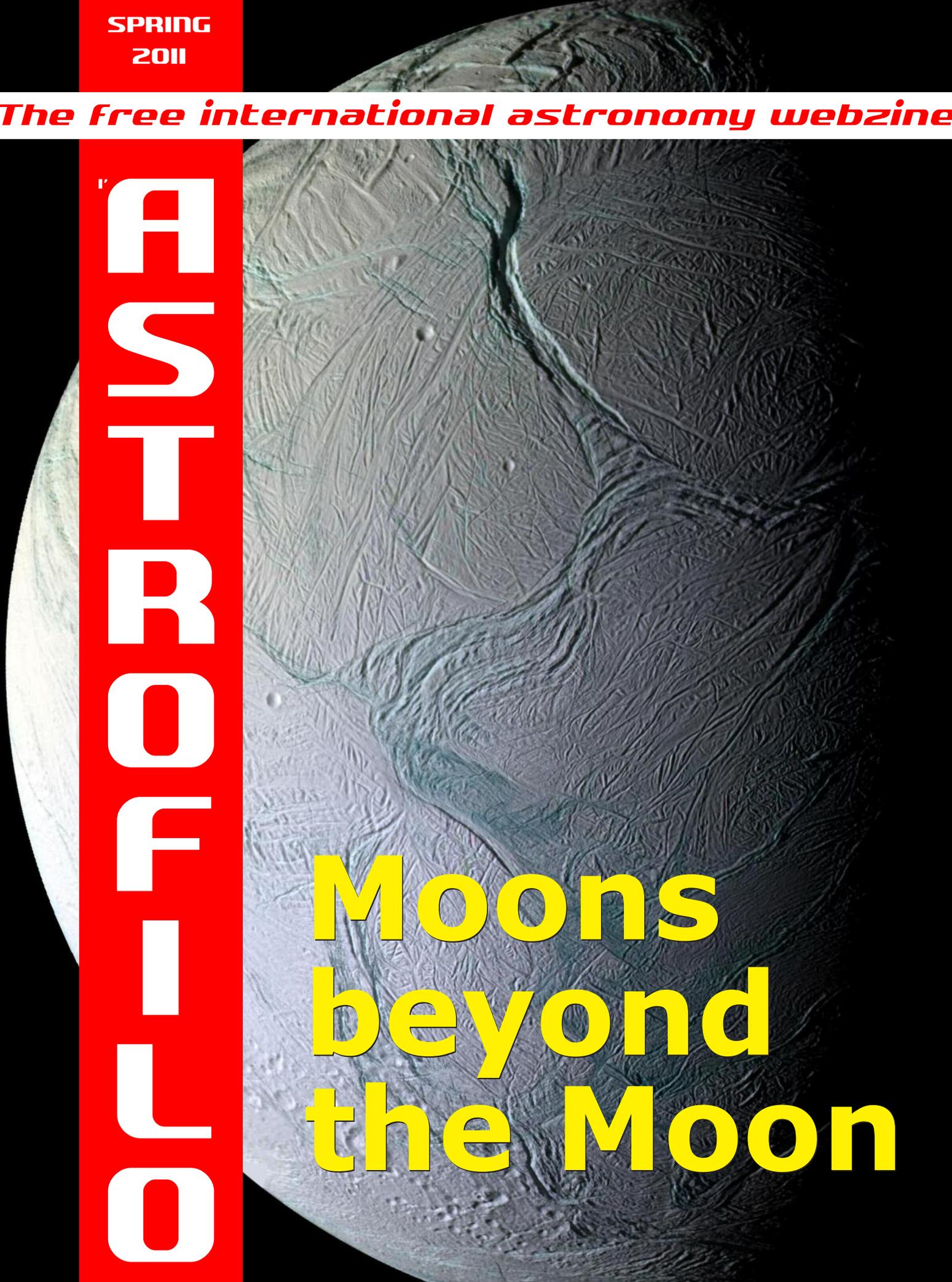


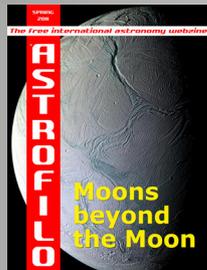
SPRING
2011

The free international astronomy webzine

**A
S
T
R
O
N
O
M
Y
J
O
U
R
N
A
L**

Moons beyond the Moon





ON THE COVER

On October 5, 2008, just after coming within 25 kilometers (15.6 miles) of the surface of Enceladus, NASA's Cassini captured this stunning mosaic as the spacecraft sped away from this geologically active moon of Saturn.

[NASA/JPL/Space Science Institute]

Editor in Chief
Michele Ferrara

Science Team
Prof. Enrico Maria Corsini
Dr. Marcel Clemens

Publisher, editorial office,
circulation, advertising
Astro Publishing di Pirlo L.
Via Bonomelli, 106
25049 Iseo - Bs - Italy
www.astropublishing.com
info@astropublishing.com

Internet Service Provider
Aruba S.p.A.
P.zza Garibaldi, 8
52010 Soci - Ar - Italy

Legal registration
Tribunal of Brescia - Italy
reference number 51
of the 19/11/2008

Copyright
All copyright and other intellectual property rights in all text, images and other materials on this webzine are the property of Astro Publishing di Pirlo L. or are included with the permission of the relevant owner. You are permitted to browse this webzine, reproduce extracts by way of printing, downloading to a hard disk or for the purposes of distribution to other individuals. This is only to be done on the proviso that you keep intact all copyright and other proprietary notices and that both the *Astrofilo* logo and hyperlink to astropublishing.com appear on such reproductions.

No reproduction of any part of this webzine may be sold or distributed for commercial gain nor shall it be modified or incorporated in any other work, publication or website.

The *Astrofilo* logo belongs to Astro Publishing di Pirlo L. "*Astrofilo*" and "astropublishing.com" are registered trademarks.

Note

The publisher makes available itself with having rights for possible not characterized iconographic sources.

SPECIAL ISSUE

Moons beyond the Moon (1 of 2)

Foreword

Here is the new issue of the webzine *l'Astrofilo*, dedicated to the "other moons" that populate our planetary system. In this first part we cover the very numerous satellites of Jupiter and Saturn, while the second part (to be released soon) will cover those of Mars, Uranus, Neptune and the other minor bodies in the solar system, including of course, Pluto.

Apart from including some of the best images to date, we have also included essential data for each body, useful as a reference.

The main objective of these photographic issues of *l'Astrofilo*, that really represent the "entry level" of Astro Publishing, is simply to attract the attention of those curious in astronomy.

By providing a largely visual overview, we hope to stimulate a desire to understand in greater depth the subject matter presented, thus attracting more people to the arguments dealt with our other sections, that is the news and articles on the web site.

Michele Ferrara

2

Moons beyond the Moon

(1 of 2)



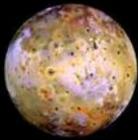
But do we learn much just by looking at pretty pictures? Actually we do; and the existence of these pretty pictures shows just how important images are to the study of the solar system, and in astronomy in general. The images are mostly from the various probes that have been sent into space specifically to photograph these bodies. The diversity of surfaces, shown even by the satellites of a single planet, is incredible. Perhaps the most striking being between the satellites of Jupiter, Io and Europa. This seemingly impossible diversity contains a huge amount of information about the complex history of the solar system, and a critical step in understanding this history is the study of images. Most images shown are at optical wavelengths, however, where a body is cloud covered, like Saturn's satellite Titan, the surface is completely obscured. The images of the surface features of this satellite (pages 52÷57) are mostly radar images, made at radio wavelengths. However, these images do only show the surfaces of the satellites. What lies beneath these surfaces may be where most interest lies, because although the surfaces are typically frozen worlds (being far from the heat of the Sun) some may be warmer and even liquid under the surface. Here lies the possibility of hidden life, surviving from geological heat.

Marcel Clemens



Jovian System

Satellites in the Jovian system are named after Jupiter's (= Zeus) lovers and descendants. Names of outer satellites with a prograde orbit generally end with the letter "a" (although an "o" ending has been reserved for some unusual cases), and names of satellites with a retrograde orbit end with an "e." This convention, although adopted for many years, has now been abandoned so that satellites discovered after 2004 won't necessarily follow the rule.



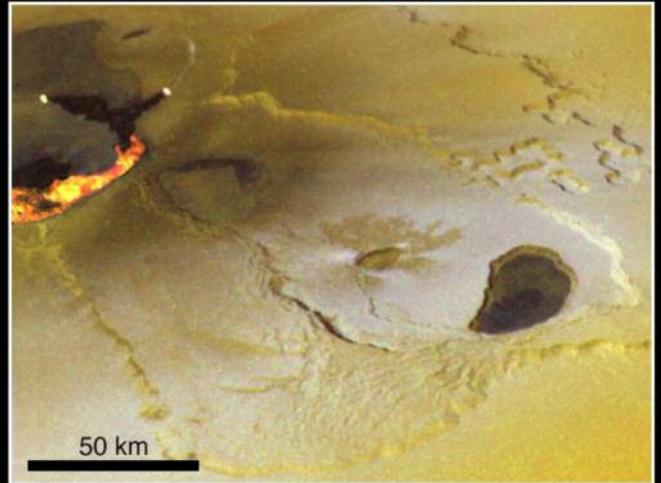
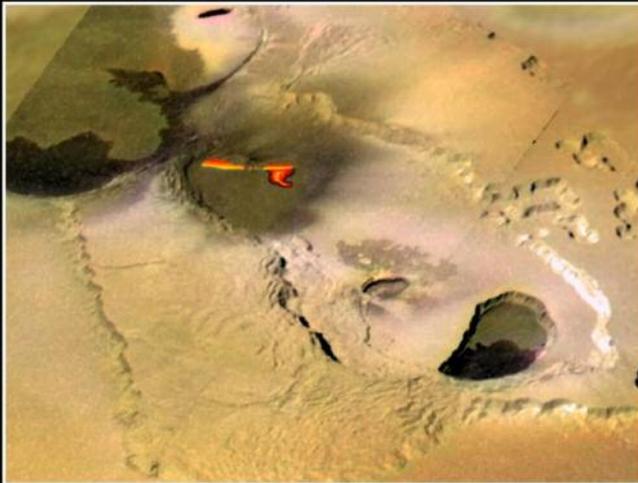
Io — Tvashtar Catena

I25 (26 Nov 1999)

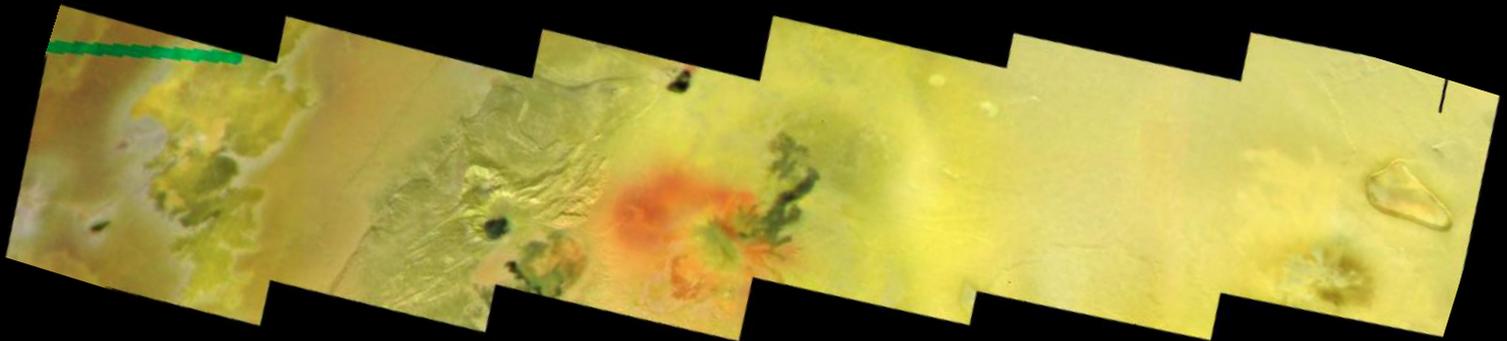
+ C21 low-resolution color
+ fire fountain sketch

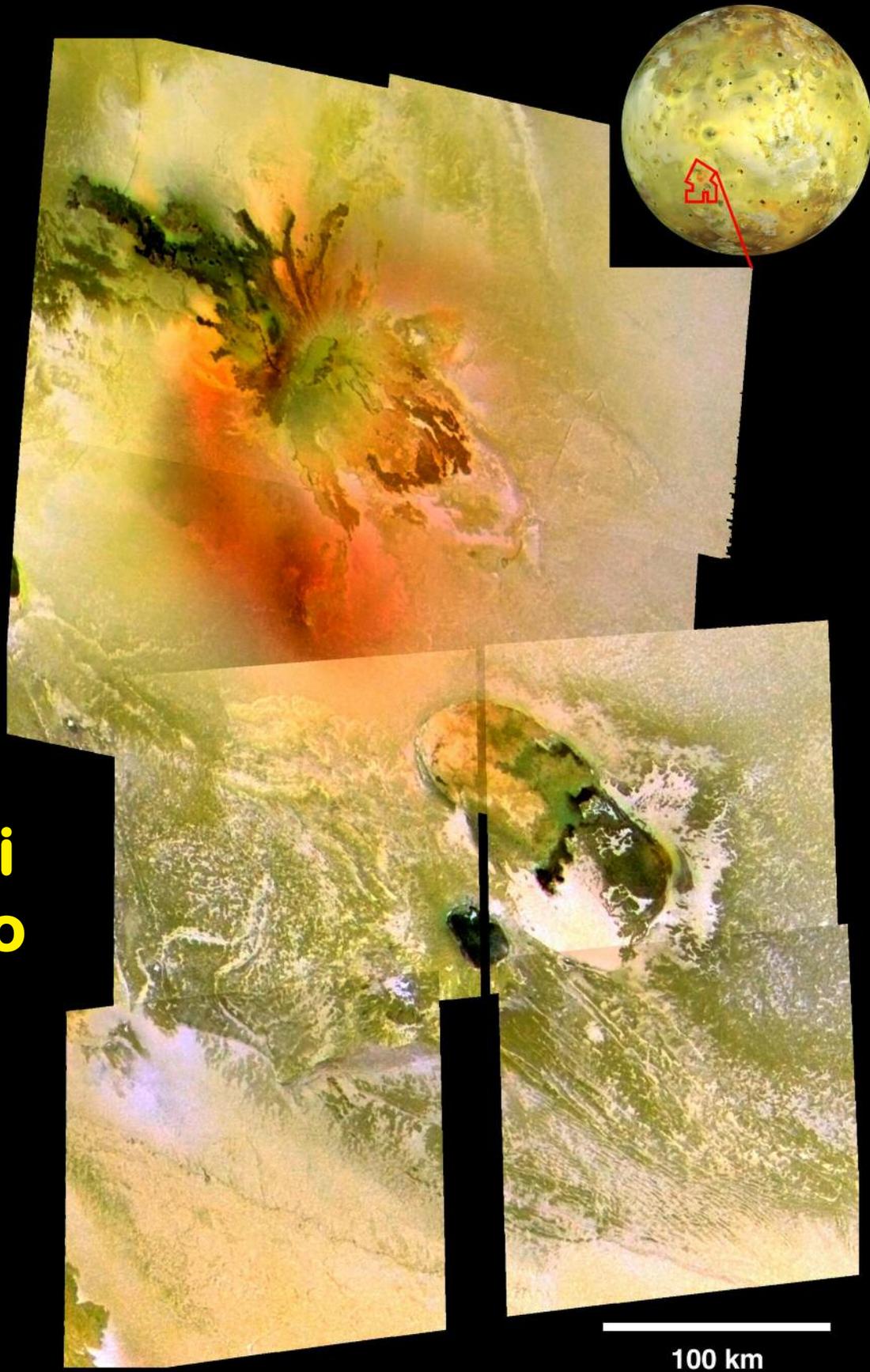
I27 (22 Feb 2000)

visible wavelength data
+ IR data of active lava flow



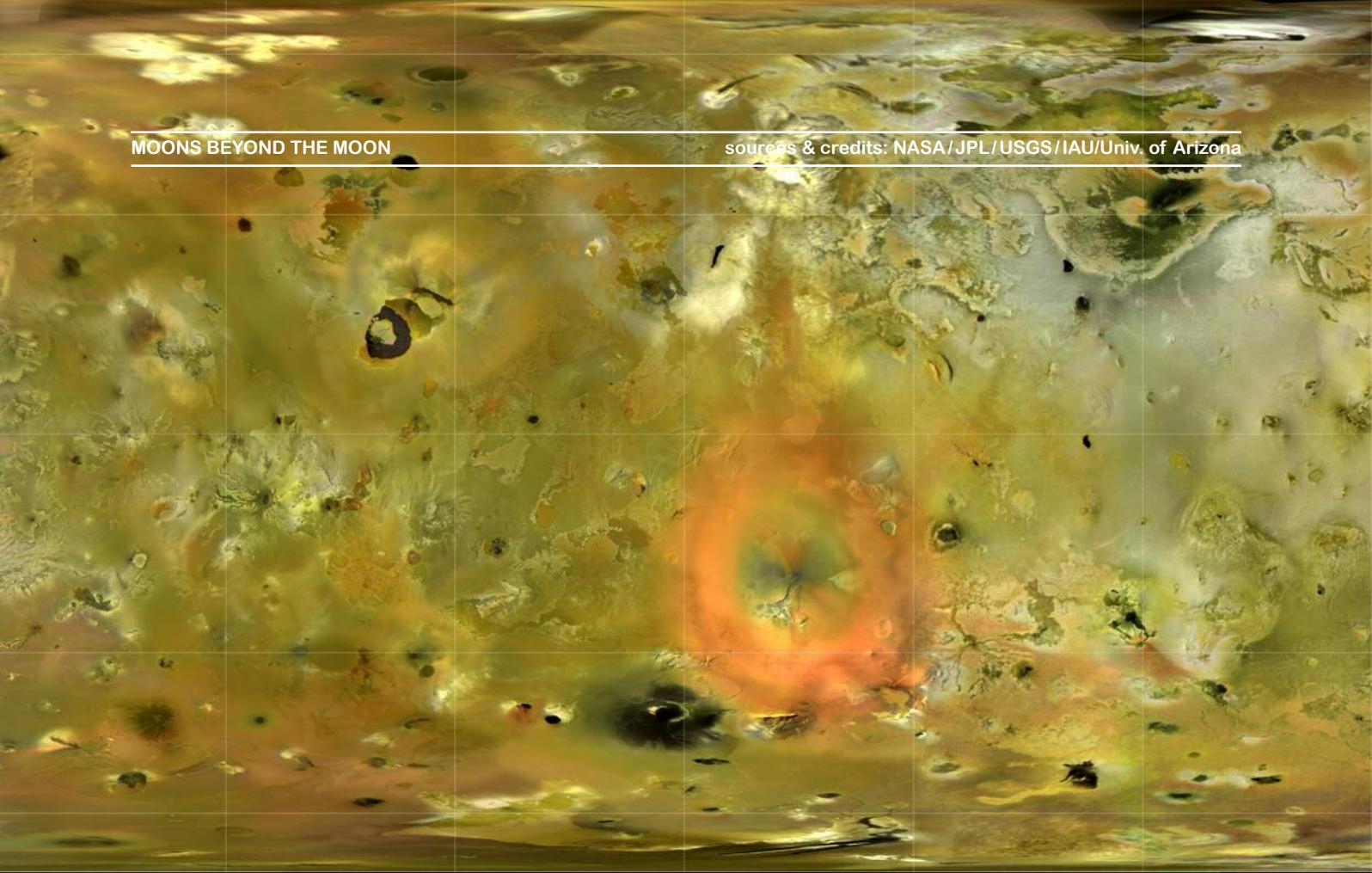
4





i
o

s



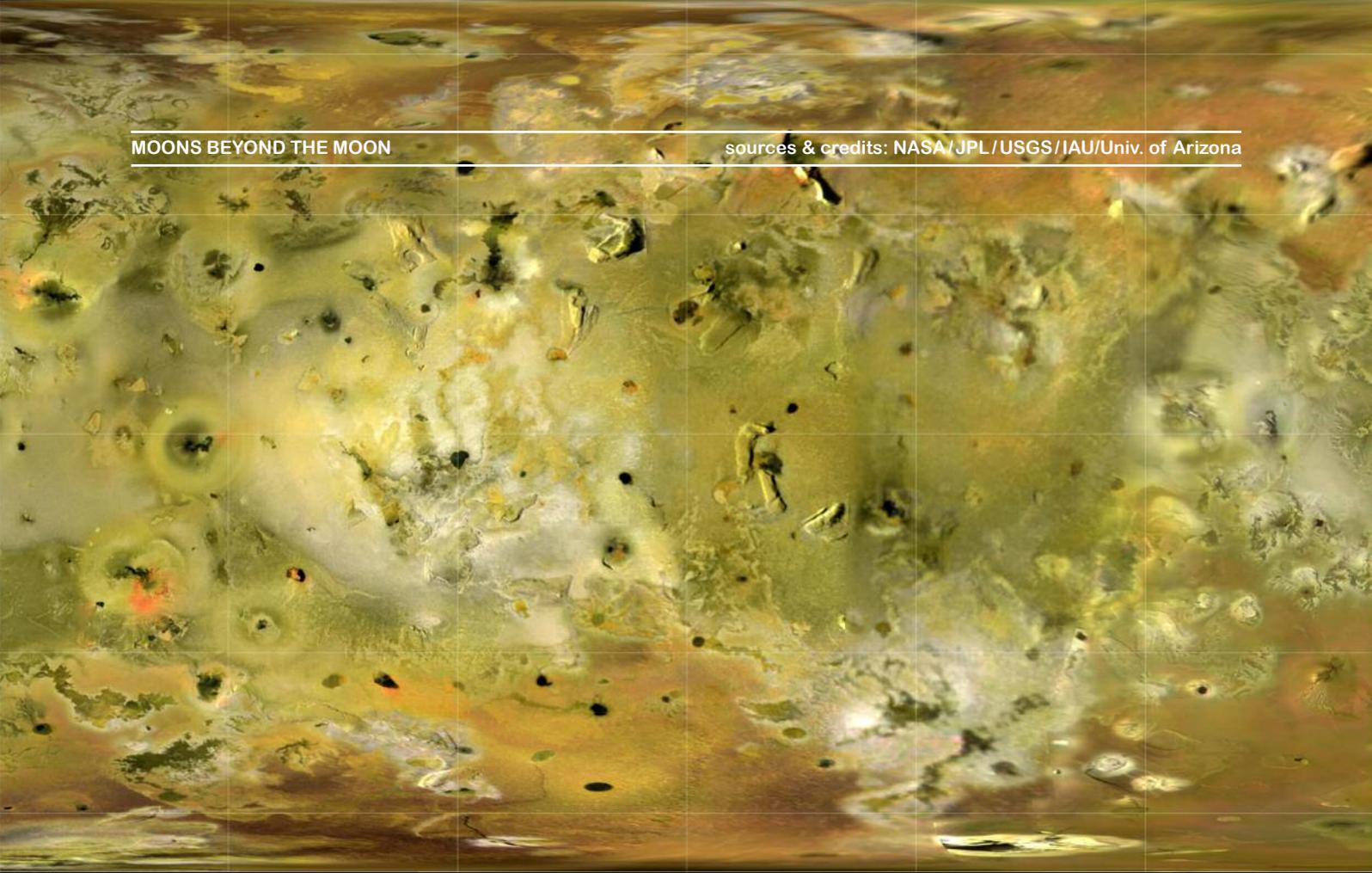
6

Galileo 1999

New Horizons 2007



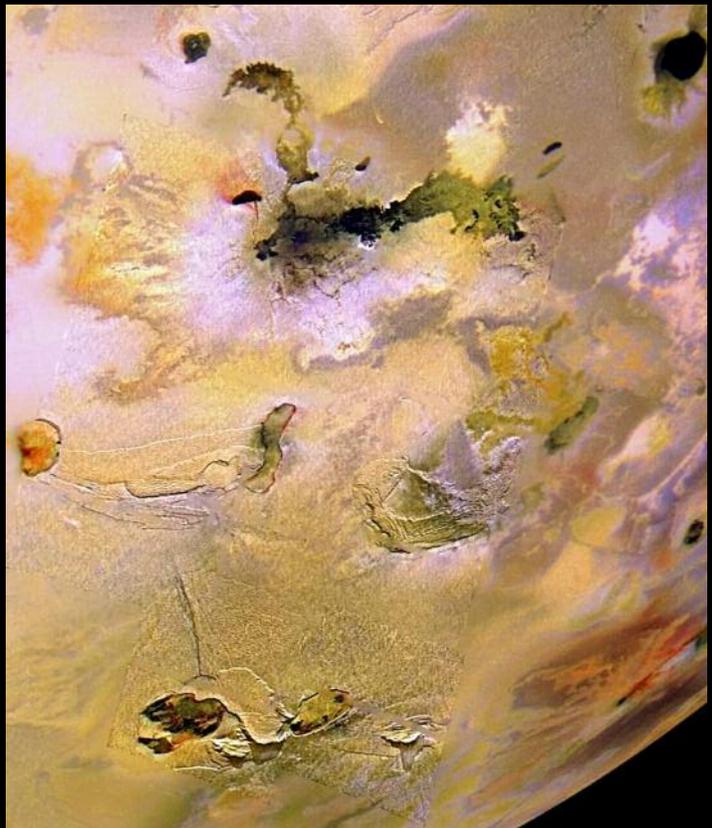
new volcanic eruption



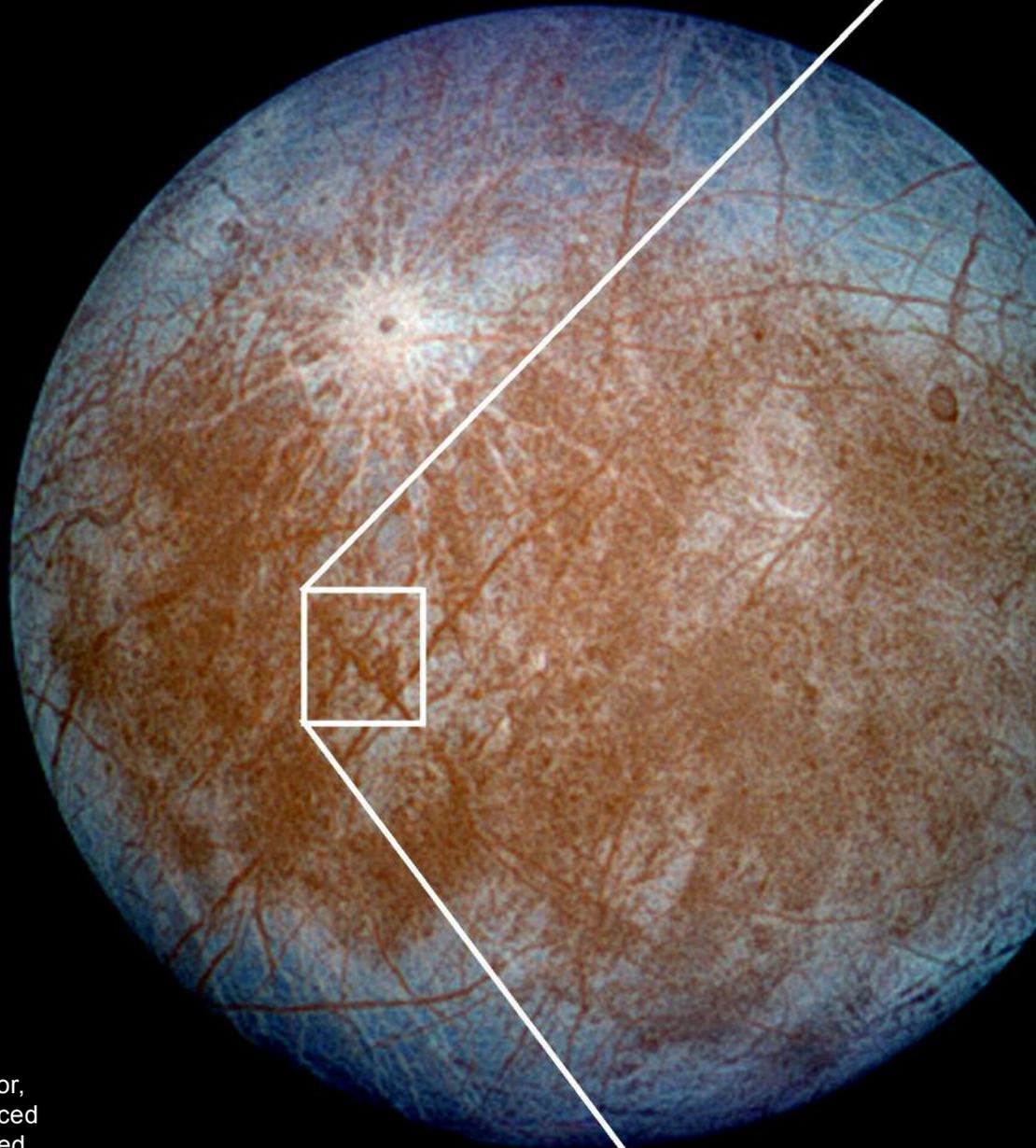
Jupiter I (Io)

Io, the daughter of Inachus, was changed by Jupiter into a cow to protect her from Hera's jealous wrath. But Hera recognized Io and sent a gadfly to torment her. Io, maddened by the fly, wandered throughout the Mediterranean region.

Discovery: January 8, 1610 - Padua - Galileo. (Simon Marius probably made an independent discovery of the Galilean satellites at about the same time that Galileo did, and he may have unwittingly sighted them up to a month earlier, but the priority must go to Galileo because he published his discovery first.)



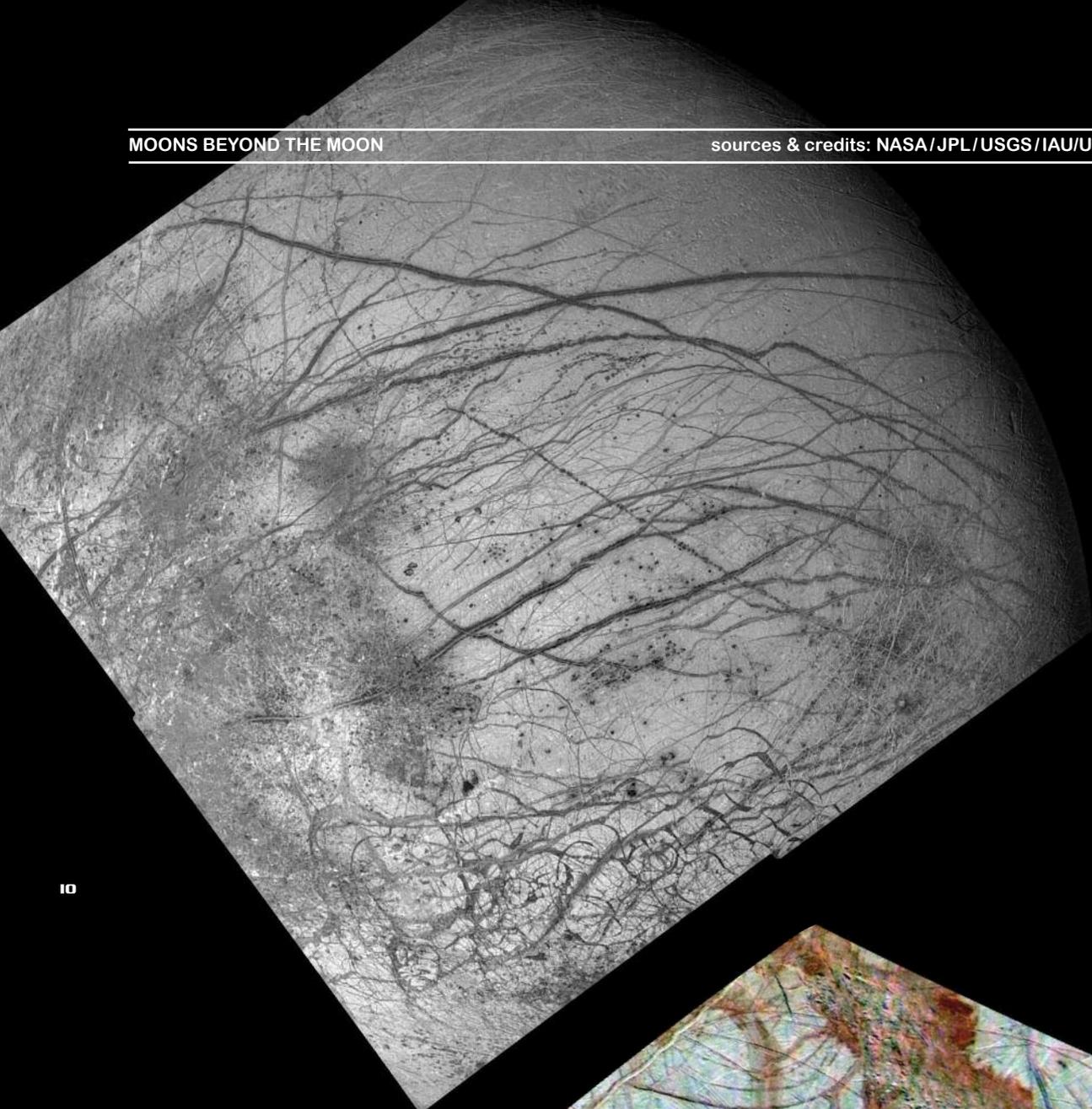
e u r o p a



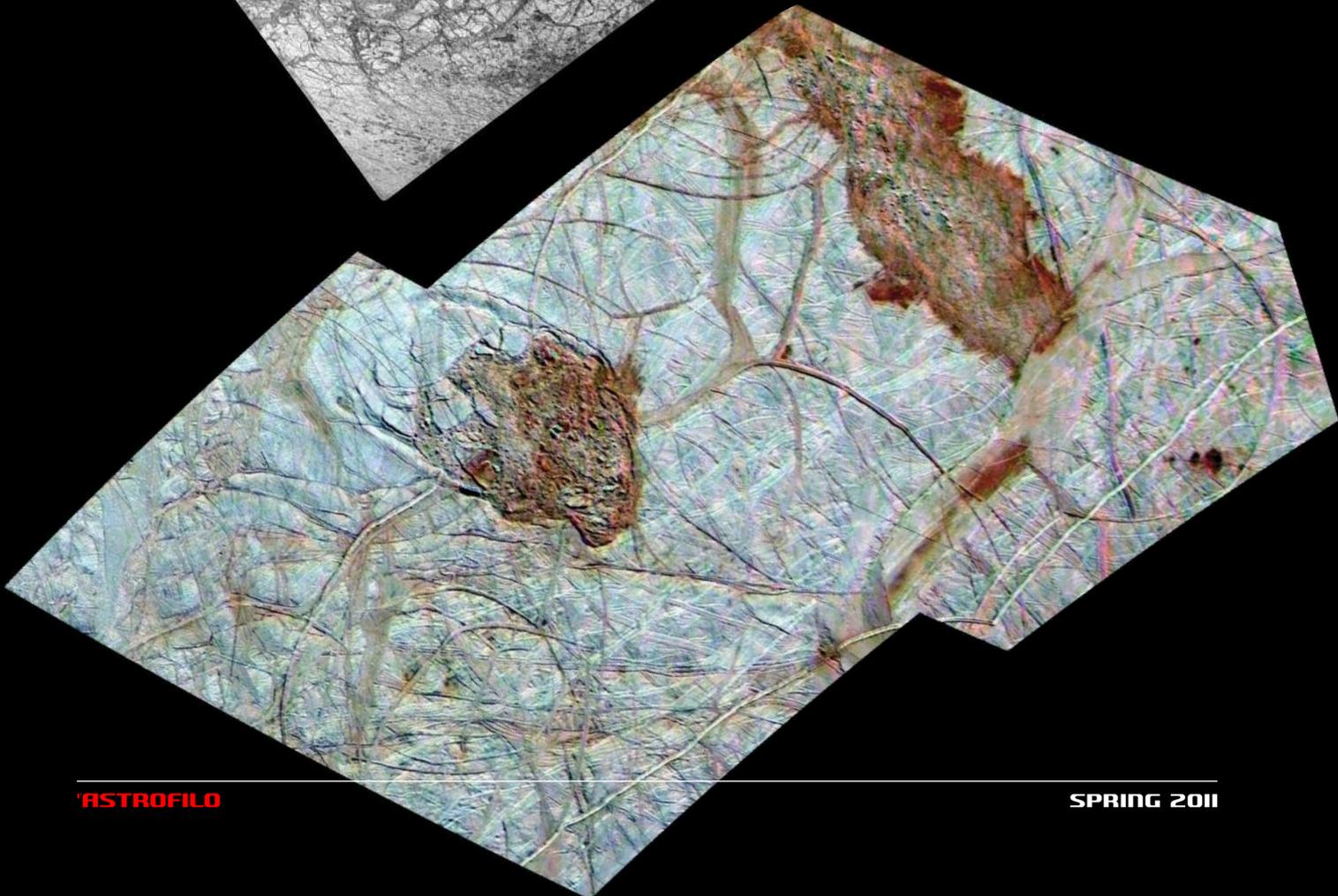
8

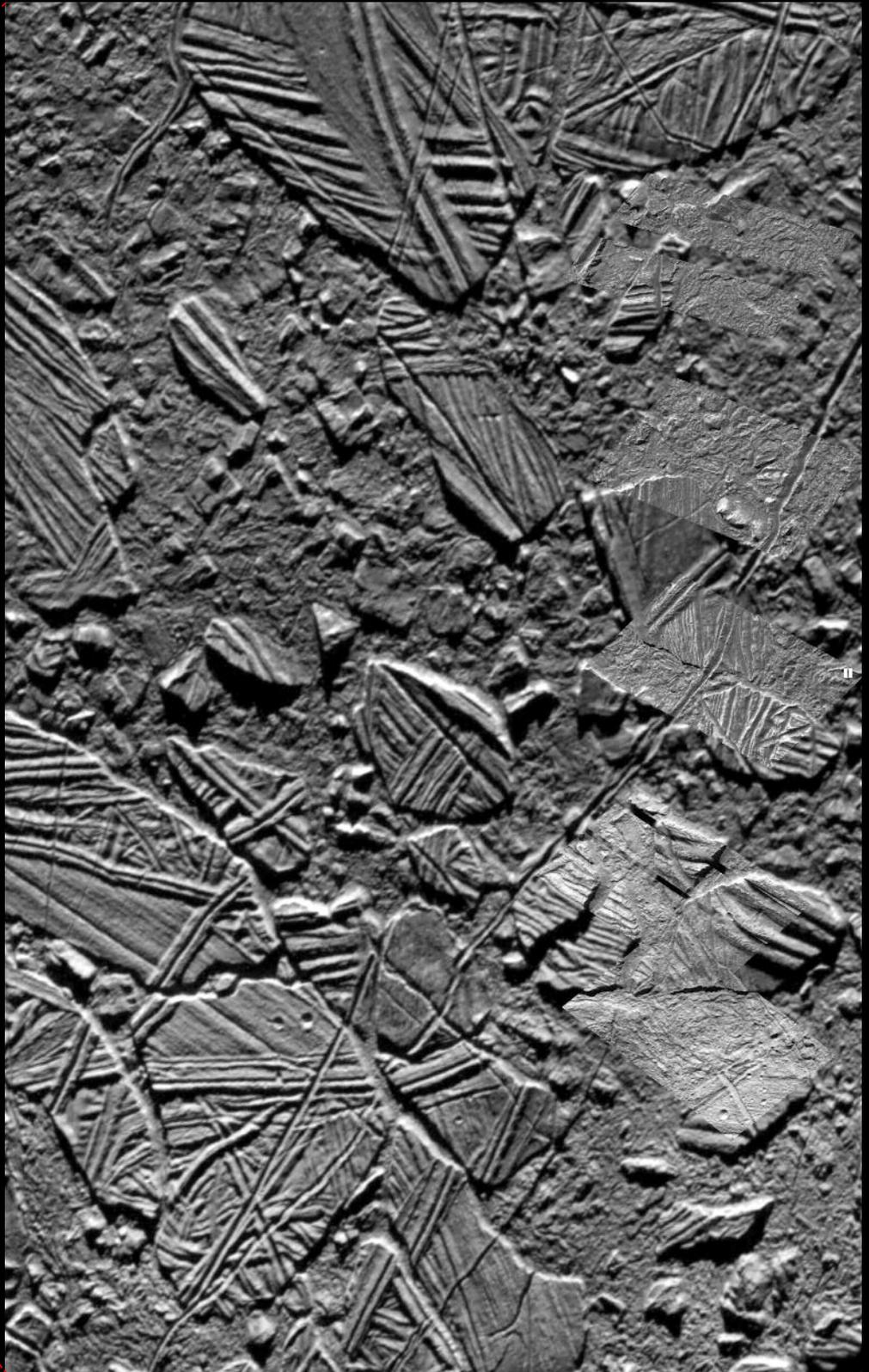
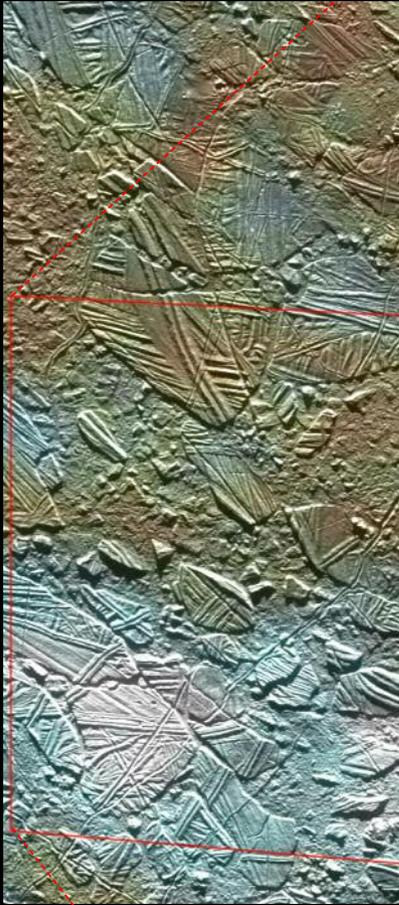
Jupiter II (Europa)

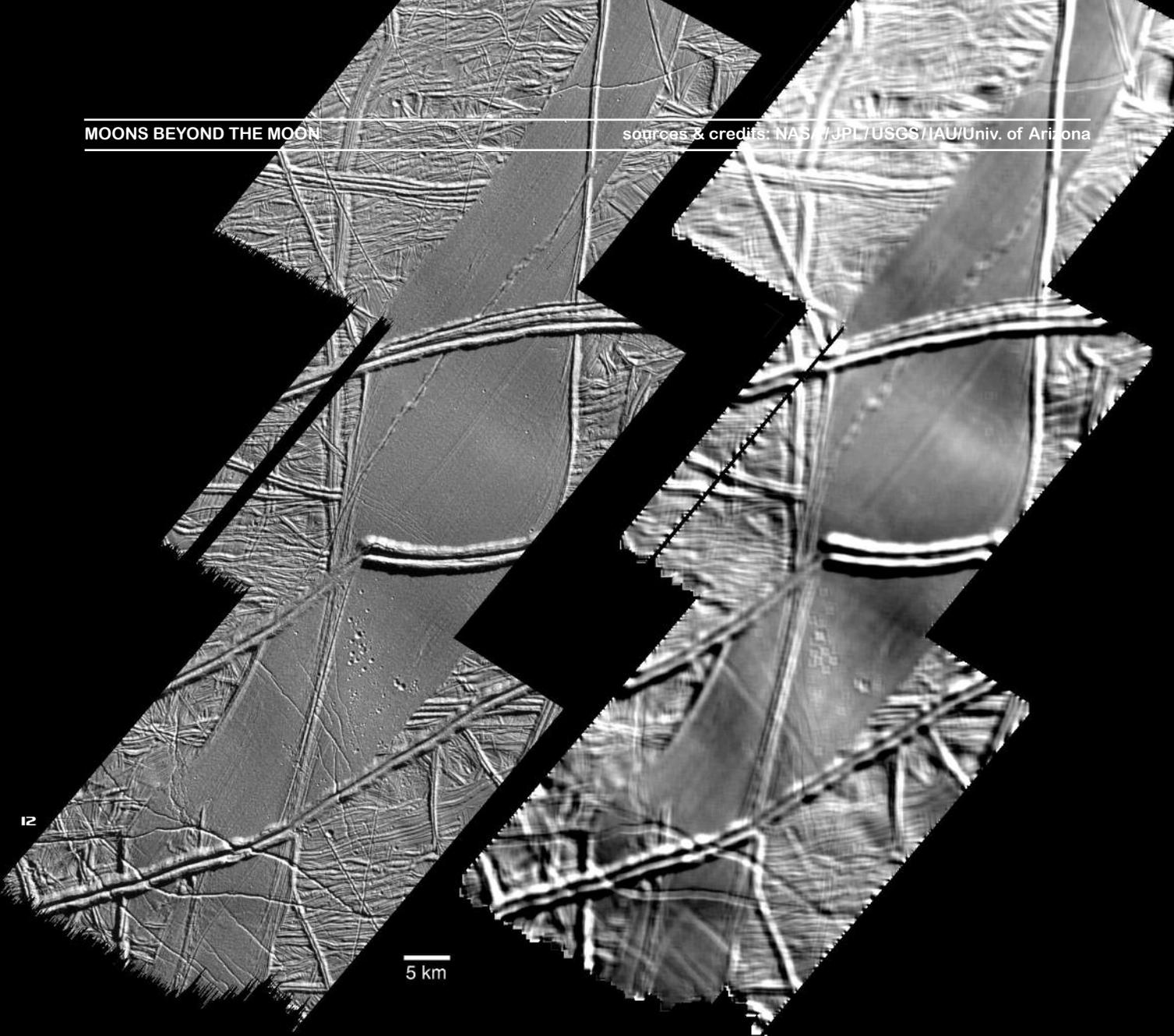
Beautiful daughter of Agenor, king of Tyre, she was seduced by Jupiter, who had assumed the shape of a white bull. When Europa climbed on his back he swam with her to Crete, where she bore several children, including Minos.
Discovery: January 8, 1610 - Padua - Galileo (who evidently observed the combined image of Io and Europa the previous night).



