1.859790	3.9675	2.2516	1.5614
A JUN.28 (0H)	Y:	+0.2472	+0.00583	+13.2572	+0.02233	+0.000487	+0.1344
				3.529843	5.1997	3.1212	3.2325
JUN.28 (0H)	X:	-0.7039	+0.01006	+28.1842	+0.03605	+0.001569	+0.2858
(2446974.5)				2.629898	4.6118	5.6326	3.0648
A JUN.30 (0H)	Y:	+0.2587	+0.00601	+13.2536	+0.01901	+0.001219	+0.1343
				4.300955	5.9616	5.9893	4.7375
JUN.30 (0H)	X:	-0.6849	+0.01074	+28.1454	+0.03289	+0.002540	+0.2848
(2446976.5)				3.399975	5.3713	6.2071	4.5685
A JUL. 2 (0H)	Y:	+0.2710	+0.00508	+13.2475	+0.02430	+0.002039	+0.1343
				5.071703	0.3482	2.5604	6.2405

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE SATURNE: MIMAS N=6.667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JUL. 2 (OH)	X:	-0.6622	+0.00947	+28.1093	+0.04811	+0.005490	+0.2847
(2446978.5)				4.169689	6.1934	2.5770	6.0694
A JUL. 4 (OH)	Y:	+0.2817	+0.00530	+13.2411	+0.02255	+0.000400	+0.1339
				5.842650	1.2641	3.7991	1.4623
JUL. 4 (OH)	X:	-0.6422	+0.01163	+28.0659	+0.03810	+0.001480	+0.2837
(2446980.5)				4.939690	0.8997	5.8649	1.2899
A JUL. 6 (OH)	Y:	+0.2914	+0.00555	+13.2349	+0.02620	+0.002139	+0.1340
				0.330213	2.2428	5.7574	2.9626
JUL. 6 (OH)	X:	-0.6210	+0.01240	+28.0239	+0.04210	+0.003021	+0.2837
(2446982.5)				5.709503	1.8713	5.9664	2.7890
A JUL. 8 (OH)	Y:	+0.3024	+0.00428	+13.2220	+0.01858	+0.001915	+0.1338
				1.101171	2.9842	2.9528	4.4677
JUL. 8 (OH)	X:	-0.5961	+0.01091	+27.9687	+0.03147	+0.004453	+0.2832
(2446984.5)				0.195954	2.4531	2.9597	4.2929
A JUL.10 (OH)	Y:	+0.3118	+0.00440	+13.2096	+0.02042	+0.000417	+0.1338
				1.871883	3.8322	4.3633	5.9680
JUL.10 (OH)	X:	-0.5730	+0.01247	+27.9181	+0.03863	+0.001667	+0.2830
(2446986.5)				0.965468	3.3466	5.4528	5.7933
A JUL.12 (OH)	Y:	+0.3203	+0.00455	+13.1934	+0.02113	+0.001717	+0.1338
				2.642433	4.5065	6.1553	1.1899
JUL.12 (OH)	X:	-0.5484	+0.01278	+27.8628	+0.03909	+0.001660	+0.2826
(2446988.5)				1.734870	4.1949	0.2990	1.0136
A JUL.14 (OH)	Y:	+0.3292	+0.00371	+13.1776	+0.02224	+0.001022	+0.1337
				3.412996	5.5005	2.6160	2.6926
JUL.14 (OH)	X:	-0.5228	+0.01258	+27.8044	+0.03797	+0.001240	+0.2821
(2446990.5)				2.504185	5.1111	2.6789	2.5162
A JUL.16 (OH)	Y:	+0.3366	+0.00386	+13.1579	+0.01855	+0.000845	+0.1335
				4.183544	0.0574	5.6091	4.1964
JUL.16 (OH)	X:	-0.4985	+0.01399	+27.7383	+0.02766	+0.003590	+0.2811
(2446992.5)				3.273357	5.8443	5.9095	4.0175
A JUL.18 (OH)	Y:	+0.3442	+0.00327	+13.1367	+0.01992	+0.000628	+0.1334
				4.953801	0.7519	2.2403	5.7004
JUL.18 (OH)	X:	-0.4705	+0.01272	+27.6785	+0.03920	+0.003291	+0.2807
(2446994.5)				4.042218	0.2589	2.4214	5.5202
A JUL.20 (OH)	Y:	+0.3514	+0.00270	+13.1125	+0.01939	+0.001866	+0.1328
				5.723989	1.3938	2.8514	0.9190
JUL.20 (OH)	X:	-0.4432	+0.01308	+27.6117	+0.03815	+0.002972	+0.2791
(2446996.5)				4.811014	1.0048	2.7778	0.7364
A JUL.22 (OH)	Y:	+0.3565	+0.00333	+13.0922	+0.02502	+0.002305	+0.1328
				0.210916	2.4604	5.6770	2.4216
JUL.22 (OH)	X:	-0.4182	+0.01514	+27.5498	+0.04601	+0.004978	+0.2792
(2446998.5)				5.579962	2.1808	5.8556	2.2375
A JUL.24 (OH)	Y:	+0.3624	+0.00242	+13.0655	+0.02135	+0.000223	+0.1321
				0.981001	3.2361	3.9229	3.9228
JUL.24 (OH)	X:	-0.3892	+0.01355	+27.4766	+0.03674	+0.002065	+0.2779
(2447000.5)				0.065345	2.8650	2.9480	3.7372
A JUL.26 (OH)	Y:	+0.3680	+0.00168	+13.0389	+0.01956	+0.001733	+0.1323
				1.751167	4.2748	2.9943	5.4240
JUL.26 (OH)	X:	-0.3606	+0.01355	+27.4028	+0.03535	+0.002199	+0.2780
(2447002.5)				0.833920	3.7828	3.2876	5.2376
A JUL.28 (OH)	Y:	+0.3716	+0.00223	+13.0089	+0.01975	+0.001859	+0.1318
				2.520894	4.8036	6.0074	0.6432

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE SATURNE: MIMAS N=6.667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JUL.28 (OH)	X:	-0.3333	+0.01484	+27.3297	+0.04015	+0.003307	+0.2771
(2447004.5)				1.602170	4.4236	6.1020	0.4555
A JUL.30 (OH)	Y:	+0.3756	+0.00153	+12.9789	+0.02109	+0.000519	+0.1318
				3.290674	5.7342	1.6045	2.1448
JUL.30 (OH)	X:	-0.3040	+0.01395	+27.2544	+0.04305	+0.001790	+0.2766
(2447006.5)				2.370445	5.4035	2.2515	1.9567
A JUL.32 (OH)	Y:	+0.3786	+0.00120	+12.9471	+0.02124	+0.000553	+0.1315
				4.060336	0.3135	3.3724	3.6476
AOU. 1 (OH)	X:	-0.2763	+0.01483	+27.1726	+0.03562	+0.001720	+0.2757
(2447008.5)				3.138508	6.2595	5.6683	3.4570
A AOU. 3 (OH)	Y:	+0.3809	+0.00116	+12.9137	+0.02006	+0.000737	+0.1311
				4.829905	1.2053	5.8643	5.1507
AOU. 3 (OH)	X:	-0.2475	+0.01463	+27.0934	+0.03683	+0.000910	+0.2746
(2447010.5)				3.906404	0.7753	0.3541	4.9590
A AOU. 5 (OH)	Y:	+0.3836	+0.00022	+12.8767	+0.01757	+0.002074	+0.1307
				5.599153	1.7201	2.7230	0.3678
AOU. 5 (OH)	X:	-0.2167	+0.01330	+27.0127	+0.03750	+0.005328	+0.2736
(2447012.5)				4.673893	1.2269	2.7032	0.1731
A AOU. 7 (OH)	Y:	+0.3844	+0.00058	+12.8429	+0.02150	+0.000930	+0.1302
				0.085245	2.6706	5.2768	1.8712
AOU. 7 (OH)	X:	-0.1896	+0.01527	+26.9343	+0.04568	+0.003082	+0.2726
(2447014.5)				5.441688	2.3473	5.6971	1.6749
A AOU. 9 (OH)	Y:	+0.3846	+0.00050	+12.8073	+0.02433	+0.001917	+0.1297
				0.854247	3.3907	5.7822	3.3688
AOU. 9 (OH)	X:	-0.1612	+0.01500	+26.8544	+0.04833	+0.002332	+0.2717
(2447016.5)				6.209119	3.0878	5.8316	3.1705
A AOU.11 (OH)	Y:	+0.3857	-0.00075	+12.7692	+0.02140	+0.002062	+0.1294
				1.623553	4.5241	2.8496	4.8717
AOU.11 (OH)	X:	-0.1306	+0.01330	+26.7655	+0.03978	+0.004153	+0.2713
(2447018.5)				0.693383	4.1129	2.9716	4.6718
A AOU.13 (OH)	Y:	+0.3850	-0.00043	+12.7304	+0.02161	+0.000498	+0.1290
				2.392403	5.1763	5.7610	0.0865
AOU.13 (OH)	X:	-0.1028	+0.01464	+26.6824	+0.04338	+0.002239	+0.2704
(2447020.5)				1.460504	4.7183	5.8567	6.1690
A AOU.15 (OH)	Y:	+0.3837	-0.00047	+12.6891	+0.01969	+0.001324	+0.1288
				3.161192	5.9603	0.0570	1.5887
AOU.15 (OH)	X:	-0.0741	+0.01431	+26.5966	+0.04529	+0.001437	+0.2699
(2447022.5)				2.227549	5.5532	0.7257	1.3864
A AOU.17 (OH)	Y:	+0.3825	-0.00125	+12.6491	+0.02342	+0.001222	+0.1284
				3.929840	0.4799	2.8204	3.0890
AOU.17 (OH)	X:	-0.0456	+0.01391	+26.5095	+0.04721	+0.001112	+0.2691
(2447024.5)				2.994469	0.1290	2.9090	2.8857
A AOU.19 (OH)	Y:	+0.3800	-0.00108	+12.6069	+0.02276	+0.000844	+0.1280
				4.698477	1.4314	5.4158	4.5906
AOU.19 (OH)	X:	-0.0185	+0.01463	+26.4192	+0.04411	+0.002693	+0.2677
(2447026.5)				3.761289	1.0893	5.8239	4.3851
A AOU.21 (OH)	Y:	+0.3779	-0.00174	+12.5626	+0.02008	+0.000884	+0.1276
				5.466774	2.1156	2.5978	6.0913
AOU.21 (OH)	X:	+0.0111	+0.01294	+26.3329	+0.04114	+0.003949	+0.2671
(2447028.5)				4.527634	1.5821	2.6208	5.8836
A AOU.23 (OH)	Y:	+0.3750	-0.00203	+12.5181	+0.01881	+0.001107	+0.1268
				6.235045	2.9363	3.0513	1.3089

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE SATURNE: MIMAS N=6.667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
AOU.23 (OH)	X:	+0.0386	+0.01343	+26.2443	+0.04217	+0.001389	+0.2653
(2447030.5)				5.294088	2.4610	3.1906	1.0987
A AOU.25 (OH)	Y:	+0.3703	-0.00146	+12.4767	+0.02510	+0.002573	+0.1265
				0.719794	3.5527	5.7564	2.8072
AOU.25 (OH)	X:	+0.0638	+0.01472	+26.1639	+0.05678	+0.005205	+0.2651
(2447032.5)				6.060450	3.2007	5.8297	2.5950
A AOU.27 (OH)	Y:	+0.3668	-0.00249	+12.4312	+0.02287	+0.000675	+0.1257
				1.487930	4.5603	2.7347	4.3078
AOU.27 (OH)	X:	+0.0924	+0.01258	+26.0714	+0.04742	+0.002688	+0.2636
(2447034.5)				0.543475	4.1716	2.8855	4.0935
A AOU.29 (OH)	Y:	+0.3627	-0.00290	+12.3874	+0.02598	+0.001405	+0.1256
				2.255917	5.4277	2.8574	5.8046
AOU.29 (OH)	X:	+0.1192	+0.01262	+25.9839	+0.05104	+0.001342	+0.2635
(2447036.5)				1.309601	4.9739	3.2359	5.5894
A AOU.31 (OH)	Y:	+0.3570	-0.00231	+12.3393	+0.02073	+0.001802	+0.1250
				3.023593	6.1642	6.1083	1.0224
AOU.31 (OH)	X:	+0.1444	+0.01344	+25.8956	+0.04716	+0.003025	+0.2624
(2447038.5)				2.075394	5.6580	6.2440	0.8053
A SEP. 2 (OH)	Y:	+0.3518	-0.00301	+12.2936	+0.02405	+0.000687	+0.1247
				3.791218	0.6549	2.3545	2.5205
SEP. 2 (OH)	X:	+0.1708	+0.01226	+25.8090	+0.05429	+0.001934	+0.2618
(2447040.5)				2.841212	0.1958	2.4947	2.3032
A SEP. 4 (OH)	Y:	+0.3458	-0.00316	+12.2467	+0.02483	+0.000610	+0.1242
				4.558724	1.4885	3.7891	4.0211
SEP. 4 (OH)	X:	+0.1950	+0.01281	+25.7183	+0.05256	+0.001759	+0.2608
(2447042.5)				3.606908	1.1281	5.4325	3.8008
A SEP. 6 (OH)	Y:	+0.3394	-0.00321	+12.1991	+0.02492	+0.000505	+0.1238
				5.326082	2.3329	5.7672	5.5214
SEP. 6 (OH)	X:	+0.2203	+0.01205	+25.6316	+0.05107	+0.000424	+0.2598
(2447044.5)				4.372323	1.8509	2.0860	5.3001
A SEP. 8 (OH)	Y:	+0.3334	-0.00391	+12.1488	+0.02000	+0.001715	+0.1231
				6.093249	3.1650	2.7477	0.7363
SEP. 8 (OH)	X:	+0.2460	+0.01088	+25.5424	+0.04168	+0.004293	+0.2585
(2447046.5)				5.137482	2.5713	2.7832	0.5116
A SEP.10 (OH)	Y:	+0.3256	-0.00336	+12.1031	+0.02441	+0.001483	+0.1227
				0.577021	3.7833	5.6201	2.2367
SEP.10 (OH)	X:	+0.2676	+0.01259	+25.4629	+0.05772	+0.004239	+0.2578
(2447048.5)				5.902836	3.3037	5.7455	2.0104
A SEP.12 (OH)	Y:	+0.3180	-0.00357	+12.0548	+0.02354	+0.001348	+0.1218
				1.343841	4.5256	5.9162	3.7327
SEP.12 (OH)	X:	+0.2908	+0.01159	+25.3784	+0.05433	+0.001409	+0.2564
(2447050.5)				0.384700	4.0890	5.8890	3.5039
A SEP.14 (OH)	Y:	+0.3113	-0.00458	+12.0082	+0.02879	+0.002229	+0.1216
				2.110903	5.5297	2.7570	5.2319
SEP.14 (OH)	X:	+0.3150	+0.00995	+25.2914	+0.05849	+0.004041	+0.2563
(2447052.5)				1.149910	5.0818	2.8979	5.0018
A SEP.16 (OH)	Y:	+0.3027	-0.00399	+11.9589	+0.02479	+0.000753	+0.1209
				2.877496	6.2636	6.0221	0.4452
SEP.16 (OH)	X:	+0.3360	+0.01118	+25.2086	+0.05264	+0.002407	+0.2552
(2447054.5)				1.914681	5.7371	6.0195	0.2137
A SEP.18 (OH)	Y:	+0.2942	-0.00405	+11.9093	+0.02449	+0.000923	+0.1208
				3.644103	0.8320	0.1174	1.9439

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE SATURNE: MIMAS N=6.667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
SEP.18 (OH) (2447056.5)	X:	+0.3576	+0.01050	+25.1256 2.679464	+0.05557 0.2493	+0.001026 1.1189	+0.2548 1.7114
A SEP.20 (OH)	Y:	+0.2859	-0.00463	+11.8614 4.410470	+0.02609 1.5149	+0.001225 3.0249	+0.1202 3.4421
SEP.20 (OH) (2447058.5)	X:	+0.3783	+0.01000	+25.0433 3.444157	+0.05832 1.0585	+0.001176 3.3922	+0.2539 3.2080
A SEP.22 (OH)	Y:	+0.2767	-0.00436	+11.8127 5.176837	+0.02800 2.3981	+0.000870 5.4282	+0.1197 4.9413
SEP.22 (OH) (2447060.5)	X:	+0.3978	+0.01030	+24.9609 4.208771	+0.06033 1.9342	+0.002150 5.6902	+0.2528 4.7058
A SEP.24 (OH)	Y:	+0.2681	-0.00488	+11.7620 5.942942	+0.02428 3.2366	+0.000903 2.5411	+0.1192 0.1558
SEP.24 (OH) (2447062.5)	X:	+0.4192	+0.00858	+24.8793 4.972944	+0.04803 2.6443	+0.003801 2.6737	+0.2522 6.2008
A SEP.26 (OH)	Y:	+0.2588	-0.00484	+11.7133 0.425777	+0.02488 4.0205	+0.000432 3.2766	+0.1185 1.6553
SEP.26 (OH) (2447064.5)	X:	+0.4375	+0.00925	+24.8020 5.737322	+0.05422 3.4234	+0.000650 4.7798	+0.2507 1.4152
A SEP.28 (OH)	Y:	+0.2483	-0.00431	+11.6659 1.191393	+0.02426 4.5570	+0.002373 5.8456	+0.1180 3.1501
SEP.28 (OH) (2447066.5)	X:	+0.4541	+0.00996	+24.7312 0.218282	+0.05885 4.0198	+0.004798 5.8736	+0.2502 2.9078
A SEP.30 (OH)	Y:	+0.2394	-0.00526	+11.6181 1.957359	+0.02816 5.5434	+0.001284 2.6230	+0.1174 4.6496
SEP.30 (OH) (2447068.5)	X:	+0.4736	+0.00764	+24.6514 0.982577	+0.06042 5.0491	+0.003451 2.7927	+0.2491 4.4054
A OCT. 2 (OH)	Y:	+0.2298	-0.00529	+11.5716 2.723009	+0.02962 6.2810	+0.001124 2.7939	+0.1170 6.1430
OCT. 2 (OH) (2447070.5)	X:	+0.4907	+0.00791	+24.5786 1.746668	+0.06111 5.7752	+0.000879 3.1314	+0.2488 5.8981
A OCT. 4 (OH)	Y:	+0.2191	-0.00464	+11.5214 3.488565	+0.02581 0.9210	+0.001712 6.0937	+0.1165 1.3591
OCT. 4 (OH) (2447072.5)	X:	+0.5062	+0.00848	+24.5037 2.510538	+0.05491 0.2839	+0.002658 6.2557	+0.2481 1.1126
A OCT. 6 (OH)	Y:	+0.2092	-0.00525	+11.4746 4.253942	+0.02730 1.5875	+0.000797 2.7156	+0.1161 2.8544
OCT. 6 (OH) (2447074.5)	X:	+0.5226	+0.00721	+24.4334 3.274453	+0.06050 1.0071	+0.001922 2.7859	+0.2476 2.6079
A OCT. 8 (OH)	Y:	+0.1989	-0.00520	+11.4273 5.019241	+0.02833 2.3927	+0.000575 4.1289	+0.1157 4.3531
OCT. 8 (OH) (2447076.5)	X:	+0.5367	+0.00761	+24.3614 4.038340	+0.06342 1.8898	+0.001888 5.3077	+0.2467 4.1043
A OCT.10 (OH)	Y:	+0.1885	-0.00517	+11.3798 5.784408	+0.02856 3.2171	+0.000403 6.0784	+0.1153 5.8507
OCT.10 (OH) (2447078.5)	X:	+0.5519	+0.00665	+24.2921 4.801927	+0.05776 2.6513	+0.000758 2.4406	+0.2461 5.6011
A OCT.12 (OH)	Y:	+0.1786	-0.00559	+11.3312 0.266299	+0.02678 4.1260	+0.001324 2.6670	+0.1145 1.0644
OCT.12 (OH) (2447080.5)	X:	+0.5667	+0.00579	+24.2218 5.565456	+0.05182 3.5071	+0.003141 2.7865	+0.2447 0.8120
A OCT.14 (OH)	Y:	+0.1672	-0.00490	+11.2865 1.030988	+0.02583 4.6831	+0.001683 5.7652	+0.1142 2.5616