10

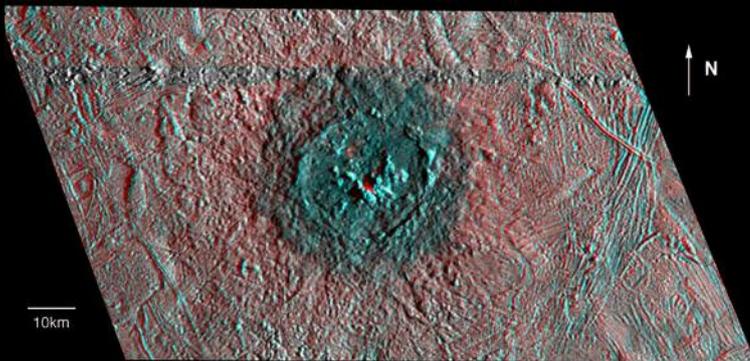






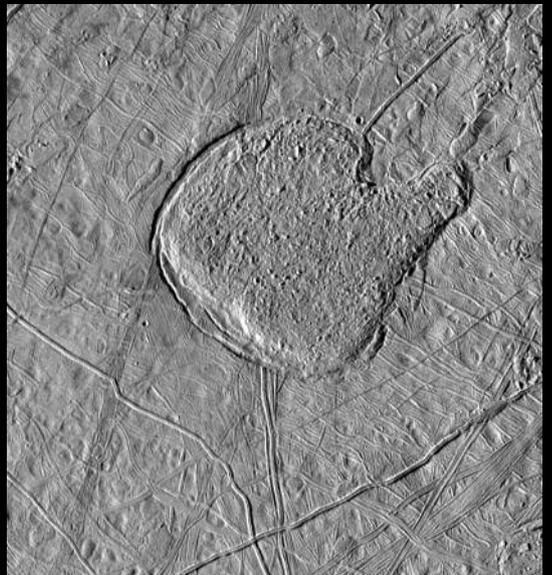
12

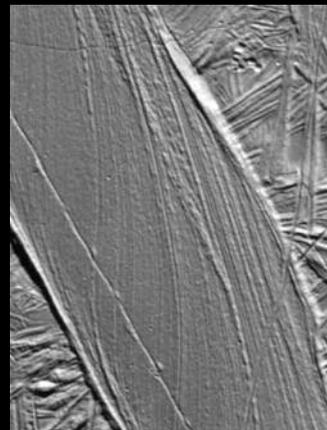
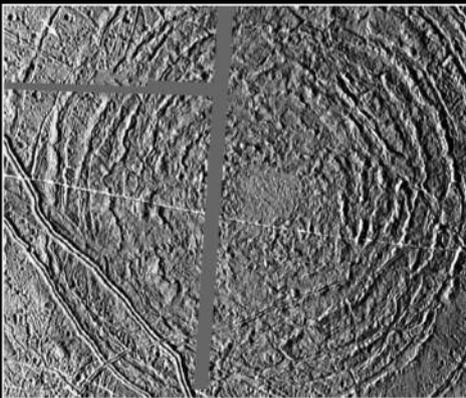
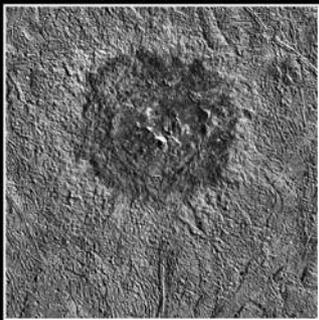
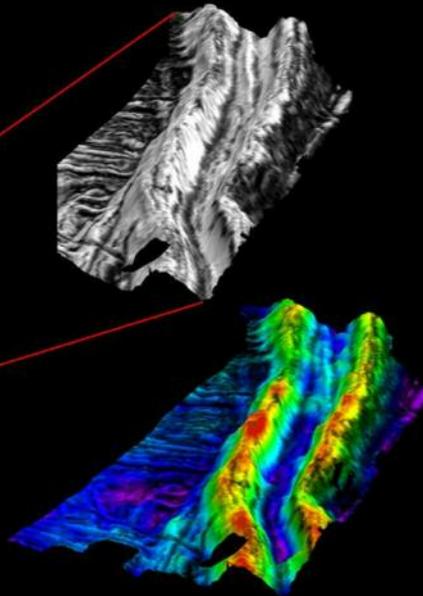
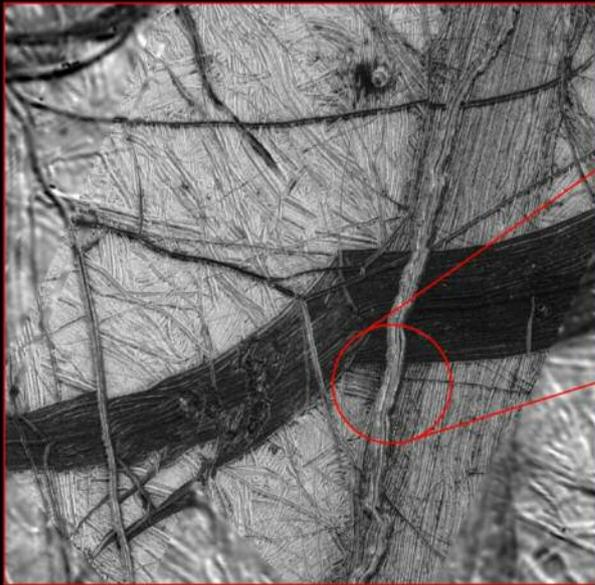
5 km



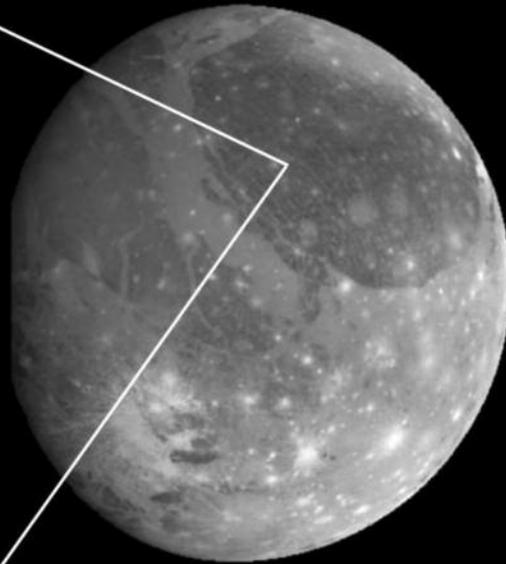
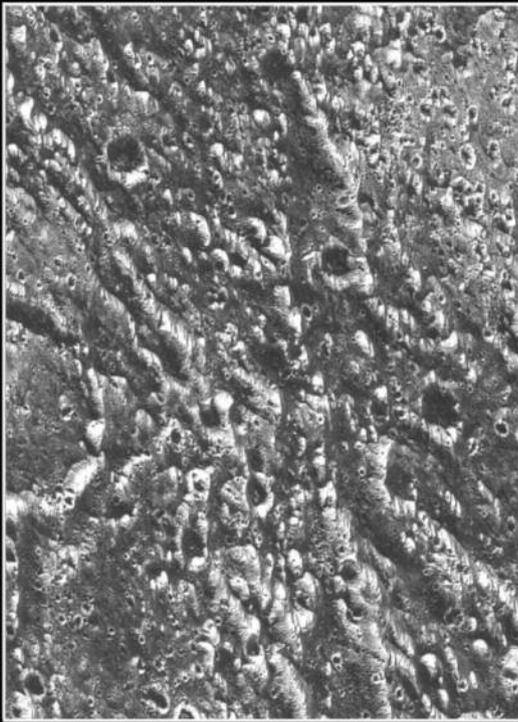
10km

N



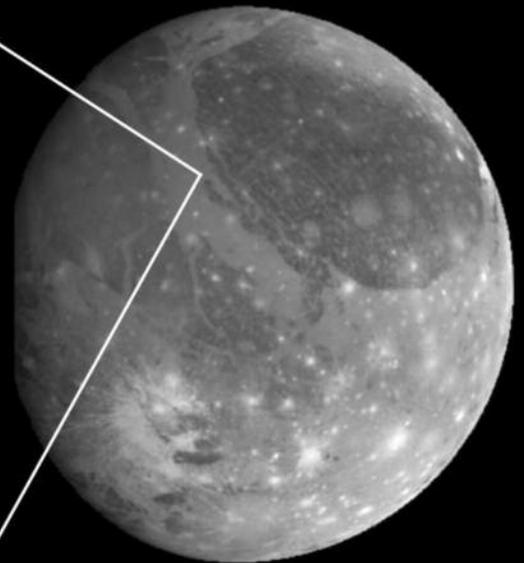
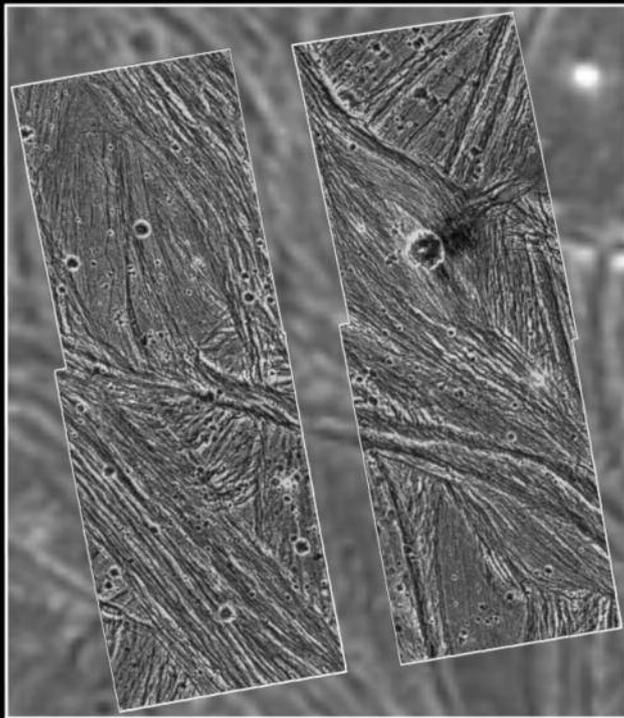


20 km



g
a
n
y
m
e
d
e
e

14

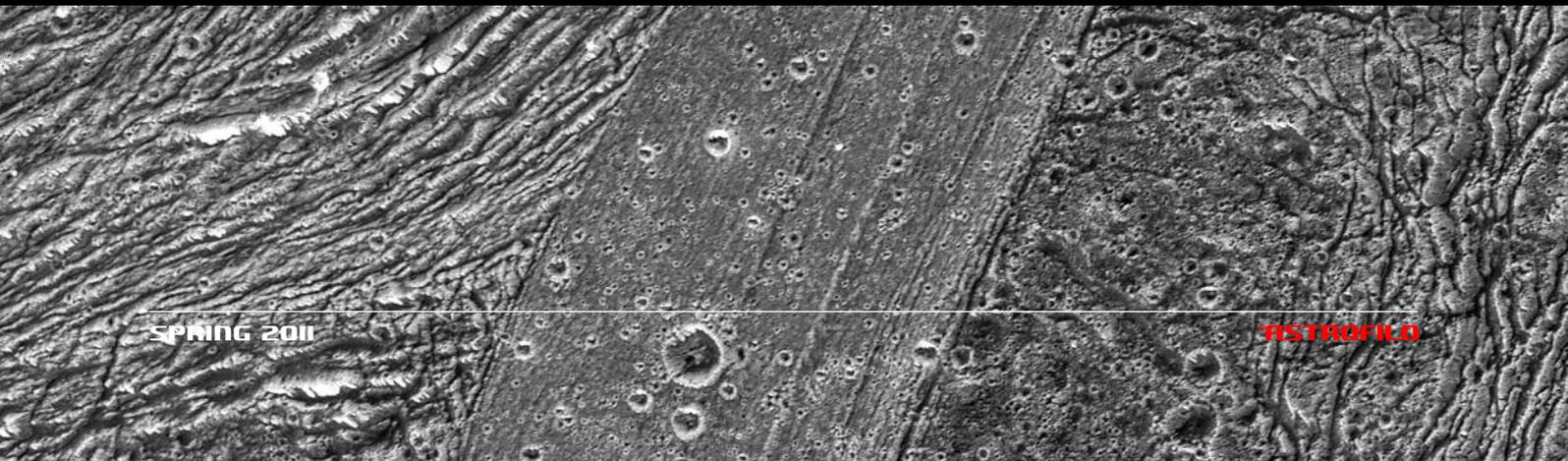
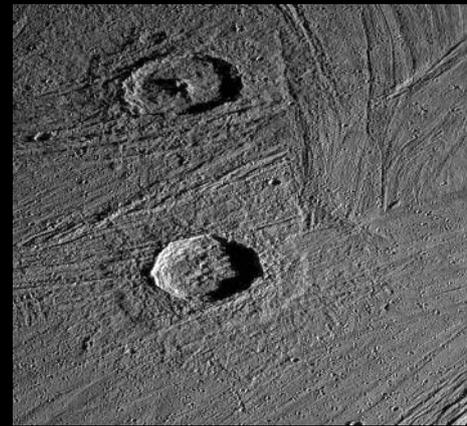
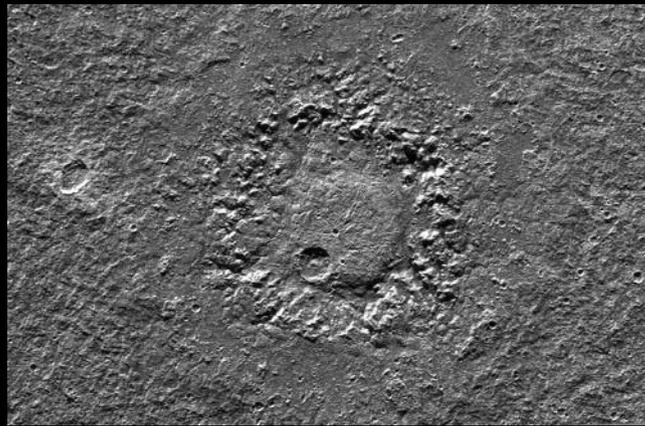
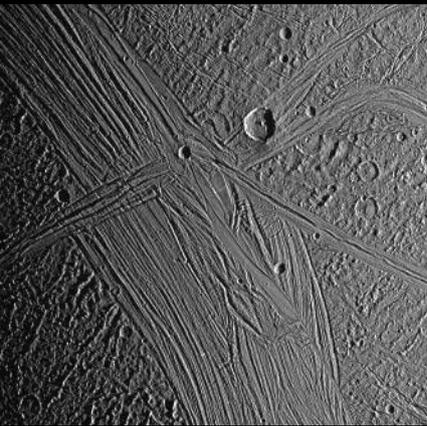


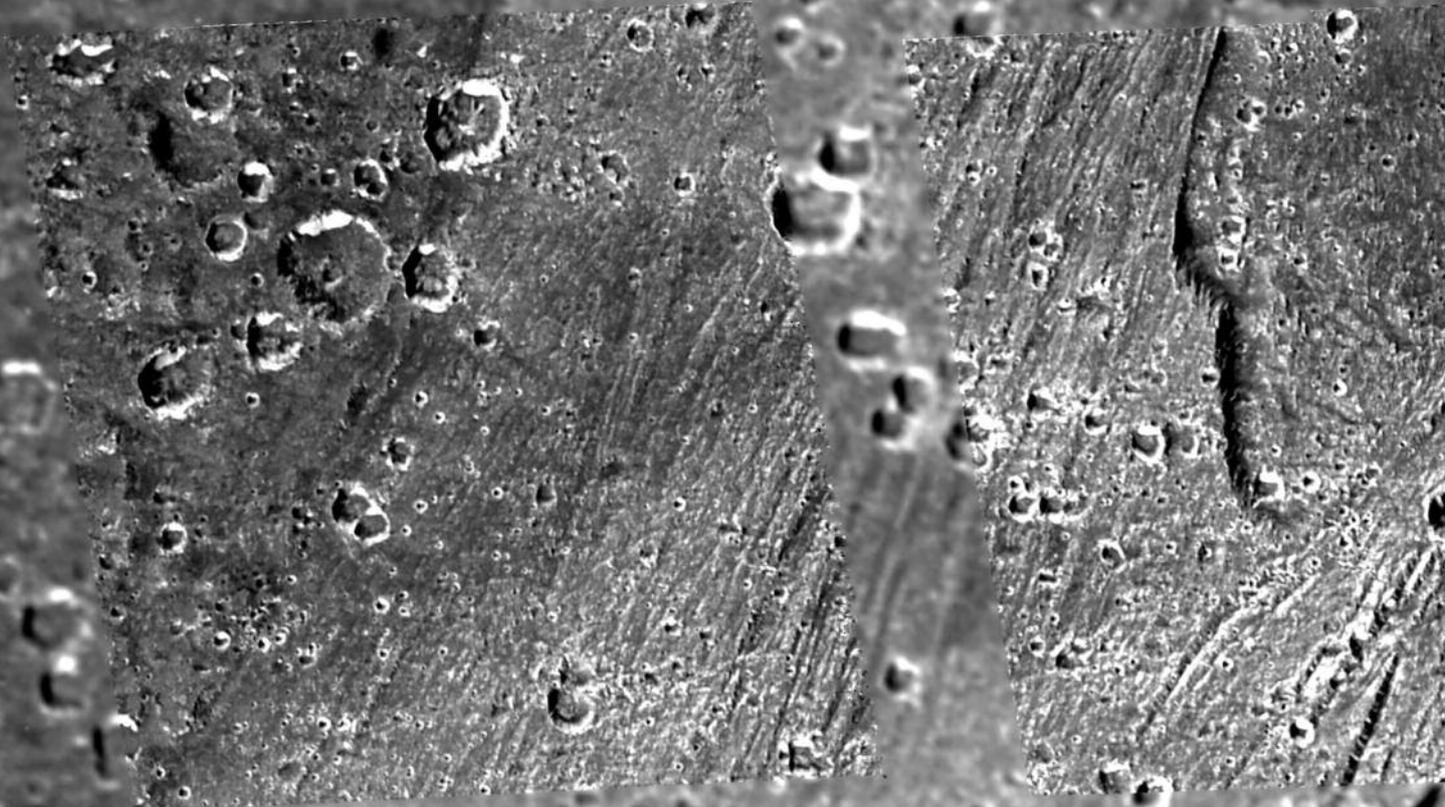
Jupiter III (Ganymede)

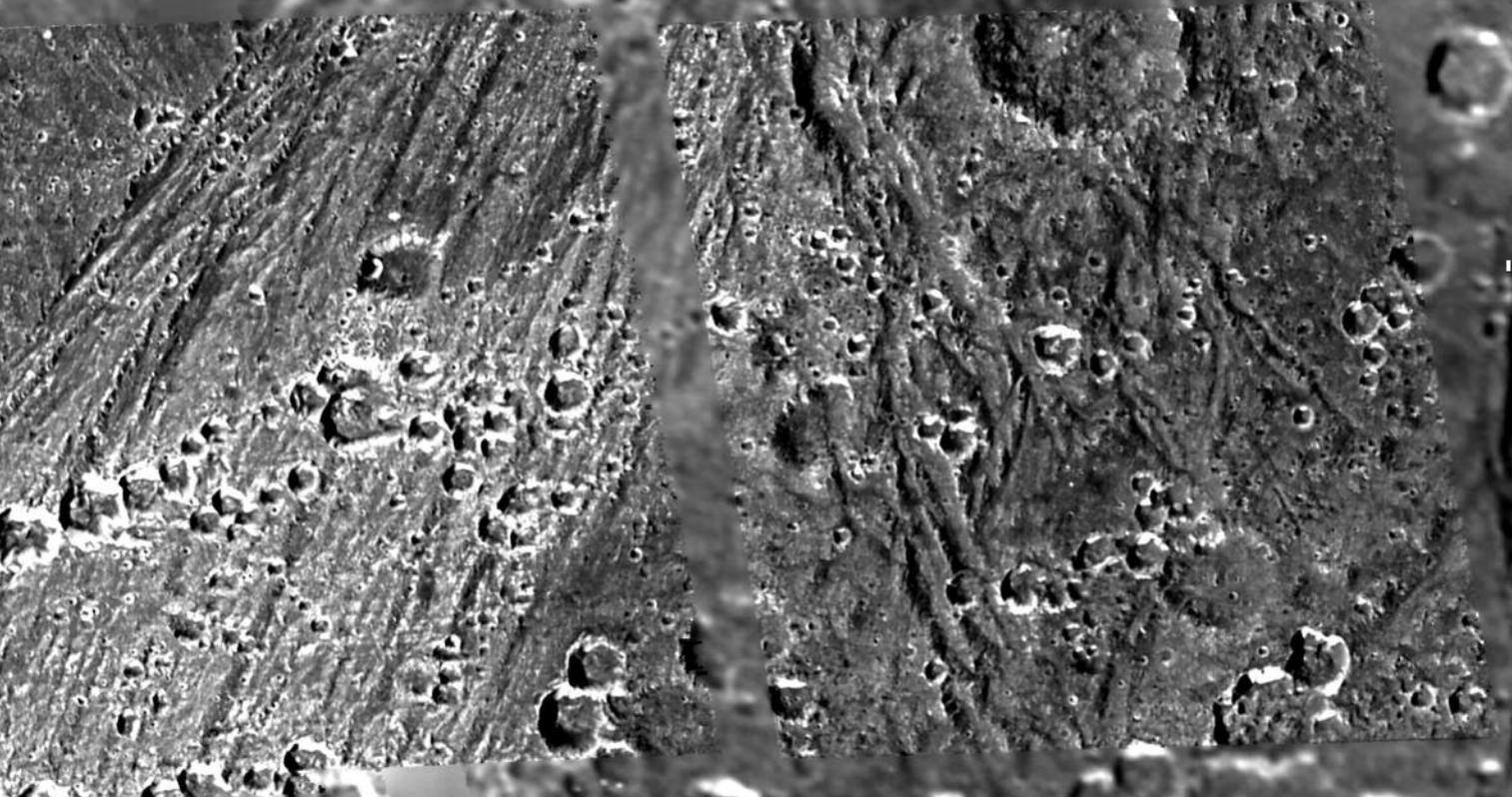
Beautiful young boy who was carried to Olympus by Jupiter disguised as an eagle. Gany- mede then became the cup- bearer of the Olympian gods. Discovery: January 7, 1610 - Padua - Galileo.



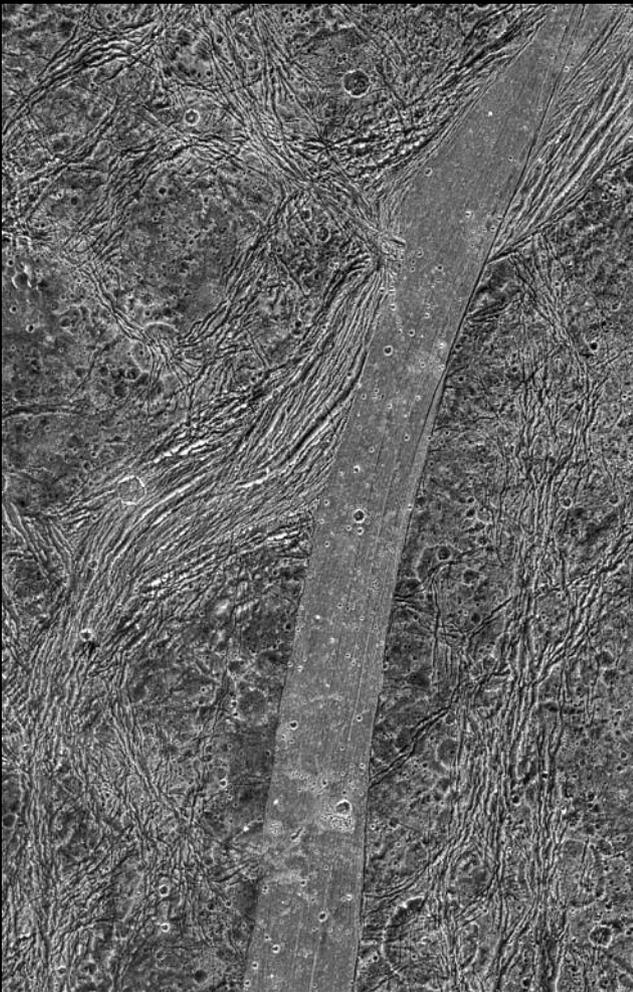
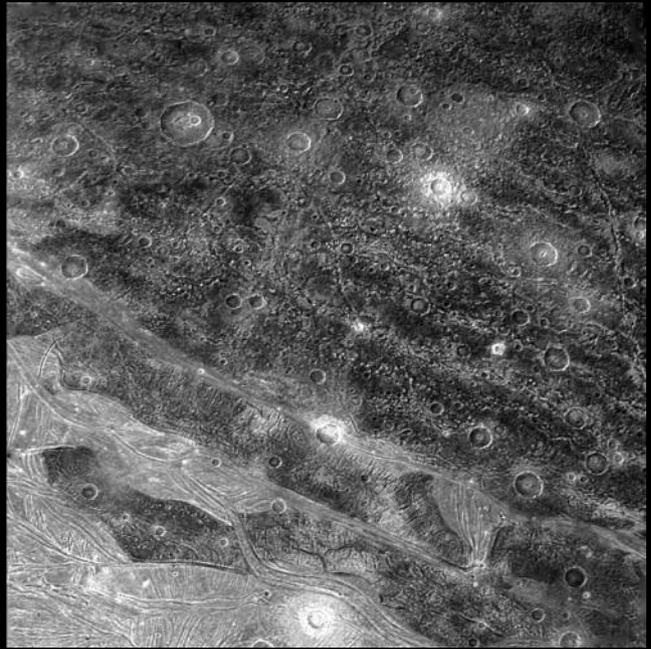
15

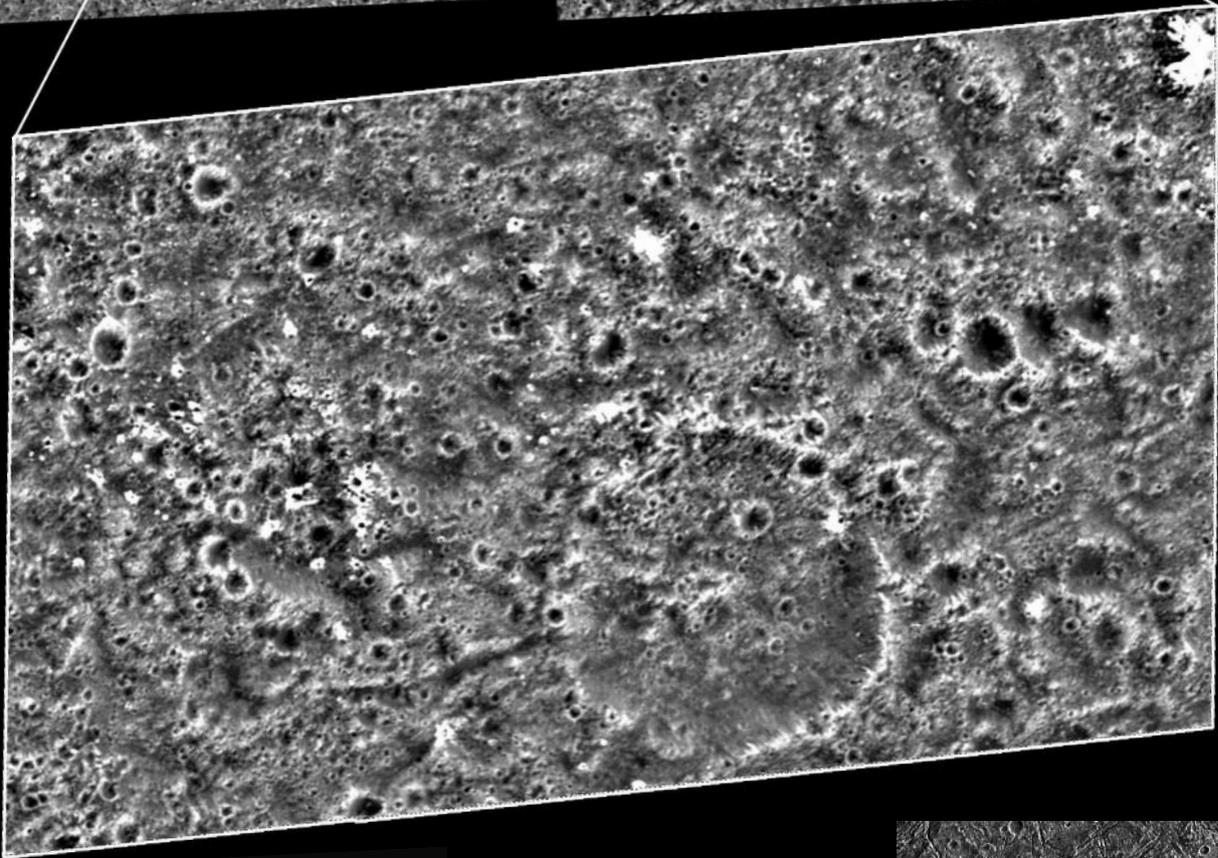
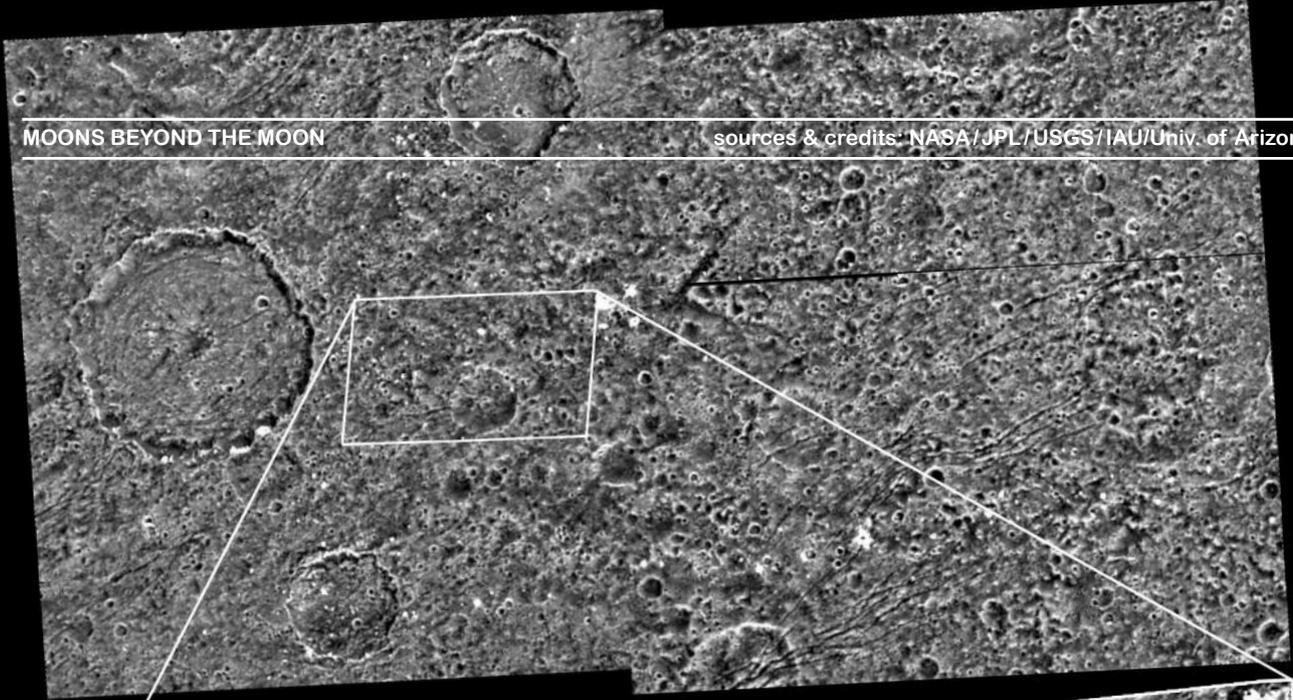




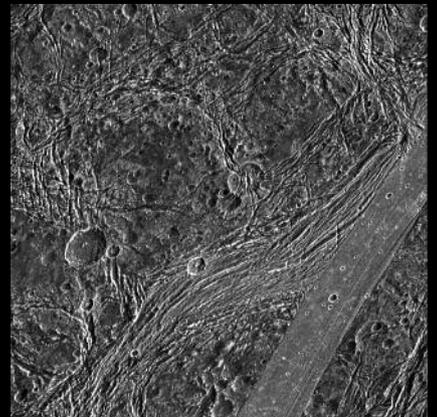
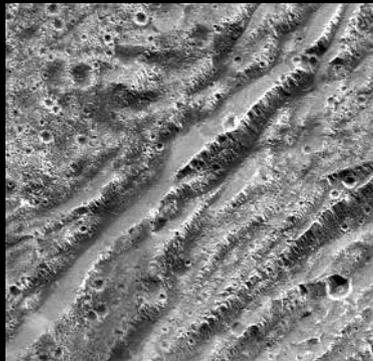
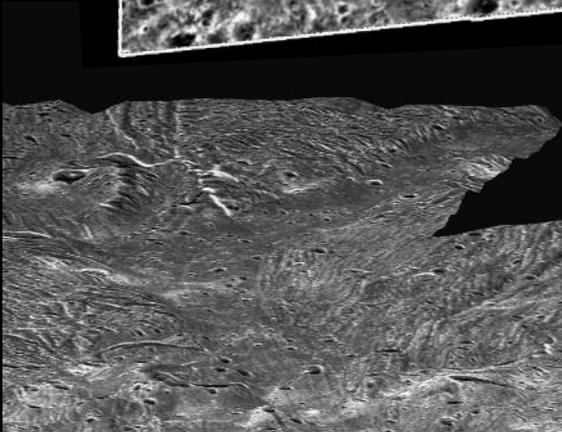


17





19



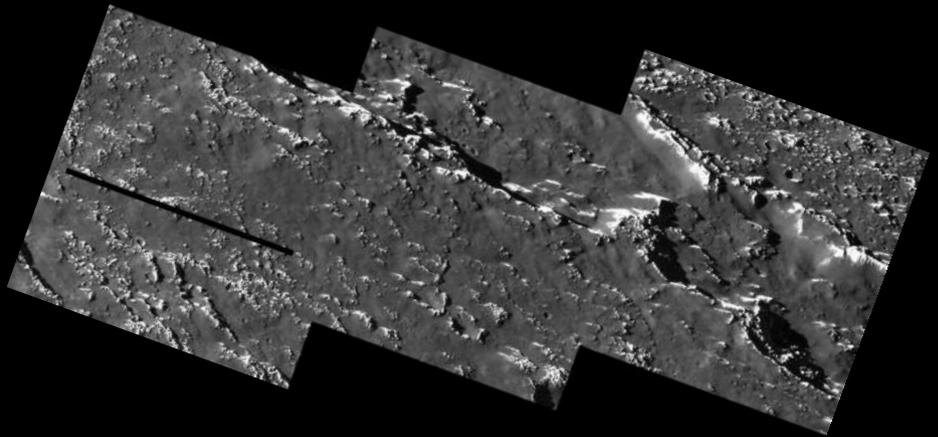
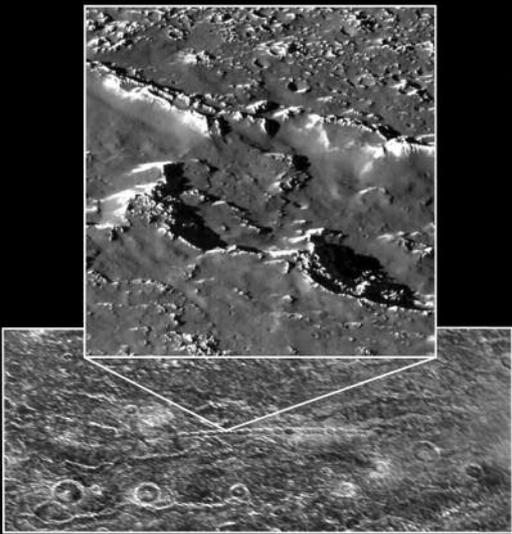