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE SATURNE: MIMAS N=6.667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
OCT.14 (0H)	X:	+0.5776	+0.00731	+24.1640	+0.05933	+0.004677	+0.2446
(2447082.5)				0.045823	4.0400	5.8119	2.3080
A OCT.16 (0H)	Y:	+0.1566	-0.00518	+11.2402	+0.02562	+0.000680	+0.1133
				1.795754	5.5163	6.1589	4.0572
OCT.16 (0H)	X:	+0.5905	+0.00591	+24.0992	+0.05727	+0.000300	+0.2431
(2447084.5)				0.809299	4.9194	0.3122	3.8014
A OCT.18 (0H)	Y:	+0.1468	-0.00587	+11.1978	+0.03212	+0.002264	+0.1132
				2.560596	6.2776	2.7379	5.5527
OCT.18 (0H)	X:	+0.6038	+0.00455	+24.0377	+0.06686	+0.004013	+0.2433
(2447086.5)				1.572972	5.7676	2.8556	5.2964
A OCT.20 (0H)	Y:	+0.1356	-0.00508	+11.1513	+0.02773	+0.001010	+0.1124
				3.325137	0.8747	5.9808	0.7656
OCT.20 (0H)	X:	+0.6137	+0.00581	+23.9767	+0.05640	+0.002572	+0.2423
(2447088.5)				2.336216	0.2580	6.0260	0.5080
A OCT.22 (0H)	Y:	+0.1247	-0.00514	+11.1069	+0.02889	+0.000646	+0.1123
				4.089695	1.6782	0.0364	2.2609
OCT.22 (0H)	X:	+0.6243	+0.00495	+23.9183	+0.05938	+0.000617	+0.2423
(2447090.5)				3.099574	1.0133	1.5664	2.0036
A OCT.24 (0H)	Y:	+0.1143	-0.00555	+11.0636	+0.02779	+0.001127	+0.1118
				4.853977	2.3741	3.1524	3.7581
OCT.24 (0H)	X:	+0.6340	+0.00447	+23.8618	+0.06160	+0.001283	+0.2416
(2447092.5)				3.862888	1.7882	3.7403	3.4992
A OCT.26 (0H)	Y:	+0.1033	-0.00518	+11.0208	+0.03038	+0.000845	+0.1115
				5.618296	3.1849	5.6140	5.2551
OCT.26 (0H)	X:	+0.6427	+0.00460	+23.8065	+0.06410	+0.001846	+0.2409
(2447094.5)				4.626159	2.6115	5.6930	4.9961
A OCT.28 (0H)	Y:	+0.0932	-0.00554	+10.9765	+0.02875	+0.000883	+0.1110
				0.099286	4.0838	2.3601	0.4678
OCT.28 (0H)	X:	+0.6528	+0.00306	+23.7498	+0.05316	+0.003420	+0.2403
(2447096.5)				5.389141	3.4841	2.6337	0.2066
A OCT.30 (0H)	Y:	+0.0823	-0.00528	+10.9352	+0.02841	+0.000101	+0.1104
				0.863279	4.8118	4.7312	1.9660
OCT.30 (0H)	X:	+0.6596	+0.00391	+23.7022	+0.05733	+0.001375	+0.2394
(2447098.5)				6.152309	4.1416	5.6087	1.7039
A OCT.32 (0H)	Y:	+0.0710	-0.00481	+10.8939	+0.02414	+0.001937	+0.1099
				1.626971	5.5010	5.9042	3.4590
NOV. 1 (0H)	X:	+0.6655	+0.00420	+23.6574	+0.05333	+0.003944	+0.2389
(2447100.5)				0.632069	4.7825	5.9253	3.1951
A NOV. 3 (0H)	Y:	+0.0613	-0.00565	+10.8556	+0.03083	+0.001722	+0.1095
				2.391017	0.0082	2.6480	4.9570
NOV. 3 (0H)	X:	+0.6740	+0.00195	+23.6090	+0.06471	+0.004174	+0.2384
(2447102.5)				1.395402	5.7260	2.7674	4.6925
A NOV. 5 (0H)	Y:	+0.0509	-0.00537	+10.8170	+0.02961	+0.000753	+0.1090
				3.154723	0.7623	2.8494	0.1658
NOV. 5 (0H)	X:	+0.6796	+0.00254	+23.5658	+0.06024	+0.000416	+0.2380
(2447104.5)				2.158432	0.1798	3.4618	6.1842
A NOV. 7 (0H)	Y:	+0.0398	-0.00474	+10.7766	+0.02987	+0.001678	+0.1088
				3.918542	1.7142	6.0313	1.6634
NOV. 7 (0H)	X:	+0.6841	+0.00294	+23.5203	+0.05660	+0.002434	+0.2379
(2447106.5)				2.921422	1.0396	6.1769	1.3982
A NOV. 9 (0H)	Y:	+0.0298	-0.00529	+10.7395	+0.02824	+0.000864	+0.1084
				4.682058	2.3797	2.8924	3.1573

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE SATURNE: MIMAS N=6.667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
NOV. 9 (0H) (2447108.5)	X:	+0.6893	+0.00166	+23.4813 3.684451	+0.05820 1.7114	+0.001942 3.0108	+0.2376 2.8927
A NOV.11 (0H)	Y:	+0.0195	-0.00510	+10.7026 5.445581	+0.02929 3.1675	+0.000467 4.4547	+0.1081 4.6546
NOV.11 (0H) (2447110.5)	X:	+0.6926	+0.00204	+23.4418 4.447537	+0.06280 2.5453	+0.001935 5.3385	+0.2371 4.3892
A NOV.13 (0H)	Y:	+0.0093	-0.00501	+10.6660 6.209030	+0.02987 3.9837	+0.000428 0.3036	+0.1078 6.1505
NOV.13 (0H) (2447112.5)	X:	+0.6968	+0.00108	+23.4031 5.210393	+0.05659 3.3801	+0.000997 2.2850	+0.2368 5.8849
A NOV.15 (0H)	Y:	-0.0003	-0.00523	+10.6299 0.689253	+0.03028 4.8554	+0.001049 2.5536	+0.1072 1.3639
NOV.15 (0H) (2447114.5)	X:	+0.7002	+0.00054	+23.3661 5.973333	+0.05533 4.2364	+0.002203 2.7356	+0.2357 1.0970
A NOV.17 (0H)	Y:	-0.0111	-0.00453	+10.5960 1.452236	+0.02524 5.5233	+0.001640 5.8208	+0.1070 2.8588
NOV.17 (0H) (2447116.5)	X:	+0.7004	+0.00189	+23.3404 0.452966	+0.05093 4.7477	+0.004642 5.8560	+0.2359 2.5914
A NOV.19 (0H)	Y:	-0.0207	-0.00486	+10.5628 2.215469	+0.02724 0.0501	+0.000198 1.1051	+0.1063 4.3550
NOV.19 (0H) (2447118.5)	X:	+0.7028	+0.00024	+23.3086 1.215996	+0.05530 5.6598	+0.001050 2.4963	+0.2348 4.0865
A NOV.21 (0H)	Y:	-0.0297	-0.00530	+10.5337 2.978613	+0.03028 0.6848	+0.002121 2.7669	+0.1062 5.8477
NOV.21 (0H) (2447120.5)	X:	+0.7050	-0.00071	+23.2833 1.979153	+0.06265 0.1030	+0.003779 2.8635	+0.2352 5.5799
A NOV.23 (0H)	Y:	-0.0401	-0.00442	+10.5007 3.741737	+0.02915 1.6611	+0.001316 5.9037	+0.1057 1.0612
NOV.23 (0H) (2447122.5)	X:	+0.7039	+0.00059	+23.2545 2.742016	+0.05386 1.0110	+0.002923 5.9730	+0.2346 0.7929
A NOV.25 (0H)	Y:	-0.0496	-0.00455	+10.4711 4.504808	+0.02972 2.4068	+0.000450 6.1776	+0.1056 2.5542
NOV.25 (0H) (2447124.5)	X:	+0.7040	-0.00043	+23.2314 3.505044	+0.05516 1.7158	+0.000491 2.3840	+0.2349 2.2876
A NOV.27 (0H)	Y:	-0.0587	-0.00485	+10.4420 5.267657	+0.02718 3.1672	+0.001002 3.1924	+0.1053 4.0513
NOV.27 (0H) (2447126.5)	X:	+0.7031	-0.00082	+23.2102 4.268073	+0.05592 2.4752	+0.001278 3.9553	+0.2346 3.7842
A NOV.29 (0H)	Y:	-0.0682	-0.00442	+10.4146 6.030598	+0.02941 3.9208	+0.000833 5.8789	+0.1051 5.5469
NOV.29 (0H) (2447128.5)	X:	+0.7014	-0.00074	+23.1903 5.031117	+0.05793 3.2793	+0.001619 5.8478	+0.2344 5.2812
A NOV.31 (0H)	Y:	-0.0769	-0.00469	+10.3866 0.510325	+0.03002 4.8133	+0.000900 2.2159	+0.1048 0.7594
DEC. 1 (0H) (2447130.5)	X:	+0.7008	-0.00207	+23.1685 5.794054	+0.05330 4.2367	+0.003112 2.5639	+0.2339 0.4924
A DEC. 3 (0H)	Y:	-0.0862	-0.00433	+10.3614 1.272998	+0.02774 5.5564	+0.000257 5.6896	+0.1045 2.2566
DEC. 3 (0H) (2447132.5)	X:	+0.6969	-0.00108	+23.1578 0.273887	+0.05039 4.8373	+0.002014 5.7662	+0.2337 1.9902
A DEC. 5 (0H)	Y:	-0.0956	-0.00399	+10.3361 2.035569	+0.02423 0.1042	+0.001441 5.9232	+0.1040 3.7498

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE SATURNE: MIMAS N=6.667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
DEC. 5 (OH)	X:	+0.6929	-0.00116	+23.1465	+0.04444	+0.002878	+0.2331
(2447134.5)				1.036820	5.5988	5.9704	3.4825
A DEC. 7 (OH)	Y:	-0.1034	-0.00473	+10.3161	+0.02864	+0.001980	+0.1039
				2.798387	0.7034	2.7010	5.2466
DEC. 7 (OH)	X:	+0.6912	-0.00324	+23.1374	+0.05879	+0.004706	+0.2334
(2447136.5)				1.800237	0.0723	2.7789	4.9801
A DEC. 9 (OH)	Y:	-0.1121	-0.00426	+10.2943	+0.02700	+0.000312	+0.1035
				3.561009	1.5469	3.2689	0.4560
DEC. 9 (OH)	X:	+0.6862	-0.00231	+23.1294	+0.05163	+0.000579	+0.2330
(2447138.5)				2.563325	0.9039	5.2994	0.1899
A DEC.11 (OH)	Y:	-0.1212	-0.00372	+10.2731	+0.03028	+0.001675	+0.1036
				4.323868	2.4281	5.9727	1.9521
DEC.11 (OH)	X:	+0.6806	-0.00212	+23.1206	+0.05247	+0.002269	+0.2335
(2447140.5)				3.326558	1.7748	6.0843	1.6873
A DEC.13 (OH)	Y:	-0.1290	-0.00428	+10.2542	+0.02616	+0.000943	+0.1033
				5.086370	3.1708	2.9429	3.4465
DEC.13 (OH)	X:	+0.6758	-0.00340	+23.1187	+0.04879	+0.002030	+0.2334
(2447142.5)				4.089779	2.4417	3.1358	3.1830
A DEC.15 (OH)	Y:	-0.1372	-0.00399	+10.2364	+0.02724	+0.000353	+0.1033
				5.849003	3.9382	4.9596	4.9430
DEC.15 (OH)	X:	+0.6691	-0.00296	+23.1169	+0.05370	+0.001941	+0.2334
(2447144.5)				4.853149	3.2299	5.4791	4.6806
A DEC.17 (OH)	Y:	-0.1451	-0.00389	+10.2196	+0.02807	+0.000528	+0.1031
				0.328450	4.7397	0.6794	0.1556
DEC.17 (OH)	X:	+0.6635	-0.00390	+23.1145	+0.05069	+0.001302	+0.2335
(2447146.5)				5.616398	4.1435	2.1430	6.1770
A DEC.19 (OH)	Y:	-0.1527	-0.00401	+10.2041	+0.02907	+0.000891	+0.1028
				1.091078	5.5731	2.4979	1.6528
DEC.19 (OH)	X:	+0.6566	-0.00415	+23.1164	+0.05098	+0.001461	+0.2329
(2447148.5)				0.096601	4.9555	2.6768	1.3914
A DEC.21 (OH)	Y:	-0.1612	-0.00337	+10.1896	+0.02358	+0.001488	+0.1027
				1.853385	0.1311	5.8094	3.1469
DEC.21 (OH)	X:	+0.6471	-0.00301	+23.1260	+0.03836	+0.004352	+0.2332
(2447150.5)				0.859800	5.6068	5.8744	2.8857
A DEC.23 (OH)	Y:	-0.1683	-0.00379	+10.1783	+0.02576	+0.000543	+0.1024
				2.616021	0.8314	2.5104	4.6444
DEC.23 (OH)	X:	+0.6402	-0.00485	+23.1329	+0.04863	+0.002261	+0.2327
(2447152.5)				1.623458	0.1206	2.6596	4.3836
A DEC.25 (OH)	Y:	-0.1751	-0.00402	+10.1699	+0.02452	+0.001819	+0.1023
				3.378506	1.4655	2.8313	6.1362
DEC.25 (OH)	X:	+0.6323	-0.00536	+23.1463	+0.04942	+0.003196	+0.2333
(2447154.5)				2.387107	0.7923	2.9180	5.8769
A DEC.27 (OH)	Y:	-0.1831	-0.00313	+10.1590	+0.02818	+0.001679	+0.1022
				4.141273	2.4373	5.8616	1.3509
DEC.27 (OH)	X:	+0.6215	-0.00406	+23.1537	+0.04868	+0.003424	+0.2333
(2447156.5)				3.150692	1.8164	5.9290	1.0924
A DEC.29 (OH)	Y:	-0.1901	-0.00340	+10.1519	+0.02656	+0.000244	+0.1022
				4.903885	3.1778	6.1510	2.8435
DEC.29 (OH)	X:	+0.6122	-0.00531	+23.1694	+0.04529	+0.000819	+0.2337
(2447158.5)				3.914399	2.4894	2.8763	2.5877
A DEC.31 (OH)	Y:	-0.1967	-0.00361	+10.1449	+0.02464	+0.000876	+0.1022
				5.666431	4.0254	3.1352	4.3415

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 1 DE SATURNE: MIMAS N=6.667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
DEC.30 (OH) (2447159.5)	X:	+0.6073	-0.00575	+23.1776 4.296242	+0.04296 2.8696	+0.002078 3.1627	+0.2337 3.3370
A DEC.32 (OH)	Y:	-0.2003	-0.00333	+10.1427 6.047781	+0.02539 4.3638	+0.000331 5.3384	+0.1023 5.0890
DEC.32 (OH) (2447161.5)	X:	+0.5961	-0.00525	+23.1950 5.060111	+0.04765 3.6236	+0.001957 5.5831	+0.2340 4.8354
A DEC.34 (OH)	Y:	-0.2069	-0.00324	+10.1384 0.527298	+0.02619 5.1566	+0.000575 0.8341	+0.1022 0.3022

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 2 DE SATURNE: ENCELADE N=4.586