Jupiter IV (Callisto)

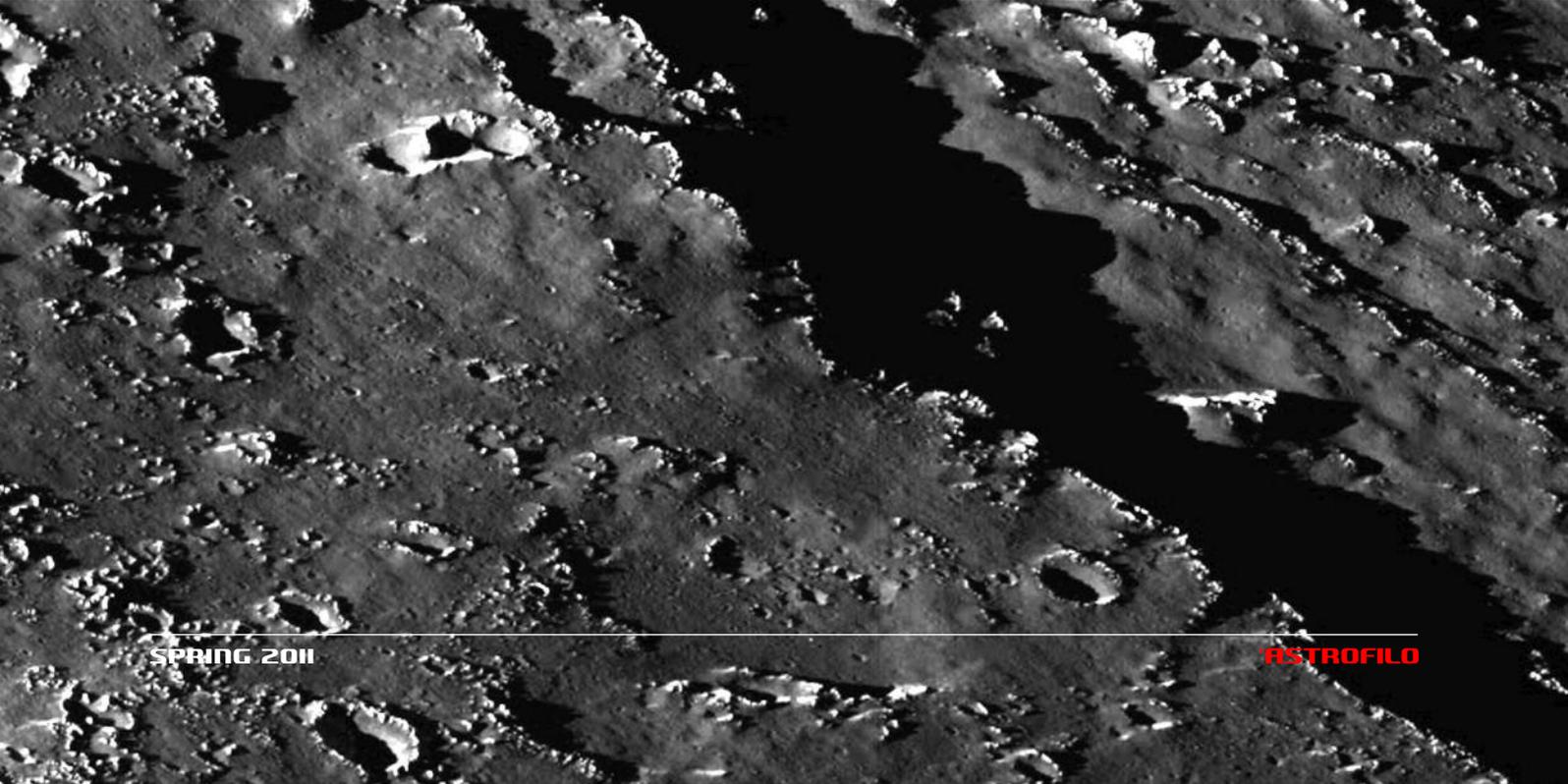
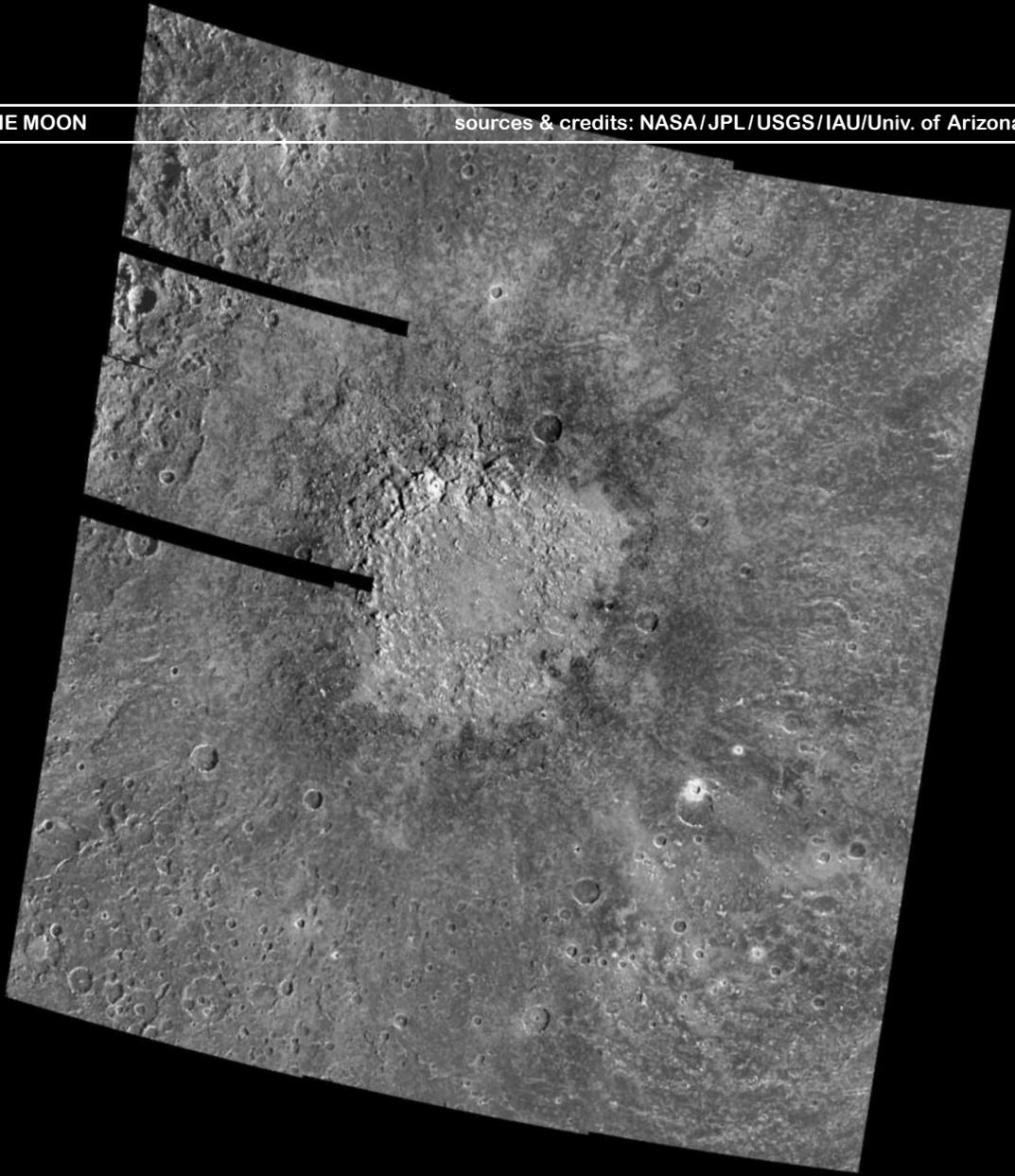
Beautiful daughter of Lycaon, she was seduced by Jupiter, who changed her into a bear to protect her from Hera's jealousy. Discovery: January 7, 1610 - Padua - Galileo.



20

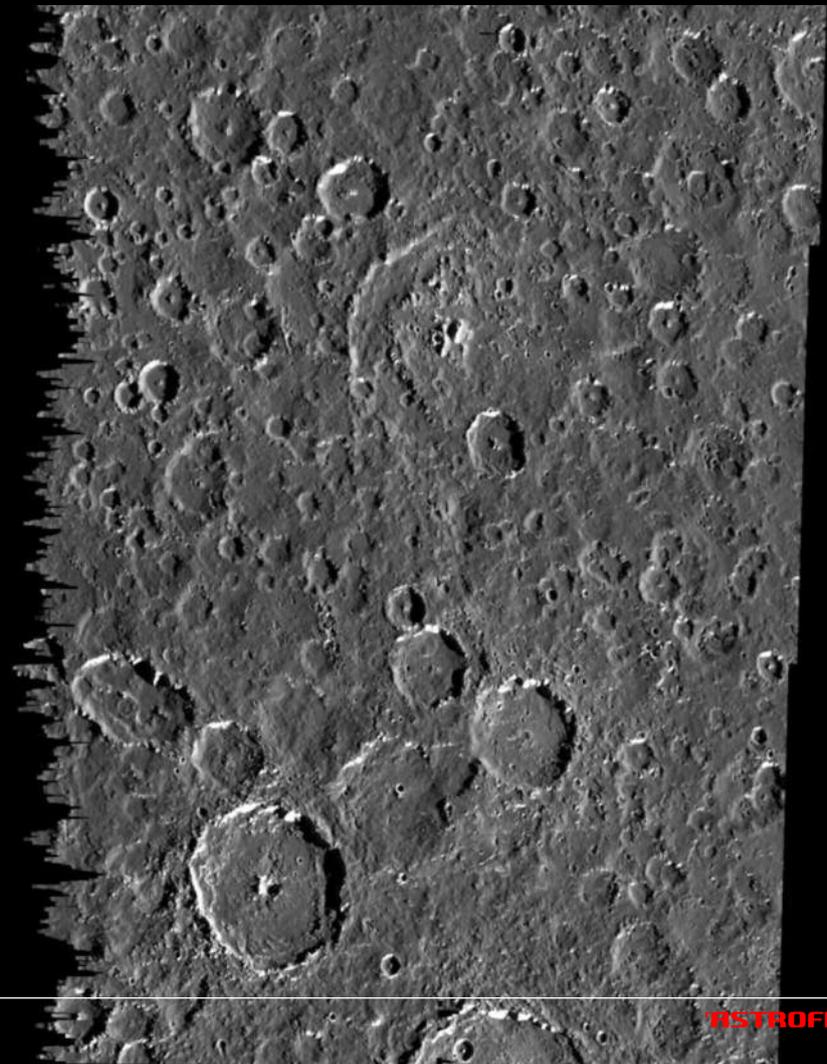
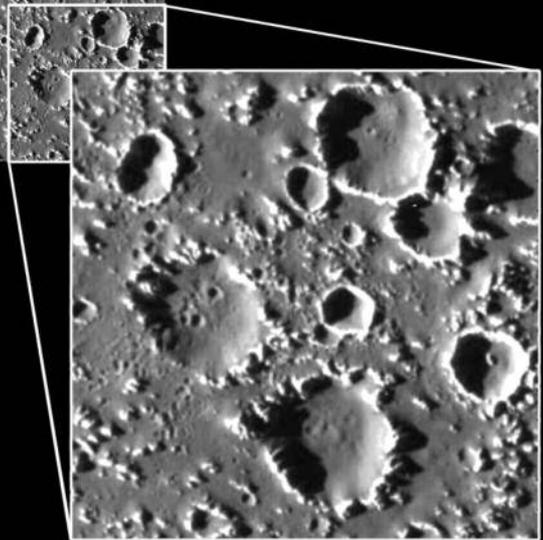
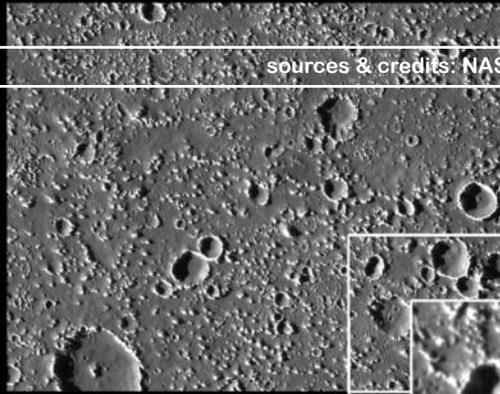


**c
a
l
l
i
s
t
o**

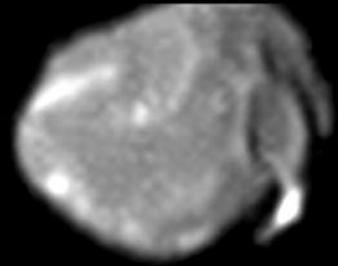
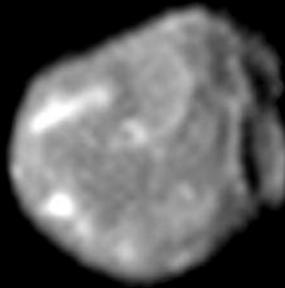
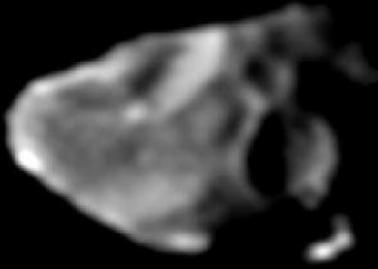


22





a
m
a
l
t
h
e
a



Jupiter V (Amalthea)

A naiad who nursed the new-born Jupiter. She had as a favorite animal a goat which is said by some authors to have nourished Jupiter. The name was suggested by Flammarion.

Discovery: September 9, 1892
- Mt. Hamilton - E.E. Barnard.

Jupiter VI (Himalia)

A Rhodian nymph who bore three sons of Zeus.

Discovery: December 4, 1904
Mt. Hamilton - C.D. Perrine.

Jupiter VII (Elara)

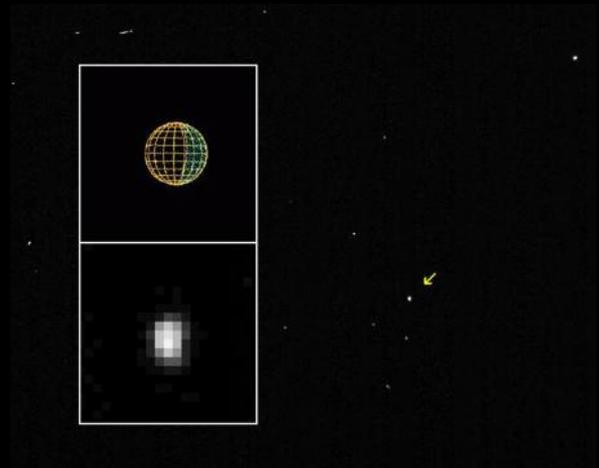
Daughter of King Orchomenus, a paramour of Zeus, and by him the mother of the giant Tityus.

Discovery: January 3, 1905 -
Mt. Hamilton - C.D. Perrine.

Jupiter VIII (Pasiphae)

Wife of Minos, king of Crete. Zeus made approaches to her as a bull (taurus). She then gave birth to the Minotaur.

(Spelling changed from Pasiphaë to Pasiphae July 2009.)
Discovery: January 27, 1908 -
Greenwich - P.J. Melotte.



h
i
m
a
l
i
a

e
l
a
r
a



Jupiter IX (Sinope)

Daughter of the river god Asopus. Zeus desired to make love to her. Instead of this he granted perpetual virginity, after he had been deceived by his own promises. (In the same way, she also fooled Apollo.)

Discovery: July 21, 1914 - Mt. Hamilton - S.B. Nicholson.

Jupiter X (Lysithea)

Daughter of Kadmos, also named Semele, mother of Dionysos by Zeus. According to others, she was the daughter of Evenus and mother of Helenus by Jupiter.

Discovery: July 6, 1938 - Mt. Wilson - S.B. Nicholson.

Jupiter XI (Carme)

A nymph and attendant of Artemis; mother, by Zeus, of Britomartis.

Discovery: July 30, 1938 - Mt. Wilson - S.B. Nicholson.

Jupiter XII (Ananke)

Goddess of fate and necessity, mother of Adrastea by Zeus.

Discovery: September 28, 1951 - Mt. Wilson - S.B. Nicholson.

t
h
e
b
e**Jupiter XIII (Leda)**

Seduced by Zeus in the form of a swan, she was the mother of Castor, Pollux and Helen.

Discovery: September 11, 1974 - Palomar - C.T. Kowal.

Jupiter XIV (Thebe)

An Egyptian king's daughter, granddaughter of Io, mother of Aigyptos by Zeus. The Egyptian city of Thebes was named after her.

Discovery: March 5, 1979 - Voyager 1 - Voyager Science Team.

adrastea

**Jupiter XV (Adrastea)**

A nymph of Crete to whose care Rhea entrusted the infant Zeus.

Discovery: July, 1979 - Voyager 2 - Voyager Science Team.

Jupiter XVI (Metis)

First wife of Zeus. He swallowed her when she became pregnant; Athena was subsequently born from the forehead of Zeus.

Discovery: March 4, 1979 - Voyager 1 - Voyager Science Team.

m
e
t
i
s**Jupiter XVII (Callirrhoe)**

Daughter of the river god Achelous and stepdaughter of Jupiter.

Discovery: October 19, 1999 - Spacewatch - J.V. Scotti, T.B. Spahr, R.S. McMillan, J.A. Larson, J. Montani, A.E. Gleason, and T. Gehrels.

Jupiter XVIII (Themisto)

Daughter of the Arcadian river god Inachus, mother of Ister by Zeus.

Discovery: September 30, 1975, rediscovered November 21, 2000 - Palomar, re-discovered at Mauna Kea - C.T. Kowal and E. Roemer (1975), and S.S. Sheppard, D.C. Jewitt, Y.R. Fernandez, G. Magnier, M. Holman, B.G. Marsden, and G.V. Williams (2000).

Jupiter XIX (Megaclite)

Daughter of Macareus, who with Zeus gave birth to Thebe and Locrus.

Discovery: November 25, 2000 - Mauna Kea - S.S. Sheppard, D.C. Jewitt, Y.R. Fernandez, and G. Magnier.

Jupiter XX (Taygete)

Daughter of Atlas, one of the Pleiades, mother of Lakedaimon by Zeus.

Discovery: November 25, 2000 - Mauna Kea - S.S. Sheppard, D.C. Jewitt, Y.R. Fernandez, and G. Magnier.

Jupiter XXI (Chaldene)

Bore the son Solymos with Zeus.

Discovery: November 26, 2000 - Mauna Kea - S.S. Sheppard, D.C. Jewitt, Y.R. Fernandez, and G. Magnier.

Jupiter XXII (Harpalyke)

Daughter and wife of Clymenus. In revenge for this incestuous relationship, she killed the son she bore him, cooked the corpse, and served it to Clymenus.

She was transformed into the night bird called Chalkis, and Clymenus hanged himself.

Some say that she was transformed into that bird because she had intercourse with Zeus.

Discovery: November 23, 2000 - Mauna Kea - S.S. Sheppard, D.C. Jewitt, Y.R. Fernandez, and G. Magnier.

Jupiter XXIII (Kalyke)

Nymph who bore the handsome son Endymion with Zeus.

Discovery: November 23, 2000 - Mauna Kea - S.S. Sheppard, D.C. Jewitt, Y.R. Fernandez, and G. Magnier.

Jupiter XXIV (Iocaste)

Wife of Laius, King of Thebes, and mother of Oedipus. After Laius was killed, Iocaste unknowingly married her own son Oedipus.

When she learned that her husband was her son, she killed herself. Some say she was the mother of Agamedes by Jupiter.

Discovery: November 23, 2000 - Mauna Kea - S.S. Sheppard, D.C. Jewitt, Y.R. Fernandez, and G. Magnier.

Jupiter XXV (Erinome)

Daughter of Celes, compelled by Venus to fall in love with

Jupiter.

Discovery: November 23, 2000 - Mauna Kea - S.S. Sheppard, D.C. Jewitt, Y.R. Fernandez, and G. Magnier.

Jupiter XXVI (Isonoe)

A Danaid, bore with Zeus the son Orchomenos.

Discovery: November 23, 2000 - Mauna Kea - S.S. Sheppard, D.C. Jewitt, Y.R. Fernandez, and G. Magnier.

Jupiter XXVII (Praxidike)

Goddess of punishment, mother of Klesios by Zeus.

Discovery: November 23, 2000 - Mauna Kea - S.S. Sheppard, D.C. Jewitt, Y.R. Fernandez, and G. Magnier.

Jupiter XXVIII (Autonoe)

Mother of the Graces by Jupiter according to some authors.

Discovery: December 10, 2001 - Mauna Kea - S.S. Sheppard, D.C. Jewitt and J. Kleyna.

Jupiter XXIX (Thyone)

Semele, mother of Dionysos by Zeus. She received the name of Thyone in Hades by Dionysos before he ascended up with her from there to heaven.

Discovery: December 11, 2001 - Mauna Kea - S.S. Sheppard, D.C. Jewitt and J. Kleyna.

Jupiter XXX (Hermippe)

Consort of Zeus and mother of Orchomenos by him.

Discovery: December 9, 2001

Mauna Kea - S.S. Sheppard,
D.C. Jewitt and J. Kleyna.

Jupiter XXXI (Aitne)

A Sicilian nymph, conquest of Zeus.

Discovery: December 9, 2001
Mauna Kea - S.S. Sheppard,
D.C. Jewitt and J. Kleyna.

Jupiter XXXII (Eurydome)

Mother of the Graces by Zeus, according to some authors. (Source: Cornutus: Theologiae Graecae compendium 15.)

Discovery: December 9, 2001
Mauna Kea - S.S. Sheppard,
D.C. Jewitt and J. Kleyna.

Jupiter XXXIII (Euanthe)

The mother of the Graces by Zeus, according to some authors.

Discovery: December 11, 2001
Mauna Kea - S.S. Sheppard,
D.C. Jewitt and J. Kleyna.

Jupiter XXXIV (Euporie)

One of the Horae (seasons), a daughter of Jupiter and Themis.

Discovery: December 11, 2001
Mauna Kea - S.S. Sheppard,
D.C. Jewitt and J. Kleyna.

Jupiter XXXV (Orthosie)

One of the Horae, a daughter of Jupiter and Themis.

Discovery: December 11, 2001 - Mauna Kea - S.S. Sheppard, D.C. Jewitt and J. Kleyna.

Jupiter XXXVI (Sponde)

One of the Horae daughter of Jupiter.

Discovery: December 9, 2001
Mauna Kea - S.S. Sheppard,
D.C. Jewitt and J. Kleyna.

Jupiter XXXVII (Kale)

One of the Graces, a daughter of Zeus, wife of Hephaistos.

Discovery: December 9, 2001
Mauna Kea - S.S. Sheppard,
D.C. Jewitt and J. Kleyna.

Jupiter XXXVIII (Pasithee)

One of the Graces, a daughter of Zeus.

Discovery: December 11, 2001 - Mauna Kea - S.S. Sheppard, D.C. Jewitt and J. Kleyna.

Jupiter XXXIX (Hegemone)

One of the Graces, a daughter of Zeus.

Discovery: February 8, 2003 - Mauna Kea - S.S. Sheppard.

Jupiter XL (Mneme)

One of the Muses, a daughter of Zeus. Discovery: February 9, 2003 - Mauna Kea - B. Gladman and L. Allen.

Jupiter XLI (Aoede)

One of the Muses, a daughter of Zeus.

Discovery: February 8, 2003 - Mauna Kea - S.S. Sheppard.

Jupiter XLII (Thelxinoe)

One of the Muses, a daughter of Zeus.

Discovery: February 9, 2003 - Mauna Kea - S.S. Sheppard.

Jupiter XLIII (Arche)

One of the Muses, a daughter of Zeus.

Discovery: October 31, 2002 - Mauna Kea - S.S. Sheppard.

Jupiter XLIV (Kallichore)

One of the Muses, a daughter of Zeus.

Discovery: February 6, 2003 - Mauna Kea - S.S. Sheppard.

Jupiter XLV (Helike)

One of the Muses, a daughter of Zeus.

Discovery: February 6, 2003 - Mauna Kea - S.S. Sheppard.

Jupiter XLVI (Carpo)

One of the Horae, a daughter of Zeus.

Discovery: February 26, 2003
Mauna Kea - S.S. Sheppard.

Jupiter XLVII (Eukelade)

One of the Muses, a daughter of Zeus.

Discovery: February 5, 2003 - Mauna Kea - S.S. Sheppard.

Jupiter XLVIII (Cyllene)

Daughter of Zeus, a nymph.

Discovery: February 9, 2003 - Mauna Kea - S.S. Sheppard.

Jupiter XLIX (Kore)

Daughter of Zeus and Demeter, also known as Persephone.

Discovery: February 8, 2003 - Mauna Kea - S. Sheppard, D.C. Jewitt, J. Kleyna.

Jupiter L (Herse)

Daughter of Zeus and divine moon (Selene).

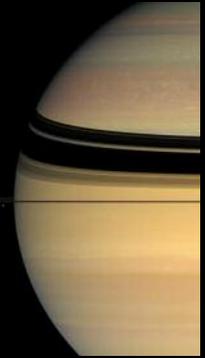
Discovery: February 27, 2003 - Mauna Kea - B. Gladman, J. Kavelaars, J.-M. Petit, and L. Allen.

Numeral	Name	Mean radius (km)	Semi-major axis (km)	Sidereal period (d) (r = retrograde)	Discovery date	Discovered by	Notes
J I	Io	1818.1 ± 0.1	421,800	1.769	1610	Galileo	Main group moon (Galilean)
J II	Europa	1560.7 ± 0.7	671,100	3.551	1610	Galileo	Main group moon (Galilean)
J III	Ganymede	2634.1 ± 0.3	1,070,400	7.155	1610	Galileo	Main group moon (Galilean)
J IV	Callisto	2408.4 ± 0.3	1,882,700	16.69	1610	Galileo	Main group moon (Galilean)
J V	Amalthea	83.45 ± 2.4	181,400	0.498	1892	Barnard	Inner moon (Amalthea)
J VI	Himalia	85	11,461,000	250.56	1904	Perrine	Prograde irregular (Himalia)
J VII	Elara	43	11,741,000	259.64	1905	Perrine	Prograde irregular (Himalia)
J VIII	Pasiphaë	30	23,624,000	743.63 (r)	1908	Melotte	Retrograde irregular (Pasiphae)
J IX	Sinope	19	23,939,000	758.90 (r)	1914	Nicholson	Retrograde irregular (Pasiphae)
J X	Lysithea	18	11,717,000	259.20	1938	Nicholson	Prograde irregular (Himalia)
J XI	Carme	23	23,404,000	734.17 (r)	1938	Nicholson	Retrograde irregular (Carme)
J XII	Ananke	14	21,276,000	629.77 (r)	1951	Nicholson	Retrograde irregular (Ananke)
J XIII	Leda	10	11,165,000	240.92	1974	Kowal	Prograde irregular (Himalia)
J XIV	Thebe	49.3 ± 2.0	221,900	0.675	1980	Synnott (Voyager 1)	Inner moon (Amalthea)
J XV	Adrastea	8.2 ± 2.0	129,000	0.298	1979	Jewitt, Danielson (Voyager 1)	Inner moon (Amalthea)
J XVI	Metis	21.5 ± 2.0	128,000	0.295	1979	Synnott (Voyager 1)	Inner moon (Amalthea)
J XVII	Callirrhoe	4.3	24,103,000	758.77 (r)	2000	Scotti, Spahr, McMillan, Larsen, Montani, Gleason, Gehrels	Retrograde irregular (Pasiphae)
J XVIII	Themisto	4.0	7,284,000	130.02	1975/2000	Kowal and Roemer (1975); Sheppard, Jewitt, Fernández, Magnier (2000)	Prograde irregular
J XIX	Megaclite	2.7	23,493,000	752.86 (r)	2001	Sheppard, Jewitt, Fernández, Magnier, Dahm, Evans	Retrograde irregular (Pasiphae)
J XX	Taygete	2.5	23,280,000	732.41 (r)	2001	Sheppard, Jewitt, Fernández, Magnier, Dahm, Evans	Retrograde irregular (Carme)
J XXI	Chaldene	1.9	23,100,000	723.72 (r)	2001	Sheppard, Jewitt, Fernández, Magnier, Dahm, Evans	Retrograde irregular (Carme)
J XXII	Harpalyke	2.2	20,858,000	623.32 (r)	2001	Sheppard, Jewitt, Fernández, Magnier, Dahm, Evans	Retrograde irregular (Ananke)
J XXIII	Kalyke	2.6	23,483,000	742.06 (r)	2001	Sheppard, Jewitt, Fernández, Magnier, Dahm, Evans	Retrograde irregular (Carme)
J XXIV	Iocaste	2.6	21,060,000	631.60 (r)	2001	Sheppard, Jewitt, Fernández, Magnier, Dahm, Evans	Retrograde irregular (Ananke)
J XXV	Erinome	1.6	23,196,000	728.46 (r)	2001	Sheppard, Jewitt, Fernández, Magnier, Dahm, Evans	Retrograde irregular (Carme)
J XXVI	Isonoe	1.9	23,155,000	726.23 (r)	2001	Sheppard, Jewitt, Fernández, Magnier, Dahm, Evans	Retrograde irregular (Carme)
J XXVII	Praxidike	3.4	20,908,000	625.39 (r)	2001	Sheppard, Jewitt, Fernández, Magnier, Dahm, Evans	Retrograde irregular (Ananke)
J XXVIII	Autonoe	2.0	24,046,000	760.95 (r)	2002	Sheppard, Jewitt, Kleyna	Retrograde irregular (Pasiphae)
J XXIX	Thyone	2.0	20,939,000	627.21 (r)	2002	Sheppard, Jewitt, Kleyna	Retrograde irregular (Ananke)
J XXX	Hermippe	2.0	21,131,000	633.9 (r)	2002	Sheppard, Jewitt, Kleyna	Retrograde irregular (Ananke?)

JXXXI	Aitne	1.5	23,229,000	730.18 (r)	2002	Sheppard, Jewitt, Kleyna	Retrograde irregular (Carme)
JXXXII	Eurydome	1.5	22,865,000	717.33 (r)	2002	Sheppard, Jewitt, Kleyna	Retrograde irregular (Pasiphae?)
JXXXIII	Euanthe	1.5	20,797,000	620.49 (r)	2002	Sheppard, Jewitt, Kleyna	Retrograde irregular (Ananke)
JXXXIV	Euporie	1.0	19,304,000	550.74 (r)	2002	Sheppard, Jewitt, Kleyna	Retrograde irregular (Ananke)
JXXXV	Orthosie	1.0	20,720,000	622.56 (r)	2002	Sheppard, Jewitt, Kleyna	Retrograde irregular (Ananke)
JXXXVI	Sponde	1.0	23,487,000	748.34 (r)	2002	Sheppard, Jewitt, Kleyna	Retrograde irregular (Pasiphae)
JXXXVII	Kale	1.0	23,217,000	729.47 (r)	2002	Sheppard, Jewitt, Kleyna	Retrograde irregular (Carme)
JXXXVIII	Pasithee	1.0	23,004,000	719.44 (r)	2002	Sheppard, Jewitt, Kleyna	Retrograde irregular (Carme)
JXXXIX	Hegemone	1.5	23,577,000	739.88 (r)	2003	Sheppard, Jewitt, Kleyna, Fernández	Retrograde irregular (Pasiphae)
JXL	Mneme	1.0	21,035,000	620.04 (r)	2003	Gladman, Allen	Retrograde irregular (Ananke)
JXLI	Aoede	2.0	23,980,000	761.50 (r)	2003	Sheppard, Jewitt, Kleyna, Fernández, Hsieh	Retrograde irregular (Pasiphae)
JXLII	Thelxinoe	1.0	21,164,000	628.09 (r)	2003	Sheppard, Jewitt, Kleyna, Gladman, Kavelaars, Petit, Allen	Retrograde irregular (Ananke)
JXLIII	Arche	1.5	23,355,000	731.95 (r)	2002	Sheppard, Meech, Hsieh, Tholen, Tonry	Retrograde irregular (Carme)
JXLIV	Kallichore	1.0	23,288,000	728.73 (r)	2003	Sheppard, Jewitt, Kleyna, Fernández	Retrograde irregular (Carme?)
JXLV	Helike	2.0	21,069,000	626.32 (r)	2003	Sheppard, Jewitt, Kleyna, Fernández, Hsieh	Retrograde irregular (Ananke)
JXLVI	Carpo	1.5	17,058,000	456.30	2003	Sheppard, Gladman, Kavelaars, Petit, Allen, Jewitt, Kleyna	Prograde irregular
JXLVII	Eukelade	2.0	23,328,000	730.47 (r)	2003	Sheppard, Jewitt, Kleyna, Fernández, Hsieh	Retrograde irregular (Carme)
JXLVIII	Cyllene	1.0	23,809,000	752 (r)	2003	Sheppard, Jewitt, Kleyna	Retrograde irregular (Pasiphae)
JXLIX	Kore	1.0	24,543,000	779.17 (r)	2003	Sheppard, Jewitt, Kleyna	Retrograde irregular (Pasiphae)
JL	Herse	1.0	22,983,000	714.51 (r)	2003	Gladman, Sheppard, Jewitt, Kleyna, Kavelaars, Petit, Allen	Retrograde irregular (Carme)
—	S/2000 J 11	2.0	12,555,000	287	2000	Sheppard, Jewitt, Fernández, Magnier, Evans	Prograde irregular
—	S/2003 J 2	1.0	28,455,000	981.55 (r)	2003	Sheppard, Jewitt, Kleyna, Fernández, Hsieh	Retrograde irregular
—	S/2003 J 3	1.0	20,224,000	583.88 (r)	2003	Sheppard, Jewitt, Kleyna, Fernández, Hsieh	Retrograde irregular (Ananke)
—	S/2003 J 4	1.0	23,933,000	755.26 (r)	2003	Sheppard, Jewitt, Kleyna, Fernández, Hsieh	Retrograde irregular (Pasiphae)
—	S/2003 J 5	2.0	23,498,000	738.74 (r)	2003	Sheppard, Jewitt, Kleyna, Fernández, Hsieh	Retrograde irregular (Carme)
—	S/2003 J 9	0.5	23,388,000	733.30 (r)	2003	Sheppard, Jewitt, Kleyna, Fernández	Retrograde irregular (Carme)
—	S/2003 J 10	1.0	23,044,000	716.25 (r)	2003	Sheppard, Jewitt, Kleyna, Fernández	Retrograde irregular (Pasiphae?)
—	S/2003 J 12	0.5	17,833,000	489.72 (r)	2003	Sheppard, Jewitt, Kleyna, Fernández	Retrograde irregular (Ananke)
—	S/2003 J 15	1.0	22,630,000	689.77 (r)	2003	Sheppard, Jewitt, Kleyna, Fernández	Retrograde irregular (Ananke?)
—	S/2003 J 16	1.0	20,956,000	616.33 (r)	2003	Gladman, Sheppard, Jewitt, Kleyna, Kavelaars, Petit, Allen	Retrograde irregular (Ananke)
—	S/2003 J 18	1.0	20,426,000	596.58 (r)	2003	Gladman, Sheppard, Jewitt, Kleyna, Kavelaars, Petit, Allen	Retrograde irregular (Ananke)
—	S/2003 J 19	1.0	23,535,000	740.43 (r)	2003	Gladman, Sheppard, Jewitt, Kleyna, Kavelaars, Petit, Allen	Retrograde irregular (Carme)
—	S/2003 J 23	1.0	23,566,000	732.45 (r)	2004	Sheppard, Jewitt, Kleyna, Fernández	Retrograde irregular (Pasiphae)

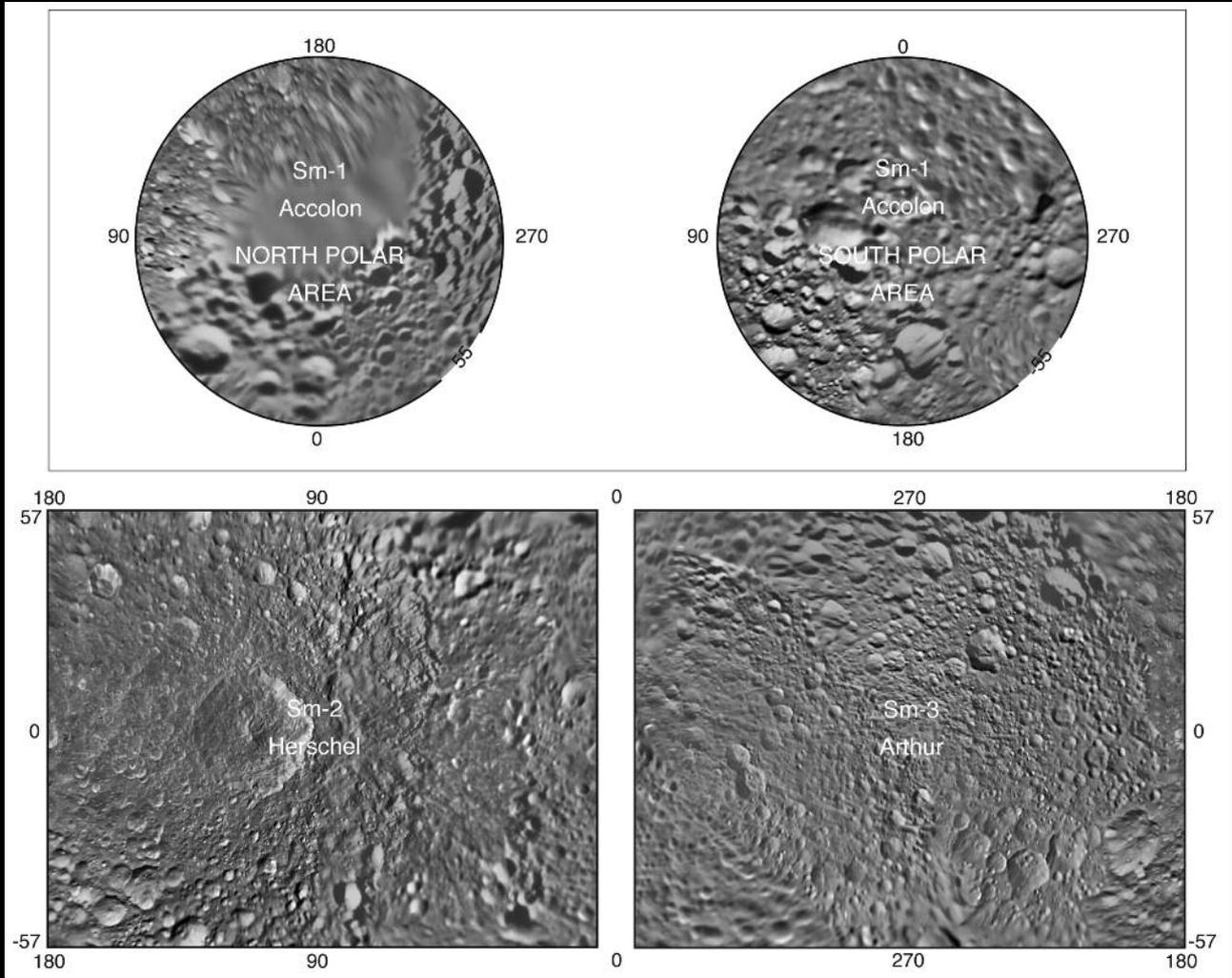
Saturnian System

Satellites in the saturnian system are named after Greco-Roman titans, descendants of the titans, the Roman god of the beginning, and giants from Greco-Roman and other mythologies. Gallic, Inuit and Norse names identify three different orbit inclination groups, where inclinations are measured with respect to the ecliptic, not Saturn's equator or orbit. Retrograde satellites (those with an inclination of 90 to 180 degrees) are named for Norse giants (except for Phoebe, which was discovered long ago and is the largest). Prograde satellites with an orbit inclination of around 36 degrees are named for Gallic giants, and prograde satellites with an inclination of around 48 degrees are named for Inuit giants and spirits.