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN. 1 (OH)	X:	+0.1762	+0.00053	+30.0563	+0.07268	+0.000335	+0.0688
(2446796.5)				3.828782	2.5164	4.4084	3.4163
A JAN.17 (OH)	Y:	+0.0342	-0.00040	+13.5792	+0.02974	+0.000138	+0.0312
				5.526980	4.3497	0.1154	5.1168
JAN.17 (OH)	X:	+0.1859	+0.00043	+30.4438	+0.06875	+0.000366	+0.0698
(2446812.5)				1.771156	0.6411	2.4901	5.5263
A FEV. 2 (OH)	Y:	+0.0280	-0.00032	+13.7911	+0.02852	+0.000159	+0.0317
				3.474857	2.4589	4.4200	0.9488
FEV. 1 (OH)	X:	+0.1942	+0.00046	+30.9589	+0.06548	+0.000431	+0.0710
(2446827.5)				1.417752	0.4707	2.3074	4.7620
A FEV.17 (OH)	Y:	+0.0228	-0.00041	+14.0407	+0.02753	+0.000158	+0.0322
				3.125966	2.2954	4.2415	0.1886
FEV.17 (OH)	X:	+0.2025	+0.00067	+31.6484	+0.06228	+0.000452	+0.0726
(2446843.5)				5.654556	4.9342	0.4616	0.6031
A MAR. 5 (OH)	Y:	+0.0155	-0.00041	+14.3583	+0.02669	+0.000174	+0.0330
				1.083655	0.4576	2.3570	2.3159
MAR. 1 (OH)	X:	+0.2105	+0.00055	+32.2420	+0.06057	+0.000431	+0.0740
(2446855.5)				4.124350	3.6014	5.4766	3.7720
A MAR.17 (OH)	Y:	+0.0109	-0.00056	+14.6269	+0.02582	+0.000193	+0.0335
				5.839040	5.3690	0.8578	5.4874
MAR.17 (OH)	X:	+0.2206	+0.00046	+33.1066	+0.05826	+0.000455	+0.0758
(2446871.5)				2.090775	1.8291	3.7155	5.9098
A AVR. 2 (OH)	Y:	+0.0016	-0.00053	+15.0090	+0.02513	+0.000191	+0.0343
				3.807506	3.5715	5.3431	1.3446
AVR. 1 (OH)	X:	+0.2292	+0.00029	+33.9459	+0.05565	+0.000458	+0.0775
(2446886.5)				1.762066	1.7595	3.6398	5.1721
A AVR.17 (OH)	Y:	-0.0069	-0.00063	+15.3761	+0.02458	+0.000197	+0.0350
				3.479525	3.4630	5.4270	0.6057
AVR.17 (OH)	X:	+0.2343	+0.00030	+34.7994	+0.05288	+0.000480	+0.0790
(2446902.5)				6.026161	0.0265	2.0213	1.0384
A MAI 3 (OH)	Y:	-0.0177	-0.00067	+15.7503	+0.02298	+0.000214	+0.0357
				1.459858	1.6775	3.8172	2.7540
MAI 1 (OH)	X:	+0.2383	-0.00005	+35.4492	+0.04897	+0.000540	+0.0799
(2446916.5)				1.123035	1.6598	3.7062	3.7087
A MAI 17 (OH)	Y:	-0.0269	-0.00078	+16.0342	+0.02076	+0.000229	+0.0362
				2.838131	3.3040	5.6574	5.4204
MAI 17 (OH)	X:	+0.2385	-0.00042	+36.0082	+0.04288	+0.000578	+0.0806
(2446932.5)				5.397144	6.2788	2.0784	5.8633
A JUN. 2 (OH)	Y:	-0.0395	-0.00068	+16.2755	+0.01689	+0.000273	+0.0364
				0.826206	1.6112	3.9686	1.2887
JUN. 1 (OH)	X:	+0.2336	-0.00076	+36.2924	+0.03675	+0.000644	+0.0806
(2446947.5)				5.086414	0.0801	2.1202	5.1322
A JUN.17 (OH)	Y:	-0.0501	-0.00066	+16.3949	+0.01293	+0.000280	+0.0364
				0.512078	1.7787	3.9462	0.5543
JUN.17 (OH)	X:	+0.2219	-0.00087	+36.3051	+0.03199	+0.000670	+0.0799
(2446963.5)				3.078862	4.9241	0.4322	0.9968
A JUL. 3 (OH)	Y:	-0.0615	-0.00052	+16.3895	+0.01138	+0.000285	+0.0361
				4.783787	0.5156	2.2205	2.6974

1987 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)	X:	+0.2089	-0.00110	+36.0709	+0.03356	+0.000687	+0.0789
(2446977.5)				4.461159	0.5900	2.1329	3.6545
A JUL.17 (OH)	Y:	-0.0687	-0.00054	+16.2752	+0.01330	+0.000249	+0.0357
				6.162959	2.5610	3.7512	5.3545
JUL.17 (OH)	X:	+0.1923	-0.00137	+35.5511	+0.04052	+0.000671	+0.0773
(2446993.5)				2.445379	5.3955	0.3597	5.7875
A AOU. 2 (OH)	Y:	-0.0773	-0.00032	+16.0379	+0.01815	+0.000221	+0.0349
				4.143959	0.9971	2.0501	1.2010
AOU. 1 (OH)	X:	+0.1735	-0.00141	+34.8813	+0.05094	+0.000583	+0.0756
(2447008.5)				2.119880	5.4352	0.3024	5.0300
A AOU.17 (OH)	Y:	-0.0824	-0.00027	+15.7401	+0.02235	+0.000196	+0.0342
				3.816291	0.9575	1.9137	0.4424
AOU.17 (OH)	X:	+0.1518	-0.00121	+34.0431	+0.06150	+0.000508	+0.0735
(2447024.5)				0.089285	3.6765	4.7616	0.8625
A SEP. 2 (OH)	Y:	-0.0874	-0.00009	+15.3817	+0.02647	+0.000159	+0.0333
				1.784540	5.4387	0.1686	2.5569
SEP. 1 (OH)	X:	+0.1340	-0.00126	+33.2120	+0.07065	+0.000385	+0.0716
(2447039.5)				6.032115	3.5356	4.7008	0.0880
A SEP.17 (OH)	Y:	-0.0899	-0.00003	+15.0355	+0.02910	+0.000144	+0.0325
				1.444174	5.2726	6.2805	1.7846
SEP.17 (OH)	X:	+0.1129	-0.00089	+32.3428	+0.07754	+0.000336	+0.0698
(2447055.5)				3.985914	1.6516	2.9719	2.1882
A OCT. 3 (OH)	Y:	-0.0911	-0.00006	+14.6842	+0.03136	+0.000116	+0.0317
				5.682575	3.3906	4.5040	3.8866
OCT. 1 (OH)	X:	+0.1003	-0.00113	+31.6358	+0.08118	+0.000216	+0.0684
(2447069.5)				5.331545	3.1429	4.3866	4.8071
A OCT.17 (OH)	Y:	-0.0917	-0.00005	+14.4086	+0.03279	+0.000126	+0.0311
				0.747121	4.8491	6.2152	0.2247
OCT.17 (OH)	X:	+0.0836	-0.00087	+30.9366	+0.08391	+0.000192	+0.0669
(2447085.5)				3.273666	1.2171	2.7618	0.6154
A NOV. 2 (OH)	Y:	-0.0931	+0.00006	+14.1372	+0.03351	+0.000113	+0.0306
				4.975998	2.9270	4.3819	2.3205
NOV. 1 (OH)	X:	+0.0711	-0.00092	+30.4064	+0.08389	+0.000189	+0.0659
(2447100.5)				2.911262	0.9736	2.5093	6.1087
A NOV.17 (OH)	Y:	-0.0931	+0.00006	+13.9346	+0.03401	+0.000105	+0.0302
				4.617941	2.6829	4.4752	1.5350
NOV.17 (OH)	X:	+0.0557	-0.00058	+29.9957	+0.08351	+0.000185	+0.0652
(2447116.5)				0.846681	5.3203	0.8600	1.9150
A DEC. 3 (OH)	Y:	-0.0928	+0.00000	+13.7766	+0.03367	+0.000105	+0.0299
				2.558528	0.7403	2.7014	3.6294
DEC. 1 (OH)	X:	+0.0473	-0.00085	+29.7795	+0.08171	+0.000282	+0.0648
(2447130.5)				2.180680	0.4692	2.3216	4.5297
A DEC.17 (OH)	Y:	-0.0924	-0.00003	+13.6877	+0.03290	+0.000089	+0.0298
				3.897574	2.1968	4.4715	6.2488
DEC.17 (OH)	X:	+0.0351	-0.00073	+29.6948	+0.07899	+0.000307	+0.0648
(2447146.5)				0.115213	4.8236	0.4712	0.3393
A DEC.33 (OH)	Y:	-0.0934	+0.00006	+13.6483	+0.03159	+0.000113	+0.0298
				1.838051	0.2576	2.5960	2.0648

1987 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:	+0.0000	+0.00000	+37.2506	+0.06507	+0.000456	+0.0031
(2446796.5)				4.916073	3.7153	5.5260	0.3440
A JAN.17 (OH)	Y:	-0.0013	+0.00000	+16.7889	+0.02751	+0.000168	+0.0014
				0.293251	5.6891	0.9776	2.0195
JAN.17 (OH)	X:	+0.0000	+0.00000	+37.7334	+0.06327	+0.000503	+0.0032
(2446812.5)				1.591471	0.6403	2.3725	6.2705
A FEV. 2 (OH)	Y:	-0.0013	+0.00000	+17.1029	+0.02805	+0.000191	+0.0014
				3.257414	2.5808	4.1057	1.6591
FEV. 1 (OH)	X:	+0.0000	+0.00000	+38.3710	+0.06275	+0.000543	+0.0033
(2446827.5)				1.227939	0.5351	2.1892	5.5519
A FEV.17 (OH)	Y:	-0.0013	+0.00000	+17.4610	+0.02893	+0.000211	+0.0015
				2.898700	2.4353	3.9112	0.9429
FEV.17 (OH)	X:	+0.0000	+0.00000	+39.2261	+0.06381	+0.000591	+0.0034
(2446843.5)				4.197032	3.7928	5.3581	5.2093
A MAR. 5 (OH)	Y:	-0.0014	+0.00000	+17.9042	+0.03040	+0.000231	+0.0016
				5.872235	5.6421	0.7890	0.5864
MAR. 1 (OH)	X:	+0.0000	+0.00000	+39.9644	+0.06587	+0.000617	+0.0036
(2446855.5)				0.145155	6.2466	1.4860	3.3949
A MAR.17 (OH)	Y:	-0.0015	+0.00000	+18.2714	+0.03182	+0.000240	+0.0016
				1.823081	1.7687	3.1923	5.0794
MAR.17 (OH)	X:	+0.0000	+0.00000	+41.0356	+0.06985	+0.000655	+0.0038
(2446871.5)				3.126790	3.2335	4.7287	3.0709
A AVR. 2 (OH)	Y:	-0.0016	+0.00000	+18.7917	+0.03390	+0.000252	+0.0018
				4.807339	4.9793	0.1649	4.7679
AVR. 1 (OH)	X:	+0.0000	+0.00000	+42.0727	+0.07432	+0.000676	+0.0040
(2446886.5)				2.787455	3.1569	4.6839	2.4057
A AVR.17 (OH)	Y:	-0.0017	+0.00000	+19.2890	+0.03561	+0.000263	+0.0018
				4.469297	4.8493	0.1554	4.1091
AVR.17 (OH)	X:	-0.0001	+0.00000	+43.1286	+0.07852	+0.000708	+0.0041
(2446902.5)				5.783715	0.1372	1.7380	2.1231
A MAI 3 (OH)	Y:	-0.0017	+0.00000	+19.7932	+0.03652	+0.000288	+0.0019
				1.182425	1.7842	3.5334	3.7822
MAI 1 (OH)	X:	+0.0000	+0.00000	+43.9329	+0.08096	+0.000733	+0.0043
(2446916.5)				2.127574	2.9973	4.7082	1.1106
A MAI 17 (OH)	Y:	-0.0018	+0.00000	+20.1776	+0.03621	+0.000317	+0.0019
				3.808452	4.6183	0.2101	2.7998
MAI 17 (OH)	X:	-0.0001	+0.00000	+44.6218	+0.08122	+0.000781	+0.0044
(2446932.5)				5.134471	6.2728	1.8110	0.8377
A JUN. 2 (OH)	Y:	-0.0019	+0.00000	+20.5090	+0.03458	+0.000351	+0.0021
				0.529954	1.6062	3.5529	2.4898
JUN. 1 (OH)	X:	-0.0001	+0.00000	+44.9739	+0.07896	+0.000817	+0.0044
(2446947.5)				4.814262	6.2229	1.8401	0.1988
A JUN.17 (OH)	Y:	-0.0019	+0.00000	+20.6820	+0.03232	+0.000367	+0.0021
				0.206982	1.5759	3.5212	1.8667
JUN.17 (OH)	X:	+0.0000	+0.00000	+44.9884	+0.07468	+0.000848	+0.0044
(2446963.5)				1.540491	3.2632	5.1786	6.2028
A JUL. 3 (OH)	Y:	-0.0019	+0.00000	+20.6993	+0.03009	+0.000363	+0.0020
				3.213166	4.9359	0.5353	1.5971

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 3 DE SATURNE: TETHYS N=3.328

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JUL. 1 (OH)	X:	+0.0000	+0.00000	+44.6947	+0.07062	+0.000837	+0.0043
(2446977.5)				4.171538	6.2005	1.7934	5.1888
A JUL.17 (OH)	Y:	-0.0019	+0.00000	+20.5758	+0.02880	+0.000337	+0.0020
				5.841560	1.6135	3.4274	0.5975
JUL.17 (OH)	X:	+0.0000	+0.00000	+44.0500	+0.06747	+0.000800	+0.0042
(2446993.5)				0.890493	3.2906	5.0648	4.8985
A AOU. 2 (OH)	Y:	-0.0018	+0.00001	+20.3006	+0.02821	+0.000304	+0.0019
				2.558152	4.9796	0.4542	0.2723
AOU. 1 (OH)	X:	+0.0000	+0.00000	+43.2155	+0.06687	+0.000725	+0.0040
(2447008.5)				0.557253	3.3078	4.9741	4.2369
A AOU.17 (OH)	Y:	-0.0018	+0.00001	+19.9494	+0.02802	+0.000269	+0.0018
				2.223713	4.9635	0.4167	5.8851
AOU.17 (OH)	X:	+0.0000	+0.00000	+42.1744	+0.06855	+0.000642	+0.0037
(2447024.5)				3.545235	0.3523	1.9286	3.9043
A SEP. 2 (OH)	Y:	-0.0017	+0.00000	+19.5215	+0.02789	+0.000241	+0.0017
				5.211795	1.9741	3.7059	5.5897
SEP. 1 (OH)	X:	+0.0000	+0.00000	+41.1415	+0.07110	+0.000552	+0.0036
(2447039.5)				3.197535	0.2833	1.8171	3.2042
A SEP.17 (OH)	Y:	-0.0016	+0.00000	+19.1087	+0.02757	+0.000214	+0.0016
				4.865597	1.8916	3.6121	4.8770
SEP.17 (OH)	X:	+0.0000	+0.00000	+40.0625	+0.07383	+0.000476	+0.0034
(2447055.5)				6.170204	3.5081	5.0463	2.8839
A OCT. 3 (OH)	Y:	-0.0015	+0.00000	+18.6899	+0.02749	+0.000191	+0.0016
				1.558208	5.1246	0.5533	4.5391
OCT. 1 (OH)	X:	+0.0000	+0.00000	+39.1900	+0.07555	+0.000417	+0.0033
(2447069.5)				2.482412	0.0138	1.5990	1.7636
A OCT.17 (OH)	Y:	-0.0014	+0.00000	+18.3604	+0.02729	+0.000170	+0.0015
				4.157554	1.6490	3.3551	3.4391
OCT.17 (OH)	X:	+0.0000	+0.00000	+38.3219	+0.07652	+0.000378	+0.0031
(2447085.5)				5.443130	3.1718	4.8399	1.3944
A NOV. 2 (OH)	Y:	-0.0014	+0.00000	+18.0408	+0.02711	+0.000151	+0.0015
				0.840854	4.8322	0.2909	3.0979
NOV. 1 (OH)	X:	+0.0000	+0.00000	+37.6636	+0.07625	+0.000355	+0.0030
(2447100.5)				5.073078	2.9750	4.7274	0.6526
A NOV.17 (OH)	Y:	-0.0013	+0.00000	+17.8042	+0.02672	+0.000137	+0.0014
				0.477231	4.6554	0.1717	2.3554
NOV.17 (OH)	X:	+0.0000	+0.00000	+37.1511	+0.07504	+0.000356	+0.0030
(2447116.5)				1.743219	6.1070	1.6648	0.2750
A DEC. 3 (OH)	Y:	-0.0013	+0.00000	+17.6241	+0.02609	+0.000136	+0.0014
				3.438281	1.5202	3.4202	1.9733
DEC. 1 (OH)	X:	+0.0000	+0.00000	+36.8753	+0.07312	+0.000365	+0.0029
(2447130.5)				4.325999	2.5656	4.4472	5.4468
A DEC.17 (OH)	Y:	-0.0013	+0.00000	+17.5298	+0.02516	+0.000140	+0.0014
				6.028365	4.2738	6.2272	0.8524
DEC.17 (OH)	X:	+0.0000	+0.00000	+36.7653	+0.07048	+0.000396	+0.0029
(2447146.5)				0.994394	5.7072	1.3237	5.0604
A DEC.33 (OH)	Y:	-0.0013	+0.00000	+17.4958	+0.02385	+0.000157	+0.0014
				2.705493	1.1491	3.1271	0.4954

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 4 DE SATURNE: DIONE N=2.296

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN. 1 (OH)	X:	-0.1306	-0.00006	+47.6518	+0.11195	+0.000503	+0.0516
(2446796.5)				0.897160	5.8808	1.4822	0.7192
A JAN.17 (OH)	Y:	-0.0350	-0.00004	+21.5189	+0.04485	+0.000178	+0.0233
				2.595077	1.4403	3.2292	2.4196
JAN.17 (OH)	X:	-0.1318	-0.00010	+48.2679	+0.10831	+0.000567	+0.0523
(2446812.5)				6.182960	5.0602	0.6708	5.0163
A FEV. 2 (OH)	Y:	-0.0357	-0.00004	+21.8550	+0.04408	+0.000210	+0.0237
				1.603179	0.6042	2.4031	0.4407
FEV. 1 (OH)	X:	-0.1335	-0.00018	+49.0823	+0.10431	+0.000615	+0.0532
(2446827.5)				2.895815	1.9570	3.8323	4.7317
A FEV.17 (OH)	Y:	-0.0364	-0.00003	+22.2518	+0.04313	+0.000232	+0.0241
				4.603780	3.7725	5.5689	0.1590
FEV.17 (OH)	X:	-0.1366	-0.00025	+50.1753	+0.10027	+0.000681	+0.0544
(2446843.5)				1.908404	1.1845	3.0687	2.7570
A MAR. 5 (OH)	Y:	-0.0370	-0.00001	+22.7550	+0.04213	+0.000258	+0.0247
				3.620415	2.9843	4.7758	4.4714
MAR. 1 (OH)	X:	-0.1396	-0.00031	+51.1206	+0.09697	+0.000733	+0.0555
(2446855.5)				4.313830	3.7654	5.6414	1.2799
A MAR.17 (OH)	Y:	-0.0373	+0.00001	+23.1783	+0.04136	+0.000275	+0.0252
				6.028177	5.5515	1.0709	2.9981
MAR.17 (OH)	X:	-0.1446	-0.00038	+52.4920	+0.09267	+0.000782	+0.0570
(2446871.5)				3.338771	3.0471	4.9245	5.6036
A AVR. 2 (OH)	Y:	-0.0373	+0.00003	+23.7836	+0.04029	+0.000292	+0.0258
				5.055159	4.8034	0.3720	1.0354
AVR. 1 (OH)	X:	-0.1502	-0.00040	+53.8197	+0.08876	+0.000831	+0.0583
(2446886.5)				0.075493	0.0458	1.9550	5.3390
A AVR.17 (OH)	Y:	-0.0367	+0.00006	+24.3669	+0.03890	+0.000310	+0.0265
				1.792562	1.7653	3.7330	0.7739
AVR.17 (OH)	X:	-0.1570	-0.00038	+55.1732	+0.08395	+0.000875	+0.0600
(2446902.5)				5.398454	5.6717	1.3244	3.3914
A MAI 3 (OH)	Y:	-0.0357	+0.00011	+24.9597	+0.03632	+0.000344	+0.0270
				0.831720	1.0583	3.1391	5.1071
MAI 1 (OH)	X:	-0.1626	-0.00039	+56.2040	+0.07920	+0.000909	+0.0609
(2446916.5)				6.134597	0.4144	2.3884	4.8304
A MAI 17 (OH)	Y:	-0.0341	+0.00014	+25.4102	+0.03291	+0.000379	+0.0276
				1.566240	2.0492	4.2130	0.2630
MAI 17 (OH)	X:	-0.1691	-0.00030	+57.0887	+0.07292	+0.000955	+0.0621
(2446932.5)				5.185599	6.1141	1.8135	2.8915
A JUN. 2 (OH)	Y:	-0.0316	+0.00018	+25.7923	+0.02798	+0.000422	+0.0279
				0.614357	1.4578	3.5921	4.6016
JUN. 1 (OH)	X:	-0.1740	-0.00021	+57.5420	+0.06708	+0.000991	+0.0624
(2446947.5)				1.942519	3.2646	5.2052	2.6443
A JUN.17 (OH)	Y:	-0.0289	+0.00023	+25.9797	+0.02382	+0.000440	+0.0283
				3.651061	4.9558	0.6433	4.3498
JUN.17 (OH)	X:	-0.1774	-0.00011	+57.5639	+0.06296	+0.001018	+0.0627
(2446963.5)				0.996899	2.7961	4.5913	0.7038
A JUL. 3 (OH)	Y:	-0.0254	+0.00023	+25.9709	+0.02249	+0.000433	+0.0282
				2.701493	4.6146	6.2655	2.4093

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 4 DE SATURNE: DIONE N=2.296

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JUL. 1 (0H) (2446977.5)	X:	-0.1792	+0.00001	+57.1909 1.738442	+0.06351 3.9849	+0.001003 5.6074	+0.0622 2.1468
A JUL.17 (0H)	Y:	-0.0222	+0.00023	+25.7893 3.439710	+0.02486 5.8598	+0.000400 0.9882	+0.0281 3.8454
JUL.17 (0H) (2446993.5)	X:	-0.1790	+0.00011	+56.3692 0.786345	+0.06961 3.5055	+0.000950 4.9326	+0.0615 0.1978
A AOU. 2 (0H)	Y:	-0.0187	+0.00020	+25.4133 2.484354	+0.02970 5.3408	+0.000359 0.3507	+0.0277 1.8969
AOU. 1 (0H) (2447008.5)	X:	-0.1773	+0.00018	+55.3039 3.814883	+0.07903 0.6150	+0.000875 1.9303	+0.0604 6.2214
A AOU.17 (0H)	Y:	-0.0156	+0.00015	+24.9432 5.510700	+0.03429 2.3918	+0.000320 3.6870	+0.0273 1.6304
AOU.17 (0H) (2447024.5)	X:	-0.1745	+0.00025	+53.9738 2.849194	+0.09013 6.2412	+0.000771 1.2073	+0.0591 4.2572
A SEP. 2 (0H)	Y:	-0.0130	+0.00012	+24.3748 4.543826	+0.03830 1.6891	+0.000289 3.0103	+0.0267 5.9544
SEP. 1 (0H) (2447039.5)	X:	-0.1711	+0.00026	+52.6553 5.863630	+0.09998 3.2044	+0.000665 4.4683	+0.0578 3.9838
A SEP.17 (0H)	Y:	-0.0112	+0.00010	+23.8277 1.275167	+0.04131 4.9197	+0.000255 0.0116	+0.0262 5.6766
SEP.17 (0H) (2447055.5)	X:	-0.1668	+0.00022	+51.2767 4.882779	+0.10840 2.4293	+0.000576 3.7399	+0.0563 2.0042
A OCT. 3 (0H)	Y:	-0.0097	+0.00007	+23.2717 0.295684	+0.04367 4.1406	+0.000232 5.5365	+0.0256 3.7047
OCT. 1 (0H) (2447069.5)	X:	-0.1636	+0.00023	+50.1629 5.589592	+0.11393 3.2938	+0.000504 4.6734	+0.0552 3.4140
A OCT.17 (0H)	Y:	-0.0088	+0.00005	+22.8325 1.004710	+0.04533 5.0107	+0.000201 0.1634	+0.0252 5.1116
OCT.17 (0H) (2447085.5)	X:	-0.1598	+0.00016	+49.0546 4.596573	+0.11809 2.4639	+0.000449 3.9382	+0.0542 1.4241
A NOV. 2 (0H)	Y:	-0.0082	+0.00002	+22.4038 0.015252	+0.04666 4.1831	+0.000180 5.6624	+0.0247 3.1308
NOV. 1 (0H) (2447100.5)	X:	-0.1570	+0.00014	+48.2154 1.305099	+0.12023 5.5995	+0.000403 0.8955	+0.0533 1.1295
A NOV.17 (0H)	Y:	-0.0080	+0.00000	+22.0825 3.011131	+0.04747 1.0381	+0.000151 2.6298	+0.0244 2.8376
NOV.17 (0H) (2447116.5)	X:	-0.1548	+0.00011	+47.5640 0.304158	+0.12098 4.7446	+0.000400 0.1836	+0.0527 5.4177
A DEC. 3 (0H)	Y:	-0.0080	-0.00002	+21.8330 2.015348	+0.04772 0.1777	+0.000149 1.9223	+0.0242 0.8504
DEC. 1 (0H) (2447130.5)	X:	-0.1531	+0.00004	+47.2152 0.997475	+0.12016 5.5654	+0.000404 1.0690	+0.0524 0.5324
A DEC.17 (0H)	Y:	-0.0082	-0.00002	+21.6956 2.713589	+0.04728 0.9939	+0.000148 2.8627	+0.0241 2.2507
DEC.17 (0H) (2447146.5)	X:	-0.1525	+0.00002	+47.0803 6.277288	+0.11827 4.7100	+0.000437 0.2933	+0.0524 4.8204
A DEC.33 (0H)	Y:	-0.0086	-0.00002	+21.6338 1.716151	+0.04623 0.1291	+0.000171 2.0909	+0.0240 0.2638

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 5 DE SATURNE: RHEA N=1.391

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN. 1 (OH)	X:	-0.1169	-0.00004	+66.5701	+0.14985	+0.000692	+0.0388
(2446796.5)				4.106687	2.8196	4.6279	0.2587
A JAN.17 (OH)	Y:	-0.0069	-0.00008	+30.0777	+0.06005	+0.000244	+0.0175
				5.793215	4.6701	0.0551	1.9480
JAN.17 (OH)	X:	-0.1176	-0.00009	+67.4310	+0.14640	+0.000778	+0.0391
(2446812.5)				1.197137	0.0909	1.9292	0.7480
A FEV. 2 (OH)	Y:	-0.0083	-0.00007	+30.5585	+0.05985	+0.000286	+0.0177
				2.889206	1.9238	3.6500	2.4424
FEV. 1 (OH)	X:	-0.1190	-0.00011	+68.5695	+0.14223	+0.000847	+0.0395
(2446827.5)				3.185655	2.2664	4.1150	4.7478
A FEV.17 (OH)	Y:	-0.0096	-0.00007	+31.1234	+0.05922	+0.000318	+0.0179
				4.882355	4.0830	5.8389	0.1641
FEV.17 (OH)	X:	-0.1209	-0.00017	+70.0974	+0.13752	+0.000956	+0.0404
(2446843.5)				0.285595	5.8647	1.4309	5.2499
A MAR. 5 (OH)	Y:	-0.0108	-0.00006	+31.8367	+0.05833	+0.000364	+0.0183
				1.986384	1.3789	3.1439	0.6694
MAR. 1 (OH)	X:	-0.1231	-0.00016	+71.4178	+0.13371	+0.001017	+0.0408
(2446855.5)				4.398021	3.8734	5.7302	0.9175
A MAR.17 (OH)	Y:	-0.0117	-0.00005	+32.4344	+0.05752	+0.000382	+0.0186
				6.101171	5.6545	1.1508	2.6217
MAR.17 (OH)	X:	-0.1257	-0.00019	+73.3337	+0.12870	+0.001124	+0.0421
(2446871.5)				1.510133	1.2435	3.1033	1.4282
A AVR. 2 (OH)	Y:	-0.0127	-0.00001	+33.2878	+0.05640	+0.000417	+0.0191
				3.215349	2.9940	4.8381	3.1344
AVR. 1 (OH)	X:	-0.1291	-0.00019	+75.1892	+0.12392	+0.001180	+0.0429
(2446886.5)				3.522165	3.5261	5.3967	5.4483
A AVR.17 (OH)	Y:	-0.0131	+0.00000	+34.1078	+0.05454	+0.000445	+0.0195
				5.228086	5.2356	0.8768	0.8708
AVR.17 (OH)	X:	-0.1321	-0.00019	+77.0789	+0.11884	+0.001271	+0.0441
(2446902.5)				0.649262	0.9614	2.8432	5.9831
A MAI 3 (OH)	Y:	-0.0133	+0.00003	+34.9388	+0.05147	+0.000498	+0.0200
				2.354565	2.6255	4.6496	1.4039
MAI 1 (OH)	X:	-0.1352	-0.00013	+78.5197	+0.11401	+0.001306	+0.0451
(2446916.5)				1.282772	1.8927	3.7866	0.9526
A MAI 17 (OH)	Y:	-0.0131	+0.00005	+35.5686	+0.04745	+0.000550	+0.0204
				2.986468	3.5228	5.6063	2.6544
MAI 17 (OH)	X:	-0.1376	-0.00013	+79.7549	+0.10826	+0.001354	+0.0457
(2446932.5)				4.704762	5.6782	1.2851	1.4850
A JUN. 2 (OH)	Y:	-0.0121	+0.00006	+36.1013	+0.04182	+0.000603	+0.0207
				0.122390	1.0260	3.0585	3.1846
JUN. 1 (OH)	X:	-0.1394	+0.00000	+80.3875	+0.10317	+0.001395	+0.0460
(2446947.5)				0.454731	1.8002	3.6673	5.5362
A JUN.17 (OH)	Y:	-0.0114	+0.00009	+36.3601	+0.03763	+0.000618	+0.0208
				2.152118	3.4945	5.3850	0.9476
JUN.17 (OH)	X:	-0.1398	+0.00002	+80.4174	+0.09958	+0.001406	+0.0465
(2446963.5)				3.880820	5.6543	1.1535	6.0786
A JUL. 3 (OH)	Y:	-0.0099	+0.00008	+36.3436	+0.03667	+0.000600	+0.0210
				5.574265	1.1617	2.8201	1.4876

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 5 DE SATURNE: RHEA N=1.391

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JUL. 1 (0H) (2446977.5)	X:	-0.1391	+0.00009	+79.8953 4.520949	+0.09973 0.4000	+0.001379 2.0841	+0.0463 1.0568
A JUL.17 (0H)	Y:	-0.0088	+0.00009	+36.0864 6.211065	+0.03924 2.2349	+0.000549 3.7318	+0.0209 2.7457
JUL.17 (0H) (2446993.5)	X:	-0.1378	+0.00017	+78.7466 1.658093	+0.10449 4.2437	+0.001326 5.8014	+0.0453 1.6010
A AOU. 2 (0H)	Y:	-0.0075	+0.00005	+35.5579 3.344957	+0.04415 6.0541	+0.000490 1.2126	+0.0205 3.2865
AOU. 1 (0H) (2447008.5)	X:	-0.1349	+0.00019	+77.2583 3.680993	+0.11254 0.3411	+0.001203 1.7971	+0.0446 5.6381
A AOU.17 (0H)	Y:	-0.0067	+0.00004	+34.8990 5.365678	+0.04833 2.0970	+0.000441 3.5446	+0.0202 1.0388
AOU.17 (0H) (2447024.5)	X:	-0.1320	+0.00023	+75.4006 0.805061	+0.12314 4.0657	+0.001095 5.4707	+0.0433 6.1603
A SEP. 2 (0H)	Y:	-0.0060	+0.00001	+34.1053 2.488610	+0.05193 5.7787	+0.000406 0.9885	+0.0196 1.5612
SEP. 1 (0H) (2447039.5)	X:	-0.1284	+0.00022	+73.5572 2.814191	+0.13278 0.0466	+0.000948 1.4262	+0.0421 3.9029
A SEP.17 (0H)	Y:	-0.0058	+0.00000	+33.3425 4.497871	+0.05424 1.7391	+0.000370 3.2413	+0.0191 5.5867
SEP.17 (0H) (2447055.5)	X:	-0.1251	+0.00023	+71.6327 6.206473	+0.14183 3.6656	+0.000848 5.0663	+0.0410 4.4131
A OCT. 3 (0H)	Y:	-0.0059	-0.00002	+32.5697 1.608420	+0.05627 5.3579	+0.000341 0.5722	+0.0187 6.0994
OCT. 1 (0H) (2447069.5)	X:	-0.1219	+0.00019	+70.0760 0.529563	+0.14794 4.4491	+0.000751 5.8823	+0.0399 5.6401
A OCT.17 (0H)	Y:	-0.0062	-0.00004	+31.9614 2.216994	+0.05783 6.1486	+0.000304 1.3612	+0.0182 1.0471
OCT.17 (0H) (2447085.5)	X:	-0.1186	+0.00017	+68.5284 3.909526	+0.15303 1.7282	+0.000668 3.2114	+0.0387 6.1430
A NOV. 2 (0H)	Y:	-0.0070	-0.00005	+31.3693 5.600619	+0.05936 3.4368	+0.000267 4.9337	+0.0178 1.5528
NOV. 1 (0H) (2447100.5)	X:	-0.1162	+0.00016	+67.3575 5.895612	+0.15600 3.8718	+0.000621 5.4268	+0.0379 3.8570
A NOV.17 (0H)	Y:	-0.0078	-0.00007	+30.9288 1.307804	+0.06046 5.5852	+0.000240 0.8384	+0.0174 5.5545
NOV.17 (0H) (2447116.5)	X:	-0.1136	+0.00012	+66.4469 2.984023	+0.15758 1.1218	+0.000589 2.7686	+0.0371 4.3478
A DEC. 3 (0H)	Y:	-0.0090	-0.00007	+30.5892 4.684671	+0.06120 2.8348	+0.000219 4.4838	+0.0171 6.0511
DEC. 1 (0H) (2447130.5)	X:	-0.1119	+0.00009	+65.9604 3.576046	+0.15731 1.8517	+0.000582 3.5482	+0.0366 5.5616
A DEC.17 (0H)	Y:	-0.0102	-0.00008	+30.4066 5.281741	+0.06109 3.5607	+0.000216 5.2967	+0.0169 0.9873
DEC.17 (0H) (2447146.5)	X:	-0.1105	+0.00004	+65.7720 0.661429	+0.15616 5.3776	+0.000620 0.8707	+0.0363 6.0480
A DEC.33 (0H)	Y:	-0.0115	-0.00009	+30.3313 2.373170	+0.06040 0.7973	+0.000239 2.6490	+0.0167 1.4798

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 6 DE SATURNE: TITAN N=0.394