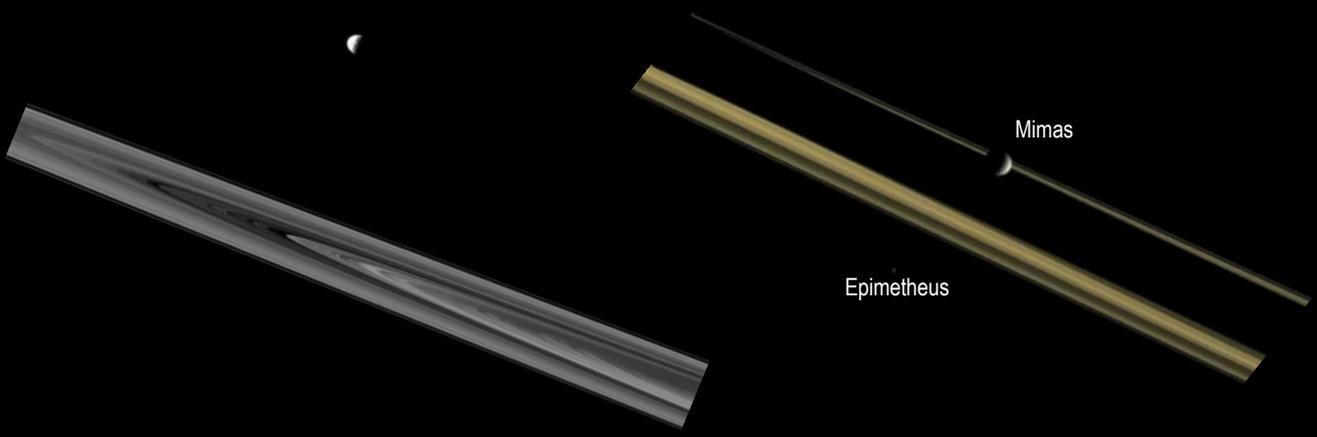


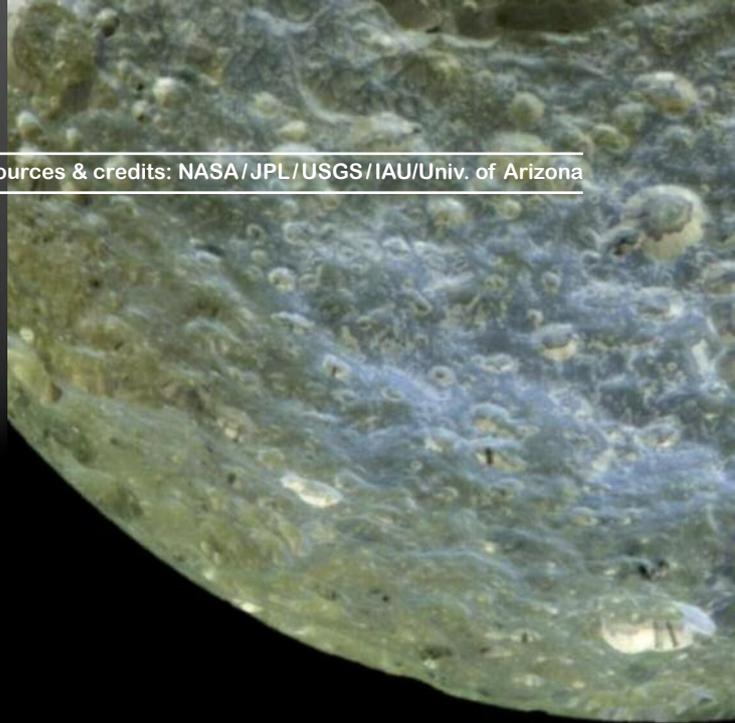
m
i
m
a
s





31



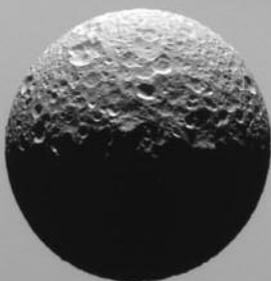


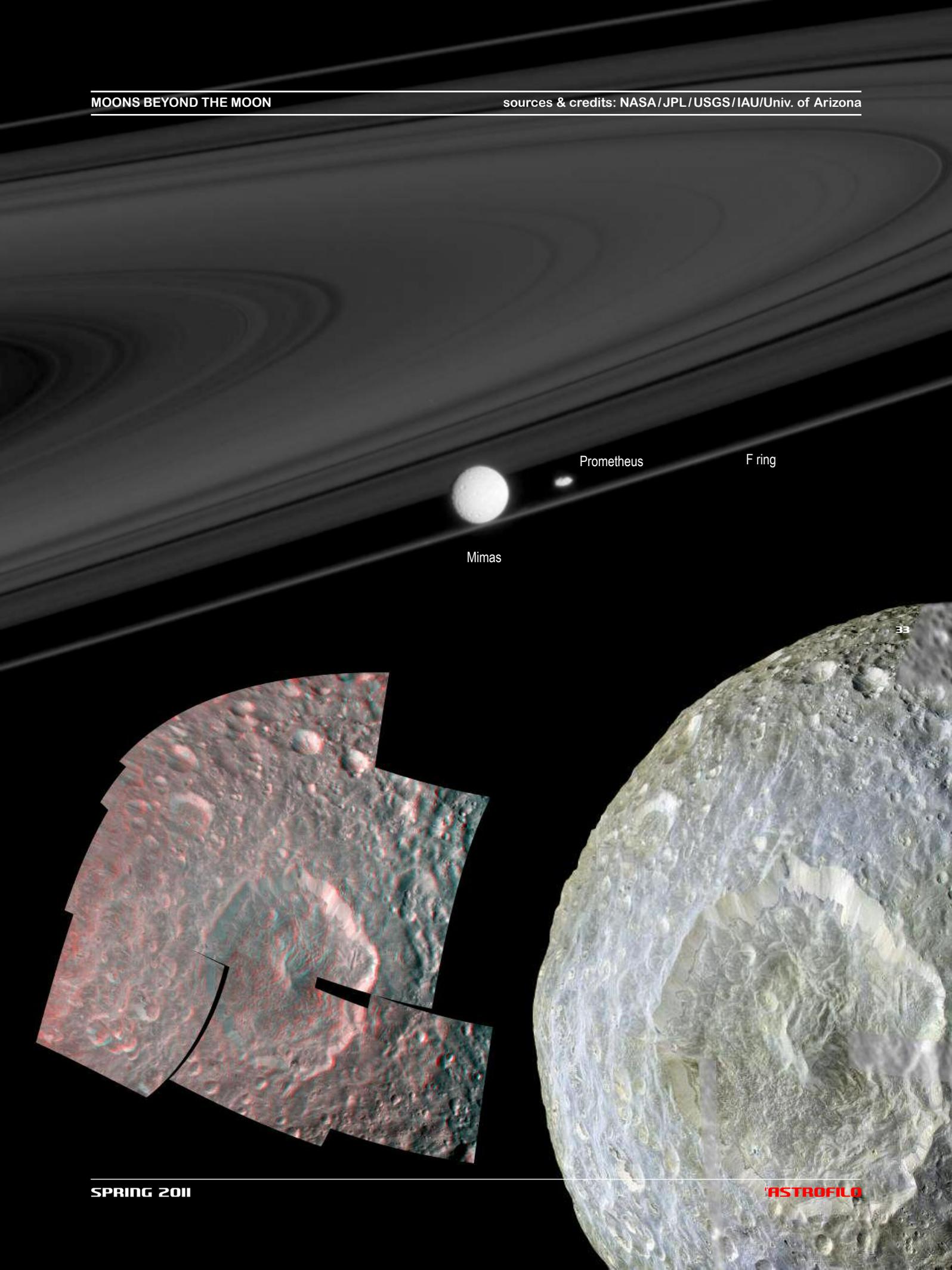
32

Saturn I (Mimas)

Named by Herschel's son John in the early 19th century after a giant felled by Hephaestus (or Ares) in the war between the Titans and Olympian gods.

Discovery: July 18, 1789 - Slough - W. Herschel.



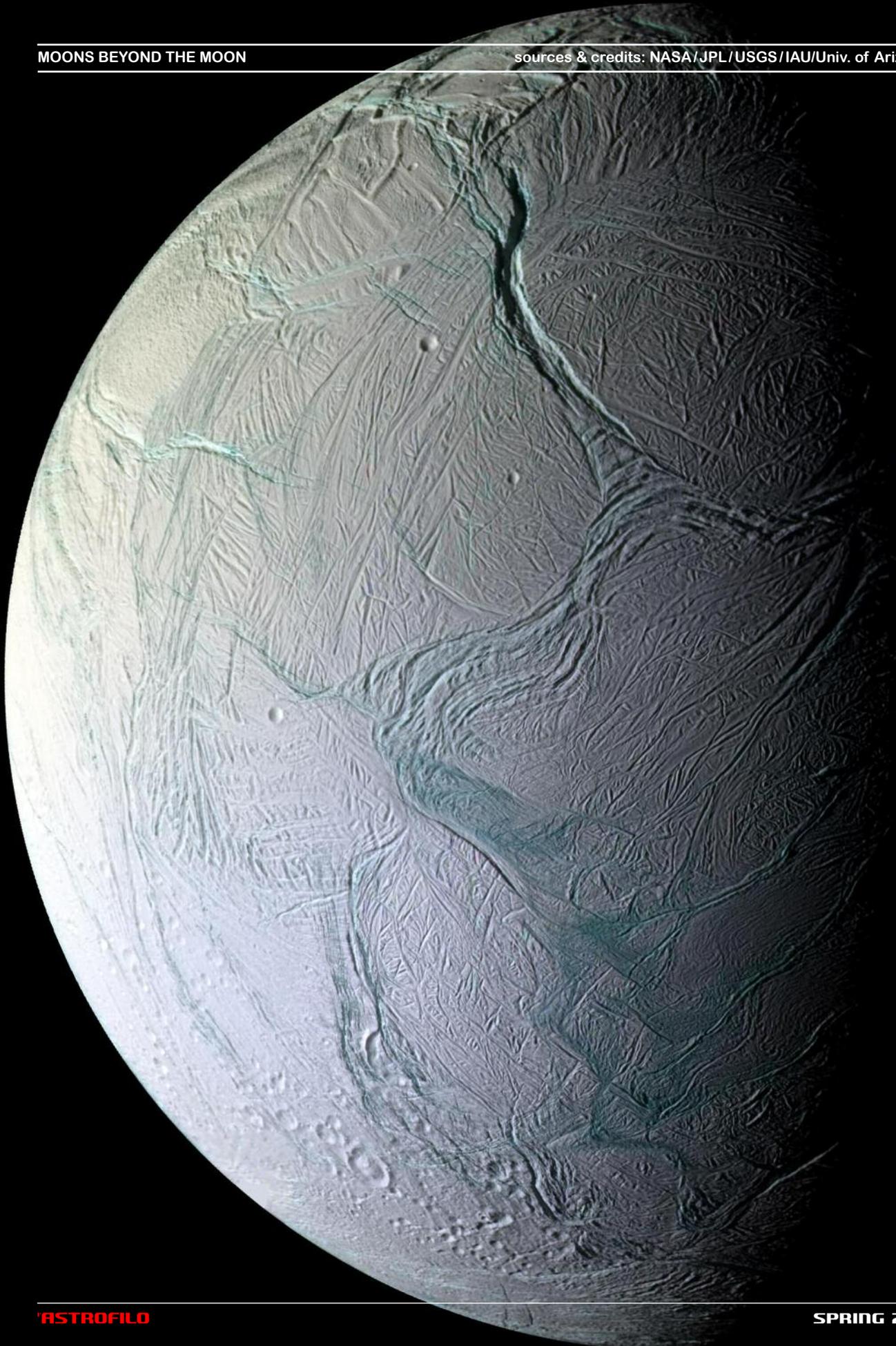


Mimas

Prometheus

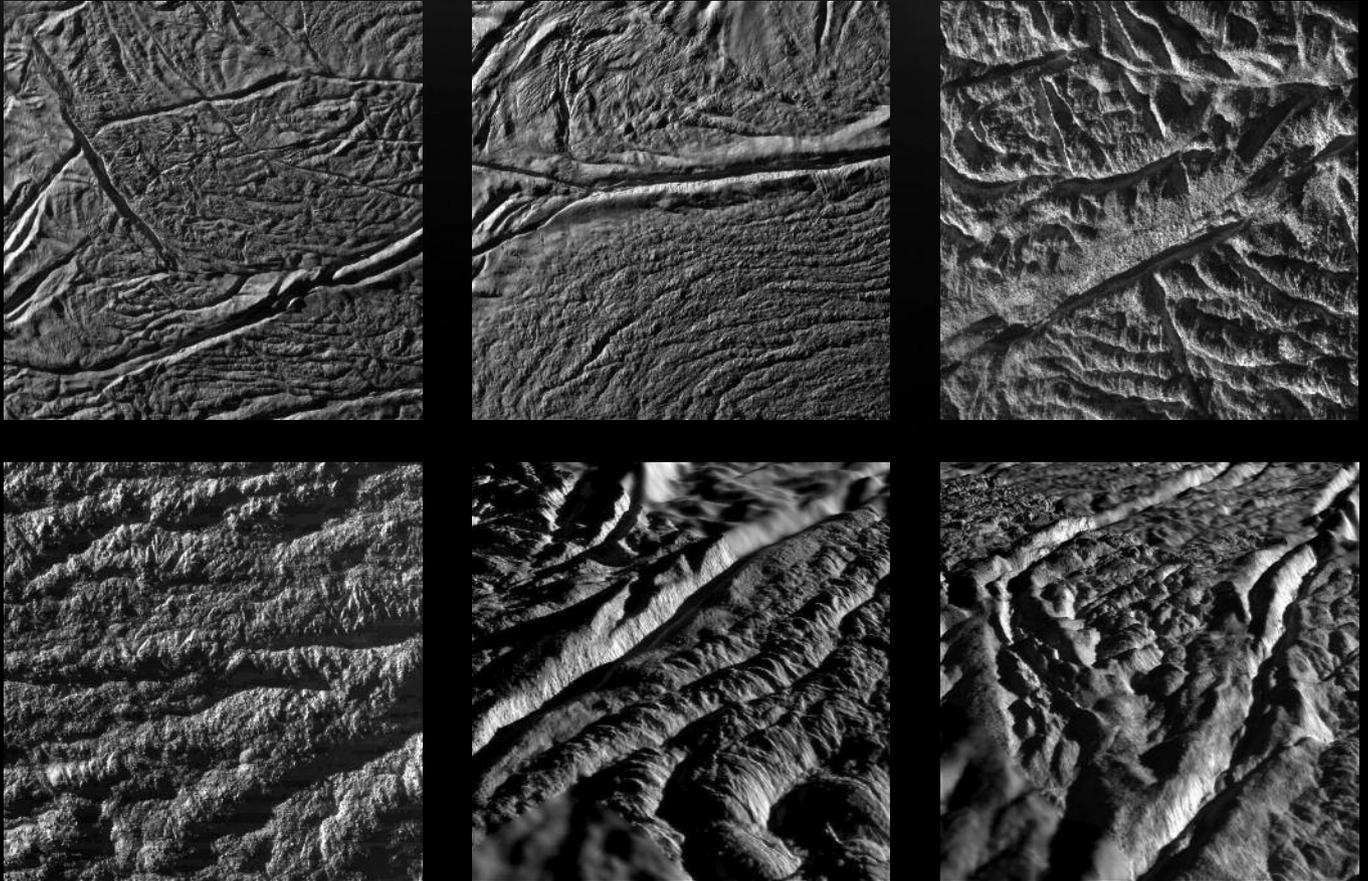
F ring

33



e
n
c
e
l
a
d
u
s

34



35

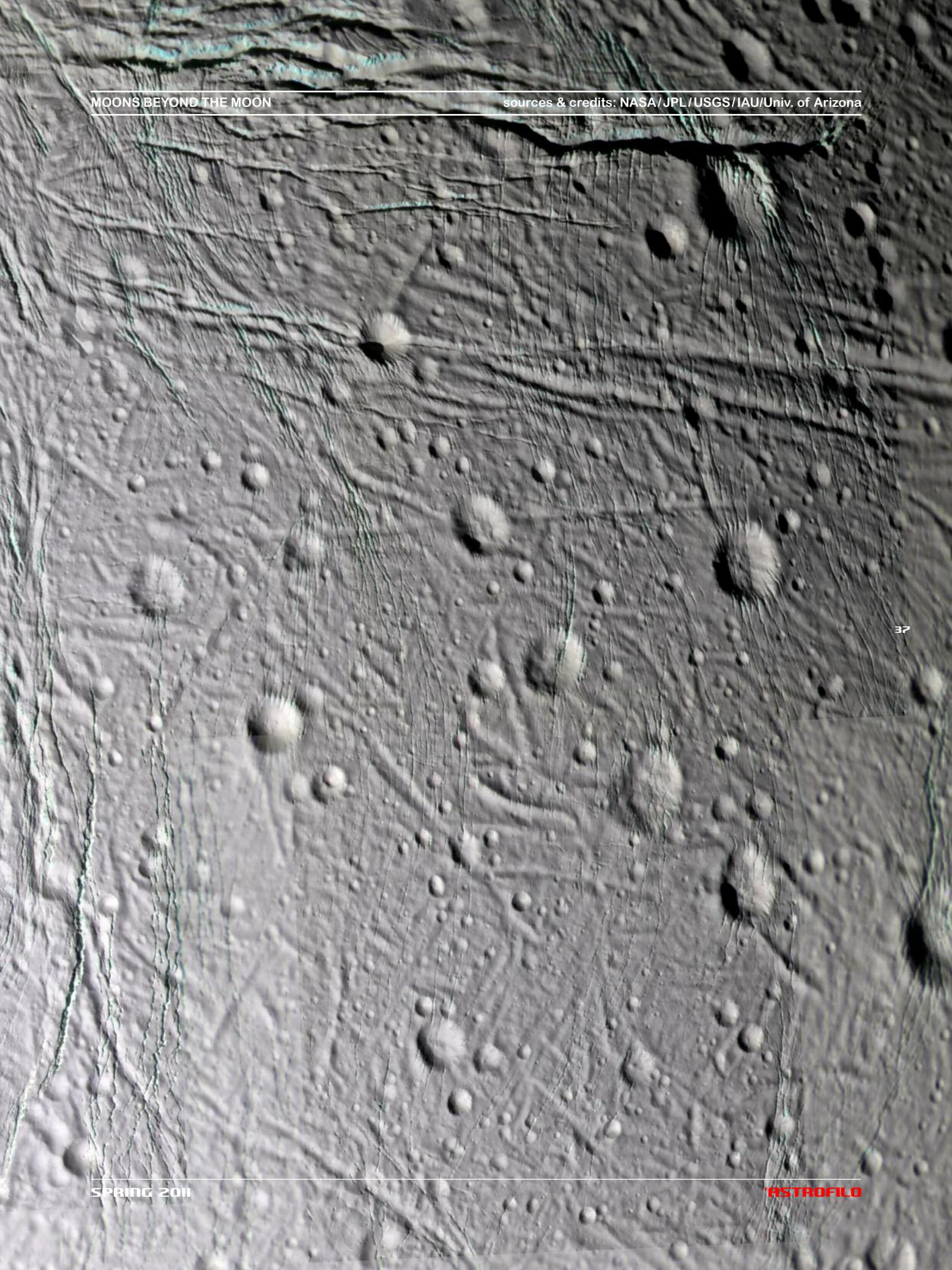
Saturn II (Enceladus)

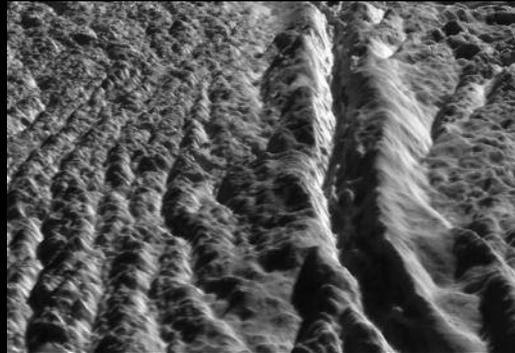
Named by Herschel's son John after the giant Enceladus. Enceladus was crushed by Athene in the battle between the Olympian gods and the Titans. Earth piled on top of him became the island of Sicily.

Discovery: August 28, 1789 - Slough - W. Herschel.

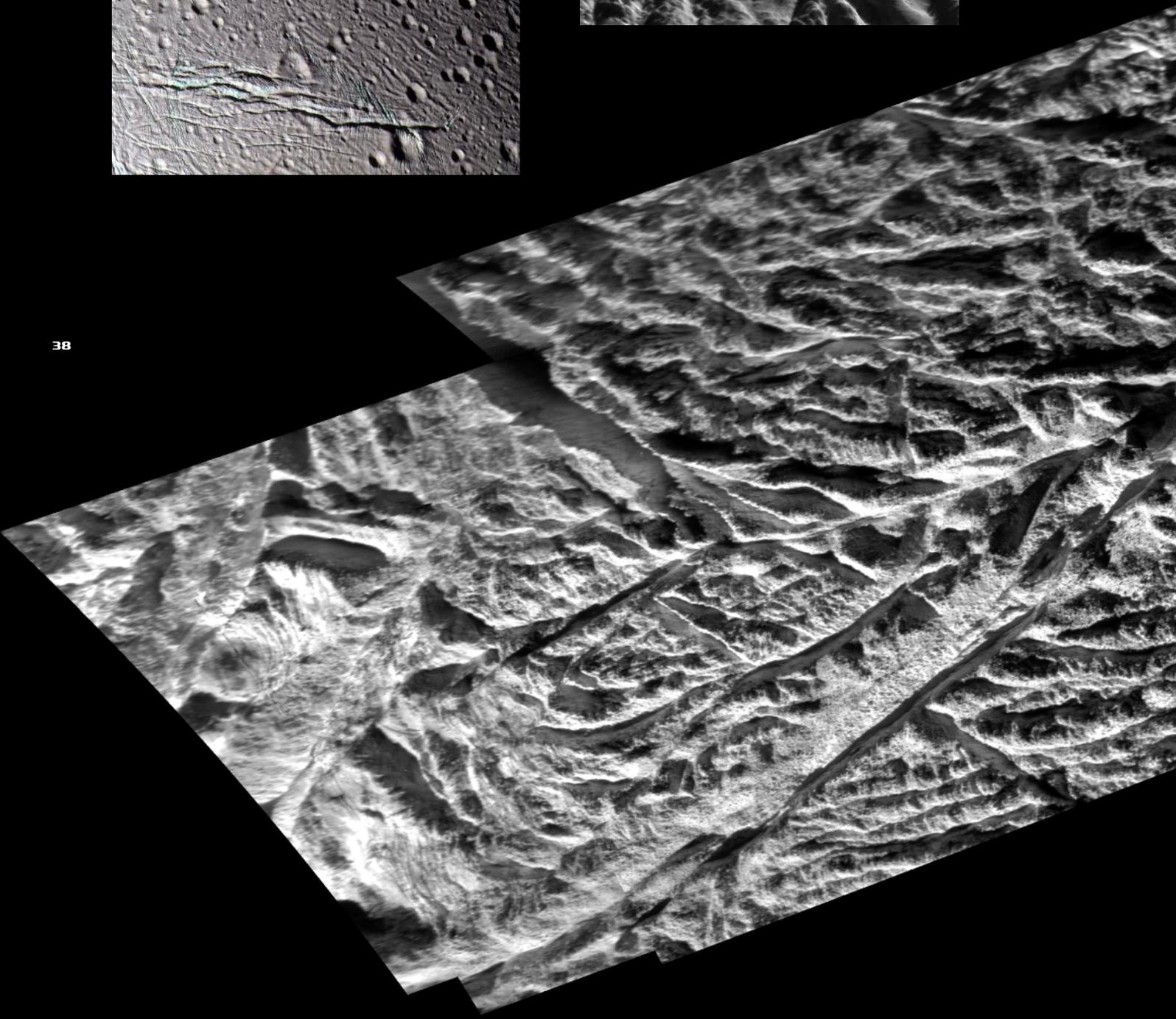


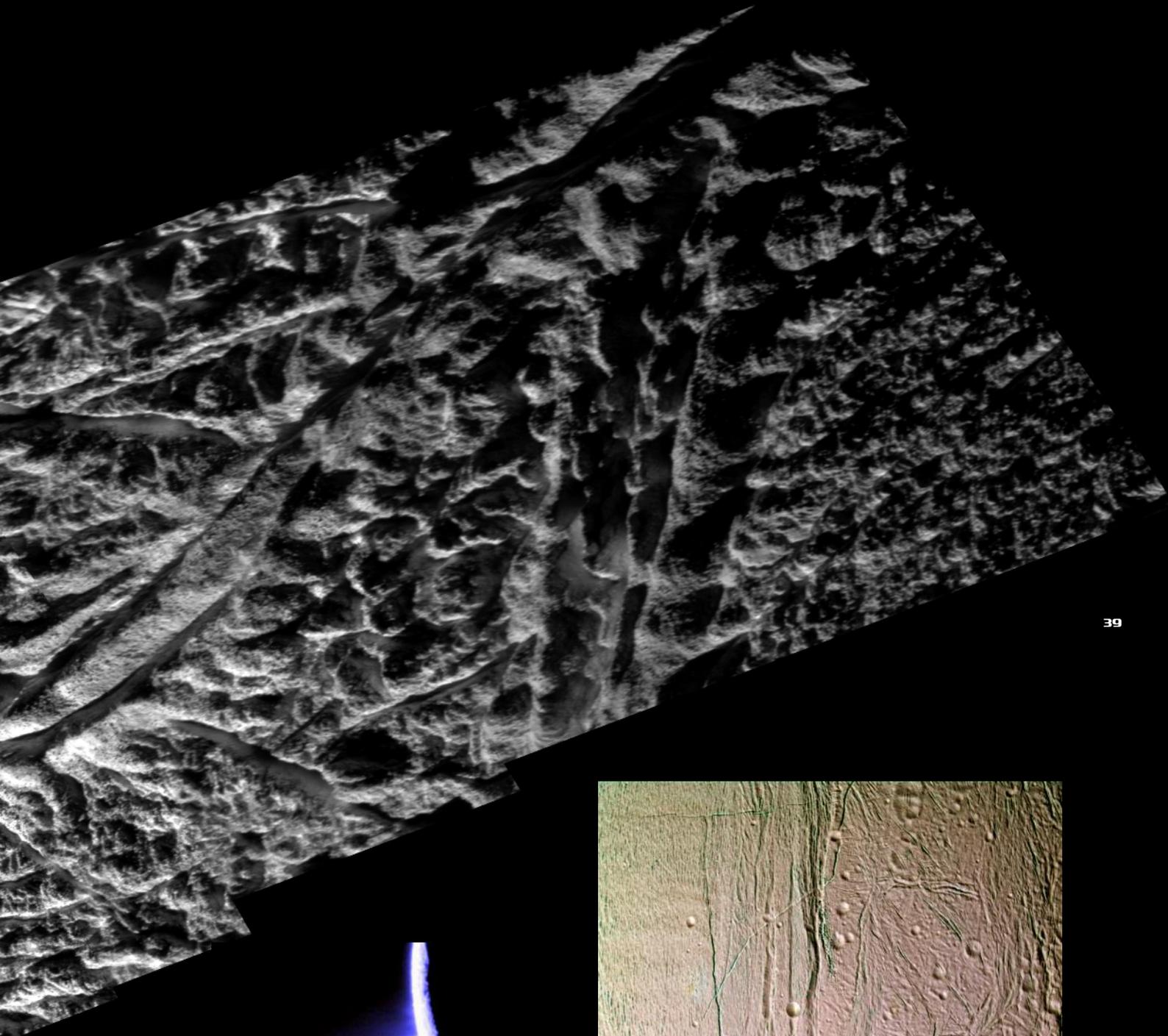




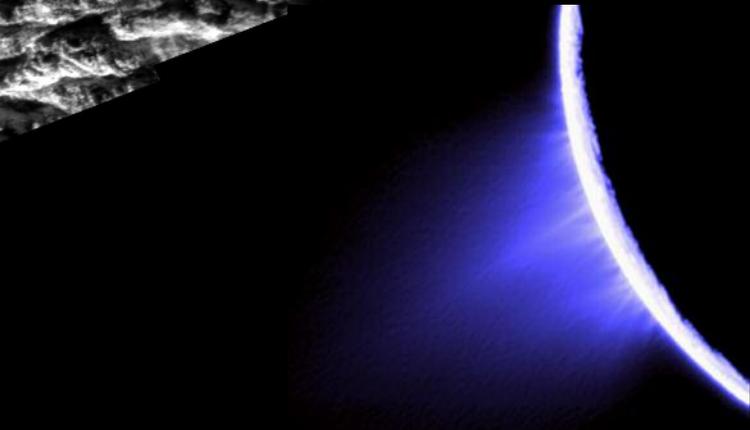


38



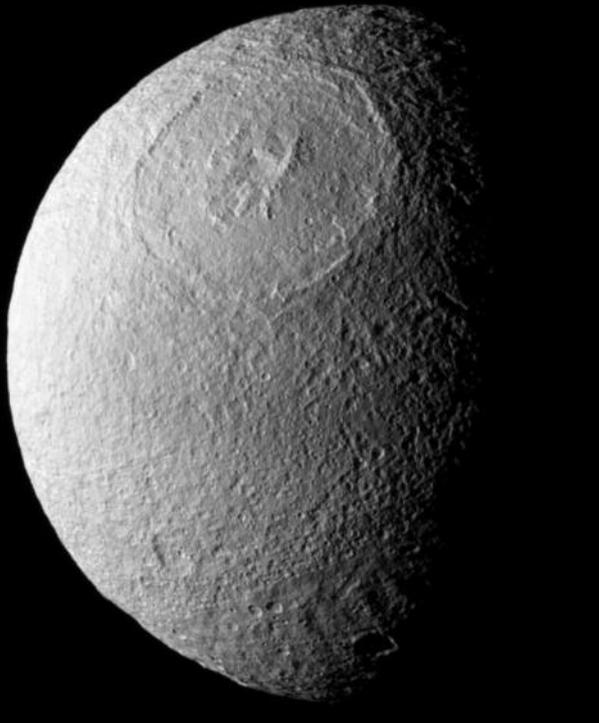
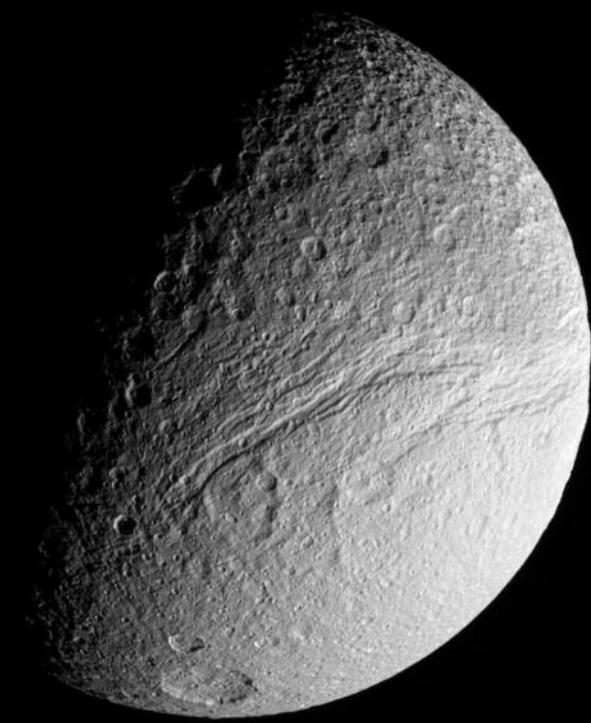
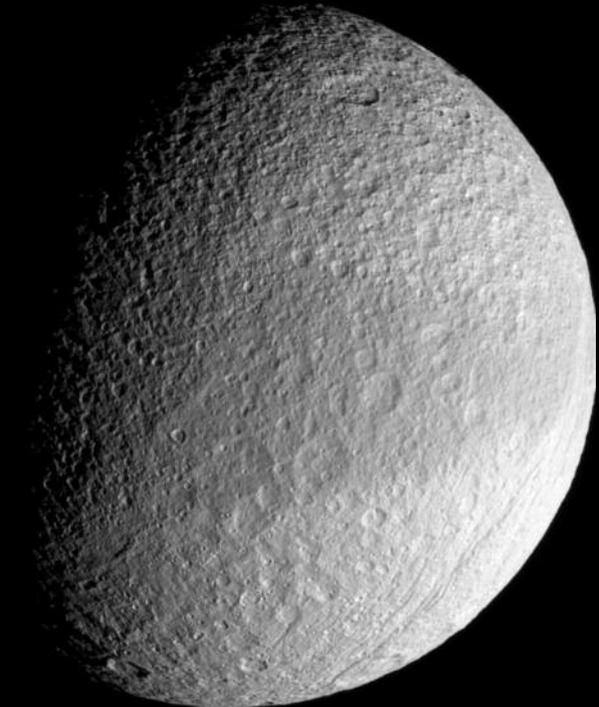
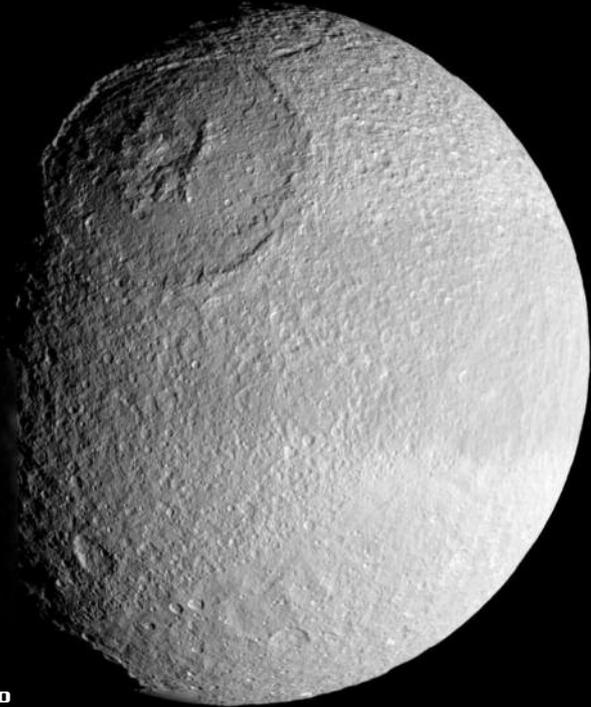


39



40

t
e
t
h
y
s

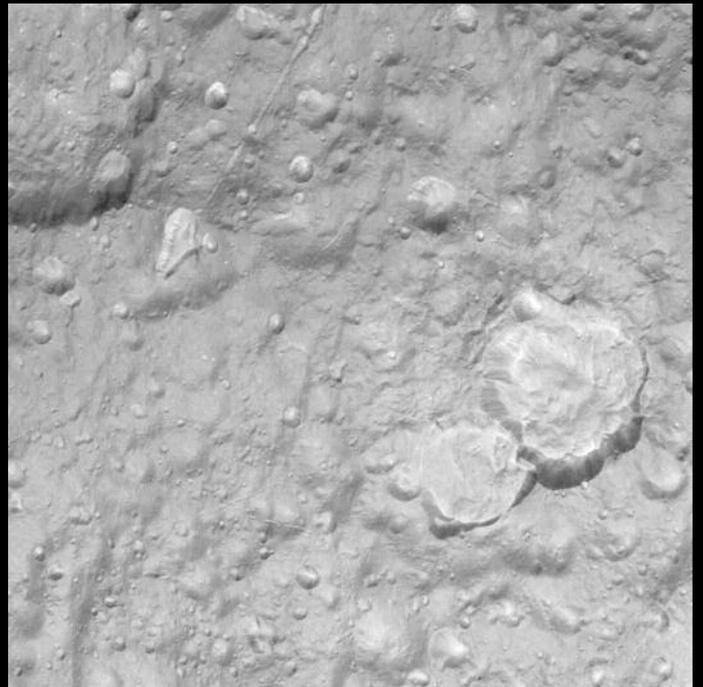
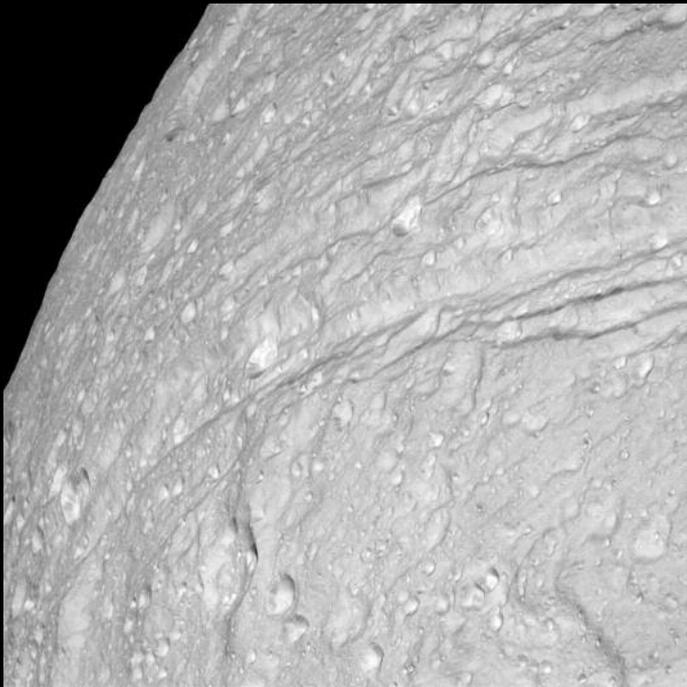
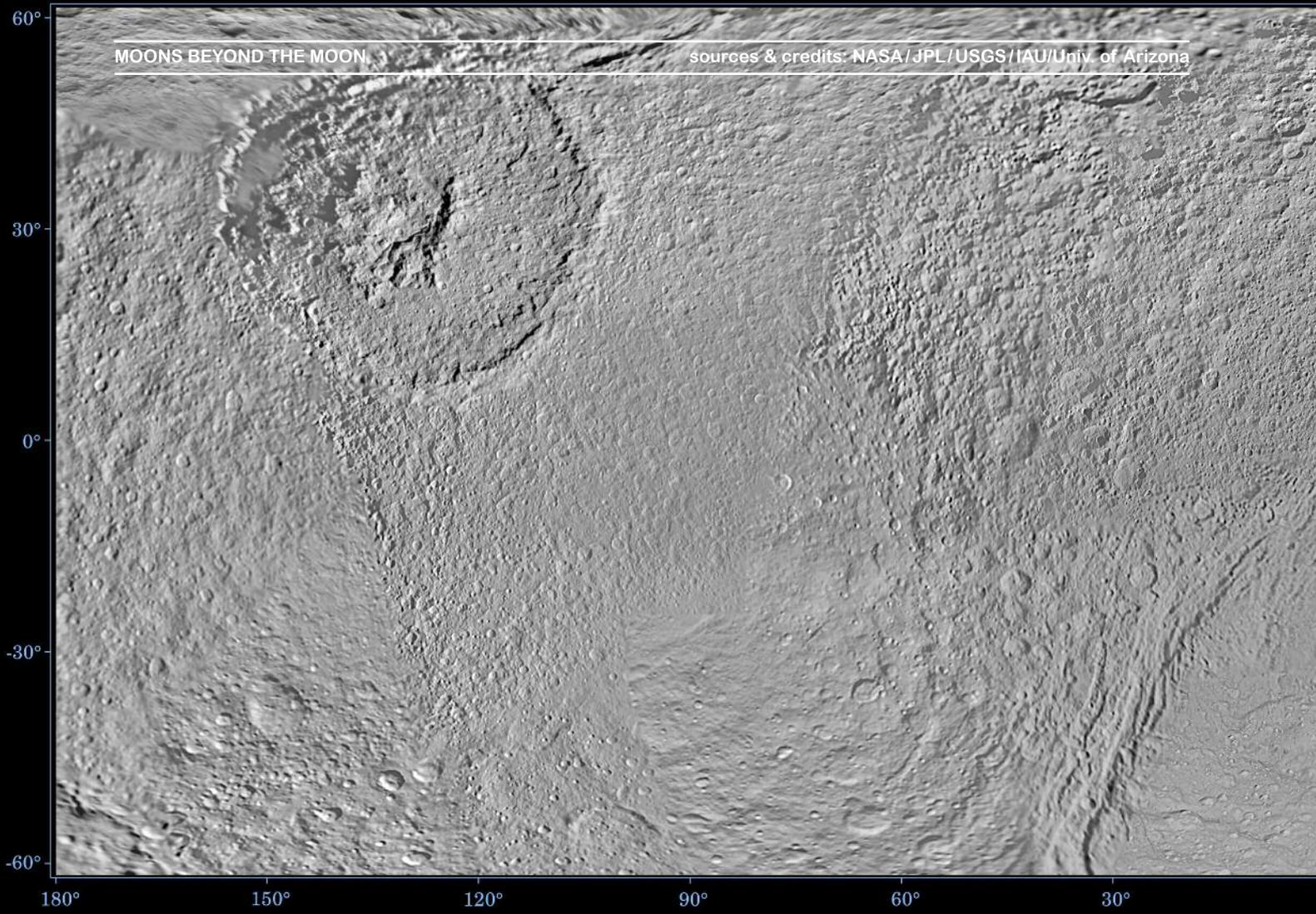


Saturn III (Tethys)

Cassini wished to name Tethys and the other three satellites that he discovered (Dione, Rhea, and Iapetus) after Louis XIV. However, the names used today for these satellites were applied in the early 19th century by John Herschel, who named them for Titans and Titanesses, brothers and sisters of Saturn. Tethys was the wife of Oceanus and mother of all rivers and Oceanids.

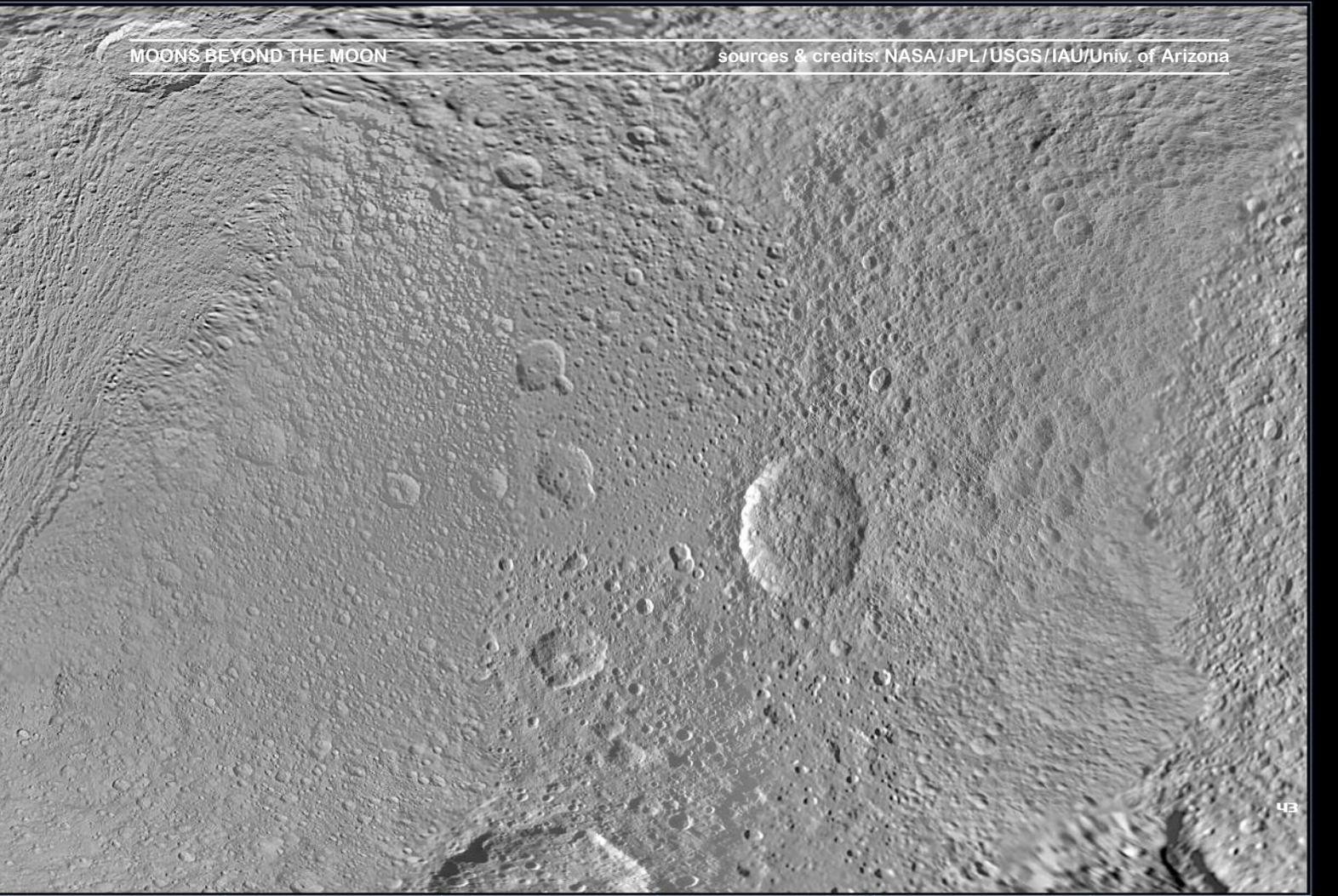
Discovery: March 21, 1684 - Paris

G.D. Cassini.



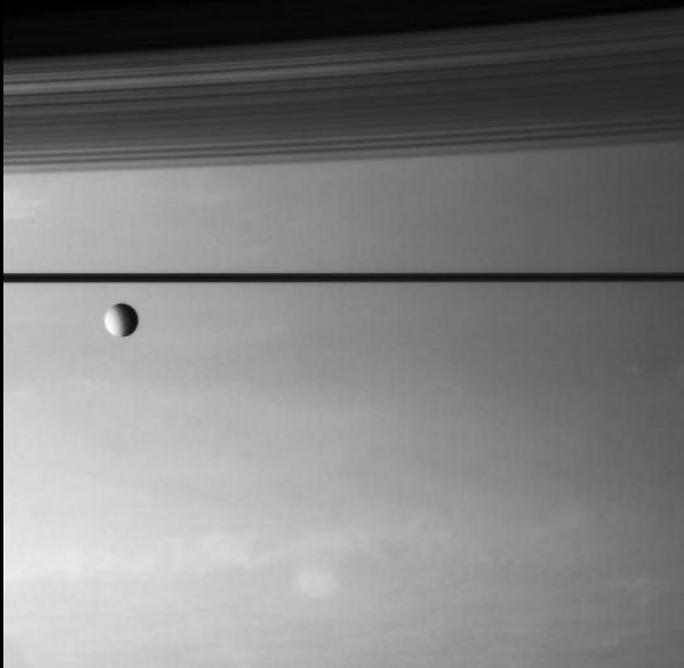
MOONS BEYOND THE MOON

sources & credits: NASA/JPL/USGS/IAU/Univ. of Arizona

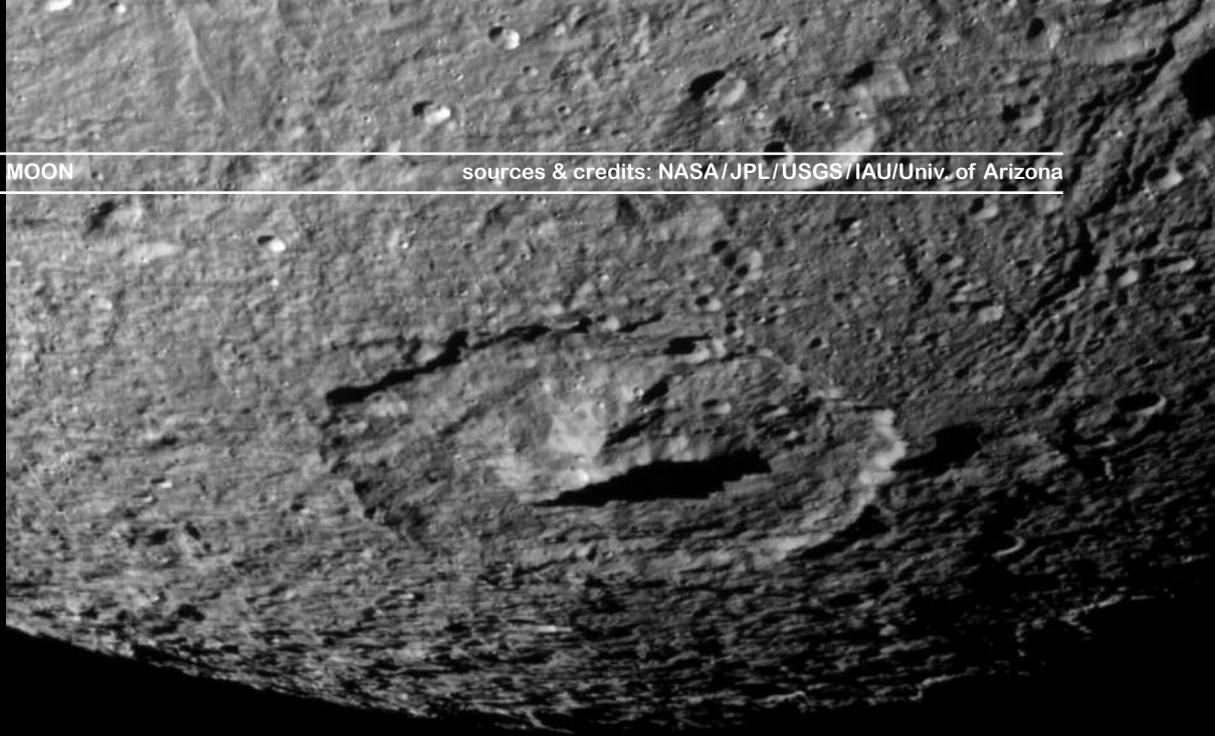


0° 330° 300° 270° 240° 210° 180°

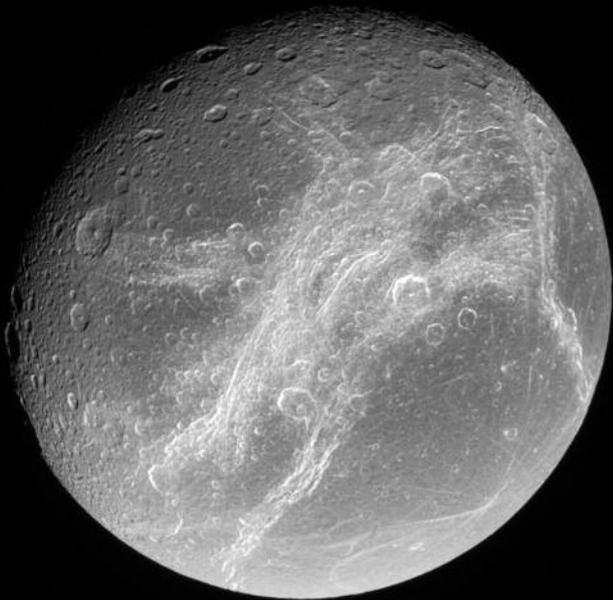
500 km



d
i
o
n
e



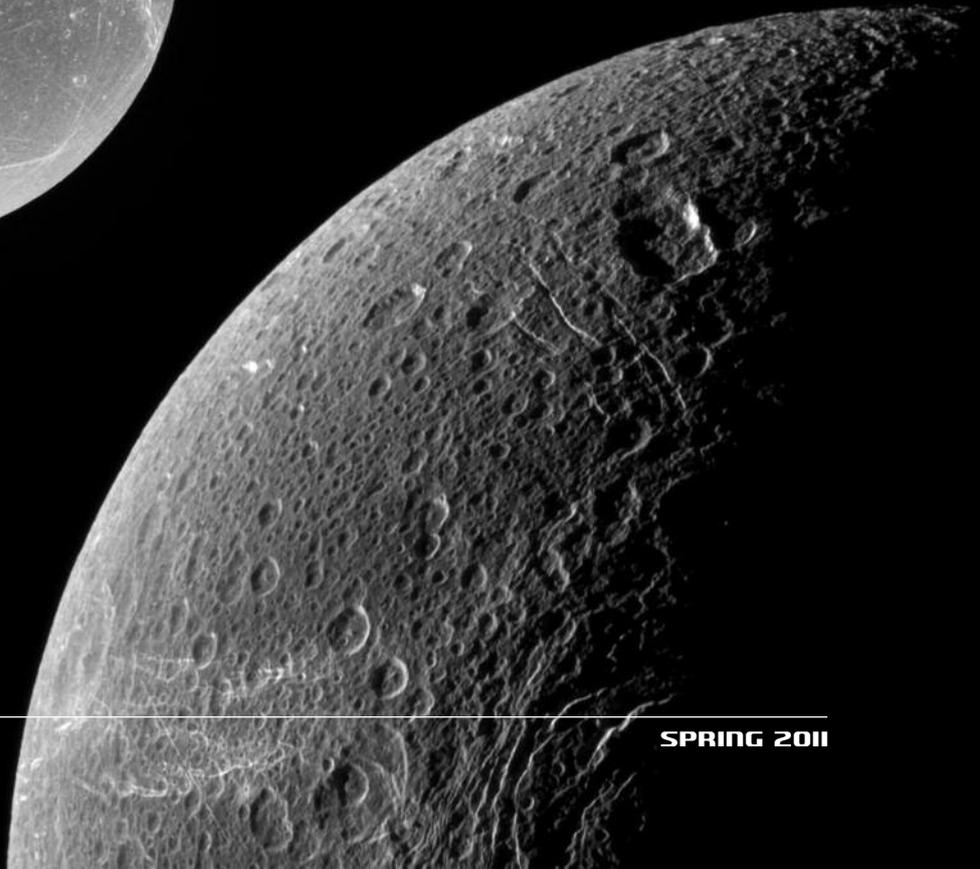
44

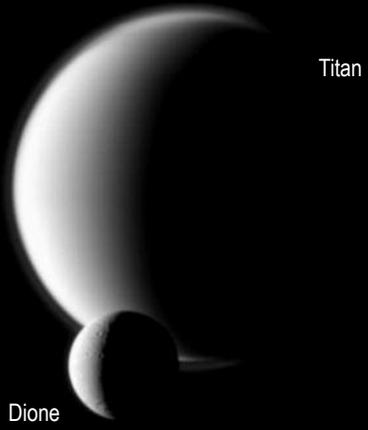


Saturn IV (Dione)

Dione was the sister of Kronos and mother (by Zeus) of Aphrodite.

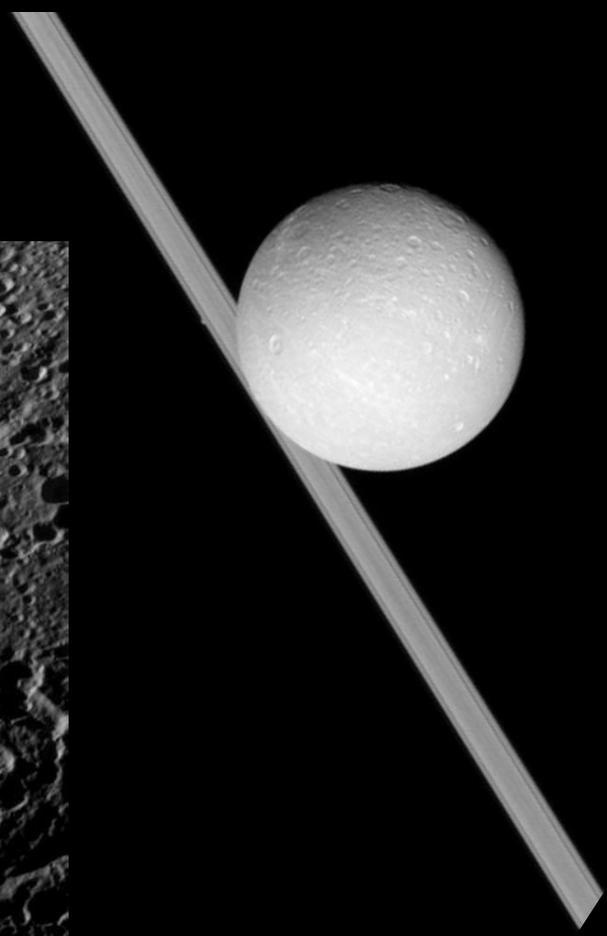
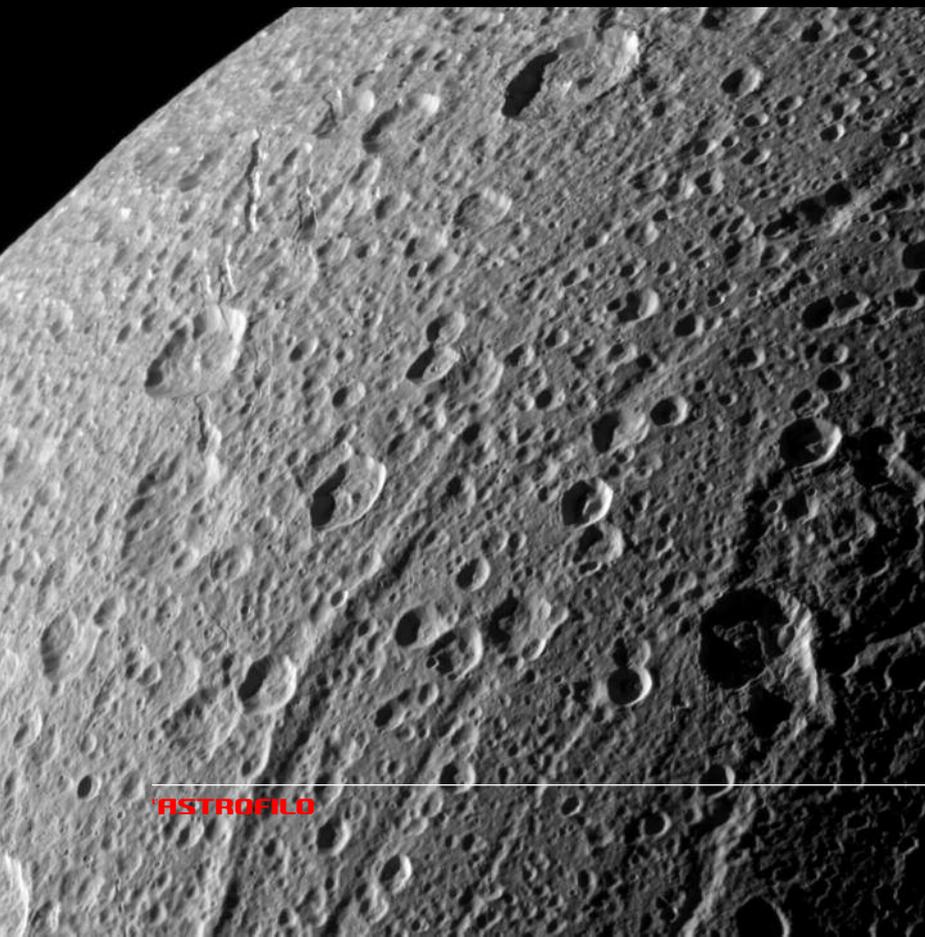
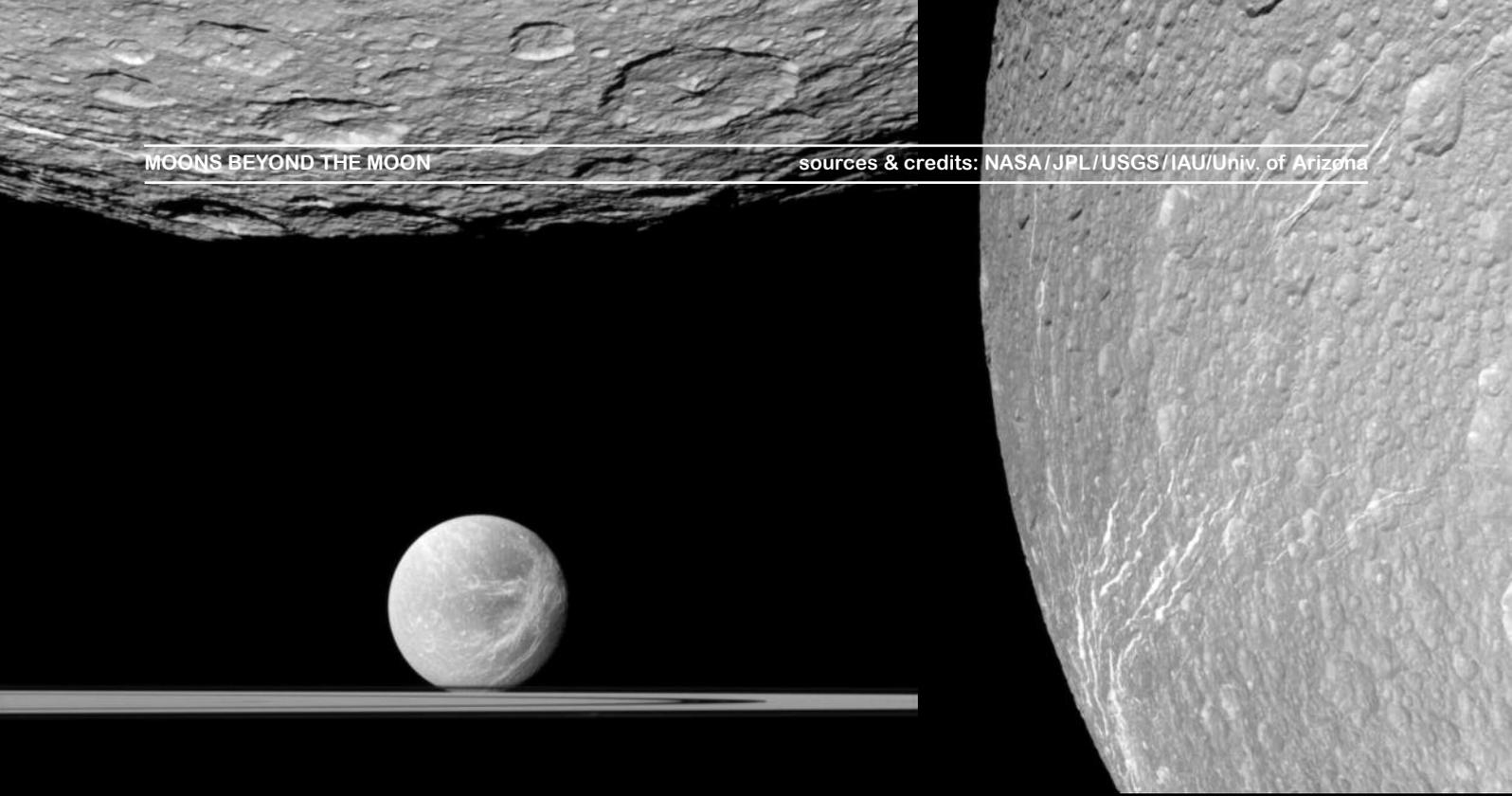
Discovery: March 21, 1684 - Paris - G.D. Cassini.





45

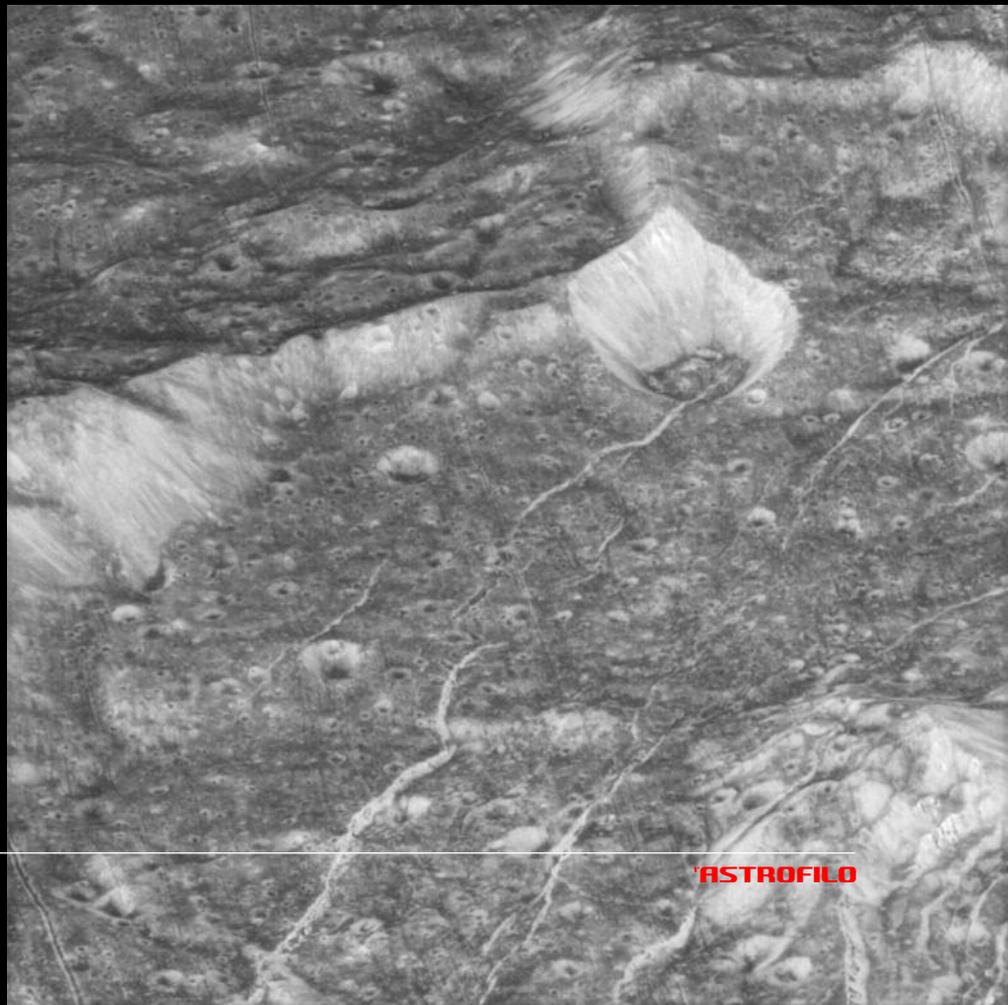


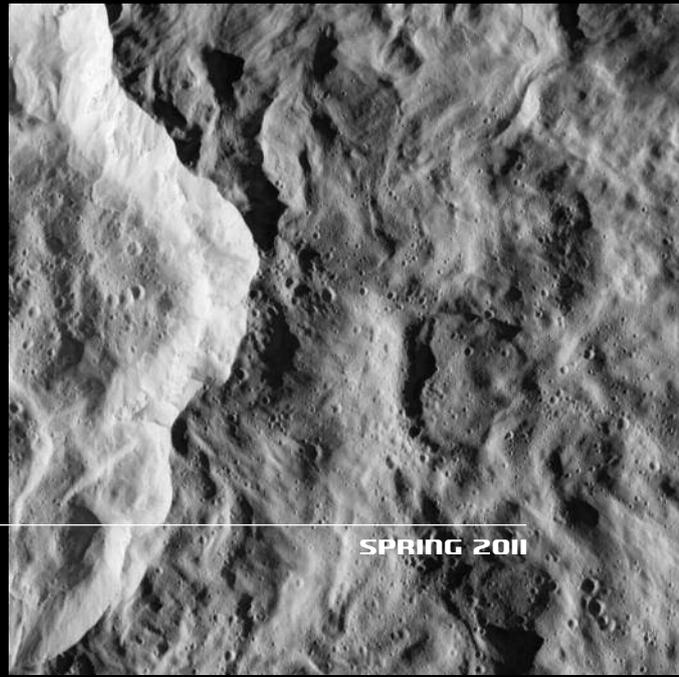
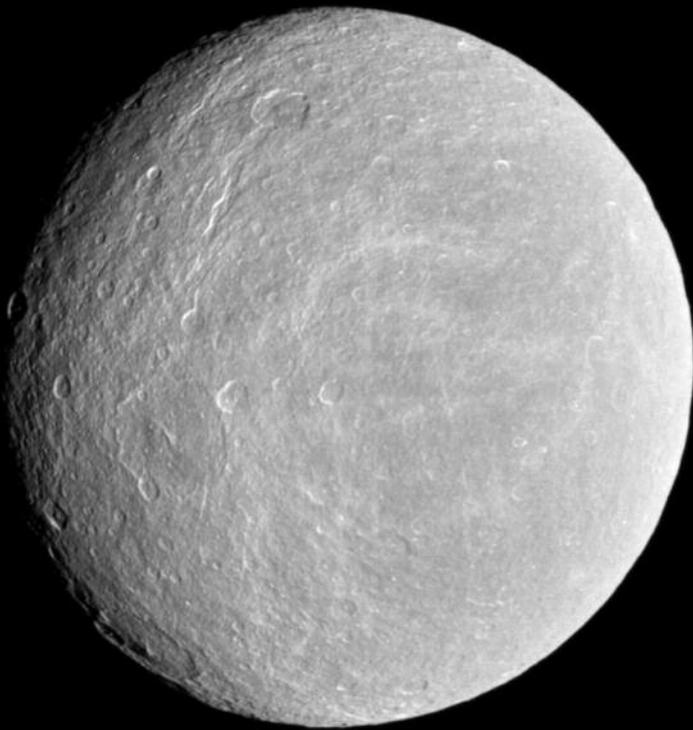




Dione

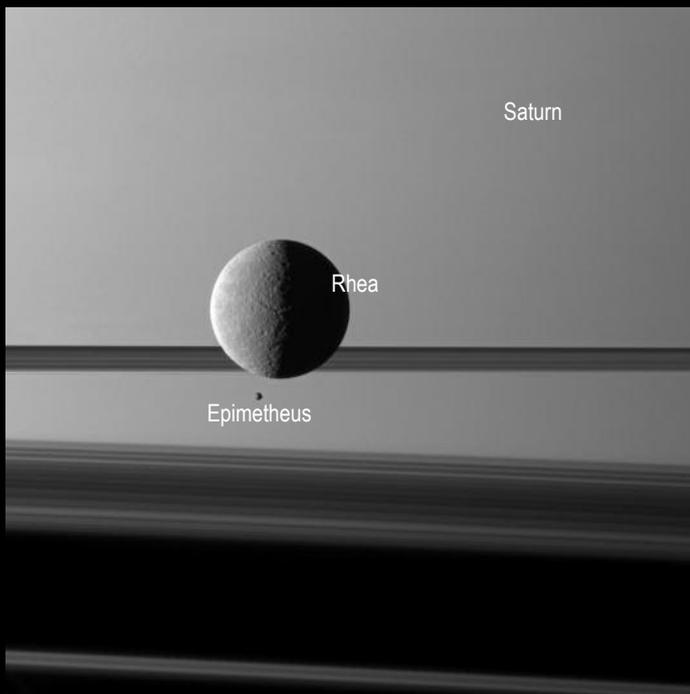
Titan

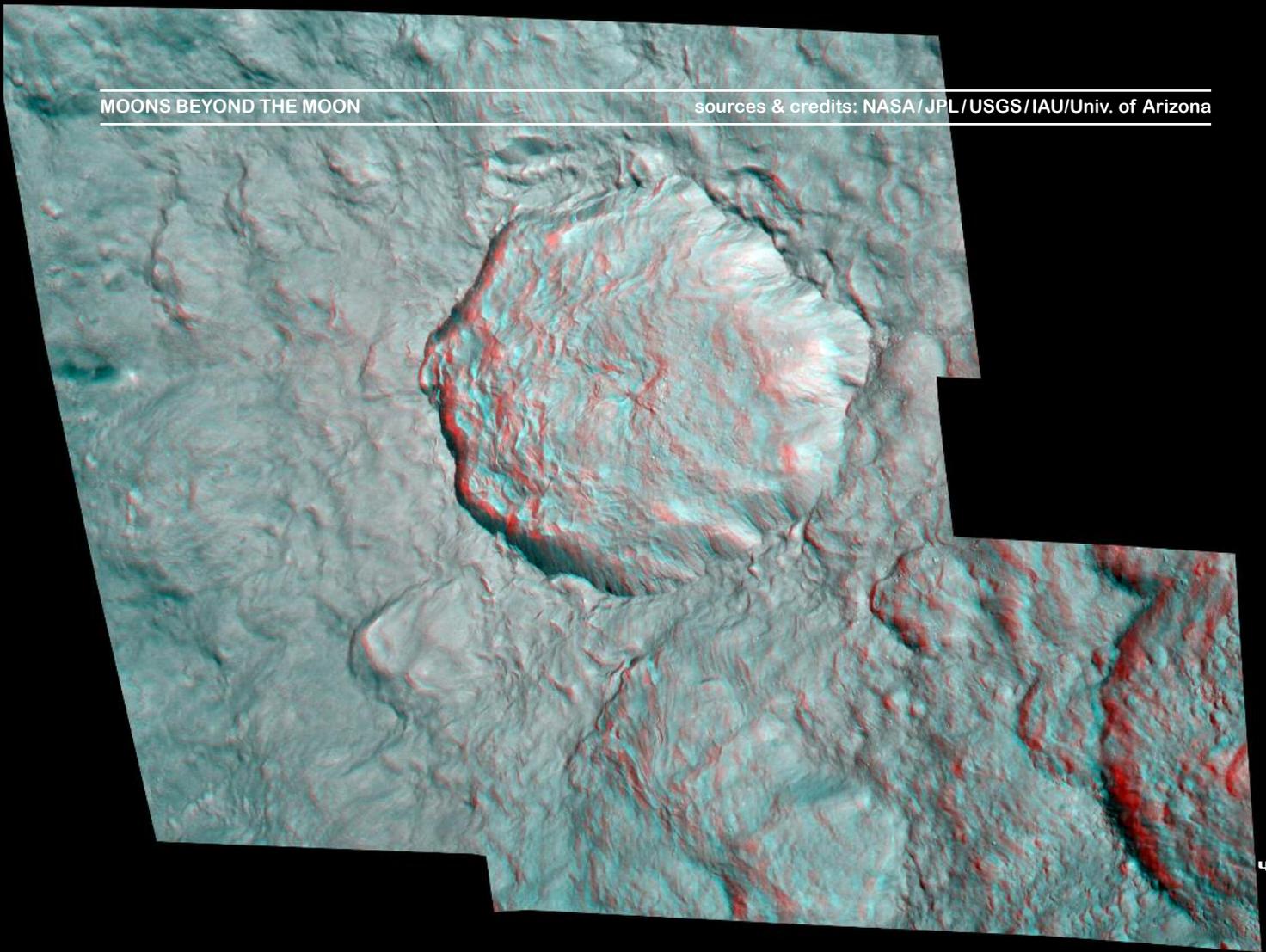




48

rhea





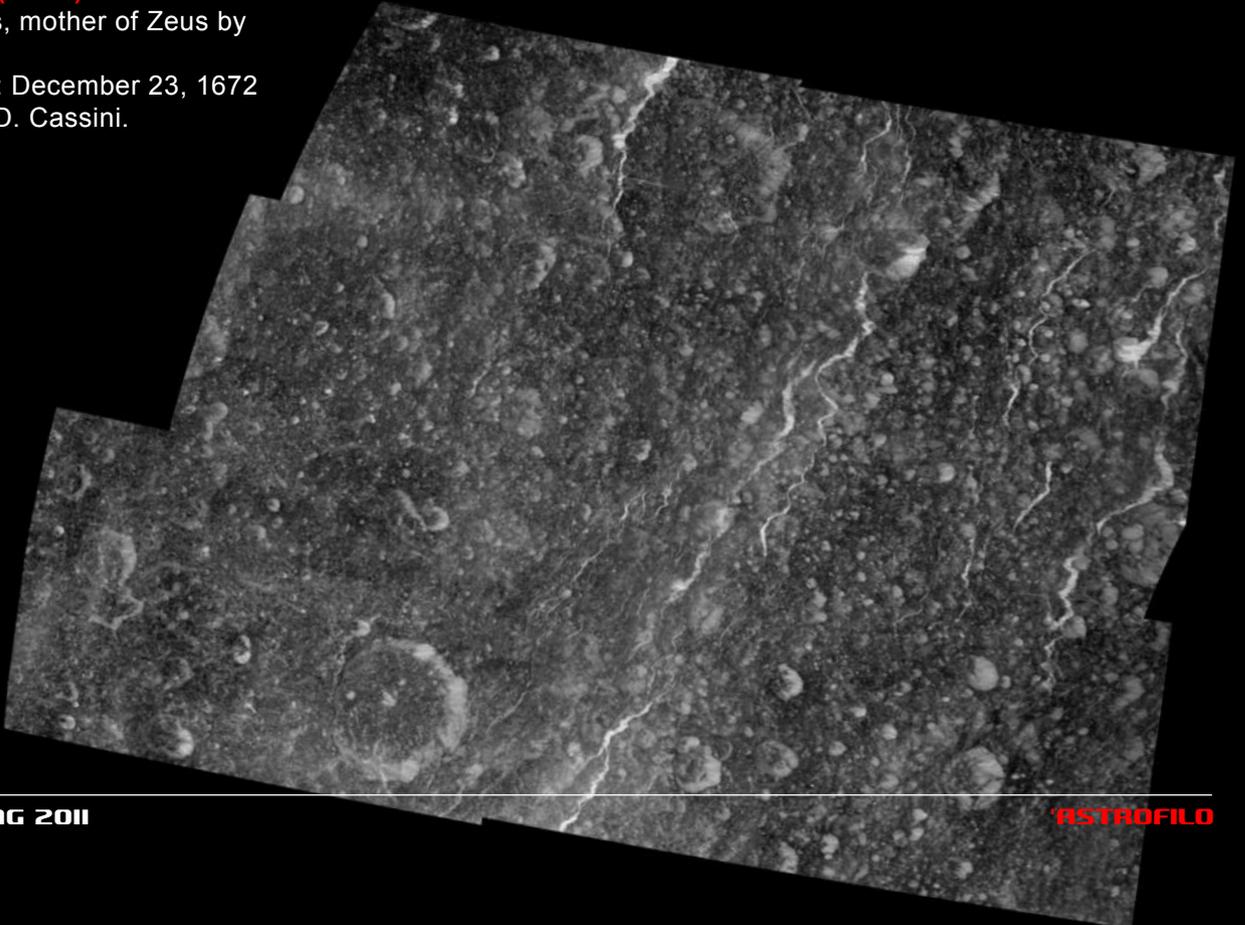
49

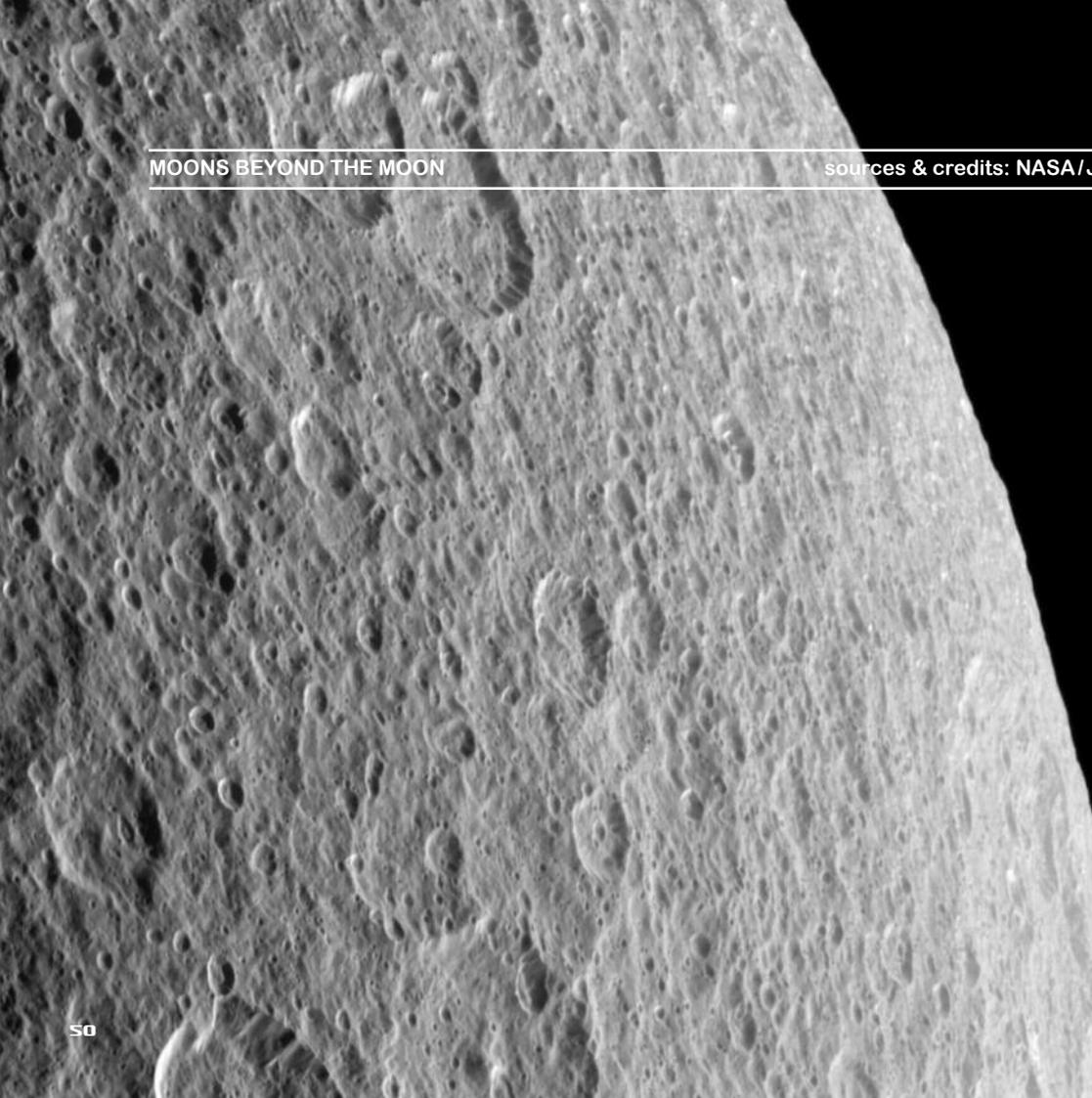
Saturn V (Rhea)

A Titaness, mother of Zeus by Kronos.