		A0	A1	B0 F0	B1 F1	C0 P0
JAN. 1 (OH)	X:	- 7.0893	- 0.00797	+154.4168	+ 0.56631	+2.4672
(2446796.5)				5.518272	4.2053	3.4282
A JAN.12 (OH)	Y:	- 3.0017	+ 0.45914	+ 70.5988	+ 0.52130	+1.1944
				0.962969	5.8229	5.1298
JAN.12 (OH)	X:	- 9.3562	+ 0.40161	+153.6713	+ 0.23053	+2.2206
(2446807.5)				3.520069	4.2332	5.6281
A JAN.23 (OH)	Y:	- 2.7597	+ 0.42540	+ 67.0404	+ 0.40651	+0.9143
				5.251153	5.5126	1.0025
JAN.23 (OH)	X:	-11.5864	+ 0.85701	+162.7210	+ 0.87247	+1.8438
(2446818.5)				1.574641	5.8545	1.9530
A FEV. 3 (OH)	Y:	- 1.7074	+ 0.24976	+ 71.1925	+ 0.14602	+0.9089
				3.263189	0.3171	3.7184
FEV. 1 (OH)	X:	- 1.4570	- 0.97879	+164.5948	+ 0.89555	+2.7004
(2446827.5)				5.101023	3.0314	2.5825
A FEV.12 (OH)	Y:	- 2.4224	+ 0.26794	+ 72.2262	+ 0.35504	+1.1840
				0.555002	5.5617	4.3707
FEV.12 (OH)	X:	- 2.9514	- 0.77340	+158.7103	+ 0.99894	+2.0053
(2446838.5)				3.159890	2.7524	4.8972
A FEV.23 (OH)	Y:	- 3.4204	+ 0.45170	+ 69.3070	+ 0.46359	+0.9699
				4.851982	5.2472	0.2532
FEV.23 (OH)	X:	- 5.8909	- 0.25953	+163.7896	+ 0.13147	+2.2289
(2446849.5)				1.164252	2.2014	1.2517
A MAR. 6 (OH)	Y:	- 3.4844	+ 0.49065	+ 75.0513	+ 0.29929	+0.9335
				2.857878	5.6982	3.0430
MAR. 1 (OH)	X:	-10.7033	+ 0.58779	+163.5011	+ 0.51155	+2.4329
(2446855.5)				3.507971	4.6758	5.6800
A MAR.12 (OH)	Y:	- 2.8685	+ 0.41920	+ 71.6926	+ 0.46112	+0.9933
				5.255325	5.6724	1.0858
MAR.12 (OH)	X:	-12.4423	+ 0.96541	+174.5849	+ 0.74824	+1.9698
(2446866.5)				1.582333	5.8851	2.0250
A MAR.23 (OH)	Y:	- 1.5930	+ 0.19775	+ 76.2164	+ 0.07704	+0.9758
				3.285548	6.2500	3.7793
MAR.23 (OH)	X:	-13.5397	+ 1.17762	+167.2706	+ 1.30945	+2.9143
(2446877.5)				5.942751	5.6909	4.4343
A AVR. 3 (OH)	Y:	- 0.5433	+ 0.01682	+ 76.3905	+ 0.24766	+1.2272
				1.352902	1.0917	6.1034
AVR. 1 (OH)	X:	- 4.4295	- 0.62635	+171.7675	+ 0.88172	+2.2467
(2446886.5)				3.184507	3.1382	5.0082
A AVR.12 (OH)	Y:	- 3.9829	+ 0.54400	+ 74.5087	+ 0.58668	+1.0535
				4.889688	5.4832	0.3518
AVR.12 (OH)	X:	- 7.2080	- 0.12296	+177.8695	+ 0.26539	+2.3855
(2446897.5)				1.215536	2.6891	1.3553
A AVR.23 (OH)	Y:	- 3.7745	+ 0.53219	+ 80.8841	+ 0.37888	+1.0168
				2.909190	5.4844	3.1642
AVR.23 (OH)	X:	-10.4962	+ 0.44103	+177.9903	+ 0.64966	+2.9503
(2446908.5)				5.580645	5.4532	3.6863
A MAI 4 (OH)	Y:	- 3.3550	+ 0.49455	+ 82.2123	+ 0.39899	+1.4031
				1.031293	6.1067	5.3590

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 6 DE SATURNE: TITAN N=0.394

		A0	A1	B0 F0	B1 F1	C0 P0
MAI 1 (OH)	X:	- 3.4451	- 0.58621	+179.1925	+ 0.71862	+2.2909
(2446916.5)				2.457460	2.4432	3.5773
A MAI 12 (OH)	Y:	+ 1.4239	- 0.45391	+ 82.8151	+ 0.35278	+0.9379
				4.186429	3.0191	5.3655
MAI 12 (OH)	X:	- 1.4415	- 0.97159	+181.3927	+ 1.07931	+2.6404
(2446927.5)				0.468298	2.1075	6.2471
A MAI 23 (OH)	Y:	+ 0.6739	- 0.33198	+ 80.2808	+ 0.41699	+1.2722
				2.220634	2.9976	1.6351
MAI 23 (OH)	X:	- 0.3324	- 1.26313	+193.3870	+ 0.87849	+3.2461
(2446938.5)				4.852719	2.3027	2.1130
A JUN. 3 (OH)	Y:	- 0.7424	- 0.07288	+ 83.6271	+ 0.13390	+1.3344
				0.280294	2.9514	3.8311
JUN. 1 (OH)	X:	-10.8133	+ 0.69227	+190.1940	+ 0.47456	+2.2712
(2446947.5)				2.125010	5.6557	3.0690
A JUN.12 (OH)	Y:	+ 2.1186	- 0.48936	+ 84.7802	+ 0.33078	+0.9477
				3.871494	2.4742	4.6916
JUN.12 (OH)	X:	- 7.7903	+ 0.20225	+184.5093	+ 0.48020	+2.9091
(2446958.5)				0.193218	1.0579	5.5074
A JUN.23 (OH)	Y:	+ 2.5869	- 0.59848	+ 79.4986	+ 0.57028	+1.3421
				1.904854	2.7108	1.0133
JUN.23 (OH)	X:	- 4.4977	- 0.40291	+189.4191	+ 0.54815	+2.9908
(2446969.5)				4.539500	1.3188	1.4531
A JUL. 4 (OH)	Y:	+ 2.1109	- 0.52949	+ 84.3220	+ 0.55537	+1.3401
				6.215175	2.5725	3.0764
JUL. 1 (OH)	X:	-10.6531	+ 0.37959	+188.4234	+ 0.58088	+2.3672
(2446977.5)				1.417631	4.4557	1.6517
A JUL.12 (OH)	Y:	- 3.4382	+ 0.54234	+ 83.8673	+ 0.57164	+1.0737
				3.091391	5.7327	3.4614
JUL.12 (OH)	X:	-13.1865	+ 0.91792	+179.7811	+ 0.57822	+3.0451
(2446988.5)				5.794186	5.5939	4.0505
A JUL.23 (OH)	Y:	- 2.1306	+ 0.33902	+ 82.9047	+ 0.24968	+1.3704
				1.207870	5.7162	5.6748
JUL.23 (OH)	X:	-14.2584	+ 1.19929	+177.9062	+ 1.21851	+2.6992
(2446999.5)				3.789400	5.7967	6.1476
A AOU. 3 (OH)	Y:	- 0.6262	+ 0.08685	+ 80.2246	+ 0.18935	+1.1387
				5.525060	1.1142	1.6372
AOU. 1 (OH)	X:	- 3.5857	- 0.83263	+176.4995	+ 0.93710	+2.5510
(2447008.5)				1.071975	3.1419	1.0605
A AOU.12 (OH)	Y:	- 3.4746	+ 0.49802	+ 81.4819	+ 0.55247	+1.0256
				2.763536	5.5522	2.7745
AOU.12 (OH)	X:	- 6.5606	- 0.27511	+177.6939	+ 0.55120	+2.8431
(2447019.5)				5.439457	2.9124	3.2575
A AOU.23 (OH)	Y:	- 3.5268	+ 0.54097	+ 80.5562	+ 0.46951	+1.3658
				0.887610	5.4072	4.9839
AOU.23 (OH)	X:	- 9.1665	+ 0.23929	+171.3975	+ 0.32619	+2.3854
(2447030.5)				3.475700	5.7125	5.5213
A SEP. 3 (OH)	Y:	- 3.0330	+ 0.48280	+ 74.4499	+ 0.31461	+1.0014
				5.192338	5.9338	0.8647

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 6 DE SATURNE: TITAN N=0.394

		A0	A1	B0 F0	B1 F1	C0 P0
SEP. 1 (OH)	X:	- 0.3857	- 1.19851	+166.9493	+ 1.06821	+2.4248
(2447039.5)				0.706647	2.7957	0.4072
A SEP.12 (OH)	Y:	- 0.8314	- 0.00766	+ 76.0905	+ 0.15684	+1.0892
				2.438775	4.9062	2.0115
SEP.12 (OH)	X:	- 1.1455	- 1.08349	+173.8349	+ 1.24836	+2.8283
(2447050.5)				5.074367	2.5731	2.4788
A SEP.23 (OH)	Y:	- 1.9535	+ 0.20170	+ 75.9754	+ 0.29092	+1.2148
				0.511450	4.7631	4.2435
SEP.23 (OH)	X:	- 2.3647	- 0.86918	+162.0008	+ 0.67301	+1.9585
(2447061.5)				3.145730	2.3191	4.7982
A OCT. 4 (OH)	Y:	- 2.6802	+ 0.34727	+ 71.5016	+ 0.19217	+0.9671
				4.821125	5.3799	0.1687
OCT. 1 (OH)	X:	-10.7464	+ 0.83154	+159.9868	+ 0.63841	+2.6535
(2447069.5)				0.002760	5.4884	5.0378
A OCT.12 (OH)	Y:	+ 1.7615	- 0.38056	+ 70.5770	+ 0.21731	+1.1319
				1.680978	2.2701	0.5191
OCT.12 (OH)	X:	- 8.3769	+ 0.45650	+158.7359	+ 0.39257	+2.3465
(2447080.5)				4.280743	0.7040	0.8837
A OCT.23 (OH)	Y:	+ 2.0474	- 0.46226	+ 73.5590	+ 0.44791	+1.1518
				5.968390	2.7297	2.5733
OCT.23 (OH)	X:	- 6.0614	+ 0.08797	+158.1345	+ 0.59888	+1.9217
(2447091.5)				2.338769	0.4490	3.3818
A NOV. 3 (OH)	Y:	+ 2.2152	- 0.51764	+ 73.1123	+ 0.55298	+0.7730
				4.075208	2.4222	5.0832
NOV. 1 (OH)	X:	-11.9536	+ 0.97425	+152.4350	+ 0.84731	+2.5719
(2447100.5)				5.892531	5.1884	4.2958
A NOV.12 (OH)	Y:	- 0.9707	+ 0.11395	+ 70.8017	+ 0.24256	+1.1245
				1.299547	6.0739	5.9373
NOV.12 (OH)	X:	-11.8813	+ 1.02979	+151.6011	+ 0.62178	+2.2764
(2447111.5)				3.852386	5.9519	0.0468
A NOV.23 (OH)	Y:	- 0.0247	- 0.06818	+ 70.2483	+ 0.10382	+1.0220
				5.593100	2.6233	1.8482
NOV.23 (OH)	X:	-11.4490	+ 1.03519	+159.4231	+ 1.19581	+1.7367
(2447122.5)				1.919907	5.9783	2.7336
A DEC. 4 (OH)	Y:	+ 1.1088	- 0.28326	+ 70.6406	+ 0.38953	+0.8153
				3.662269	2.0394	4.3366
DEC. 1 (OH)	X:	- 1.3387	- 0.91250	+158.2094	+ 1.07734	+2.5605
(2447130.5)				5.054456	2.8702	2.5546
A DEC.12 (OH)	Y:	- 2.4593	+ 0.25340	+ 70.3049	+ 0.36549	+1.1364
				0.514743	5.2198	4.3492
DEC.12 (OH)	X:	- 2.3759	- 0.74495	+149.9325	+ 0.83606	+1.8547
(2447141.5)				3.104758	2.4147	4.8489
A DEC.23 (OH)	Y:	- 3.2410	+ 0.39558	+ 66.5867	+ 0.28966	+0.9153
				4.803862	5.1412	0.2241
DEC.23 (OH)	X:	- 5.1406	- 0.27121	+152.4070	+ 0.19234	+2.0457
(2447152.5)				1.095181	4.5942	1.2007
A DEC.34 (OH)	Y:	- 3.5585	+ 0.47745	+ 70.9044	+ 0.38964	+0.8611
				2.800829	5.9703	3.0006

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 7 DE SATURNE: HYPERION N=0.394

		A0	A1	B0 F0	B1 F1	C0 P0
JAN. 1 (OH)	X:	+20.2946	- 5.08589	+161.2604	+12.93532	+1.1325
(2446796.5)				1.531609	5.7714	5.0202
A JAN. 9 (OH)	Y:	-27.4325	+ 1.00662	+ 77.8565	+ 6.45219	+0.6104
				3.234997	1.1621	0.4763
JAN. 9 (OH)	X:	-51.6826	+ 4.37482	+150.9908	+ 8.55153	+2.5815
(2446804.5)				3.716140	2.0751	0.3213
A JAN.17 (OH)	Y:	-23.7115	+ 4.50093	+ 55.8524	+ 3.37504	+0.9075
				5.588268	4.3215	1.8286
JAN.17 (OH)	X:	+17.8500	+ 3.16069	+164.5096	+ 8.87019	+2.6714
(2446812.5)				6.228939	4.3038	5.9295
A JAN.25 (OH)	Y:	+ 8.6447	- 5.19323	+ 63.9202	+ 2.59143	+1.0567
				1.525176	5.6360	1.6415
JAN.25 (OH)	X:	+10.1686	- 4.78838	+151.9566	+13.46146	+1.1932
(2446820.5)				2.391565	0.6082	1.2478
A FEV. 2 (OH)	Y:	-22.9774	+ 0.12624	+ 72.4257	+ 6.65112	+0.6123
				4.131719	2.3319	2.9280
FEV. 1 (OH)	X:	-54.4573	+ 8.28517	+151.6442	+ 7.07859	+3.1905
(2446827.5)				4.173877	2.4505	1.5509
A FEV. 9 (OH)	Y:	- 8.9110	+ 2.16877	+ 68.9846	+ 3.94232	+1.3362
				6.075163	4.5404	3.4631
FEV. 9 (OH)	X:	+54.7051	- 6.17952	+182.3364	+11.75741	+1.2089
(2446835.5)				0.303237	4.3665	1.6316
A FEV.17 (OH)	Y:	- 5.1137	- 4.04694	+ 69.2046	+ 3.61466	+0.8361
				2.157709	0.0590	2.9582
FEV.17 (OH)	X:	+14.2948	- 8.39039	+139.3861	+12.44094	+1.5553
(2446843.5)				2.963648	1.4590	3.0992
A FEV.25 (OH)	Y:	-29.7990	+ 2.03205	+ 67.2507	+ 5.53322	+0.4055
				4.552713	2.9377	5.0053
FEV.25 (OH)	X:	-35.4068	+10.91330	+147.9386	+ 5.70890	+3.0544
(2446851.5)				5.076935	3.3863	3.6292
A MAR. 5 (OH)	Y:	+ 8.8212	- 2.09818	+ 78.8591	+ 3.90918	+1.5576
				0.482845	4.8447	5.2023
MAR. 1 (OH)	X:	+34.5905	+ 0.25793	+181.7530	+10.36431	+2.0649
(2446855.5)				0.034177	4.2748	0.1165
A MAR. 9 (OH)	Y:	+ 6.5445	- 5.62262	+ 66.6524	+ 2.71790	+1.0982
				1.693200	5.7909	2.1923
MAR. 9 (OH)	X:	+17.2617	- 6.60048	+153.1557	+13.35891	+1.2450
(2446863.5)				2.545866	0.8786	2.0575
A MAR.17 (OH)	Y:	-25.1493	+ 0.32657	+ 75.5026	+ 6.84148	+0.5591
				4.269101	2.5430	3.4913
MAR.17 (OH)	X:	-49.8485	+11.42477	+153.8215	+ 5.74177	+3.1134
(2446871.5)				4.642961	2.9065	2.7277
A MAR.25 (OH)	Y:	+ 1.2036	+ 0.08745	+ 79.8868	+ 4.19647	+1.6825
				0.200255	4.7625	4.5575
MAR.25 (OH)	X:	+55.5493	- 8.90403	+186.2087	+13.19240	+1.5350
(2446879.5)				0.778370	4.8645	3.2911
A AVR. 2 (OH)	Y:	-24.2176	- 0.49116	+ 87.9065	+ 6.51849	+0.4101
				2.648538	0.5398	5.2673

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 7 DE SATURNE: HYPERION N=0.394

		A0	A1	B0 F0	B1 F1	C0 P0
AVR. 1 (OH)	X:	+12.3801	- 9.05568	+150.3133	+13.06234	+1.6350
(2446886.5)				3.135726	1.7094	3.7127
A AVR. 9 (OH)	Y:	-35.9200	+ 3.64594	+ 66.6968	+ 4.72396	+0.6701
				4.667135	3.1708	6.0265
AVR. 9 (OH)	X:	-23.4729	+10.17479	+165.6149	+ 7.00617	+3.4561
(2446894.5)				5.306378	3.5744	4.1456
A AVR.17 (OH)	Y:	+10.6715	- 3.03798	+ 83.9348	+ 4.06806	+1.5268
				0.659378	4.9464	5.6937
AVR.17 (OH)	X:	+27.3147	- 4.90052	+189.7814	+15.39695	+1.2769
(2446902.5)				1.482528	5.7672	5.2814
A AVR.25 (OH)	Y:	-29.2352	+ 0.79796	+ 89.5558	+ 7.43823	+0.6535
				3.210401	1.1851	0.6718
AVR.25 (OH)	X:	-51.5566	+ 4.83978	+180.4595	+ 9.74870	+3.2632
(2446910.5)				3.679874	2.0123	0.5038
A MAI 3 (OH)	Y:	-26.1197	+ 4.80430	+ 67.9745	+ 3.79157	+1:1247
				5.548969	4.2331	2.1332
MAI 1 (OH)	X:	- 9.7095	+ 8.96281	+176.6603	+ 8.06553	+3.6156
(2446916.5)				5.610846	3.8424	4.7713
A MAI 9 (OH)	Y:	+11.0450	- 3.90906	+ 84.1964	+ 3.97882	+1.4025
				0.920953	5.1504	0.0862
MAI 9 (OH)	X:	+19.1819	- 3.72802	+194.6049	+16.61984	+1.5058
(2446924.5)				1.783586	6.1363	6.0774
A MAI 17 (OH)	Y:	-27.4105	+ 0.34039	+ 88.2788	+ 7.54803	+0.6254
				3.514574	1.5763	1.4890
MAI 17 (OH)	X:	-57.1844	+ 7.44354	+182.9920	+ 8.97044	+3.6820
(2446932.5)				3.921793	2.1942	1.1073
A MAI 25 (OH)	Y:	-17.6322	+ 3.56166	+ 76.3773	+ 4.24785	+1.3735
				5.821325	4.3581	2.9592
MAI 25 (OH)	X:	+51.2196	- 2.98561	+210.4198	+12.63527	+1.6245
(2446940.5)				0.122311	4.2621	0.6964
A JUN. 2 (OH)	Y:	+ 2.7732	- 5.70134	+ 76.2049	+ 3.38018	+1.1410
				1.861801	5.9819	2.5642
JUN. 1 (OH)	X:	+20.5164	- 6.21663	+176.9470	+15.17881	+1.2397
(2446947.5)				2.378962	0.6427	1.5507
A JUN. 9 (OH)	Y:	-25.8456	- 0.16617	+ 85.1479	+ 7.69133	+0.6597
				4.129911	2.3670	3.1157
JUN. 9 (OH)	X:	-55.7748	+11.33873	+173.2305	+ 6.83682	+3.5318
(2446955.5)				4.497660	2.7287	2.4105
A JUN.17 (OH)	Y:	- 3.5934	+ 1.19281	+ 85.4693	+ 4.54436	+1.7676
				0.082702	4.7106	4.3041
JUN.17 (OH)	X:	+63.7326	- 9.50581	+205.3877	+14.21832	+1.7227
(2446963.5)				0.632282	4.6775	2.9504
A JUN.25 (OH)	Y:	-20.8903	- 1.50555	+ 91.9538	+ 6.38030	+0.4180
				2.513710	0.3959	4.4776
JUN.25 (OH)	X:	+ 3.0785	- 8.25352	+165.5897	+13.50373	+1.4545
(2446971.5)				3.281807	1.8468	4.3222
A JUL. 3 (OH)	Y:	-40.8447	+ 5.04761	+ 66.3469	+ 4.08288	+0.9314
				4.797886	3.3935	0.2082