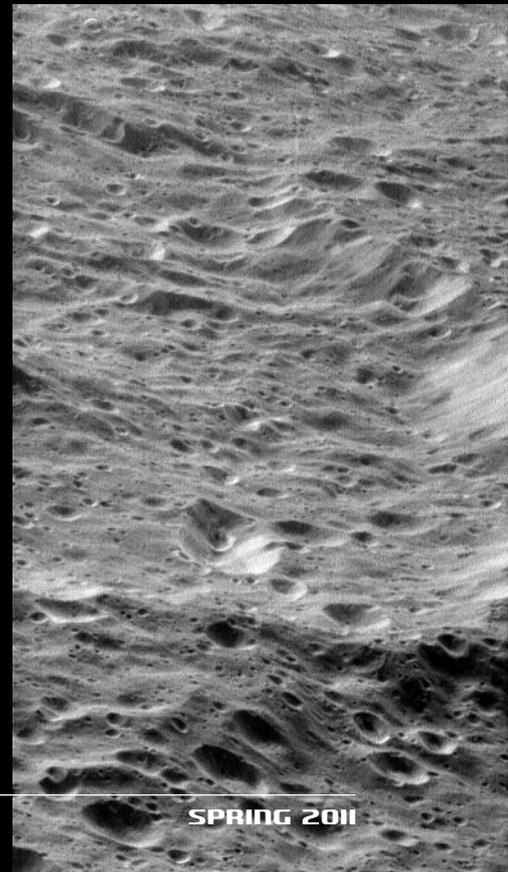
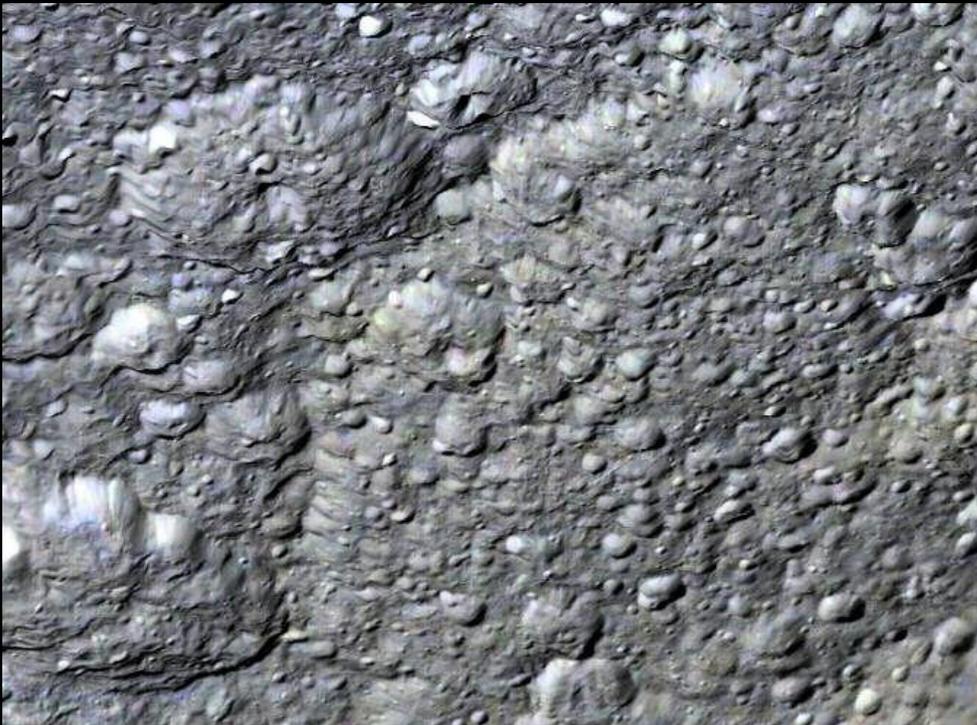
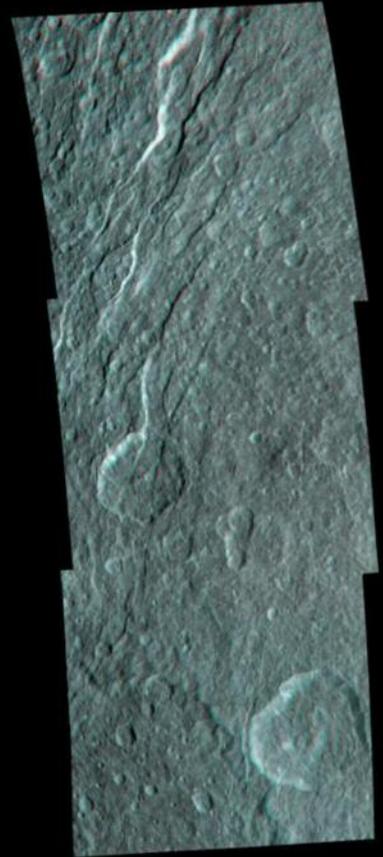
Discovery: December 23, 1672

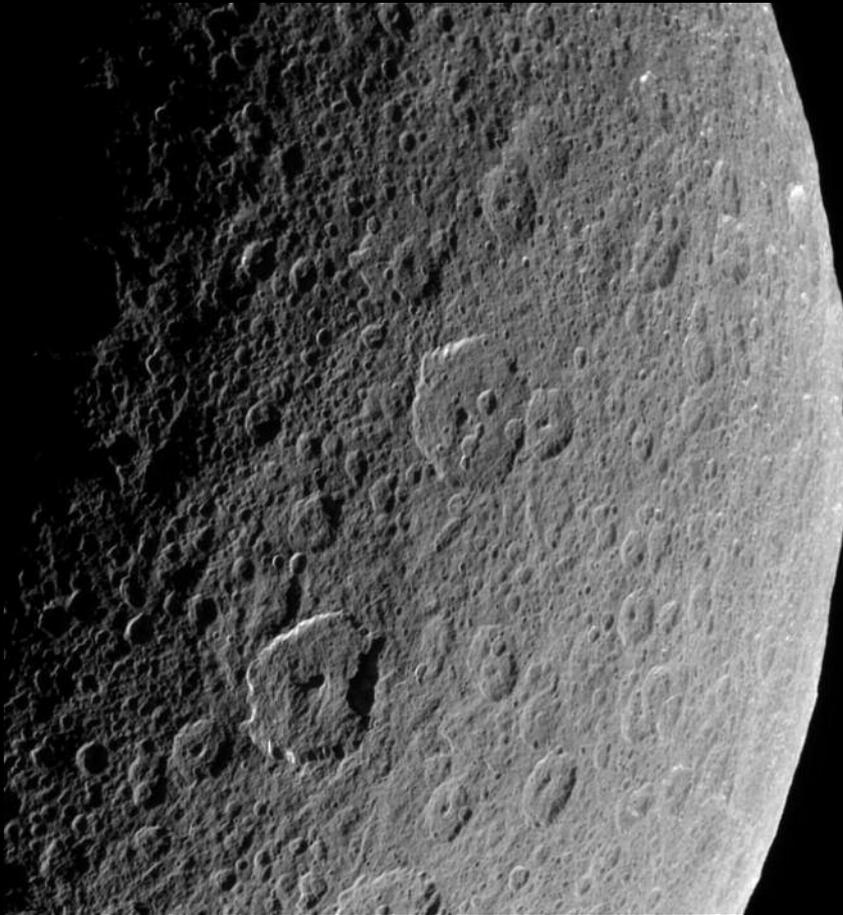
Paris - G.D. Cassini.



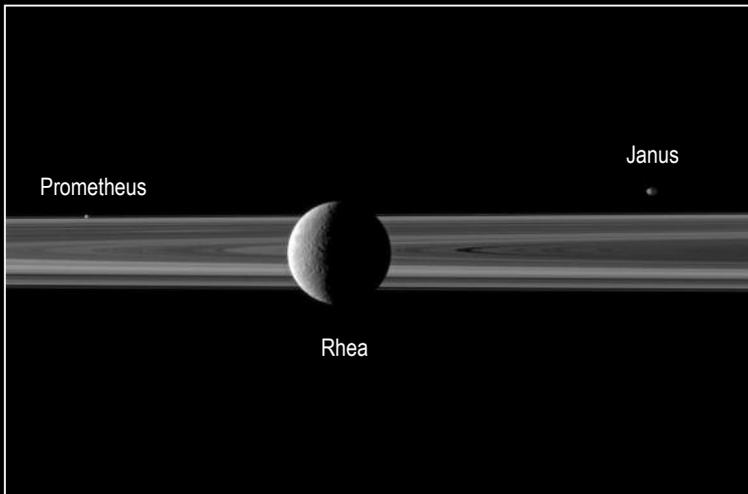


50





SI

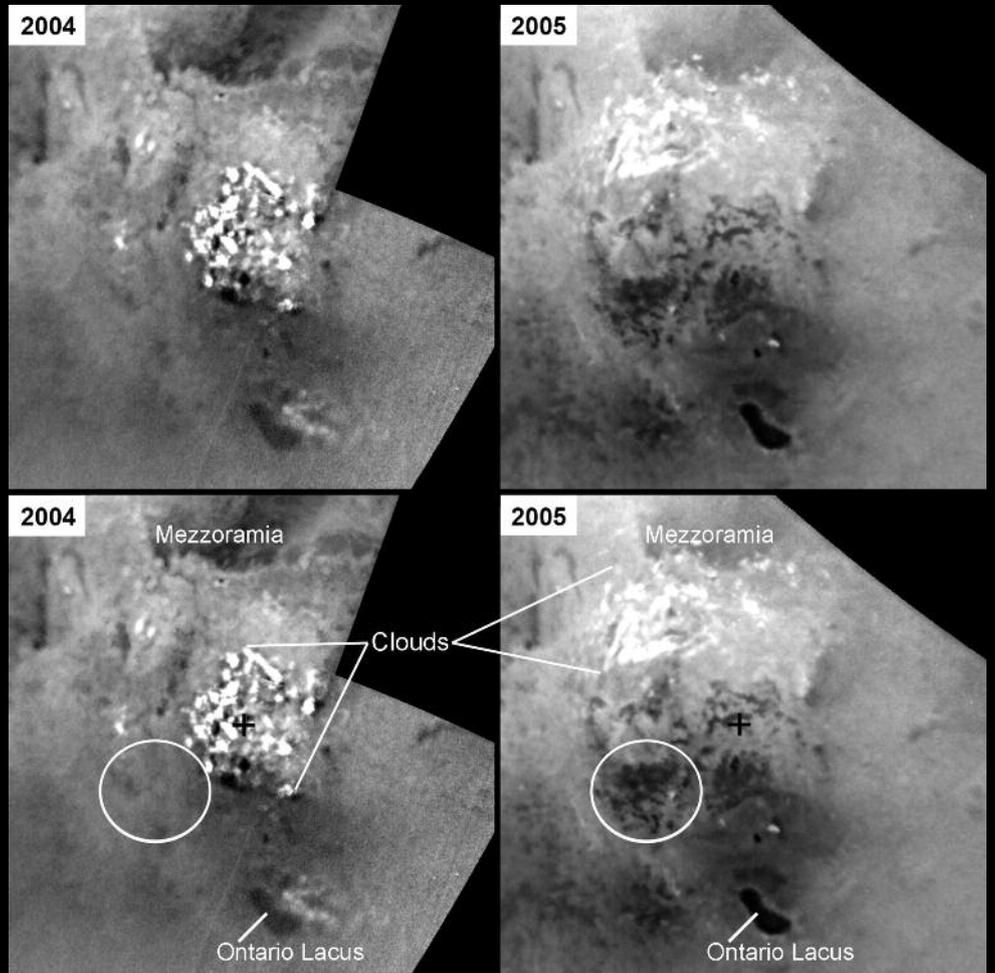


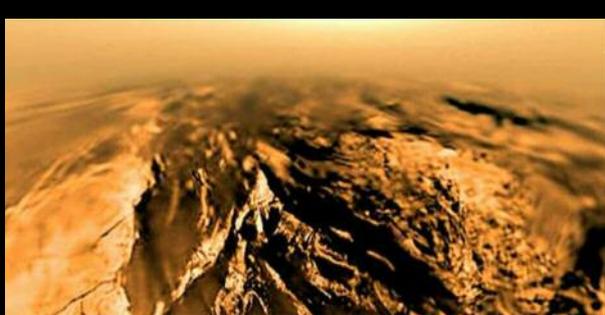
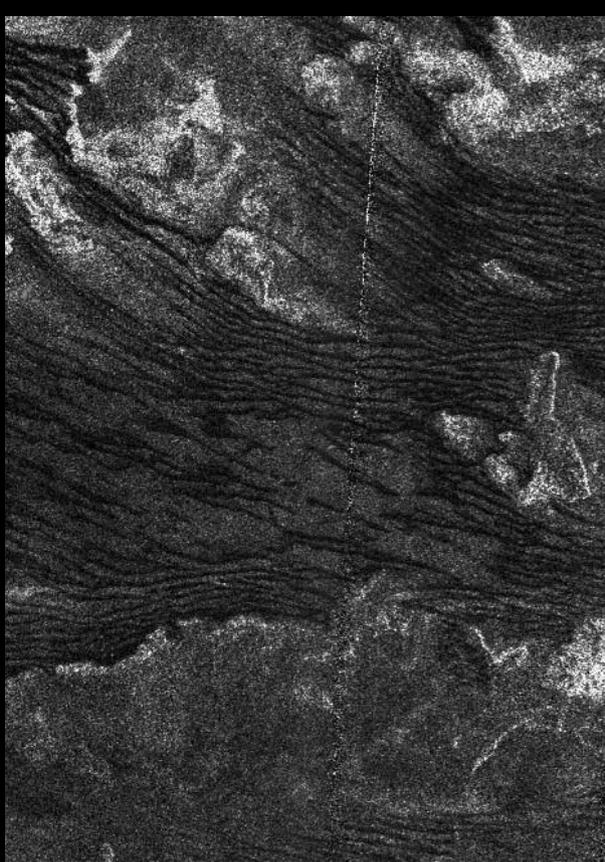
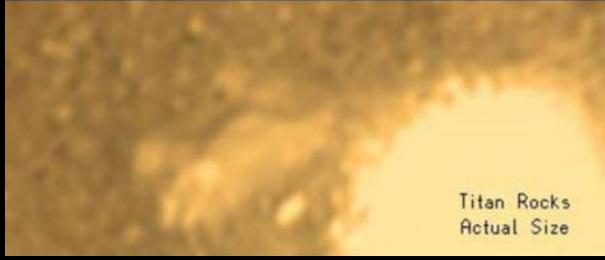
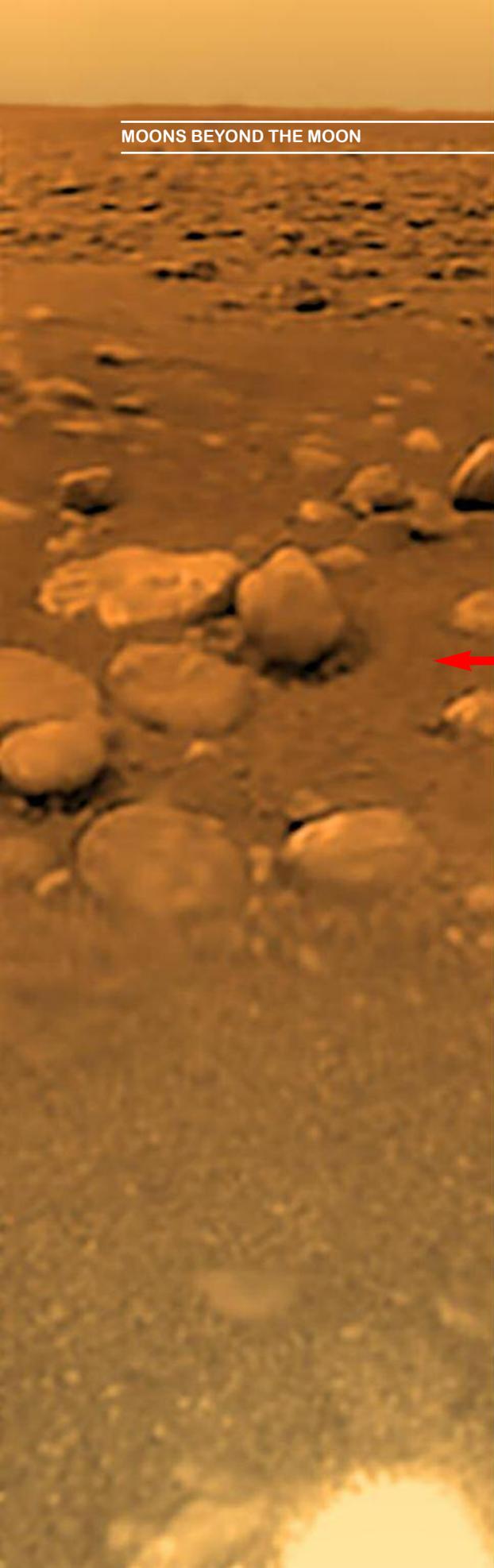


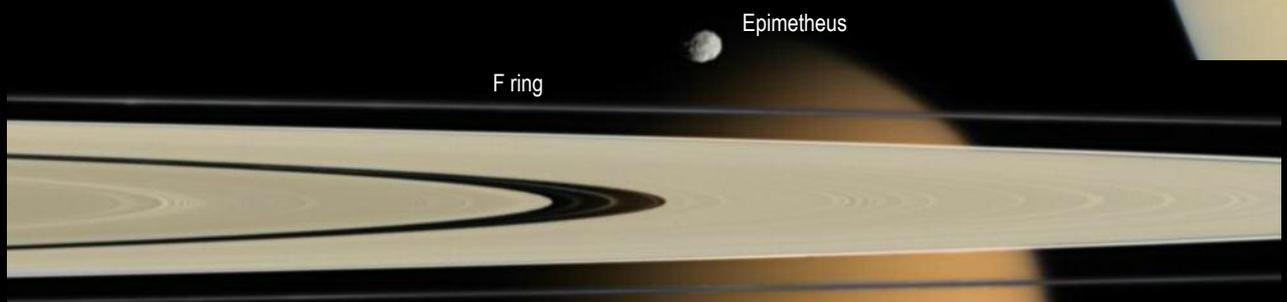
t
i
t
a
n

52

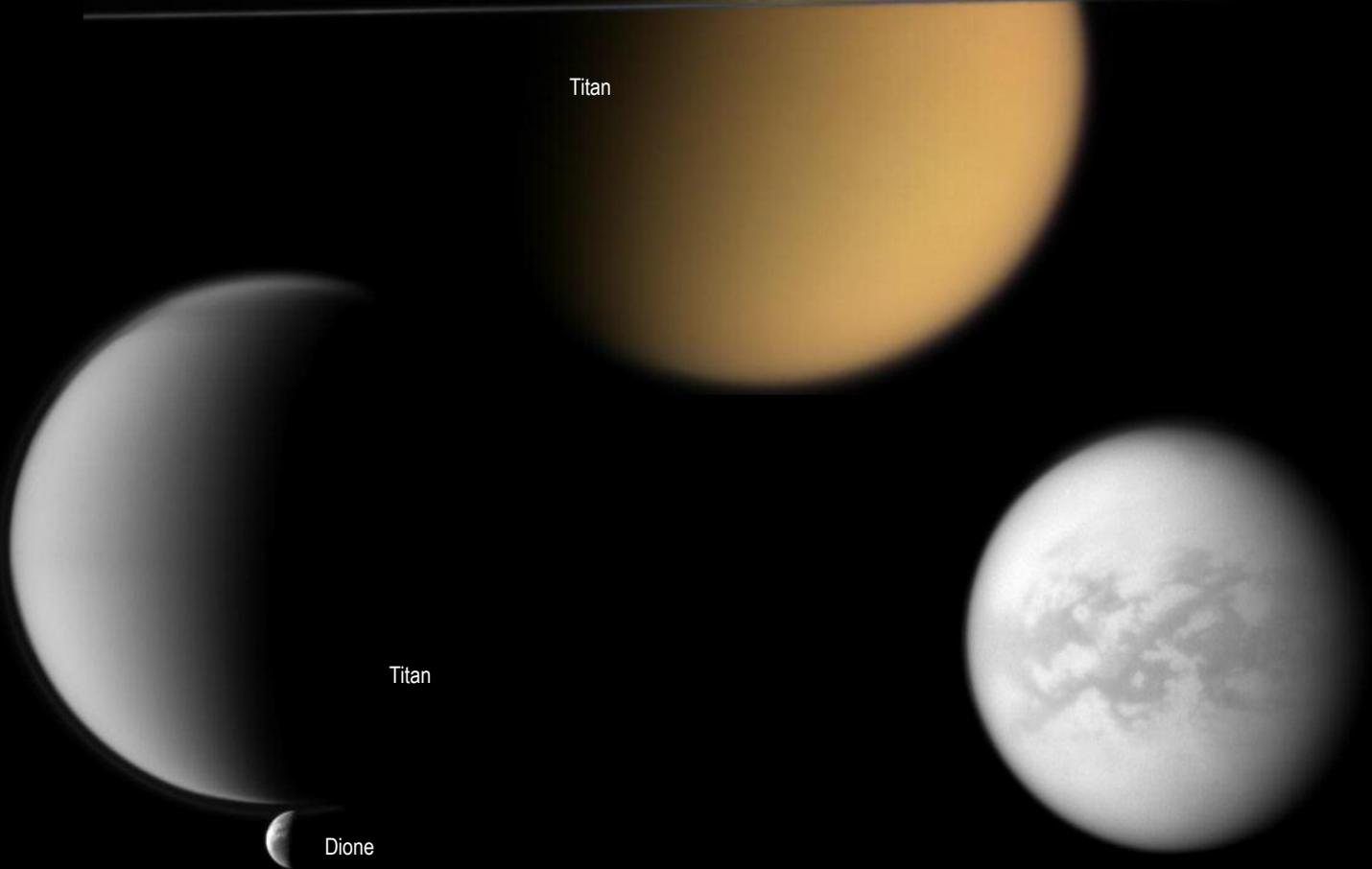
Saturn VI (Titan)
 Named by Huygens,
 who first called it
 "Luna Saturni."
 Discovery: March 25,
 1655 - The Hague -
 C. Huygens.

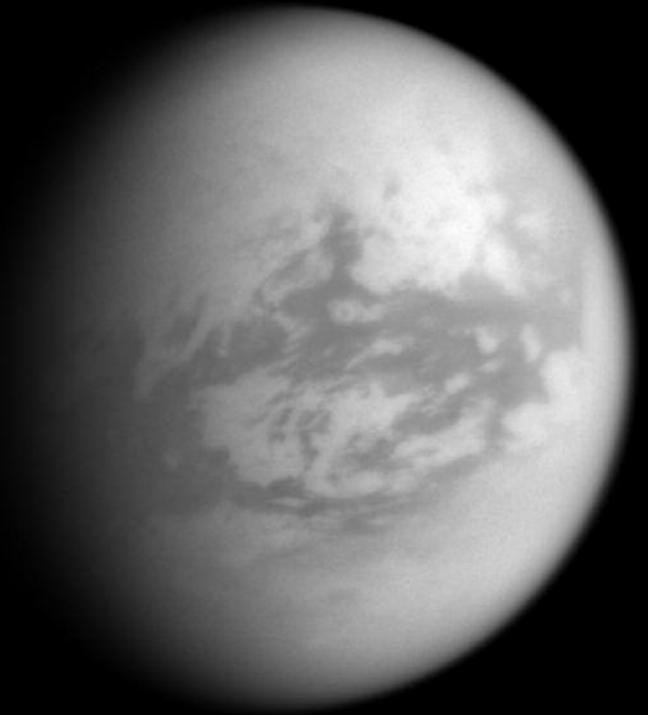




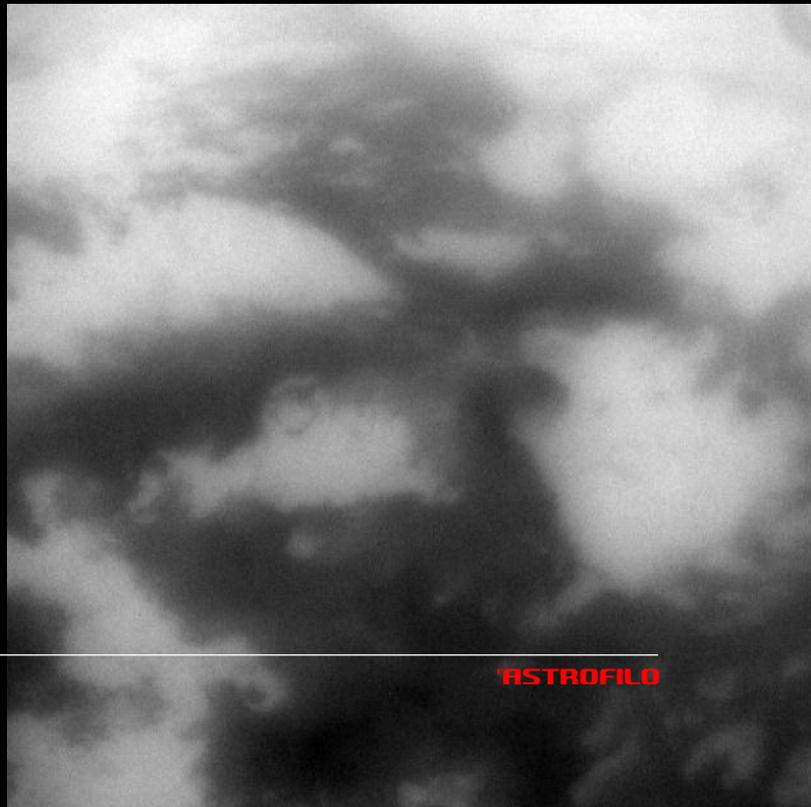
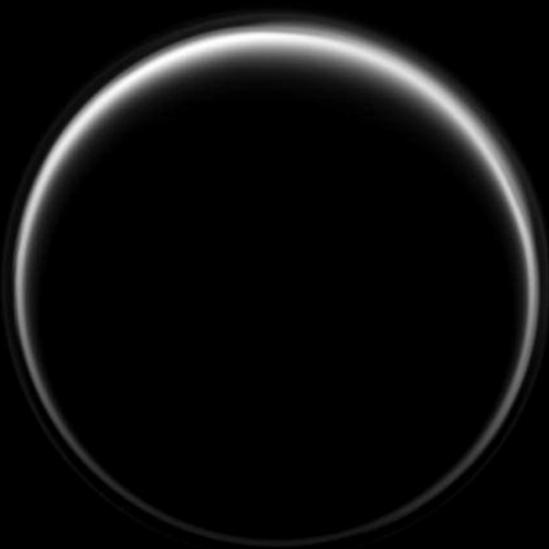


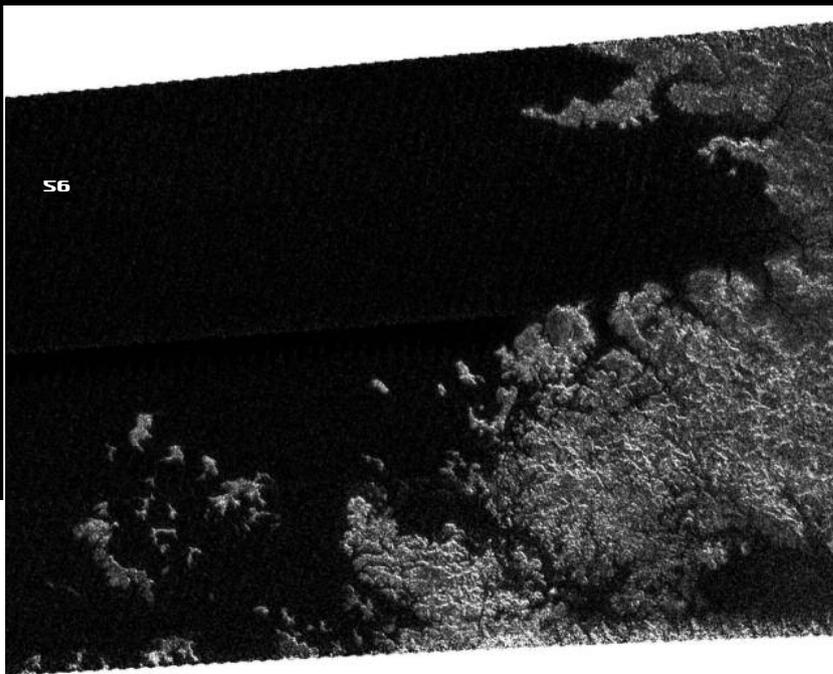
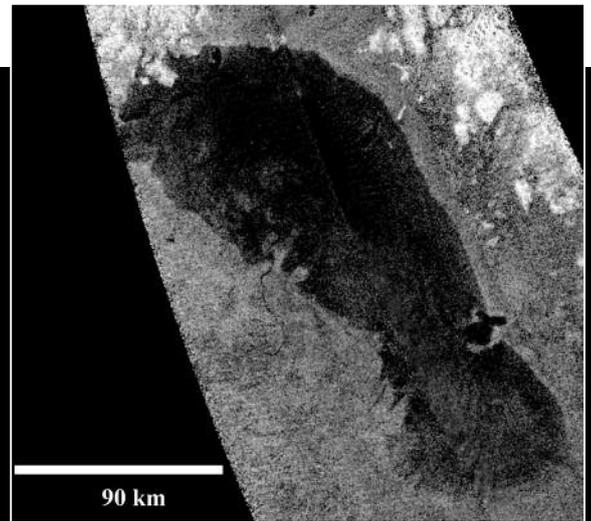
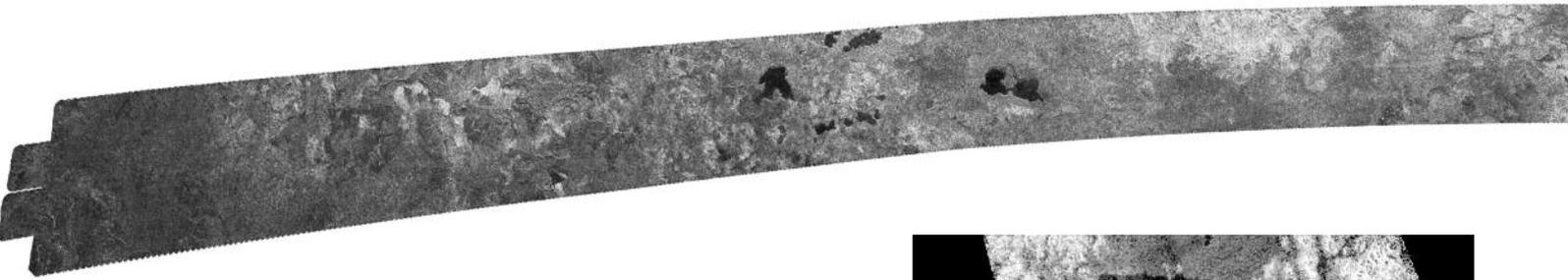
54

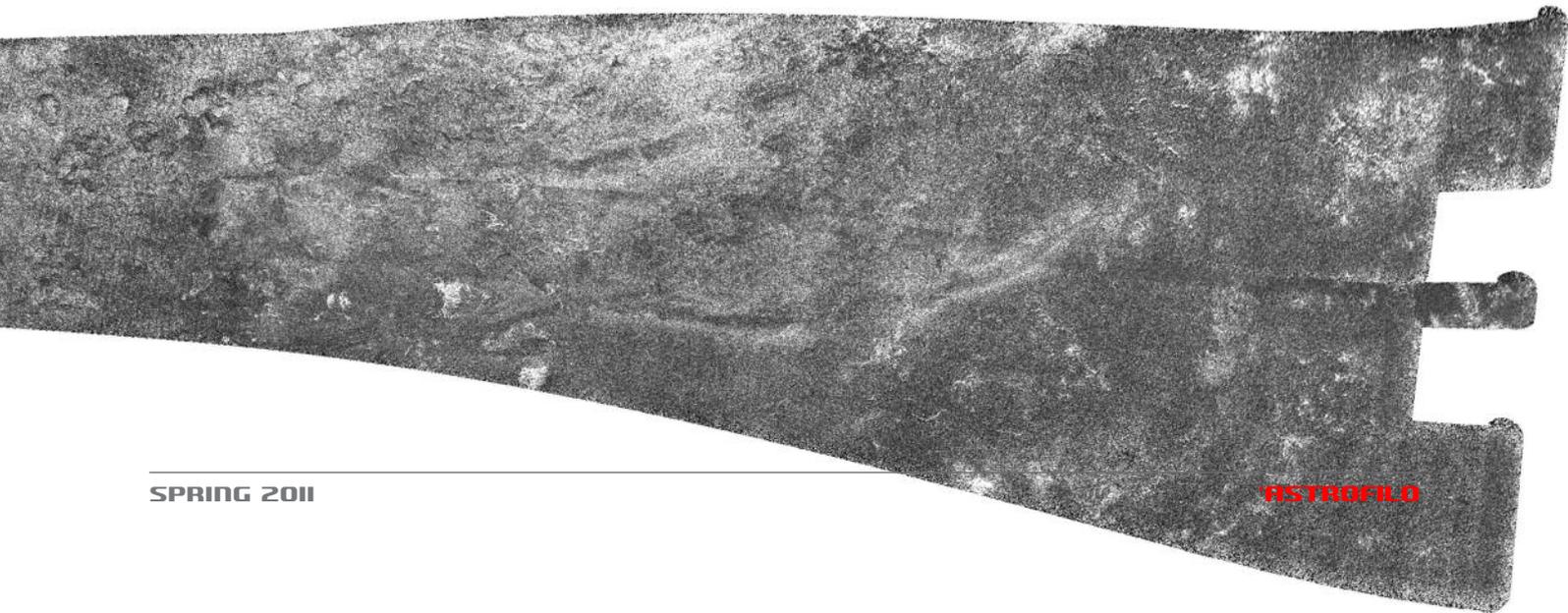
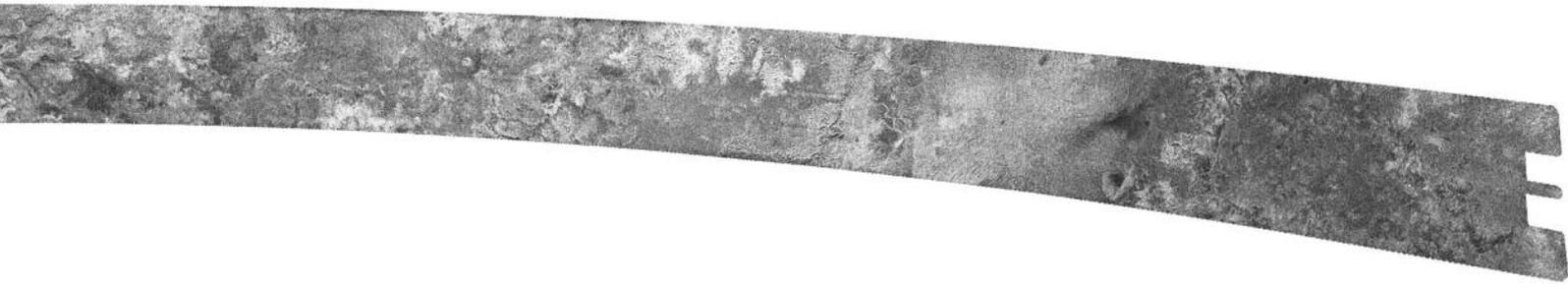




SS

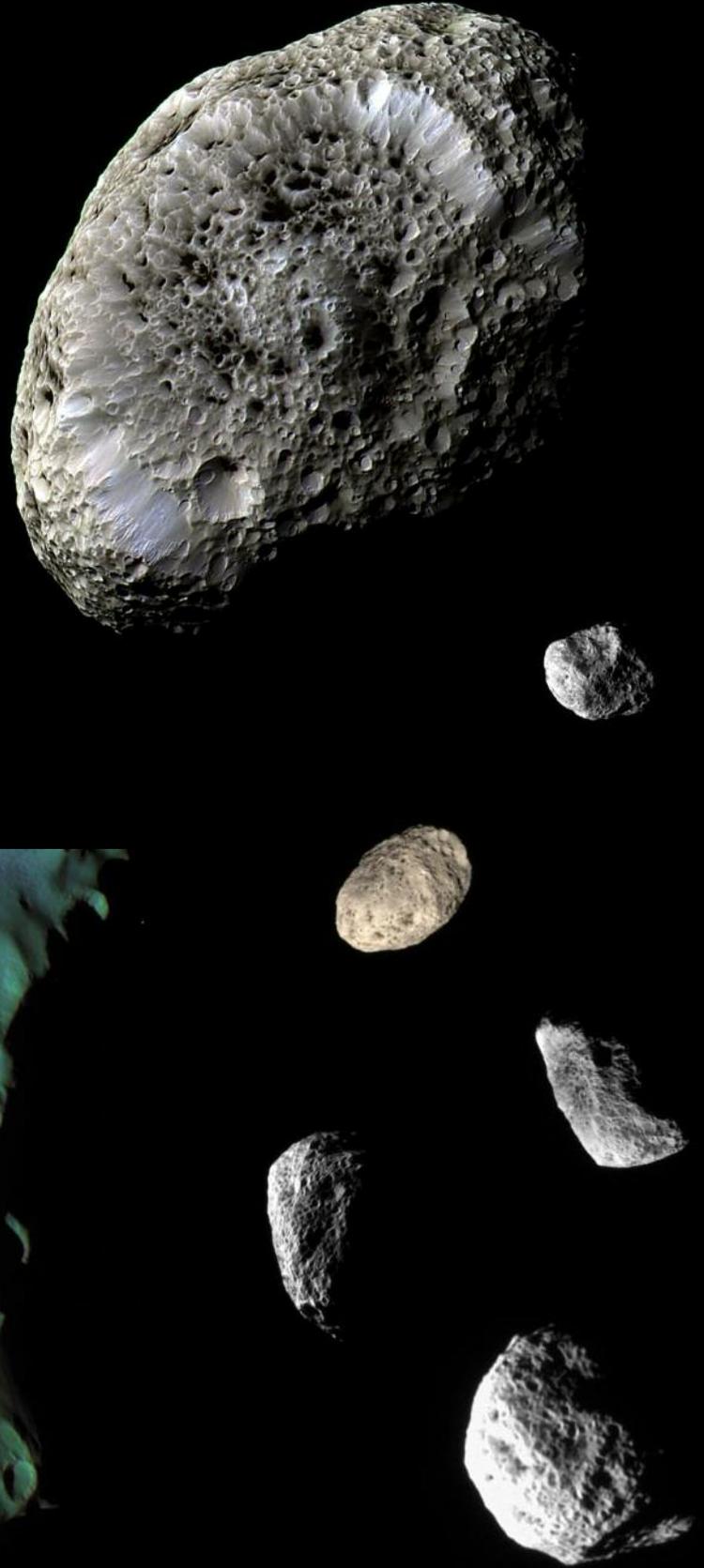
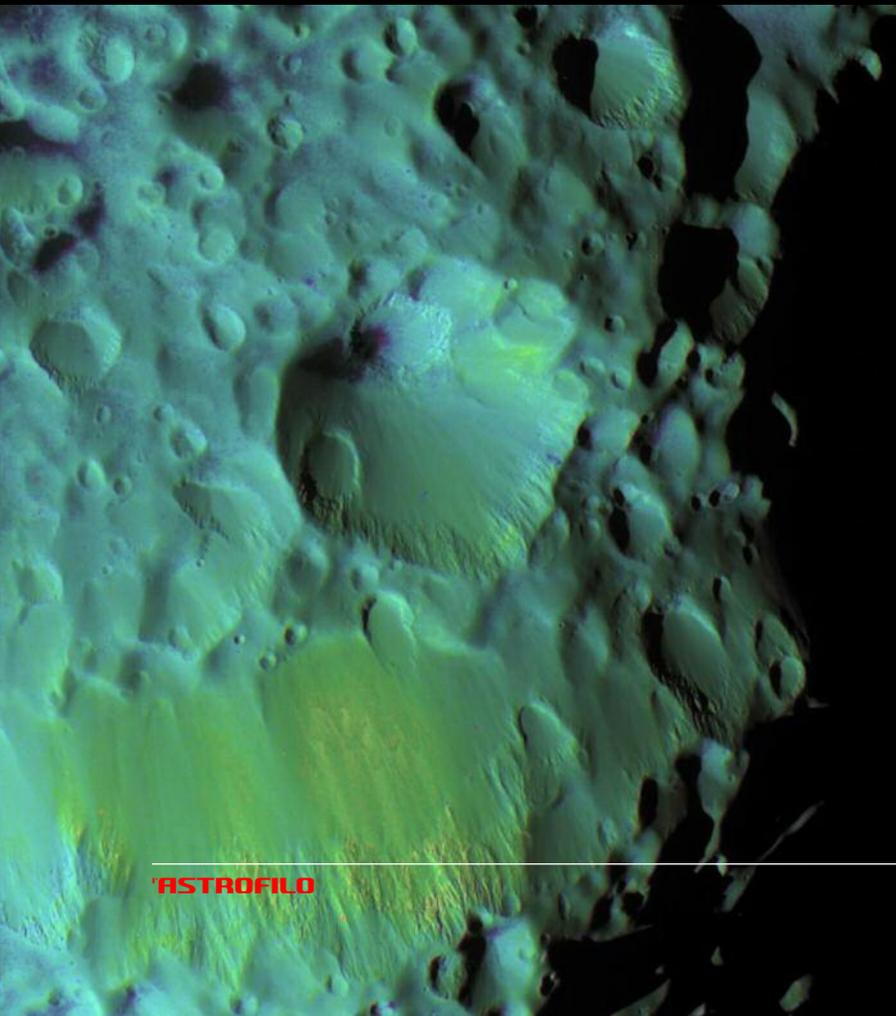






h
y
p
e
r
i
o
n

58



Saturn VII (Hyperion)

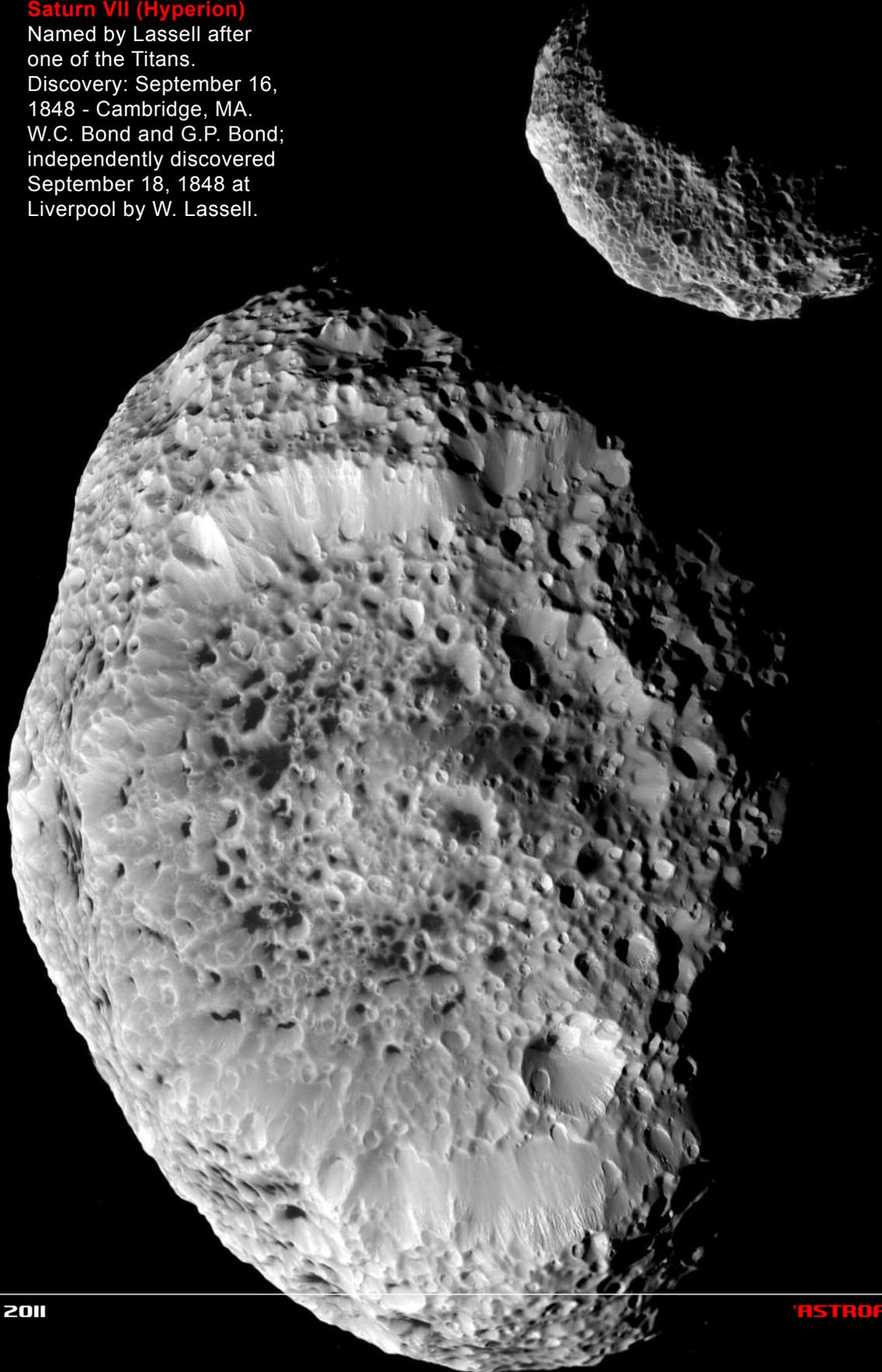
Named by Lassell after one of the Titans.

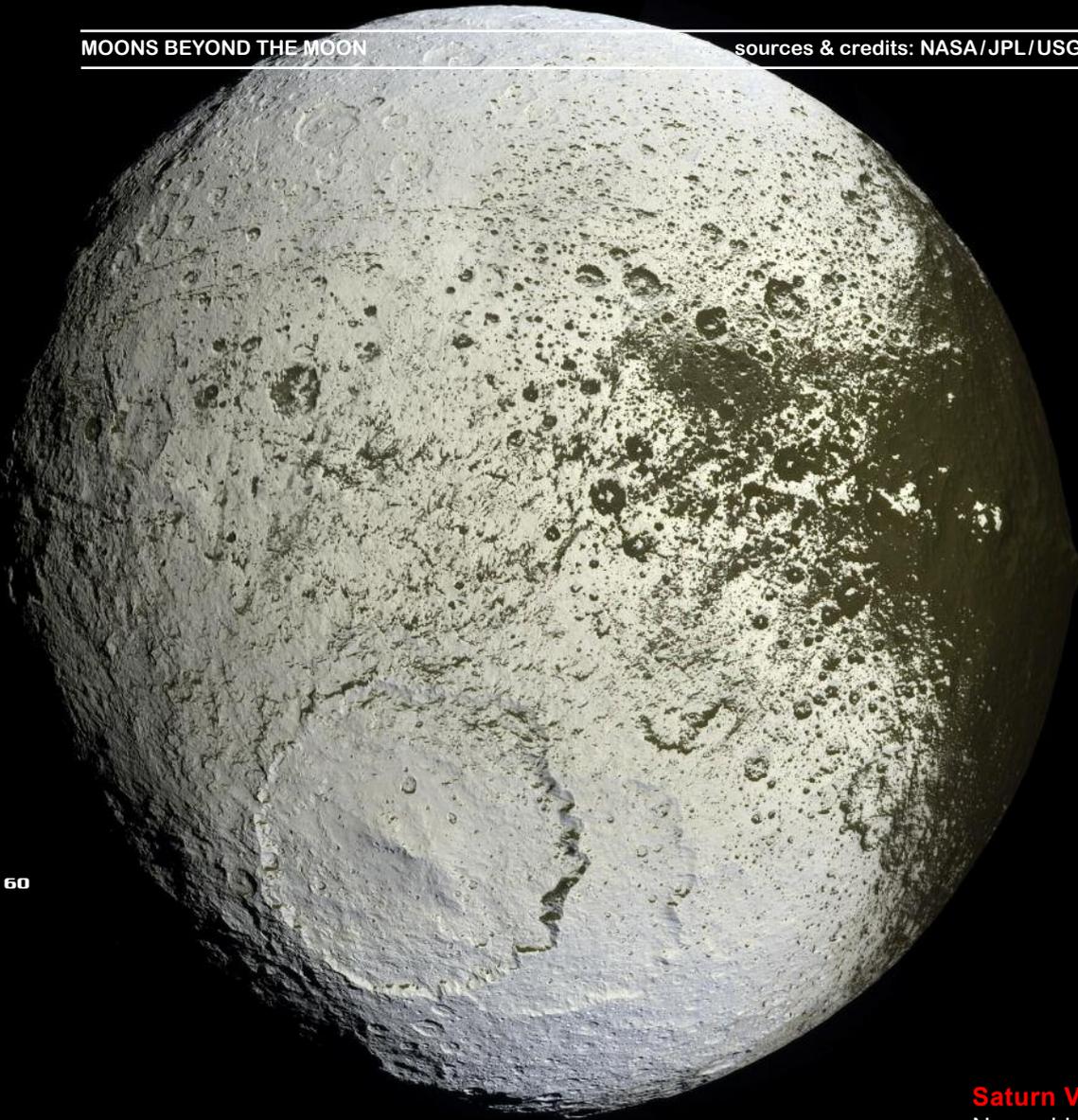
Discovery: September 16, 1848 - Cambridge, MA.

W.C. Bond and G.P. Bond; independently discovered

September 18, 1848 at

Liverpool by W. Lassell.





i
a
p
e
t
u
s

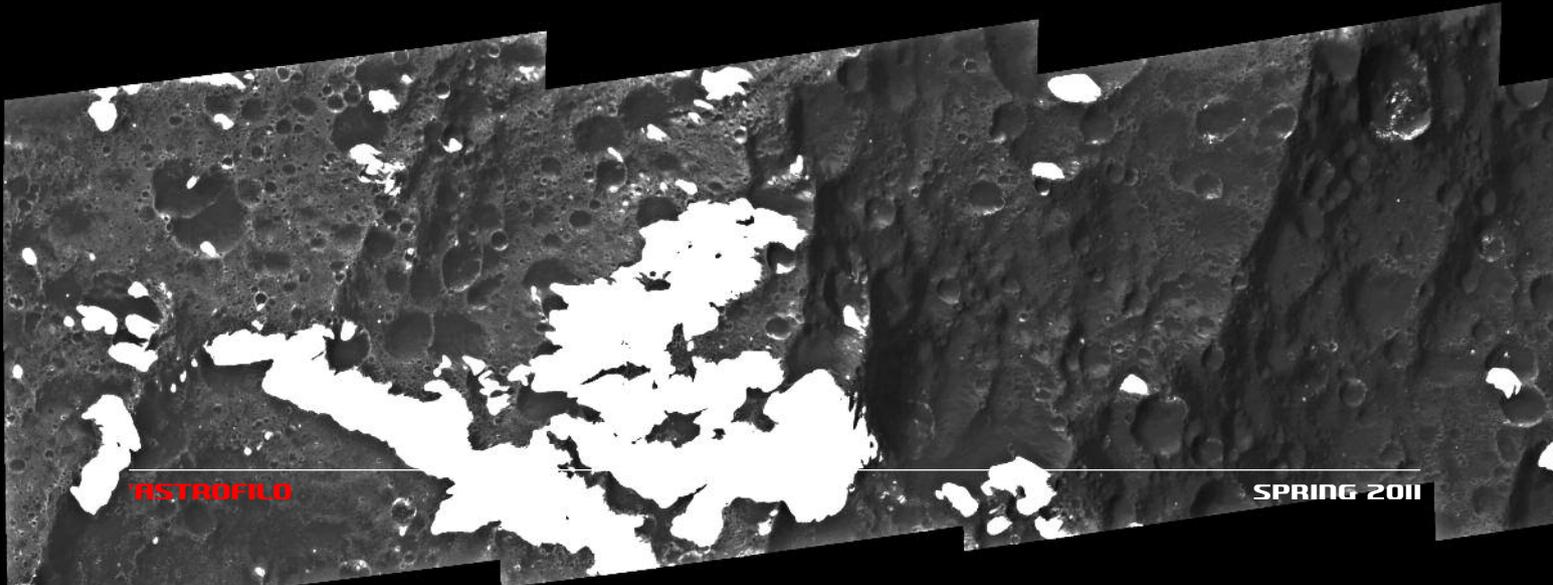
60

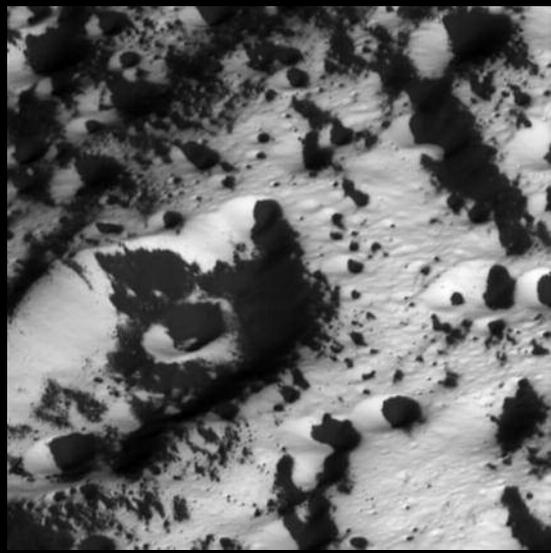
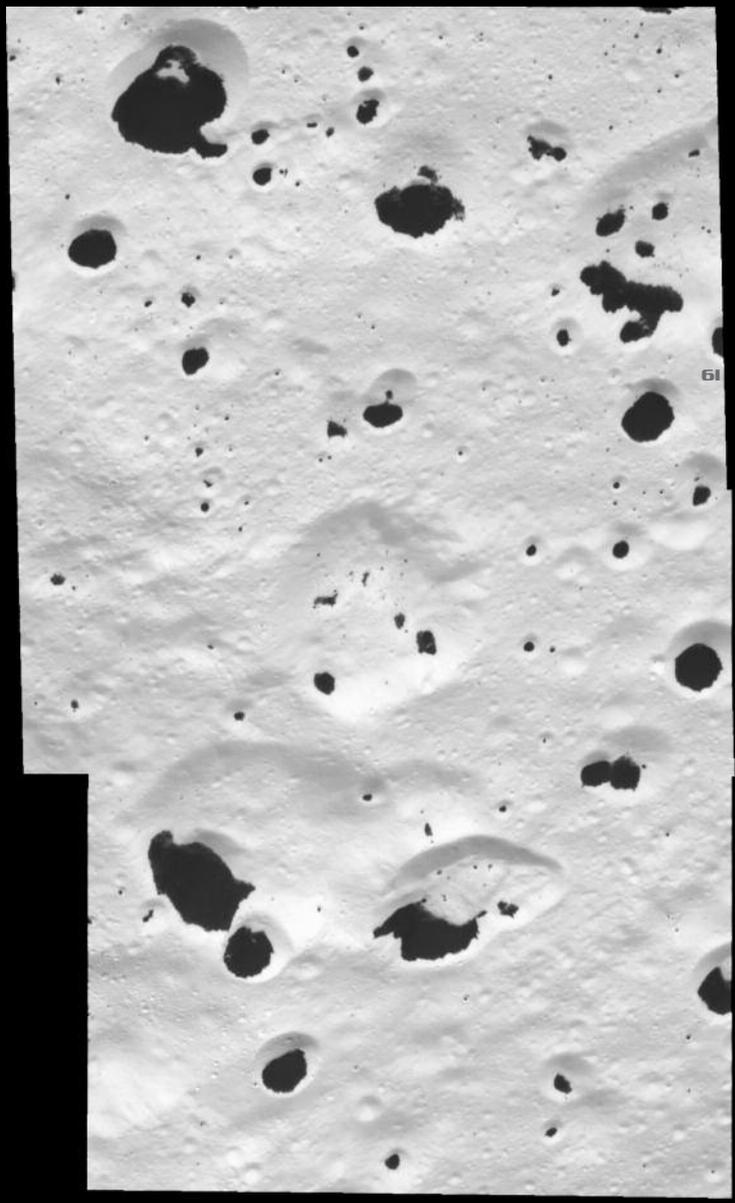
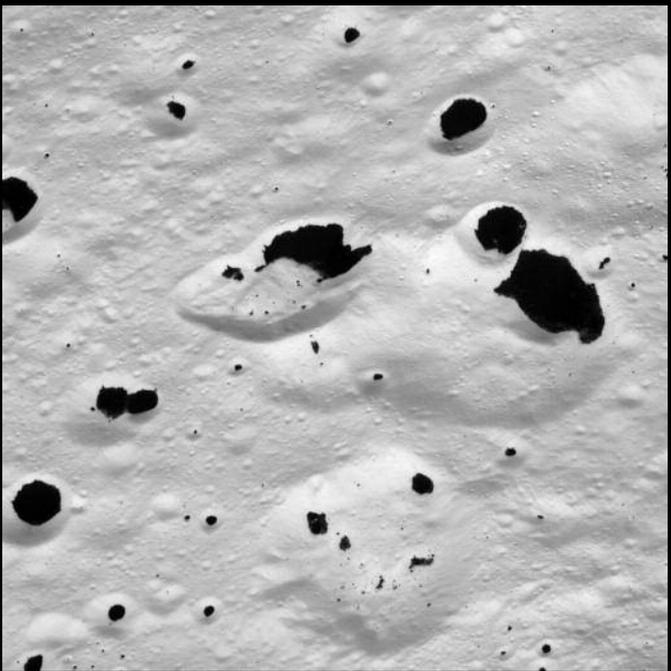
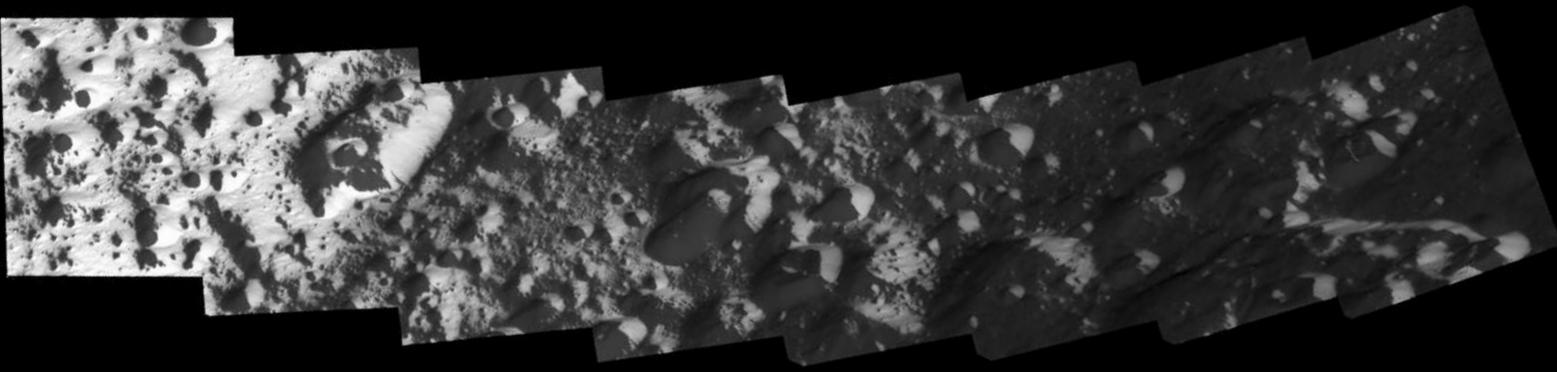
Saturn VIII (Iapetus)

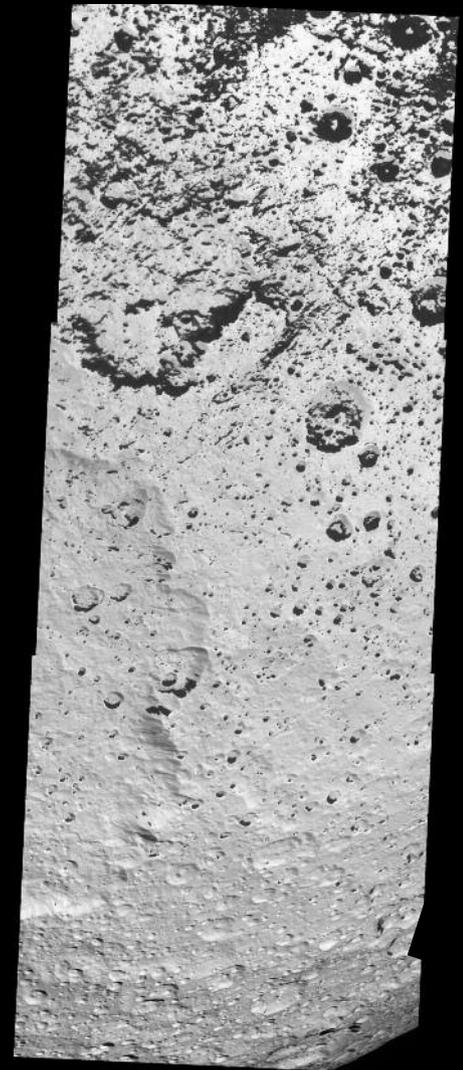
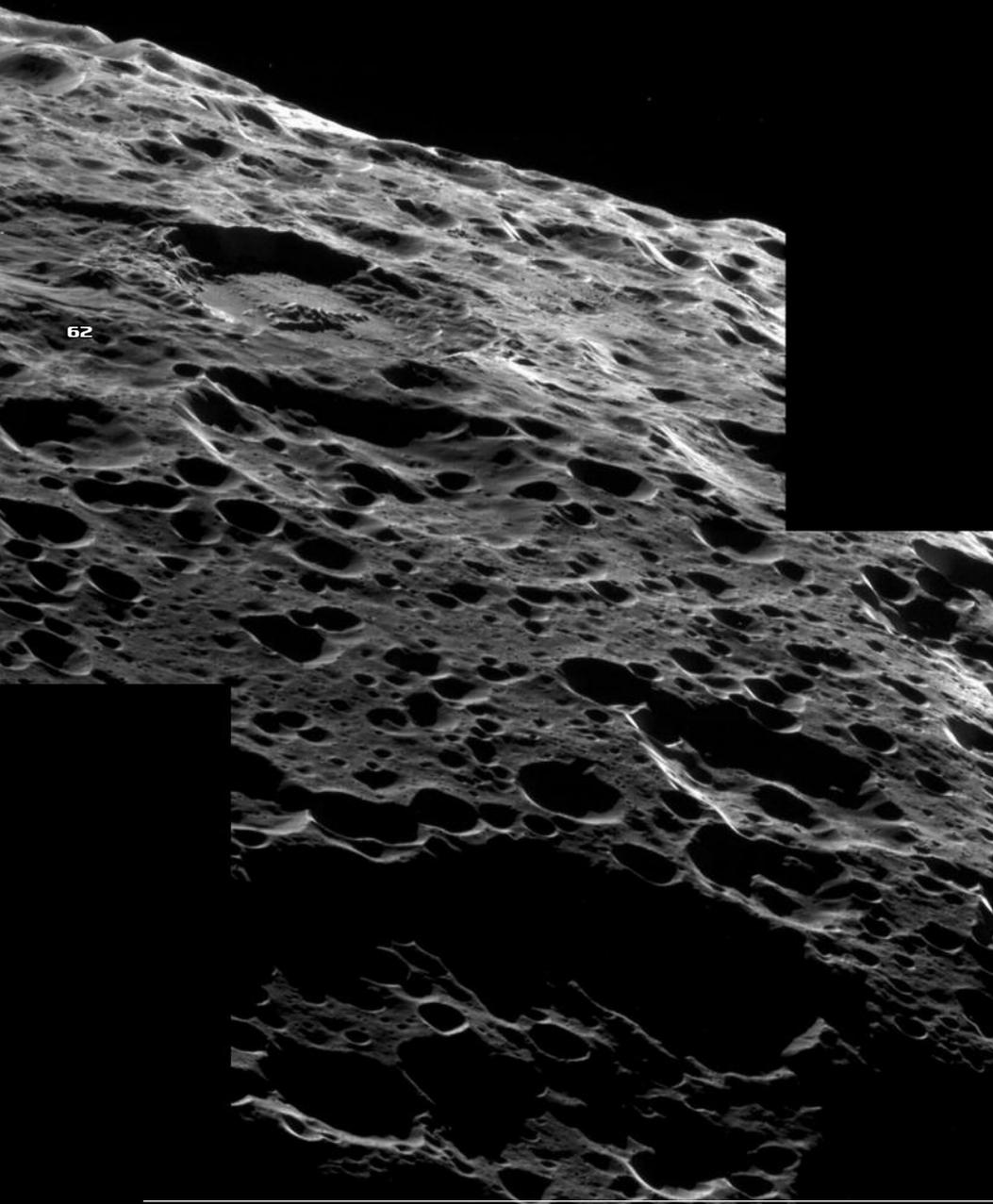
Named by John Herschel
after one of the Titans.

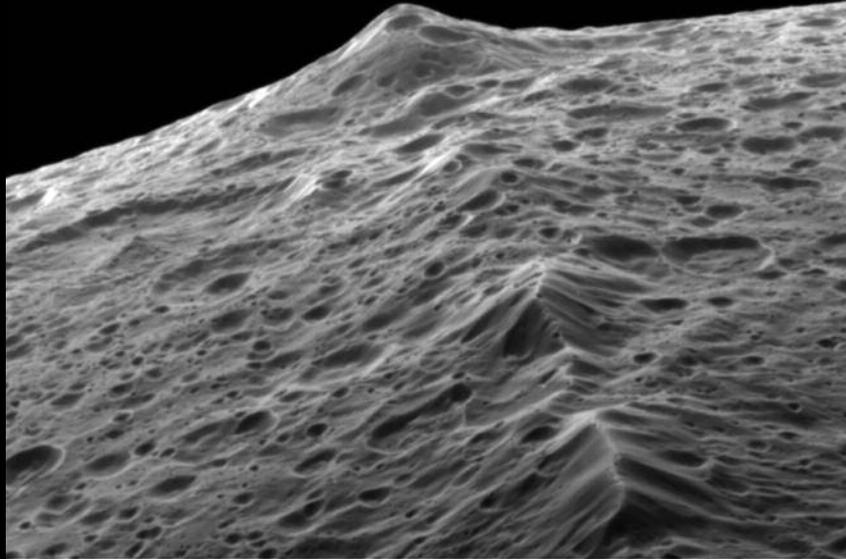
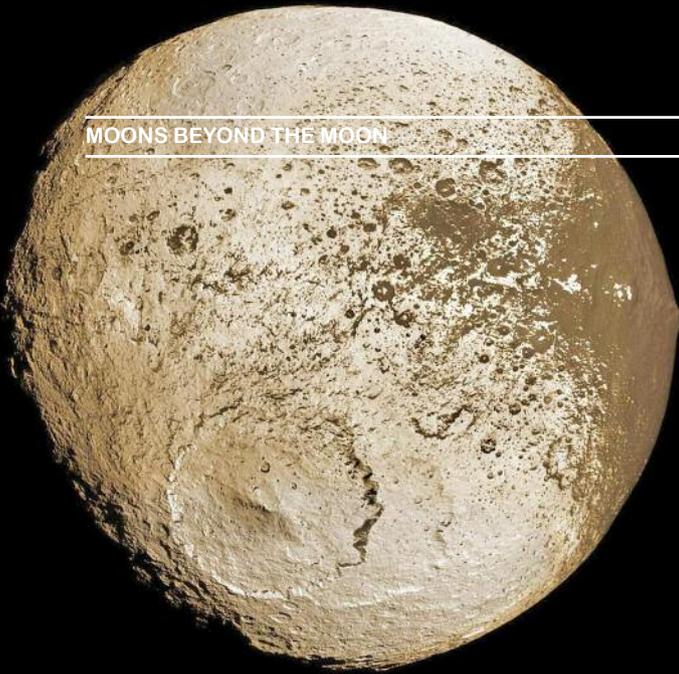
Discovery: October 25, 1671

Paris - G.D. Cassini.

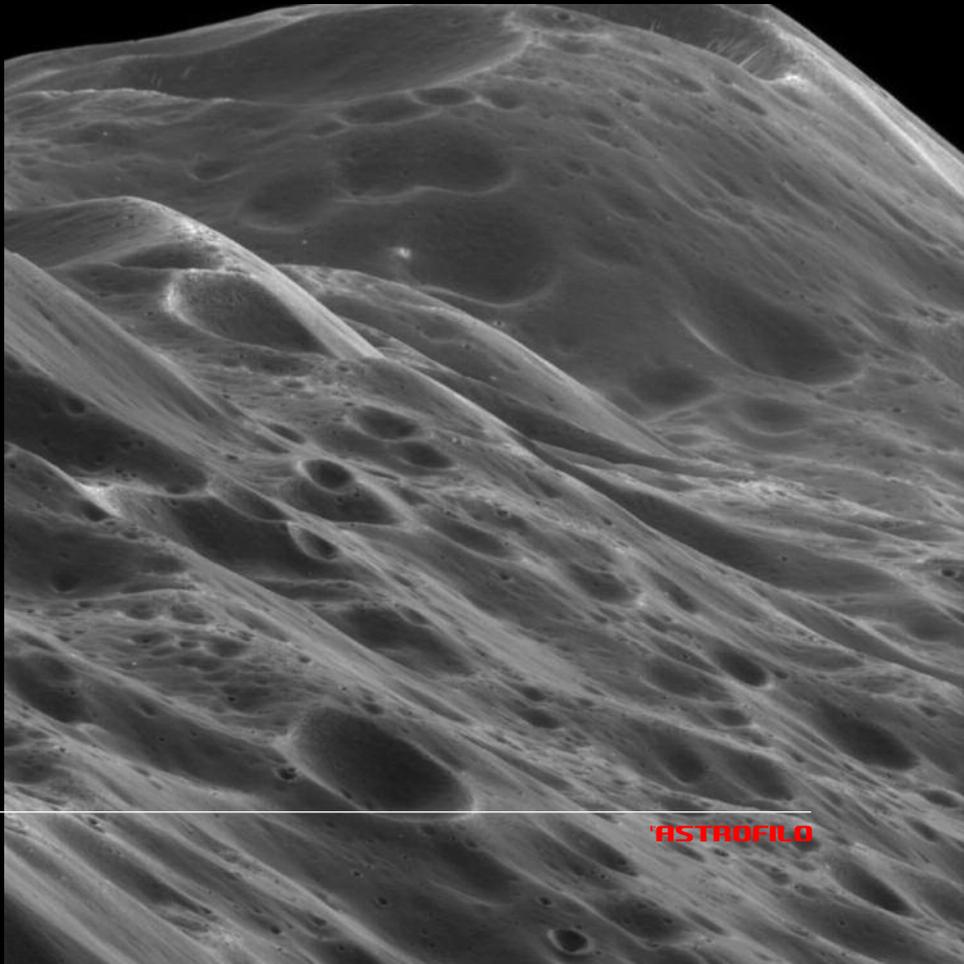
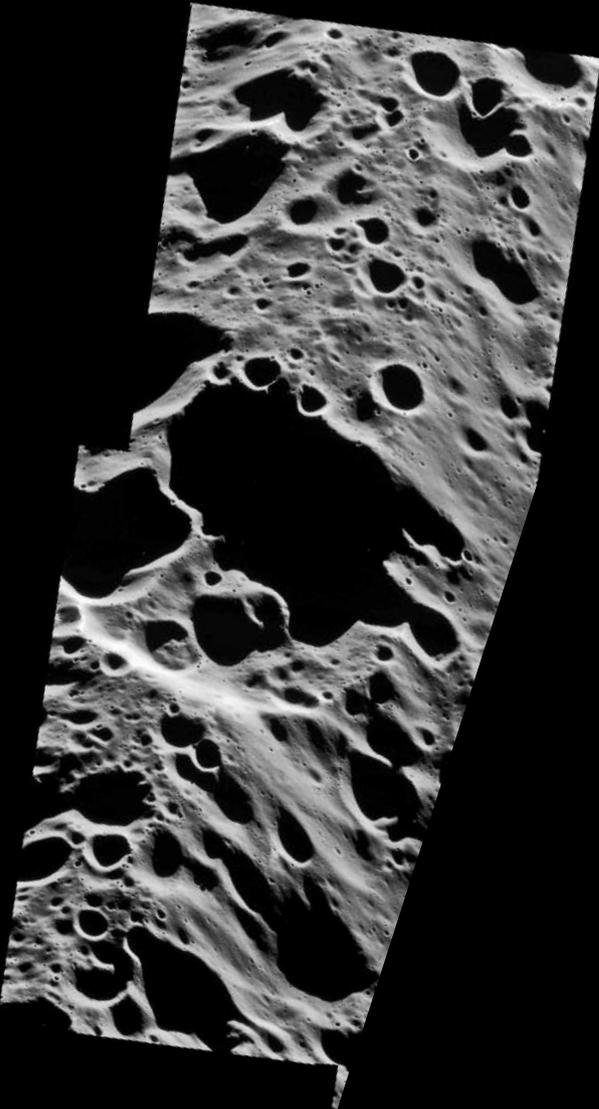




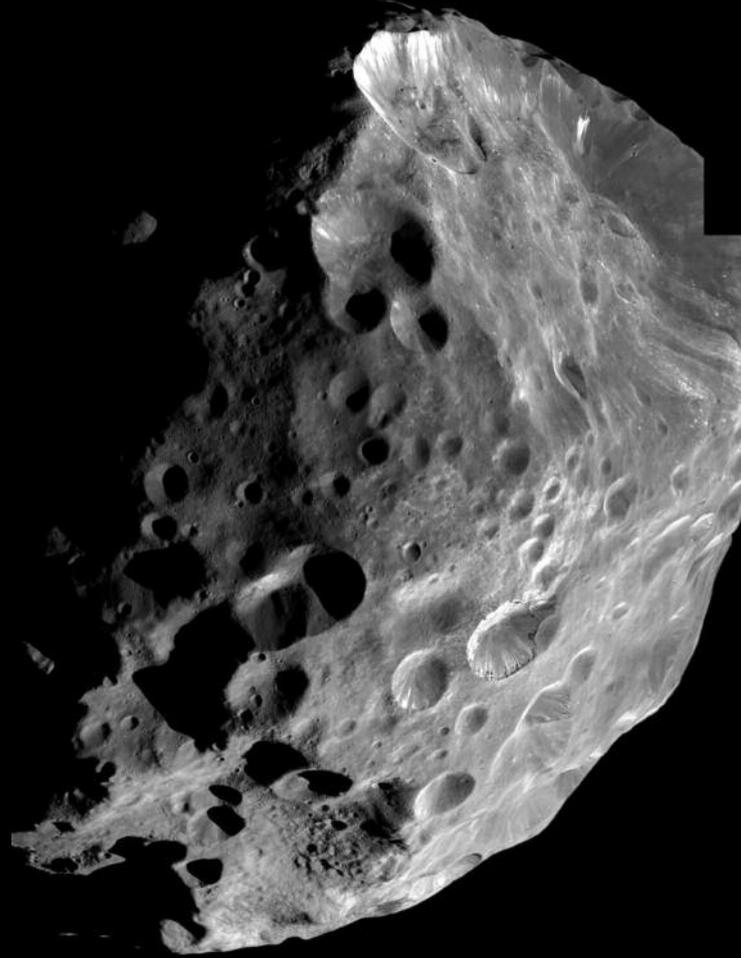




63



64

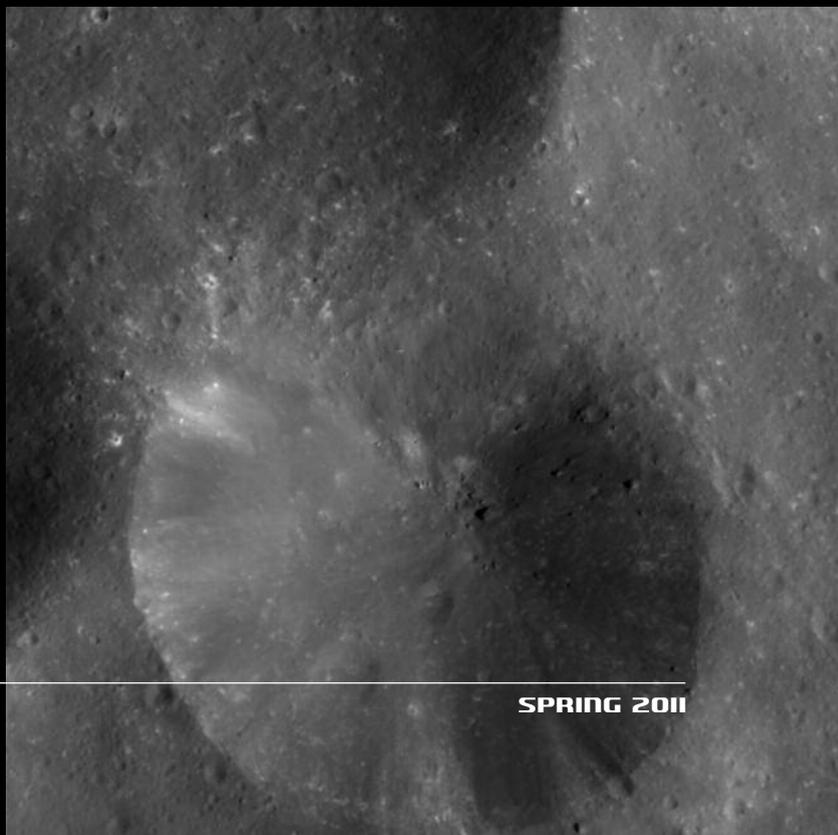


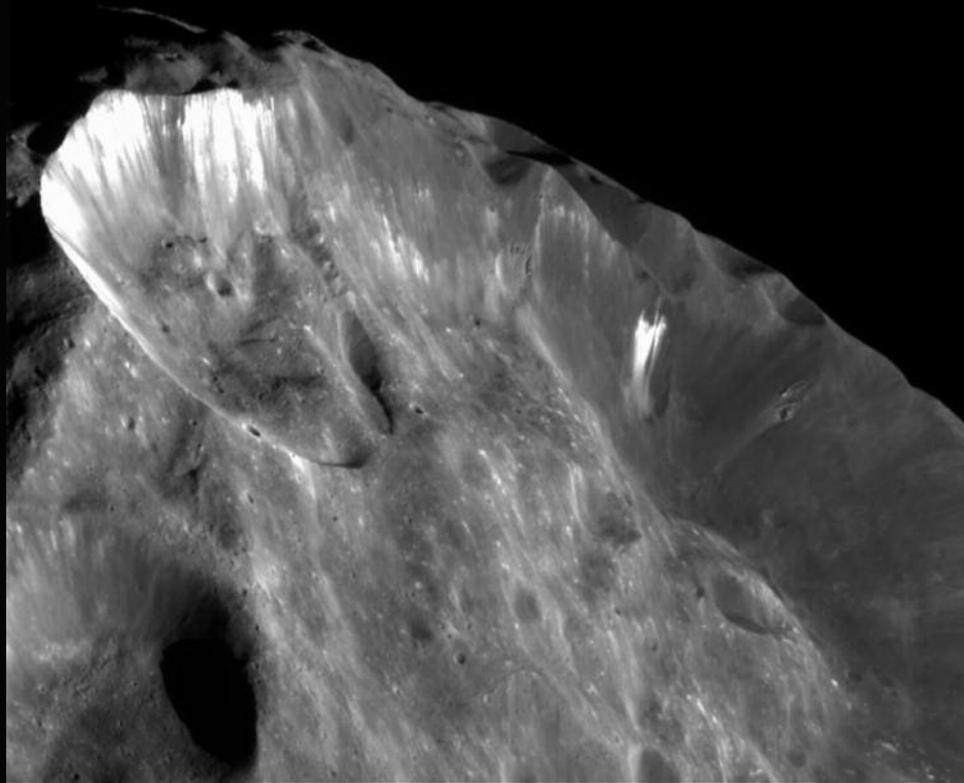
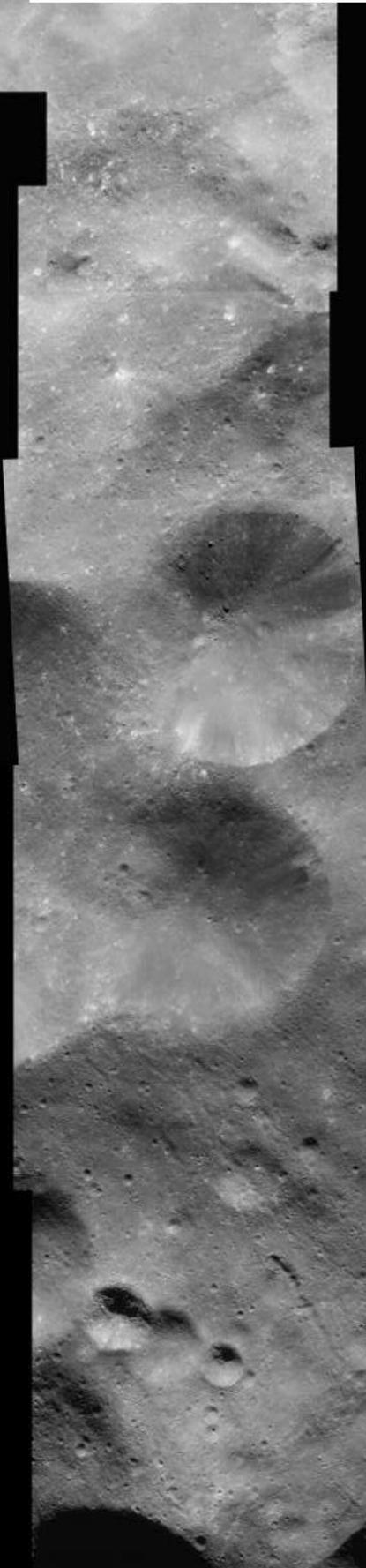
phoebe

Saturn IX (Phoebe)

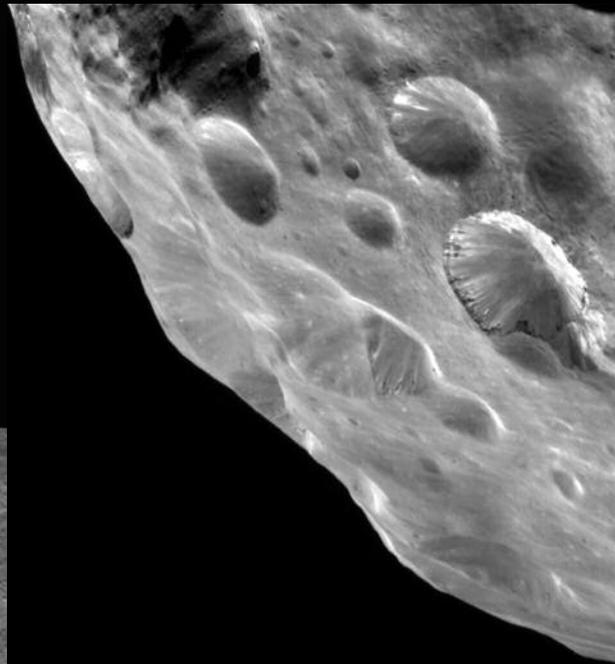
Named by Pickering after one of the Titanesses.