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 7 DE SATURNE: HYPERION N=0.394

		A0	A1	B0 F0	B1 F1	C0 P0
JUL. 1 (OH)	X:	-50.3985	+12.46939	+165.8731	+ 5.95649	+3.2664
(2446977.5)				4.795686	3.0425	3.0792
A JUL. 9 (OH)	Y:	+ 3.6602	- 0.52980	+ 87.6859	+ 4.47019	+1.7992
				0.294526	4.7683	4.7973
JUL. 9 (OH)	X:	+50.9660	- 8.24759	+195.9808	+14.17827	+1.4979
(2446985.5)				0.956935	5.0766	3.6642
A JUL.17 (OH)	Y:	-27.0884	- 0.02310	+ 94.1963	+ 7.24009	+0.5447
				2.768265	0.6534	5.7507
JUL.17 (OH)	X:	-20.1103	- 3.68496	+172.2868	+12.23932	+1.6184
(2446993.5)				3.438629	1.9397	5.5703
A JUL.25 (OH)	Y:	-39.9746	+ 6.04893	+ 60.9626	+ 3.32608	+1.0888
				5.053345	3.8160	0.7757
JUL.25 (OH)	X:	- 3.9314	+ 8.26988	+177.1784	+ 8.39711	+3.4741
(2447001.5)				5.799847	3.9869	5.1353
A AOU. 2 (OH)	Y:	+11.3719	- 4.32909	+ 81.2504	+ 3.79693	+1.2501
				1.070632	5.2369	0.4956
AOU. 1 (OH)	X:	+24.5470	- 4.35376	+188.5973	+15.69738	+1.3970
(2447008.5)				1.629258	5.9244	5.6018
A AOU. 9 (OH)	Y:	-27.6163	+ 0.41062	+ 87.2453	+ 7.34417	+0.6408
				3.342338	1.3378	0.9675
AOU. 9 (OH)	X:	-54.1936	+ 5.67044	+174.7793	+ 9.21711	+3.2900
(2447016.5)				3.782181	2.0612	0.7467
A AOU.17 (OH)	Y:	-23.3521	+ 4.40269	+ 68.2647	+ 3.82621	+1.1339
				5.653974	4.2547	2.4626
AOU.17 (OH)	X:	+33.1996	+ 1.25435	+189.9178	+10.79127	+2.1350
(2447024.5)				0.006892	4.2354	0.0824
A AOU.25 (OH)	Y:	+ 8.4097	- 5.81779	+ 70.5469	+ 2.99848	+1.0923
				1.625694	5.6673	2.1578
AOU.25 (OH)	X:	+22.8551	- 7.16436	+155.7084	+13.39563	+1.1710
(2447032.5)				2.498891	0.8023	1.9382
A SEP. 2 (OH)	Y:	-26.1995	+ 0.15640	+ 77.2608	+ 6.97048	+0.5569
				4.209001	2.4579	3.3271
SEP. 1 (OH)	X:	-53.7414	+ 9.05022	+161.7518	+ 7.30311	+3.3294
(2447039.5)				4.280482	2.5027	1.9405
A SEP. 9 (OH)	Y:	- 9.2414	+ 2.35010	+ 74.5471	+ 4.13297	+1.4681
				6.168669	4.5917	3.8595
SEP. 9 (OH)	X:	+61.0040	- 7.13883	+189.3649	+12.98455	+1.3416
(2447047.5)				0.396061	4.4325	2.3817
A SEP.17 (OH)	Y:	- 9.5116	- 3.24850	+ 76.2722	+ 4.66580	+0.5893
				2.259859	0.1342	3.4473
SEP.17 (OH)	X:	+18.0761	- 9.34957	+139.4506	+12.13374	+1.4934
(2447055.5)				3.051824	1.5872	3.4995
A SEP.25 (OH)	Y:	-34.7331	+ 3.02262	+ 65.1148	+ 4.84260	+0.4925
				4.570810	2.9965	5.7924
SEP.25 (OH)	X:	-30.1110	+10.66725	+148.2209	+ 5.97027	+2.9673
(2447063.5)				5.167592	3.3929	3.9396
A OCT. 3 (OH)	Y:	+ 9.3820	- 2.20588	+ 78.5648	+ 3.96611	+1.4291
				0.537848	4.8271	5.4574

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 7 DE SATURNE: HYPERION N=0.394

		A0	A1	B0 F0	B1 F1	C0 P0
OCT. 1 (OH)	X:	+58.8528	- 7.65521	+178.1888	+12.80237	+1.4536
(2447069.5)				0.592465	4.6469	3.0260
A OCT. 9 (OH)	Y:	-16.4103	- 1.78540	+ 78.8599	+ 5.57458	+0.3654
				2.465569	0.3457	4.5149
OCT. 9 (OH)	X:	+ 8.4557	- 7.93813	+138.6890	+11.57623	+1.2509
(2447077.5)				3.202225	1.7597	4.1748
A OCT.17 (OH)	Y:	-37.2294	+ 4.34675	+ 58.1882	+ 3.68648	+0.7591
				4.695664	3.2382	0.1418
OCT.17 (OH)	X:	-18.3170	+ 9.53683	+147.3652	+ 6.45718	+2.9490
(2447085.5)				5.377694	3.5769	4.4106
A OCT.25 (OH)	Y:	+10.2838	- 2.79170	+ 75.5452	+ 3.82021	+1.2667
				0.708441	4.9436	5.9352
OCT.25 (OH)	X:	+31.0821	- 4.33610	+162.4255	+13.74690	+1.2679
(2447093.5)				1.515003	5.8119	5.5392
A NOV. 2 (OH)	Y:	-24.3157	+ 0.04690	+ 76.6984	+ 6.59959	+0.5966
				3.255289	1.2607	0.9542
NOV. 1 (OH)	X:	-27.4679	- 0.18074	+151.6717	+ 9.73334	+2.0796
(2447100.5)				3.459602	1.8675	6.2659
A NOV. 9 (OH)	Y:	-32.7450	+ 5.34554	+ 53.6262	+ 2.83093	+0.9420
				5.173630	3.9211	1.3504
NOV. 9 (OH)	X:	+ 5.8166	+ 7.14676	+151.6429	+ 7.60074	+2.6827
(2447108.5)				5.889076	4.0214	5.5490
A NOV.17 (OH)	Y:	+11.6808	- 4.52510	+ 68.5513	+ 3.30297	+0.9104
				1.140985	5.2183	1.0793
NOV.17 (OH)	X:	+27.7773	- 4.66208	+149.4889	+13.23341	+1.1783
(2447116.5)				1.985375	0.1465	0.5935
A NOV.25 (OH)	Y:	-22.5014	- 0.42997	+ 71.0256	+ 6.49638	+0.5942
				3.761231	1.9300	2.3829
NOV.25 (OH)	X:	-44.4780	+ 7.12584	+149.5733	+ 7.34023	+3.0602
(2447124.5)				4.073972	2.2967	1.7294
A DEC. 3 (OH)	Y:	-12.4652	+ 2.92962	+ 65.3445	+ 3.62747	+1.2625
				5.987038	4.4635	3.6556
DEC. 1 (OH)	X:	+18.6395	+ 5.15397	+156.0849	+ 8.44970	+2.2269
(2447130.5)				6.023933	4.0685	5.9435
A DEC. 9 (OH)	Y:	+11.6274	- 5.13122	+ 65.0368	+ 3.08699	+0.8613
				1.286854	5.2953	1.7311
DEC. 9 (OH)	X:	+31.2311	- 5.67458	+141.0465	+12.39506	+1.0368
(2447138.5)				2.125617	0.3675	1.2325
A DEC.17 (OH)	Y:	-22.7099	- 0.42033	+ 69.2319	+ 6.40831	+0.5746
				3.911043	2.1419	2.8618
DEC.17 (OH)	X:	-44.5160	+ 8.56407	+146.1384	+ 6.59106	+2.9463
(2447146.5)				4.193662	2.3675	2.0961
A DEC.25 (OH)	Y:	- 8.6809	+ 2.37472	+ 67.1912	+ 3.66911	+1.3526
				6.128957	4.5479	4.0684
DEC.25 (OH)	X:	+61.6426	- 5.74137	+173.0310	+12.68131	+1.1908
(2447154.5)				0.327481	4.4079	2.7924
A DEC.33 (OH)	Y:	- 8.9389	- 2.79959	+ 70.7254	+ 4.78952	+0.3960
				2.202512	0.0892	3.9391

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 8 DE SATURNE: JAPET N=0.079

		A0	A1	B0 F0	C0 P0
JAN. 1 (OH) (2446796.5)	X:	+15.4270	- 2.02846	+453.3696 0.179708	+ 4.2664 3.4371
A JAN.17 (OH)	Y:	+ 7.7914	- 0.23172	+146.7643 2.561348	+ 1.9975 0.3808
JAN.17 (OH) (2446812.5)	X:	+21.1153	- 3.62839	+408.6092 1.375817	+ 9.9339 1.2326
A FEV. 2 (OH)	Y:	- 2.0958	+ 0.36696	+148.8782 3.750814	+ 1.8168 3.6471
FEV. 1 (OH) (2446827.5)	X:	-20.3836	- 0.96349	+439.9541 2.649909	+ 2.8891 3.4426
A FEV.17 (OH)	Y:	+ 4.6270	+ 0.02064	+151.9253 4.965477	+ 1.4578 0.1457
FEV.17 (OH) (2446843.5)	X:	- 8.5576	- 1.76068	+463.4968 3.969616	+ 9.2690 0.7446
A MAR. 5 (OH)	Y:	+ 4.0040	+ 0.46235	+146.7471 6.231723	+ 1.7899 2.5464
MAR. 1 (OH) (2446855.5)	X:	-39.5854	+ 3.26599	+441.5887 4.743362	+ 2.0291 1.2977
A MAR.17 (OH)	Y:	+19.1291	- 1.26777	+155.0150 0.722218	+ 2.1093 2.7217
MAR.17 (OH) (2446871.5)	X:	-26.5136	+ 2.28030	+451.7187 6.129737	+14.5759 4.2935
A AVR. 2 (OH)	Y:	+ 9.2027	- 0.74962	+148.1499 2.091694	+ 3.5253 0.3351
AVR. 1 (OH) (2446886.5)	X:	-33.5401	+ 0.71033	+511.7585 1.038985	+11.9595 5.6763
A AVR.17 (OH)	Y:	+ 9.3509	- 0.36705	+160.4015 3.357620	+ 4.5890 1.7355
AVR.17 (OH) (2446902.5)	X:	-43.8045	+ 0.92767	+533.9525 2.267874	+ 6.4347 2.4568
A MAI 3 (OH)	Y:	+ 8.3963	+ 0.58239	+169.0844 4.522494	+ 2.8200 4.9375
MAI 1 (OH) (2446916.5)	X:	-23.4866	+ 0.15431	+520.9673 3.399161	+ 5.1475 4.0240
A MAI 17 (OH)	Y:	+ 3.3699	+ 1.15093	+151.4140 5.683229	+ 3.5224 5.6311
MAI 17 (OH) (2446932.5)	X:	+ 3.1258	- 1.62621	+550.0504 4.729775	+ 6.9743 1.7523
A JUN. 2 (OH)	Y:	- 1.8772	+ 0.84859	+172.7175 0.800237	+ 3.5976 4.7772
JUN. 1 (OH) (2446947.5)	X:	- 1.7523	- 3.29373	+588.0104 5.893829	+ 8.8413 3.1639
A JUN.17 (OH)	Y:	-11.9814	+ 1.75682	+206.0688 1.994596	+ 5.9367 5.5038
JUN.17 (OH) (2446963.5)	X:	-24.4856	- 1.29305	+540.3853 0.870259	+ 9.6202 0.3360
A JUL. 3 (OH)	Y:	- 7.9802	+ 2.18842	+211.4515 3.107261	+ 1.4341 4.3943

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 8 DE SATURNE: JAPET N=0.079

		A0	A1	B0 F0	C0 P0
JUL. 1 (OH) (2446977.5)	X:	-38.4958	+ 2.16398	+555.6249 2.060290	+ 9.4618 2.2297
A JUL.17 (OH)	Y:	+ 7.2760	+ 0.13211	+178.9743 4.319471	+ 4.8785 4.3065
JUL.17 (OH) (2446993.5)	X:	+10.6039	- 2.11130	+495.8253 3.386665	+ 7.0520 3.8474
A AOU. 2 (OH)	Y:	- 4.5109	+ 0.91851	+161.3277 5.638575	+ 3.7570 5.7640
AOU. 1 (OH) (2447008.5)	X:	-26.4222	+ 0.24471	+494.6274 4.515498	+ 5.8626 6.1191
A AOU.17 (OH)	Y:	+ 0.4051	+ 0.30882	+176.1889 0.568828	+ 2.2653 2.8901
AOU.17 (OH) (2447024.5)	X:	-36.1006	+ 0.32050	+486.9544 5.810029	+ 4.8311 2.9593
A SEP. 2 (OH)	Y:	+ 7.3640	+ 0.17834	+173.0837 1.813253	+ 1.6152 4.8968
SEP. 1 (OH) (2447039.5)	X:	-40.1536	+ 2.62854	+469.1496 0.776291	+ 7.7127 5.4541
A SEP.17 (OH)	Y:	+17.0496	- 1.06201	+150.7892 3.036636	+ 3.7879 2.1057
SEP.17 (OH) (2447055.5)	X:	- 7.7239	+ 0.15761	+462.5661 1.949993	+ 8.3260 2.3450
A OCT. 3 (OH)	Y:	+ 8.5555	- 0.88447	+160.5188 4.325598	+ 2.2054 4.0959
OCT. 1 (OH) (2447069.5)	X:	+ 1.1097	- 1.45086	+437.2267 3.071317	+ 6.9199 4.1942
A OCT.17 (OH)	Y:	+ 3.2406	- 0.67729	+166.3092 5.384820	+ 3.0354 0.8752
OCT.17 (OH) (2447085.5)	X:	-11.4481	- 2.83380	+444.5079 4.387725	+ 8.9585 0.9079
A NOV. 2 (OH)	Y:	+ 2.2254	+ 0.33141	+148.9667 0.319953	+ 3.1247 2.4459
NOV. 1 (OH) (2447100.5)	X:	-15.6568	- 0.96599	+455.4322 5.441932	+10.8761 1.9523
A NOV.17 (OH)	Y:	+ 8.6924	+ 0.29882	+147.0174 1.483139	+ 2.6133 4.3175
NOV.17 (OH) (2447116.5)	X:	- 3.0406	- 0.44678	+433.2856 0.353940	+ 2.3319 4.1599
A DEC. 3 (OH)	Y:	+14.7785	- 0.79172	+130.0570 2.708164	+ 1.9784 1.4601
DEC. 1 (OH) (2447130.5)	X:	+13.1019	- 1.49782	+406.6023 1.421151	+ 6.8499 1.1968
A DEC.17 (OH)	Y:	+ 2.3644	- 0.23199	+135.1123 3.772997	+ 1.8081 3.6895
DEC.17 (OH) (2447146.5)	X:	- 4.3355	- 1.93190	+402.3270 2.702762	+ 4.0714 3.6633
A DEC.33 (OH)	Y:	+ 0.2709	- 0.14086	+136.8655 5.019343	+ 2.2238 0.3082

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	1.8×10^{-5}	665		0.2	14.4	2.520 379 35	14	191.02	0.003 4	0.31
II Umbriel	1.2×10^{-5}	555		0.1	15.3	4.144 177 2	20	266.30	0.005 0	0.36
III Titania	6.8×10^{-5}	800		0.21	14.0	8.705 871 7	33	435.91	0.002 2	0.142
IV Oberon	6.9×10^{-5}	815	(S)	0.16	14.2	13.463 238 9	44	583.52	0.000 8	0.101
V Miranda	0.2×10^{-5}	150?			16.5	1.413 479 25	10	129.39	0.002 7	4.22
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

(S) : synchronous rotation

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

Data from the Encyclopédie du Bureau des Longitudes.

ÉPHÉMÉRIDES DES CINQ SATELLITES D'URANUS

EPHEMERIDES OF THE FIVE SATELLITES OF URANUS

Coordonnées différentielles tangentielles données en secondes de degré dans le repère équatorial moyen 1950.0.

Differential tangential coordinates given in arcsecond in the mean equatorial frame 1950.0.

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

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

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	8	4.488 0	86
Ariel	32	2.493 0	90
Umbriel	32	1.516 2	91
Titania	32	0.721 7	92
Obéron	32	0.466 7	93
	(days)	*(rad/d)*	

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 5 D'URANUS: MIRANDA N=4.4880

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JANVIER							
JAN. 1 (OH)	X:	-0.0175	-0.00003	+ 8.8312	+0.38405	+0.008148	+0.0118
(2446796.5)				0.844407	5.5600	3.8044	0.7343
A JAN. 9 (OH)	Y:	-0.0305	+0.00000	+ 8.6582	+0.37815	+0.008045	+0.0111
				2.396321	0.8303	5.3680	2.4456
JAN. 9 (OH)	X:	-0.0181	-0.00001	+ 8.8472	+0.38391	+0.007911	+0.0122
(2446804.5)				4.989682	3.4196	1.6695	2.8623
A JAN.17 (OH)	Y:	-0.0309	+0.00000	+ 8.6796	+0.37738	+0.007877	+0.0114
				0.256224	4.9729	3.2475	4.3278
JAN.17 (OH)	X:	-0.0179	-0.00001	+ 8.8657	+0.38270	+0.008030	+0.0109
(2446812.5)				2.851982	1.2875	5.8450	4.8105
A JAN.25 (OH)	Y:	-0.0307	+0.00001	+ 8.7048	+0.37746	+0.008063	+0.0123
				4.399938	2.8399	1.1225	0.1401
JAN.25 (OH)	X:	-0.0182	-0.00004	+ 8.8912	+0.38504	+0.008152	+0.0123
(2446820.5)				0.715357	5.4380	3.6887	0.4806
A FEV. 2 (OH)	Y:	-0.0306	-0.00001	+ 8.7394	+0.37984	+0.008027	+0.0108
				2.261420	0.7020	5.2454	2.1408
FEVRIER							
FEV. 1 (OH)	X:	-0.0185	-0.00004	+ 8.9203	+0.38564	+0.008159	+0.0126
(2446827.5)				0.416712	5.1413	3.3963	6.2382
A FEV. 9 (OH)	Y:	-0.0306	-0.00001	+ 8.7753	+0.38121	+0.007989	+0.0108
				1.961383	0.4025	4.9422	1.4440
FEV. 9 (OH)	X:	-0.0189	-0.00002	+ 8.9612	+0.38616	+0.008046	+0.0115
(2446835.5)				4.563784	3.0044	1.2731	1.9676
A FEV.17 (OH)	Y:	-0.0312	-0.00001	+ 8.8233	+0.38084	+0.007833	+0.0125
				6.106691	4.5468	2.8332	3.4888
FEV.17 (OH)	X:	-0.0190	-0.00003	+ 9.0045	+0.38703	+0.008207	+0.0123
(2446843.5)				2.428044	0.8736	5.4343	3.9003
A FEV.25 (OH)	Y:	-0.0310	+0.00001	+ 8.8717	+0.38234	+0.008126	+0.0112
				3.969644	2.4170	0.7040	5.5810
FEV.25 (OH)	X:	-0.0194	-0.00004	+ 9.0544	+0.38989	+0.008233	+0.0126
(2446851.5)				0.293041	5.0228	3.2861	6.0001
A MAR. 5 (OH)	Y:	-0.0308	-0.00002	+ 8.9291	+0.38611	+0.008058	+0.0113
				1.833559	0.2792	4.8209	1.1441
MARS							
MAR. 1 (OH)	X:	-0.0199	-0.00003	+ 9.0846	+0.39059	+0.007982	+0.0125
(2446855.5)				5.508770	3.9503	2.2207	3.7680
A MAR. 9 (OH)	Y:	-0.0311	-0.00001	+ 8.9581	+0.38647	+0.008116	+0.0118
				0.765445	5.4960	3.7640	5.4028
MAR. 9 (OH)	X:	-0.0198	-0.00002	+ 9.1399	+0.39081	+0.008143	+0.0122
(2446863.5)				3.373756	1.8196	0.1196	5.9148
A MAR.17 (OH)	Y:	-0.0313	+0.00000	+ 9.0192	+0.38743	+0.008199	+0.0121
				4.912836	3.3621	1.6468	1.0369
MAR.17 (OH)	X:	-0.0201	-0.00006	+ 9.1980	+0.39518	+0.008358	+0.0111
(2446871.5)				1.239645	5.9719	4.2410	1.5148
A MAR.25 (OH)	Y:	-0.0313	+0.00000	+ 9.0812	+0.39046	+0.008325	+0.0128
				2.777846	1.2291	5.7837	3.1207
MAR.25 (OH)	X:	-0.0210	-0.00003	+ 9.2638	+0.39764	+0.008133	+0.0130
(2446879.5)				5.388644	3.8324	2.1040	3.5288
A AVR. 2 (OH)	Y:	-0.0314	-0.00001	+ 9.1471	+0.39265	+0.008236	+0.0118
				0.643209	5.3748	3.6503	5.1194

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 5 D'URANUS: MIRANDA N=4.4880

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
AVRIL							
AVR. 1 (OH) (2446886.5)	X:	-0.0213	-0.00003	+ 9.3190 5.092155	+0.40014 3.5367	+0.008223 1.8050	+0.0131 2.9911
A AVR. 9 (OH)	Y:	-0.0316	+0.00000	+ 9.2041 0.346386	+0.39395 5.0765	+0.008213 3.3638	+0.0120 4.4623
AVR. 9 (OH) (2446894.5)	X:	-0.0213	-0.00003	+ 9.3808 2.957871	+0.40116 1.4058	+0.008431 5.9797	+0.0115 4.9752
A AVR.17 (OH)	Y:	-0.0315	+0.00001	+ 9.2651 4.495465	+0.39582 2.9451	+0.008439 1.2378	+0.0132 0.2546
AVR.17 (OH) (2446902.5)	X:	-0.0216	-0.00006	+ 9.4416 0.824218	+0.40584 5.5562	+0.008622 3.8176	+0.0129 0.6126
A AVR.25 (OH)	Y:	-0.0314	+0.00000	+ 9.3254 2.361927	+0.39965 0.8090	+0.008449 5.3615	+0.0118 2.2924
AVR.25 (OH) (2446910.5)	X:	-0.0225	-0.00003	+ 9.5044 4.973360	+0.40816 3.4163	+0.008452 1.6831	+0.0130 2.7459
A MAI 3 (OH)	Y:	-0.0318	+0.00000	+ 9.3833 0.228165	+0.40067 4.9541	+0.008334 3.2427	+0.0125 4.1913
MAI							
MAI 1 (OH) (2446916.5)	X:	-0.0225	-0.00005	+ 9.5441 0.231123	+0.40992 4.9604	+0.008708 3.2269	+0.0130 5.8253
A MAI 9 (OH)	Y:	-0.0313	+0.00000	+ 9.4212 1.769937	+0.40443 0.2117	+0.008446 4.7506	+0.0123 0.9482
MAI 9 (OH) (2446924.5)	X:	-0.0229	-0.00003	+ 9.5971 4.379899	+0.41137 2.8227	+0.008694 1.1034	+0.0125 1.4717
A MAI 17 (OH)	Y:	-0.0318	+0.00000	+ 9.4691 5.919288	+0.40443 4.3564	+0.008327 2.6410	+0.0132 3.0830
MAI 17 (OH) (2446932.5)	X:	-0.0232	-0.00004	+ 9.6407 2.245353	+0.41368 0.6886	+0.008898 5.2475	+0.0137 3.4981
A MAI 25 (OH)	Y:	-0.0314	+0.00004	+ 9.5043 3.785675	+0.40642 2.2262	+0.008667 0.5041	+0.0114 5.0653
MAI 25 (OH) (2446940.5)	X:	-0.0237	-0.00004	+ 9.6791 0.110684	+0.41649 4.8325	+0.008855 3.0959	+0.0127 5.5611
A JUN. 2 (OH)	Y:	-0.0310	+0.00000	+ 9.5368 1.652230	+0.41004 0.0865	+0.008582 4.6171	+0.0129 0.6866
JUIN							
JUN. 1 (OH) (2446947.5)	X:	-0.0241	-0.00003	+ 9.7062 6.096378	+0.41769 4.5305	+0.008795 2.7969	+0.0122 4.9047
A JUN. 9 (OH)	Y:	-0.0309	+0.00001	+ 9.5560 1.355767	+0.41131 6.0712	+0.008640 4.3150	+0.0135 0.1426
JUN. 9 (OH) (2446955.5)	X:	-0.0241	-0.00001	+ 9.7263 3.960611	+0.41750 2.3930	+0.008877 0.6797	+0.0137 0.6101
A JUN.17 (OH)	Y:	-0.0312	+0.00003	+ 9.5707 5.504305	+0.41043 3.9323	+0.008564 2.2005	+0.0122 2.2127
JUN.17 (OH) (2446963.5)	X:	-0.0244	-0.00004	+ 9.7351 1.824804	+0.41989 0.2564	+0.009061 4.8024	+0.0128 2.7155
A JUN.25 (OH)	Y:	-0.0308	+0.00005	+ 9.5712 3.369589	+0.41155 1.7993	+0.008833 0.0576	+0.0125 4.0871
JUN.25 (OH) (2446971.5)	X:	-0.0251	-0.00002	+ 9.7378 5.971574	+0.42073 4.3953	+0.008836 2.6534	+0.0123 4.5917
A JUL. 3 (OH)	Y:	-0.0303	+0.00002	+ 9.5669 1.234600	+0.41330 5.9412	+0.008724 4.1792	+0.0135 6.1837

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 5 D'URANUS: MIRANDA N=4.4880

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JUILLET							
JUL. 1 (OH)	X:	-0.0248	-0.00004	+ 9.7284	+0.42170	+0.009054	+0.0118
(2446977.5)				1.227400	5.9355	4.1807	1.3516
A JUL. 9 (OH)	Y:	-0.0302	+0.00004	+ 9.5545	+0.41215	+0.008855	+0.0133
				2.774188	1.1984	5.7323	3.0071
JUL. 9 (OH)	X:	-0.0256	-0.00001	+ 9.7140	+0.42143	+0.008755	+0.0137
(2446985.5)				5.373205	3.7893	2.0343	3.3958
A JUL.17 (OH)	Y:	-0.0300	+0.00003	+ 9.5333	+0.41153	+0.008709	+0.0122
				0.637939	5.3397	3.5952	4.9674
JUL.17 (OH)	X:	-0.0253	+0.00000	+ 9.6841	+0.41897	+0.008892	+0.0121
(2446993.5)				3.234989	1.6520	6.2030	5.4798
A JUL.25 (OH)	Y:	-0.0297	+0.00006	+ 9.5007	+0.41016	+0.008817	+0.0133
				4.784131	3.2024	1.4656	0.6547
JUL.25 (OH)	X:	-0.0254	-0.00003	+ 9.6457	+0.42029	+0.009033	+0.0122
(2447001.5)				1.096910	5.7964	4.0302	1.0353
A AOU. 2 (OH)	Y:	-0.0292	+0.00004	+ 9.4607	+0.41043	+0.008813	+0.0127
				2.646799	1.0624	5.5890	2.7457
AOUT							
AOU. 1 (OH)	X:	-0.0256	-0.00002	+ 9.6066	+0.41931	+0.009022	+0.0133
(2447008.5)				0.796178	5.4938	3.7228	0.4514
A AOU. 9 (OH)	Y:	-0.0288	+0.00004	+ 9.4210	+0.40958	+0.008726	+0.0116
				2.346785	0.7590	5.2816	2.1122
AOU. 9 (OH)	X:	-0.0261	+0.00000	+ 9.5585	+0.41717	+0.008768	+0.0128
(2447016.5)				4.939942	3.3481	1.5822	2.5614
A AOU.17 (OH)	Y:	-0.0288	+0.00004	+ 9.3706	+0.40660	+0.008526	+0.0127
				0.207823	4.8987	3.1594	4.0180
AOU.17 (OH)	X:	-0.0258	+0.00000	+ 9.4996	+0.41396	+0.008870	+0.0120
(2447024.5)				2.799900	1.2099	5.7411	4.4509
A AOU.25 (OH)	Y:	-0.0282	+0.00007	+ 9.3108	+0.40476	+0.008732	+0.0127
				4.351579	2.7625	1.0221	6.1442
AOU.25 (OH)	X:	-0.0259	-0.00001	+ 9.4372	+0.41340	+0.008892	+0.0133
(2447032.5)				0.659952	5.3524	3.5766	0.1913
A SEP. 2 (OH)	Y:	-0.0276	+0.00003	+ 9.2512	+0.40463	+0.008596	+0.0112
				2.211842	0.6188	5.1341	1.7695
SEPTEMBRE							
SEP. 1 (OH)	X:	-0.0260	+0.00000	+ 9.3810	+0.41086	+0.008812	+0.0129
(2447039.5)				0.357689	5.0489	3.2773	5.9346
A SEP. 9 (OH)	Y:	-0.0272	+0.00003	+ 9.1963	+0.40328	+0.008519	+0.0117
				1.909728	0.3150	4.8229	1.0780
SEP. 9 (OH)	X:	-0.0261	+0.00001	+ 9.3156	+0.40727	+0.008666	+0.0119
(2447047.5)				4.499879	2.9058	1.1482	1.5817
A SEP.17 (OH)	Y:	-0.0274	+0.00004	+ 9.1333	+0.39902	+0.008308	+0.0128
				6.051521	4.4542	2.7082	3.1876
SEP.17 (OH)	X:	-0.0259	+0.00000	+ 9.2463	+0.40454	+0.008741	+0.0130
(2447055.5)				2.358734	0.7672	5.2907	3.5785
A SEP.25 (OH)	Y:	-0.0267	+0.00007	+ 9.0651	+0.39697	+0.008549	+0.0108
				3.909999	2.3185	0.5670	5.1837
SEP.25 (OH)	X:	-0.0261	+0.00000	+ 9.1795	+0.40251	+0.008590	+0.0121
(2447063.5)				0.217583	4.9073	3.1374	5.6425
A OCT. 3 (OH)	Y:	-0.0261	+0.00003	+ 9.0033	+0.39654	+0.008371	+0.0120
				1.768365	0.1735	4.6772	0.7688

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 5 D'URANUS: MIRANDA N=4.4880

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
OCTOBRE							
OCT. 1 (OH) (2447069.5)	X:	-0.0259	-0.00001	+ 9.1290 1.753068	+0.39998 0.1613	+0.008611 4.6808	+0.0115 2.4547
A OCT. 9 (OH)	Y:	-0.0261	+0.00005	+ 8.9544 3.303023	+0.39363 1.7131	+0.008506 6.2318	+0.0121 3.8432
OCT. 9 (OH) (2447077.5)	X:	-0.0263	+0.00001	+ 9.0672 5.894814	+0.39720 4.2985	+0.008285 2.5353	+0.0117 4.3034
A OCT.17 (OH)	Y:	-0.0256	+0.00003	+ 8.8968 1.160706	+0.39221 5.8518	+0.008332 4.0756	+0.0123 5.9452
OCT.17 (OH) (2447085.5)	X:	-0.0259	+0.00001	+ 9.0041 3.753078	+0.39273 2.1605	+0.008316 0.4238	+0.0126 0.1233
A OCT.25 (OH)	Y:	-0.0256	+0.00004	+ 8.8417 5.300915	+0.38844 3.7102	+0.008252 1.9559	+0.0111 1.5986
OCT.25 (OH) (2447093.5)	X:	-0.0259	-0.00001	+ 8.9445 1.611979	+0.39195 0.0226	+0.008399 4.5409	+0.0108 2.1177
A NOV. 2 (OH)	Y:	-0.0252	+0.00004	+ 8.7887 3.158178	+0.38689 1.5722	+0.008357 6.0919	+0.0123 3.5687
NOVEMBRE							
NOV. 1 (OH) (2447100.5)	X:	-0.0259	-0.00001	+ 8.8972 1.309247	+0.39020 6.0038	+0.008331 4.2329	+0.0108 1.3985
A NOV. 9 (OH)	Y:	-0.0249	+0.00003	+ 8.7490 2.853979	+0.38510 1.2692	+0.008298 5.7899	+0.0122 3.0406
NOV. 9 (OH) (2447108.5)	X:	-0.0264	+0.00000	+ 8.8510 5.451313	+0.38752 3.8587	+0.007994 2.0931	+0.0124 3.4299
A NOV.17 (OH)	Y:	-0.0248	+0.00002	+ 8.7105 0.711146	+0.38288 5.4089	+0.008119 3.6551	+0.0111 5.0014
NOV.17 (OH) (2447116.5)	X:	-0.0259	+0.00001	+ 8.8049 3.310168	+0.38360 1.7233	+0.008081 6.2674	+0.0110 5.5183
A NOV.25 (OH)	Y:	-0.0246	+0.00003	+ 8.6760 4.851500	+0.38050 3.2706	+0.008179 1.5284	+0.0121 0.6764
NOV.25 (OH) (2447124.5)	X:	-0.0259	-0.00002	+ 8.7654 1.169982	+0.38367 5.8699	+0.008160 4.1004	+0.0111 1.0715
A DEC. 3 (OH)	Y:	-0.0242	+0.00002	+ 8.6491 2.709182	+0.38010 1.1305	+0.008149 5.6567	+0.0117 2.7647
DECEMBRE							
DEC. 1 (OH) (2447130.5)	X:	-0.0260	+0.00000	+ 8.7411 2.706128	+0.38094 1.1250	+0.008113 5.6589	+0.0115 4.1598
A DEC. 9 (OH)	Y:	-0.0242	+0.00004	+ 8.6341 4.243921	+0.37797 2.6676	+0.008119 0.9320	+0.0113 5.8619
DEC. 9 (OH) (2447138.5)	X:	-0.0261	-0.00001	+ 8.7137 0.566475	+0.38063 5.2705	+0.008087 3.5040	+0.0123 6.2348
A DEC.17 (OH)	Y:	-0.0238	+0.00000	+ 8.6222 2.102273	+0.37869 0.5250	+0.007969 5.0486	+0.0106 1.4309
DEC.17 (OH) (2447146.5)	X:	-0.0264	+0.00000	+ 8.6953 4.710060	+0.37844 3.1307	+0.007920 1.3794	+0.0111 1.9574
A DEC.25 (OH)	Y:	-0.0242	+0.00001	+ 8.6180 6.243615	+0.37614 4.6670	+0.007801 2.9394	+0.0122 3.4760
DEC.25 (OH) (2447154.5)	X:	-0.0263	+0.00000	+ 8.6802 2.570916	+0.37688 0.9972	+0.008026 5.5367	+0.0119 3.8838
A DEC.33 (OH)	Y:	-0.0239	+0.00003	+ 8.6172 4.102555	+0.37598 2.5341	+0.008046 0.8030	+0.0107 5.5550

1987 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) (2446796.5)	X:	+0.0656	+0.00002	+13.0277 1.397841	+0.00393 0.2911	+0.000087 1.8042	+0.0223 4.2100
A FEV. 2 (0H)	Y:	-0.0088	+0.00000	+12.9431 2.954353	+0.00645 1.8866	+0.000091 3.4139	+0.0221 5.7634
FEV. 1 (0H) (2446827.5)	X:	+0.0663	+0.00004	+13.1587 3.276871	+0.00697 3.0862	+0.000071 3.8105	+0.0227 1.6849
A MAR. 5 (0H)	Y:	-0.0088	+0.00000	+13.1177 4.828734	+0.00882 4.4797	+0.000072 5.5639	+0.0225 3.2401
MAR. 1 (0H) (2446855.5)	X:	+0.0674	+0.00006	+13.3979 3.965187	+0.01052 4.0384	+0.000041 4.8270	+0.0230 3.0630
A AVR. 2 (0H)	Y:	-0.0090	-0.00002	+13.3912 5.514212	+0.01154 5.4966	+0.000047 0.5676	+0.0233 4.6118
AVR. 1 (0H) (2446886.5)	X:	+0.0694	+0.00004	+13.7478 5.853846	+0.01262 6.0725	+0.000034 2.2750	+0.0237 0.5433
A MAI 3 (0H)	Y:	-0.0098	-0.00002	+13.7578 1.118506	+0.01256 1.3362	+0.000056 3.6757	+0.0238 2.0968
MAI 1 (0H) (2446916.5)	X:	+0.0710	+0.00003	+14.0884 5.252346	+0.01115 5.5864	+0.000089 2.2054	+0.0243 5.6125
A JUN. 2 (0H)	Y:	-0.0108	-0.00004	+14.0836 0.517972	+0.01055 0.9674	+0.000096 3.6348	+0.0242 0.8863
JUN. 1 (0H) (2446947.5)	X:	+0.0718	+0.00000	+14.3293 0.861239	+0.00576 1.4314	+0.000123 4.2555	+0.0244 3.0970
A JUL. 3 (0H)	Y:	-0.0123	-0.00004	+14.2866 2.412800	+0.00583 3.3514	+0.000119 5.8205	+0.0243 4.6546
JUL. 1 (0H) (2446977.5)	X:	+0.0718	-0.00003	+14.3678 0.257551	+0.00283 2.9585	+0.000112 3.7879	+0.0244 1.8730
A AOU. 2 (0H)	Y:	-0.0137	-0.00003	+14.2872 1.812469	+0.00459 4.2947	+0.000108 5.4626	+0.0241 3.4298
AOU. 1 (0H) (2447008.5)	X:	+0.0706	-0.00005	+14.1905 2.142098	+0.00924 5.4510	+0.000066 5.9031	+0.0241 5.6168
A SEP. 2 (0H)	Y:	-0.0148	-0.00001	+14.0853 3.699839	+0.00958 0.6094	+0.000070 1.4520	+0.0235 0.8970
SEP. 1 (0H) (2447039.5)	X:	+0.0688	-0.00006	+13.8582 4.020828	+0.01304 1.1942	+0.000024 2.5261	+0.0233 3.0755
A OCT. 3 (0H)	Y:	-0.0155	+0.00001	+13.7478 5.579704	+0.01297 2.7529	+0.000040 4.2731	+0.0229 4.6386
OCT. 1 (0H) (2447069.5)	X:	+0.0669	-0.00005	+13.4890 3.402071	+0.01346 0.6894	+0.000043 3.2799	+0.0227 1.8366
A NOV. 2 (0H)	Y:	-0.0154	+0.00001	+13.3892 4.959926	+0.01337 2.3296	+0.000055 4.6454	+0.0224 3.3817
NOV. 1 (0H) (2447100.5)	X:	+0.0649	-0.00002	+13.1522 5.273301	+0.01126 2.7001	+0.000069 5.4565	+0.0221 5.5733
A DEC. 3 (0H)	Y:	-0.0150	+0.00001	+13.0801 0.544814	+0.01133 4.4408	+0.000079 0.6139	+0.0220 0.8414
DEC. 1 (0H) (2447130.5)	X:	+0.0638	+0.00000	+12.9301 4.651903	+0.00758 2.3029	+0.000085 4.9541	+0.0219 4.3309
A DEC.33 (0H)	Y:	-0.0147	+0.00001	+12.9059 6.202165	+0.00821 4.2142	+0.000093 0.1887	+0.0219 5.8765

1987 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)	X:	+0.1098	+0.00003	+18.1656	+0.00624	+0.000117	+0.0456
(2446796.5)				3.716326	2.5624	4.0322	3.3451
A FEV. 2 (OH)	Y:	+0.0813	+0.00006	+18.0706	+0.00953	+0.000121	+0.0455
				5.274211	4.1787	5.6465	4.8988
FEV. 1 (OH)	X:	+0.1109	+0.00007	+18.3506	+0.01014	+0.000097	+0.0464
(2446827.5)				0.445316	0.1060	0.9122	3.0920
A MAR. 5 (OH)	Y:	+0.0832	+0.00008	+18.3144	+0.01284	+0.000096	+0.0462
				1.998903	1.5493	2.6647	4.6424
MAR. 1 (OH)	X:	+0.1128	+0.00010	+18.6852	+0.01468	+0.000057	+0.0475
(2446855.5)				5.196545	5.1402	6.0337	0.0265
A AVR. 2 (OH)	Y:	+0.0854	+0.00007	+18.6963	+0.01622	+0.000064	+0.0472
				0.464328	0.3327	1.7929	1.5822
AVR. 1 (OH)	X:	+0.1161	+0.00012	+19.1741	+0.01724	+0.000052	+0.0483
(2446886.5)				1.934032	2.0422	4.4582	6.0762
A MAI 3 (OH)	Y:	+0.0876	+0.00003	+19.2076	+0.01727	+0.000083	+0.0489
				3.483909	3.5906	5.9686	1.3362
MAI 1 (OH)	X:	+0.1195	+0.00010	+19.6487	+0.01514	+0.000125	+0.0494
(2446916.5)				3.441925	3.6860	0.2626	2.7956
A JUN. 2 (OH)	Y:	+0.0888	+0.00000	+19.6626	+0.01420	+0.000135	+0.0499
				4.992686	5.3493	1.7318	4.3502
JUN. 1 (OH)	X:	+0.1228	+0.00004	+19.9836	+0.00778	+0.000169	+0.0502
(2446947.5)				0.184513	0.7081	3.4818	2.5524
A JUL. 3 (OH)	Y:	+0.0884	-0.00005	+19.9463	+0.00769	+0.000163	+0.0497
				1.737827	2.6314	5.0486	4.1069
JUL. 1 (OH)	X:	+0.1239	-0.00001	+20.0361	+0.00426	+0.000152	+0.0500
(2446977.5)				1.692838	4.2685	5.1489	5.5537
A AOU. 2 (OH)	Y:	+0.0867	-0.00009	+19.9475	+0.00674	+0.000144	+0.0494
				3.249271	5.6804	0.5421	0.8288
AOU. 1 (OH)	X:	+0.1233	-0.00007	+19.7872	+0.01274	+0.000089	+0.0486
(2447008.5)				4.714049	1.6288	2.1513	5.3017
A SEP. 2 (OH)	Y:	+0.0836	-0.00008	+19.6660	+0.01339	+0.000092	+0.0488
				6.273137	3.0876	3.9745	0.5799
SEP. 1 (OH)	X:	+0.1208	-0.00009	+19.3238	+0.01769	+0.000037	+0.0479
(2447039.5)				1.447207	4.8068	6.2352	5.0420
A OCT. 3 (OH)	Y:	+0.0807	-0.00007	+19.1942	+0.01765	+0.000059	+0.0471
				3.007360	0.0821	1.7096	0.3121
OCT. 1 (OH)	X:	+0.1179	-0.00009	+18.8101	+0.01816	+0.000063	+0.0463
(2447069.5)				2.943066	0.1497	2.6771	1.7448
A NOV. 2 (OH)	Y:	+0.0781	-0.00003	+18.6932	+0.01790	+0.000080	+0.0461
				4.502263	1.7880	4.0948	3.2987
NOV. 1 (OH)	X:	+0.1148	-0.00006	+18.3414	+0.01508	+0.000095	+0.0454
(2447100.5)				5.951635	3.3213	5.9891	1.4787
A DEC. 3 (OH)	Y:	+0.0769	+0.00000	+18.2617	+0.01497	+0.000110	+0.0453
				1.224749	5.0602	1.1737	3.0333
DEC. 1 (OH)	X:	+0.1126	-0.00002	+18.0340	+0.01029	+0.000114	+0.0450
(2447130.5)				1.160074	5.0810	1.3323	4.4686
A DEC.33 (OH)	Y:	+0.0765	+0.00003	+18.0184	+0.01103	+0.000127	+0.0449
				2.712249	0.7027	2.8673	6.0129

1987 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)	X:	-0.0750	-0.00003	+29.7202	+0.00886	+0.000187	+0.0329
(2446796.5)				0.490318	5.6629	0.7234	4.9932
A FEV. 2 (OH)	Y:	+0.0614	+0.00001	+29.5651	+0.01449	+0.000195	+0.0328
				2.047032	0.9889	2.3458	0.2651
FEV. 1 (OH)	X:	-0.0764	-0.00004	+30.0170	+0.01634	+0.000155	+0.0333
(2446827.5)				4.006644	3.6858	4.4227	5.7478
A MAR. 5 (OH)	Y:	+0.0615	+0.00002	+29.9642	+0.02091	+0.000151	+0.0332
				5.558956	5.1240	6.1801	1.0155
MAR. 1 (OH)	X:	-0.0777	-0.00007	+30.5608	+0.02393	+0.000095	+0.0339
(2446855.5)				5.361565	5.2985	6.1893	2.1834
A AVR. 2 (OH)	Y:	+0.0626	+0.00005	+30.5899	+0.02659	+0.000108	+0.0340
				0.628024	0.4870	1.9624	3.7329
AVR. 1 (OH)	X:	-0.0802	-0.00003	+31.3583	+0.02830	+0.000090	+0.0351
(2446886.5)				2.602152	2.7100	5.0636	2.9428
A MAI 3 (OH)	Y:	+0.0640	+0.00006	+31.4272	+0.02822	+0.000141	+0.0352
				4.150693	4.2561	0.2916	4.4925
MAI 1 (OH)	X:	-0.0813	-0.00003	+32.1364	+0.02497	+0.000203	+0.0355
(2446916.5)				5.408000	5.6762	2.1498	2.2720
A JUN. 2 (OH)	Y:	+0.0663	+0.00006	+32.1718	+0.02336	+0.000224	+0.0355
				0.674292	1.0509	3.5992	3.8220
JUN. 1 (OH)	X:	-0.0825	+0.00002	+32.6876	+0.01381	+0.000276	+0.0361
(2446947.5)				2.654886	3.2810	5.8837	3.0401
A JUL. 3 (OH)	Y:	+0.0682	+0.00003	+32.6358	+0.01397	+0.000263	+0.0360
				4.206935	5.1842	1.1594	4.5958
JUL. 1 (OH)	X:	-0.0821	+0.00006	+32.7781	+0.00878	+0.000246	+0.0359
(2446977.5)				5.463062	1.4639	2.5687	2.3593
A AOU. 2 (OH)	Y:	+0.0688	+0.00001	+32.6370	+0.01317	+0.000230	+0.0356
				0.735101	2.9931	4.2453	3.9157
AOU. 1 (OH)	X:	-0.0801	+0.00006	+32.3754	+0.02099	+0.000140	+0.0351
(2447008.5)				2.707599	5.7159	0.0975	3.1284
A SEP. 2 (OH)	Y:	+0.0691	-0.00003	+32.1757	+0.02247	+0.000147	+0.0349
				4.265553	0.8988	1.9464	4.6879
SEP. 1 (OH)	X:	-0.0784	+0.00009	+31.6184	+0.02843	+0.000063	+0.0344
(2447039.5)				6.231304	3.1516	4.7664	3.8769
A OCT. 3 (OH)	Y:	+0.0678	-0.00006	+31.4037	+0.02818	+0.000100	+0.0341
				1.507183	4.7102	0.1791	5.4351
OCT. 1 (OH)	X:	-0.0757	+0.00005	+30.7758	+0.02858	+0.000106	+0.0333
(2447069.5)				2.746050	6.0895	2.3916	3.1933
A NOV. 2 (OH)	Y:	+0.0659	-0.00005	+30.5841	+0.02770	+0.000137	+0.0331
				4.304122	1.4461	3.8167	4.7505
NOV. 1 (OH)	X:	-0.0743	+0.00003	+30.0056	+0.02324	+0.000158	+0.0328
(2447100.5)				6.262106	3.4815	6.1921	3.9403
A DEC. 3 (OH)	Y:	+0.0640	-0.00005	+29.8792	+0.02231	+0.000184	+0.0327
				1.534021	5.2414	1.3981	5.4937
DEC. 1 (OH)	X:	-0.0732	+0.00000	+29.4970	+0.01516	+0.000186	+0.0323
(2447130.5)				2.771701	0.2671	2.8578	3.2501
A DEC.33 (OH)	Y:	+0.0623	-0.00002	+29.4813	+0.01557	+0.000205	+0.0323
				4.322581	2.2449	4.4001	4.7983

1987 COORDONNEES EQUATORIALES DIFFERENTIELLES

DU SATELLITE 4 D'URANUS: OBERON N=0.4667

		A0	A1	B0 F0	B1 F1	B2 F2	C0 P0
JAN. 1 (OH) (2446796.5)	X:	-0.0054	-0.00001	+39.7950 0.099569	+0.01330 5.2321	+0.000247 0.3055	+0.0160 3.4567
A FEV. 2 (OH)	Y:	+0.0475	+0.00000	+39.5760 1.656687	+0.02069 0.5605	+0.000259 1.9227	+0.0159 5.0045
FEV. 1 (OH) (2446827.5)	X:	-0.0058	-0.00001	+40.1958 1.992748	+0.02262 1.5960	+0.000205 2.3847	+0.0162 0.9727
A MAR. 5 (OH)	Y:	+0.0468	+0.00009	+40.1086 3.545494	+0.02906 3.0460	+0.000201 4.1879	+0.0163 2.5126
MAR. 1 (OH) (2446855.5)	X:	-0.0067.	+0.00003	+40.9248 2.489487	+0.03251 2.3655	+0.000121 3.3565	+0.0168 1.9672
A AVR. 2 (OH)	Y:	+0.0475	+0.00011	+40.9473 4.039534	+0.03587 3.8396	+0.000148 5.3465	+0.0165 3.5175
AVR. 1 (OH) (2446886.5)	X:	-0.0072	+0.00005	+41.9968 4.389957	+0.03750 4.4437	+0.000119 0.4961	+0.0173 5.7658
A MAI 3 (OH)	Y:	+0.0510	-0.00002	+42.0660 5.938864	+0.03788 5.9913	+0.000197 2.0790	+0.0169 1.0256
MAI 1 (OH) (2446916.5)	X:	-0.0052	-0.00005	+43.0350 5.827671	+0.03319 6.0428	+0.000280 2.5392	+0.0173 2.3605
A JUN. 2 (OH)	Y:	+0.0516	+0.00001	+43.0655 1.094335	+0.03063 1.4245	+0.000296 4.0086	+0.0174 3.8945
JUN. 1 (OH) (2446947.5)	X:	-0.0062	+0.00003	+43.7727 1.451655	+0.01772 2.0266	+0.000368 4.6658	+0.0175 6.1673
A JUL. 3 (OH)	Y:	+0.0516	+0.00002	+43.6860 3.004138	+0.01756 3.9365	+0.000351 6.2081	+0.0174 1.4265
JUL. 1 (OH) (2446977.5)	X:	-0.0051	-0.00001	+43.8922 2.892304	+0.01136 5.2405	+0.000322 6.2697	+0.0173 2.7565
A AOU. 2 (OH)	Y:	+0.0530	-0.00007	+43.6873 4.447923	+0.01697 0.4463	+0.000310 1.6546	+0.0174 4.3032
AOU. 1 (OH) (2447008.5)	X:	-0.0047	+0.00000	+43.3482 4.797765	+0.02796 1.5394	+0.000188 2.1551	+0.0170 0.2834
A SEP. 2 (OH)	Y:	+0.0503	+0.00003	+43.0719 0.072913	+0.03018 3.0012	+0.000195 4.0500	+0.0171 1.8281
SEP. 1 (OH) (2447039.5)	X:	-0.0060	+0.00008	+42.3348 0.416202	+0.03801 3.6216	+0.000088 5.2061	+0.0166 4.0714
A OCT. 3 (OH)	Y:	+0.0503	-0.00005	+42.0373 1.975712	+0.03784 5.1898	+0.000128 0.6817	+0.0168 5.6237
OCT. 1 (OH) (2447069.5)	X:	-0.0045	+0.00000	+41.2073 1.847198	+0.03825 5.1977	+0.000142 1.4833	+0.0163 0.6344
A NOV. 2 (OH)	Y:	+0.0497	-0.00008	+40.9404 3.405622	+0.03715 0.5483	+0.000187 2.8819	+0.0162 2.2054
NOV. 1 (OH) (2447100.5)	X:	-0.0043	-0.00002	+40.1781 3.741204	+0.03109 0.9738	+0.000209 3.6428	+0.0159 4.4307
A DEC. 3 (OH)	Y:	+0.0472	+0.00000	+39.9964 5.296704	+0.03018 2.7322	+0.000250 5.1503	+0.0158 5.9928
DEC. 1 (OH) (2447130.5)	X:	-0.0052	+0.00000	+39.5009 5.166769	+0.02066 2.6924	+0.000249 5.2266	+0.0158 1.0109
A DEC.33 (OH)	Y:	+0.0468	+0.00000	+39.4632 0.434829	+0.02142 4.6549	+0.000273 0.4836	+0.0157 2.5583

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Ces éphémérides donnent les positions des satellites Galiléens de Jupiter, des huit premiers satellites de Saturne et des cinq satellites d'Uranus pour 1987 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.

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These ephemerides give the positions of the Galilean satellites of Jupiter, of the first eight satellites of Saturn and of the five satellites of Uranus for 1987 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 1987.

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

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