Discovery: August 16, 1898 - Arequipa - W.H. Pickering.

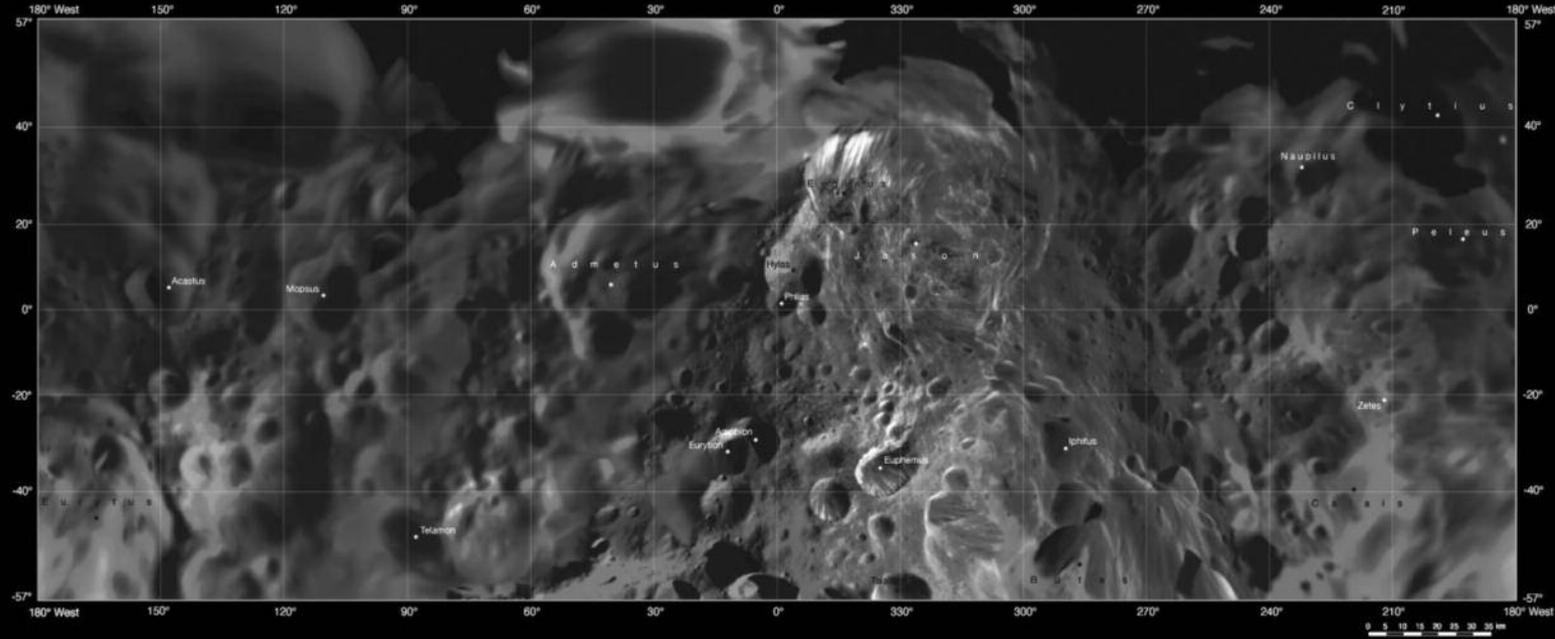


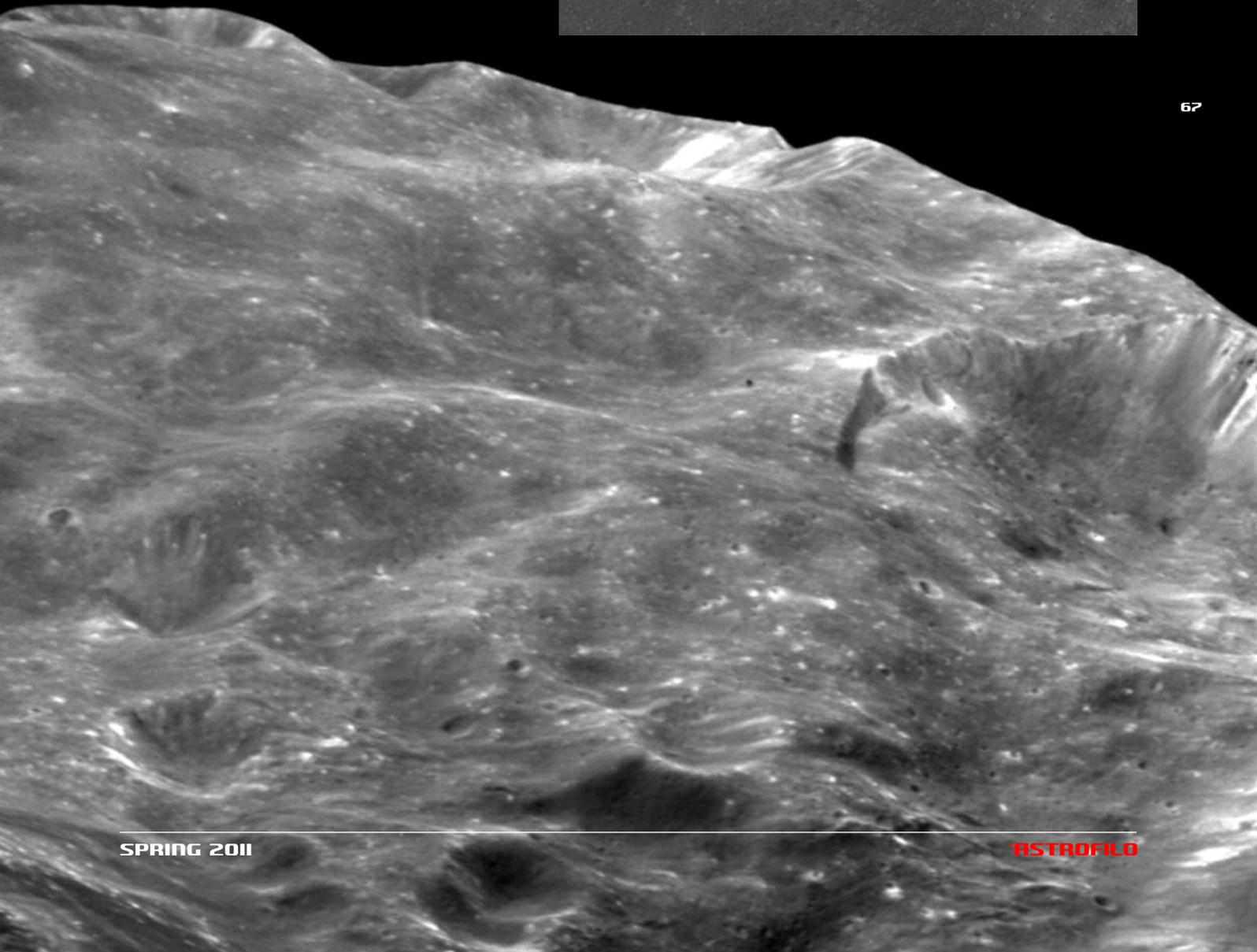
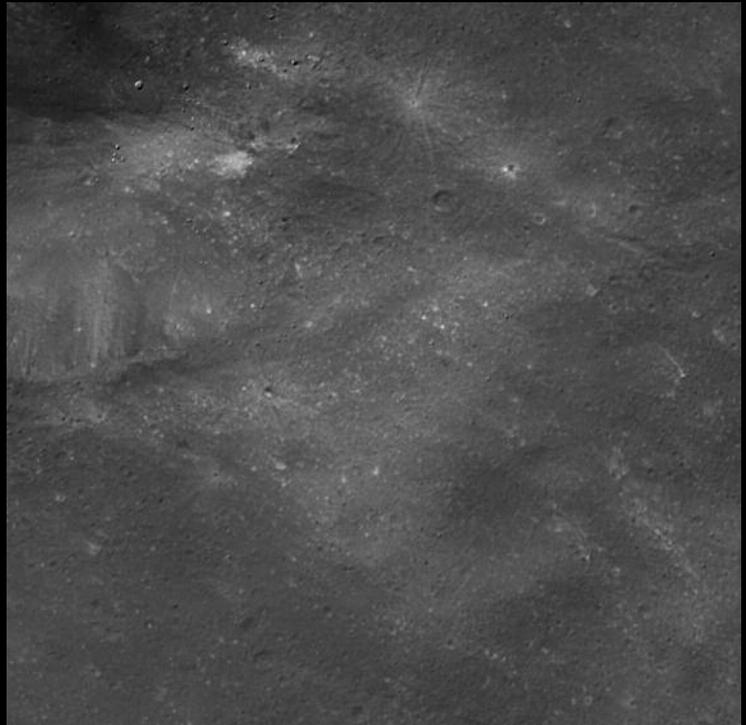


65

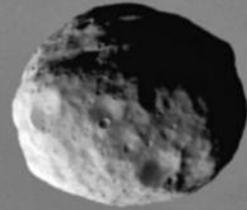


Phoebe - Mercator Projection



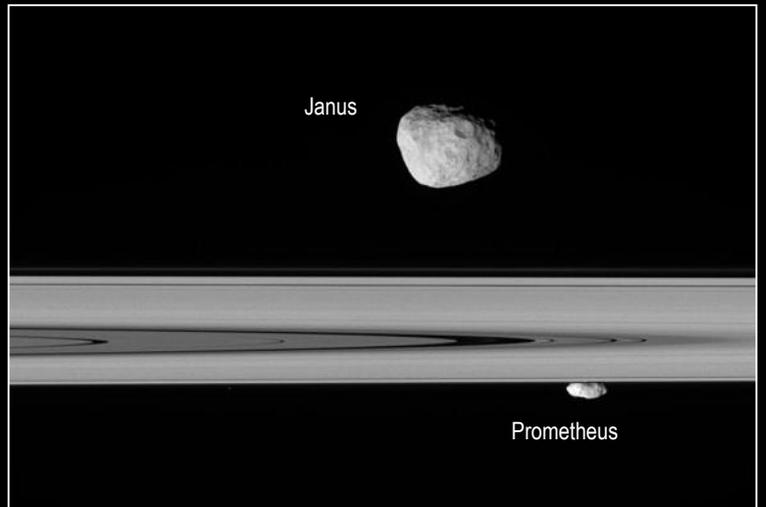


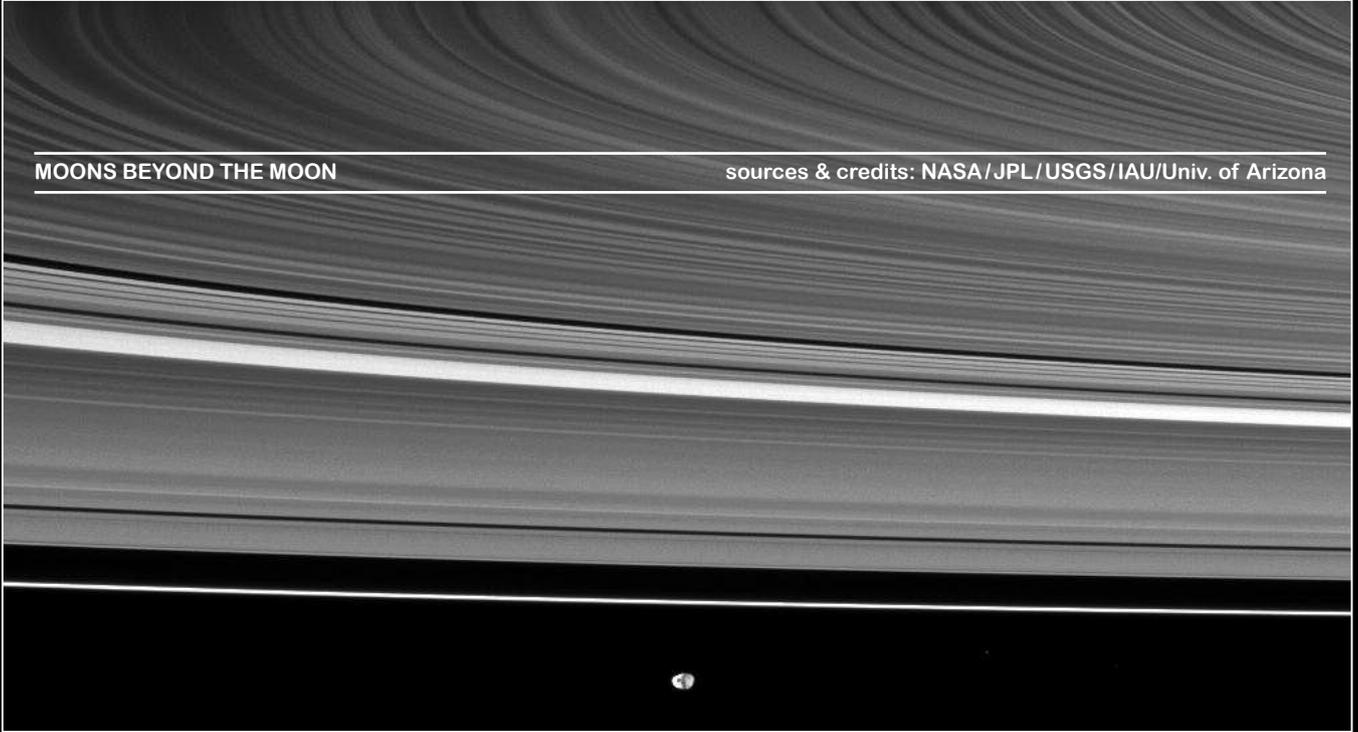
j
a
n
u
s



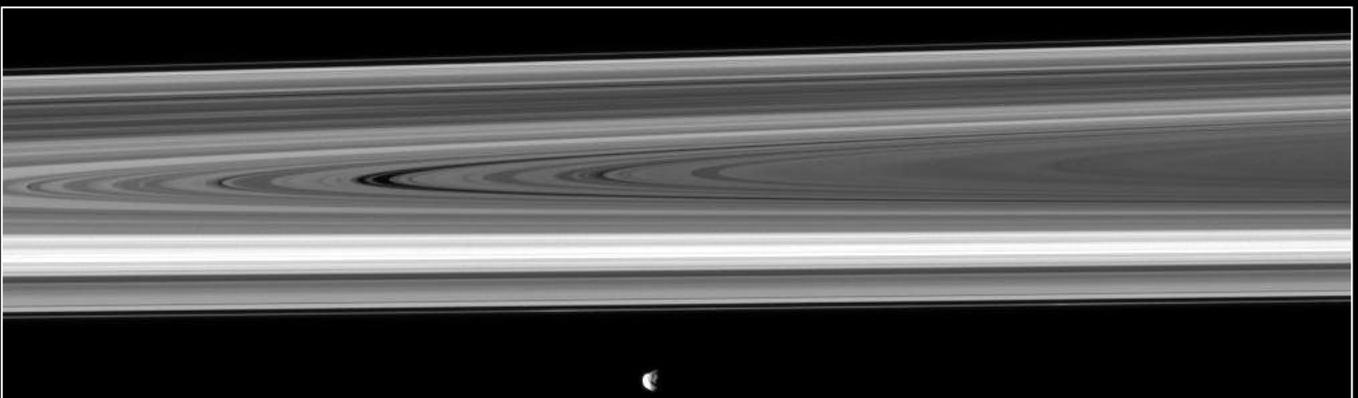
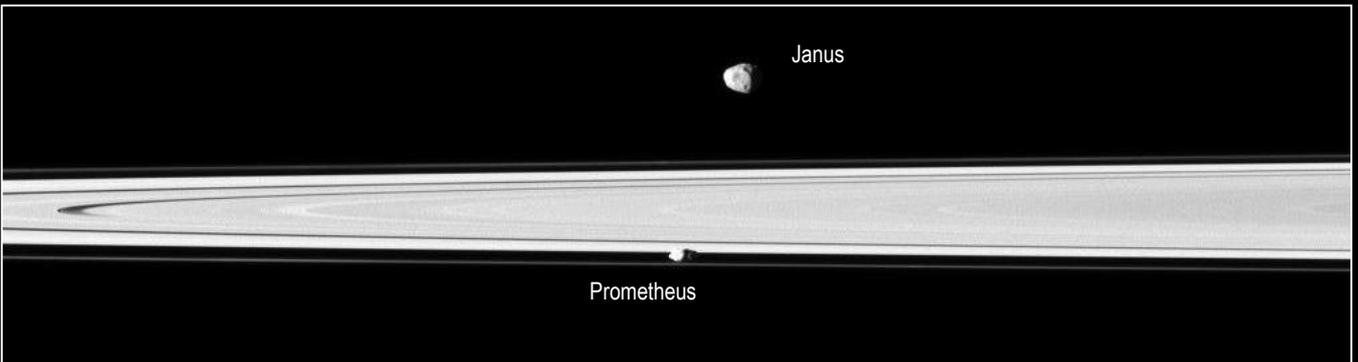
Saturn X (Janus)

First reported (though with an incorrect orbital period) and named by A. Dollfus from observations in Dec. 1966, this satellite was finally confirmed in 1980. It was proven to have a twin, Epimetheus, sharing the same orbit but never actually meeting. It is named after the Roman god of the beginning. The two-faced god could look forward and backward at the same time. Discovery: December 15, 1966 (Dollfus), February 19, 1980 (Pascu) - Pic du Midi (Dollfus), Washington (Pascu) - A. Dollfus (1966), D. Pascu (1980).

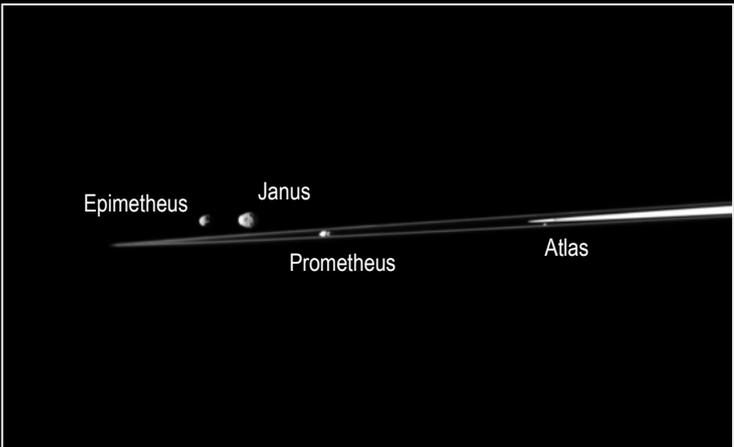
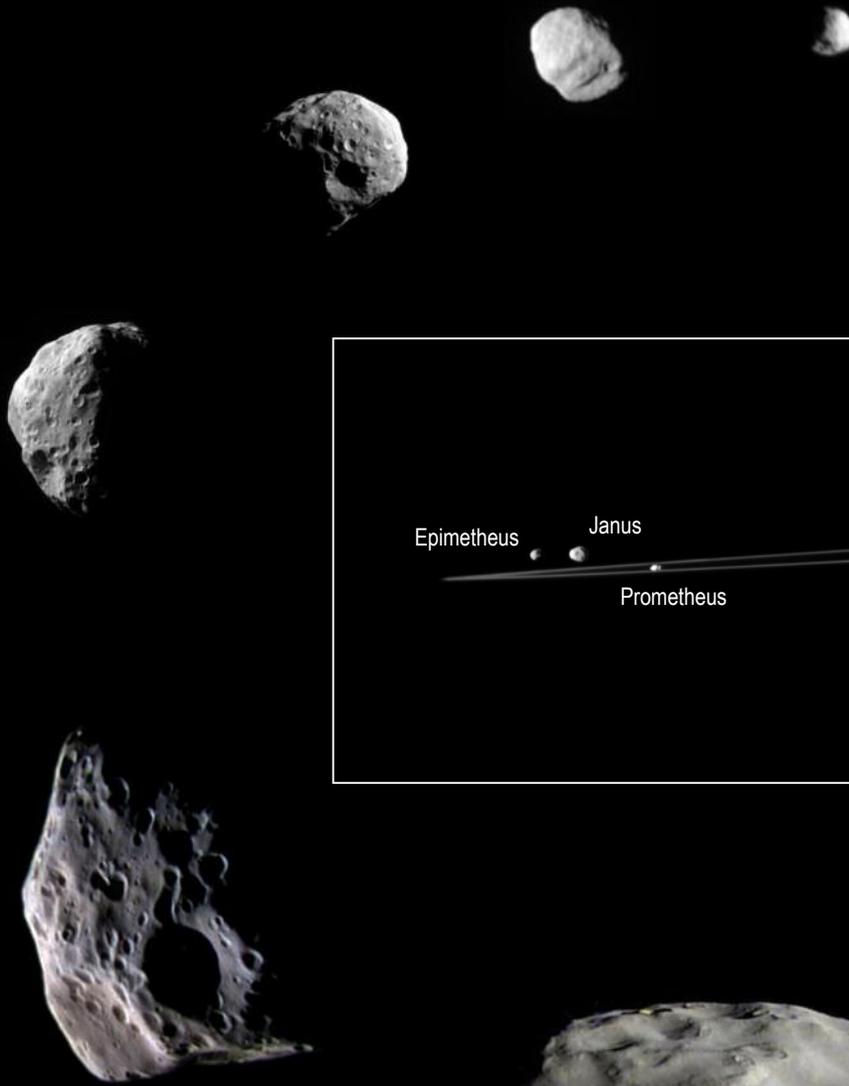




69



e
p
i
m
e
t
h
e
u
s



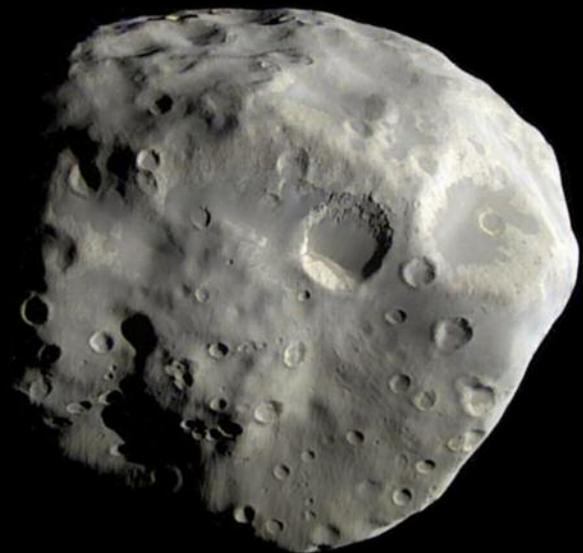
70

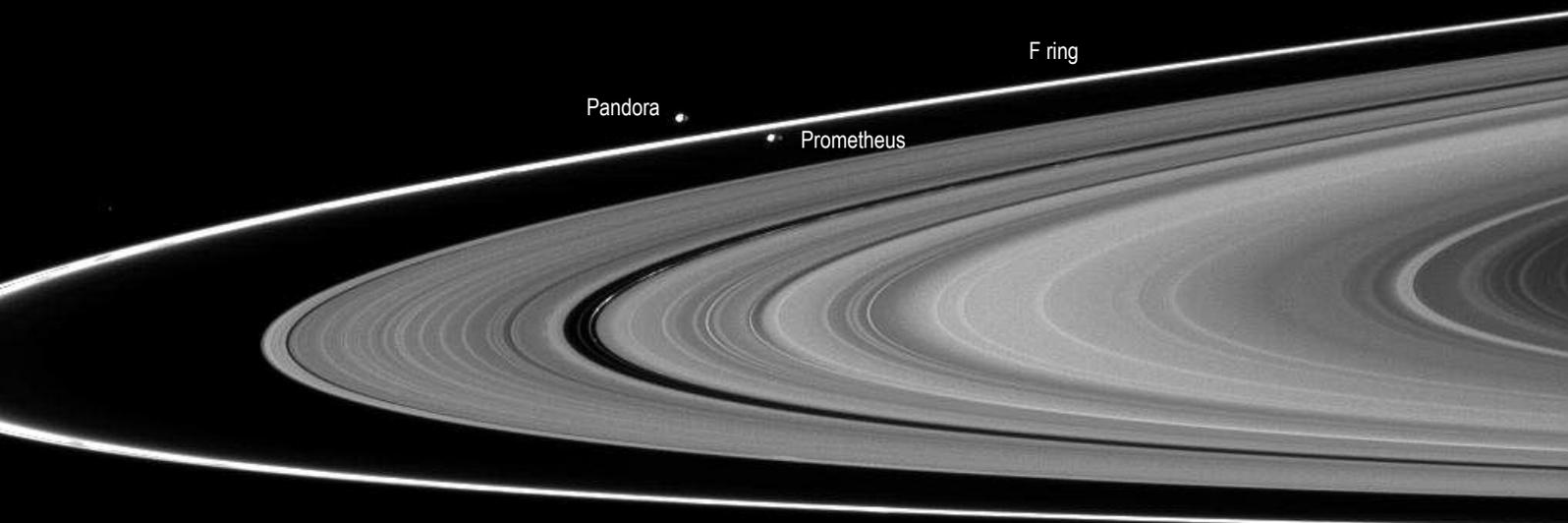
Saturn XI (Epimetheus)

First suspected by J. Fountain and S. Larson as confusing the detection of Janus. They assigned the correct orbital period, and the satellite was finally confirmed in 1980. Named after the son of the Titan Japetus.

In contrast to his far-sighted brother, Prometheus, he was instead the god of "afterthought".

Discovery: J. Fountain and S. Larson (1977), Tucson - D. Cruikshank (1980), Mauna Kea.



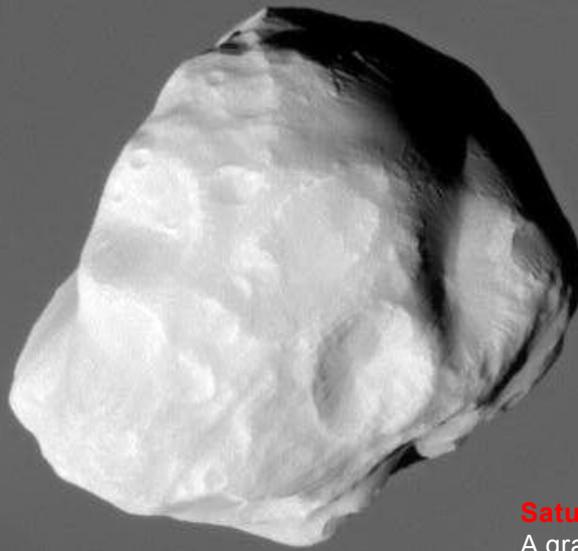


Epimetheus

71



h
e
l
e
n
e

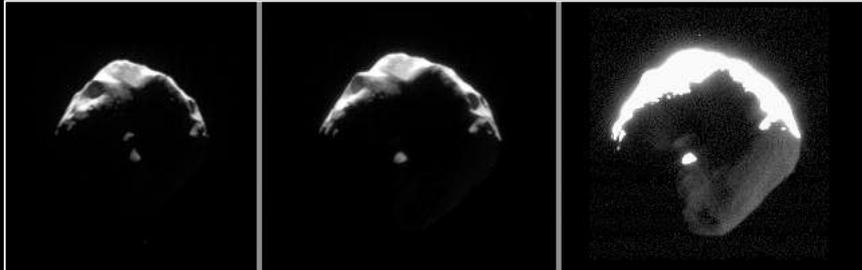


Saturn XII (Helene)

A granddaughter of Kronos, her beauty was the cause of the Trojan War.

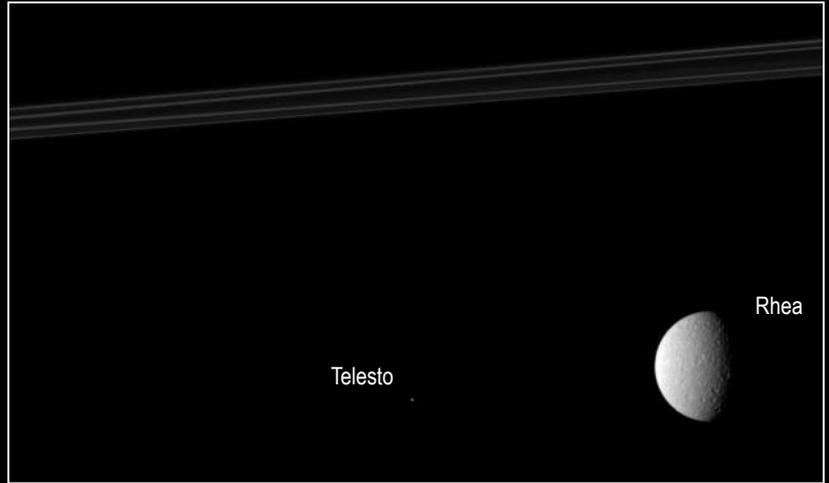
Discovery: March 1, 1980 - Pic du Midi - P. Laques and J. Lecacheux.

72





t
e
l
e
s
t
o

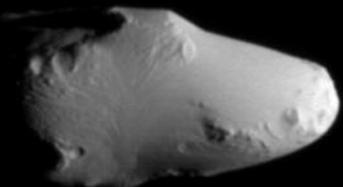


Saturn XIII (Telesto)

Daughter of the Titans Oceanus and Tethys.

Discovery: April 8, 1980 - Tucson - B.A. Smith, H. Reitsema, S.M. Larson, and J. Fountain.

c
a
l
y
p
s
o

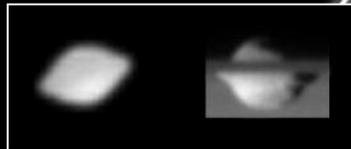


73

Saturn XIV (Calypso)

Daughter of the Titans Oceanus and Tethys and paramour of Odysseus.

Discovery: March 13, 1980 - Flagstaff - D. Pascu, P.K. Seidelmann, W. Baum, and D. Currie.



Saturn XV (Atlas)

A Titan; he held the heavens on his shoulders.

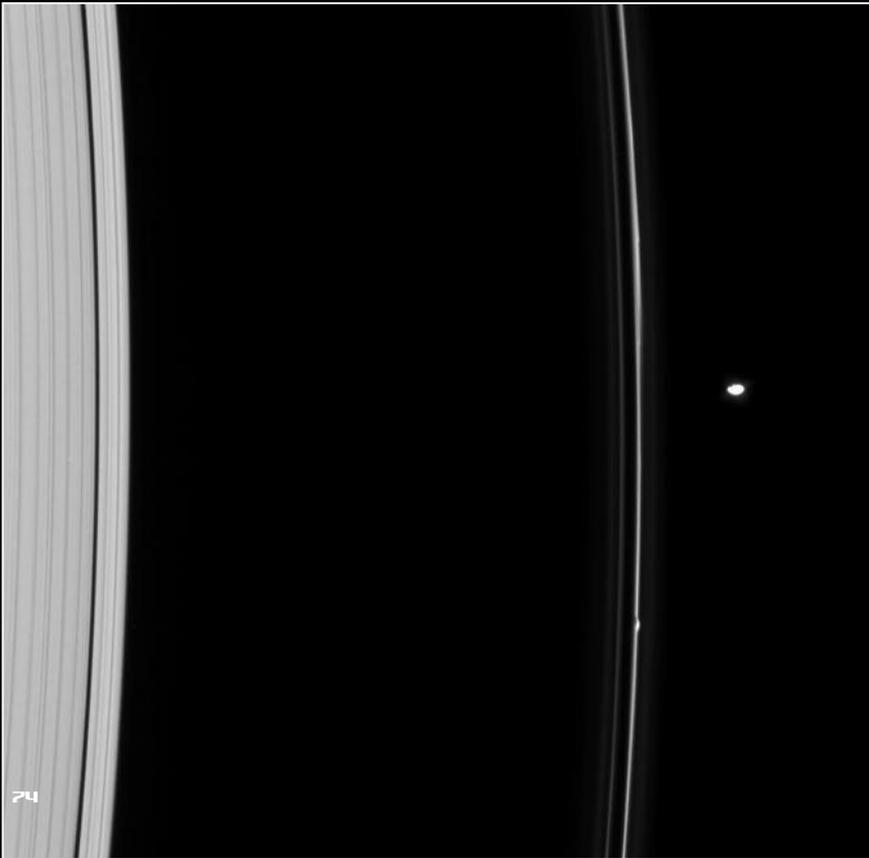
Discovery: October 1980 - Voyager 1 - Voyager Science Team.

a
t
l
a
s

Saturn XVI (Prometheus)

Son of the Titan Japetus, brother of Atlas and Epimetheus, he gave many gifts to humanity, including fire.

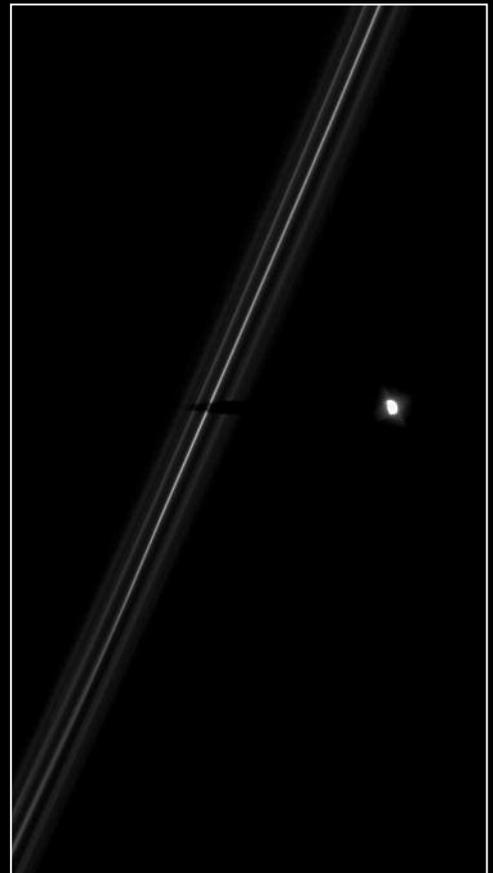
Discovery: October 1980 - Voyager 1 - Voyager Science Team.

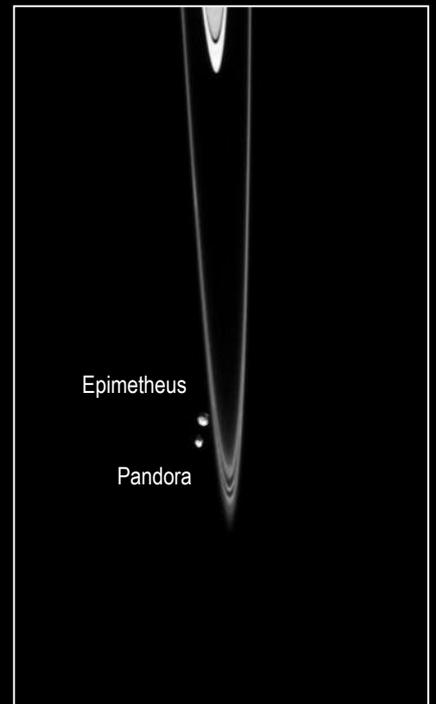
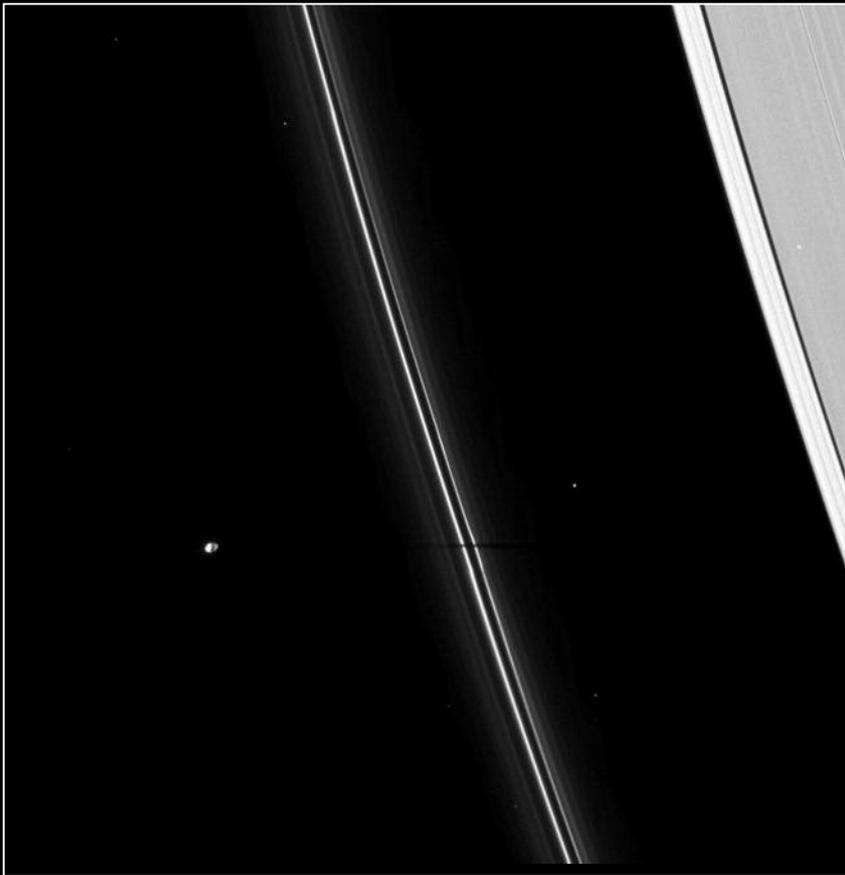
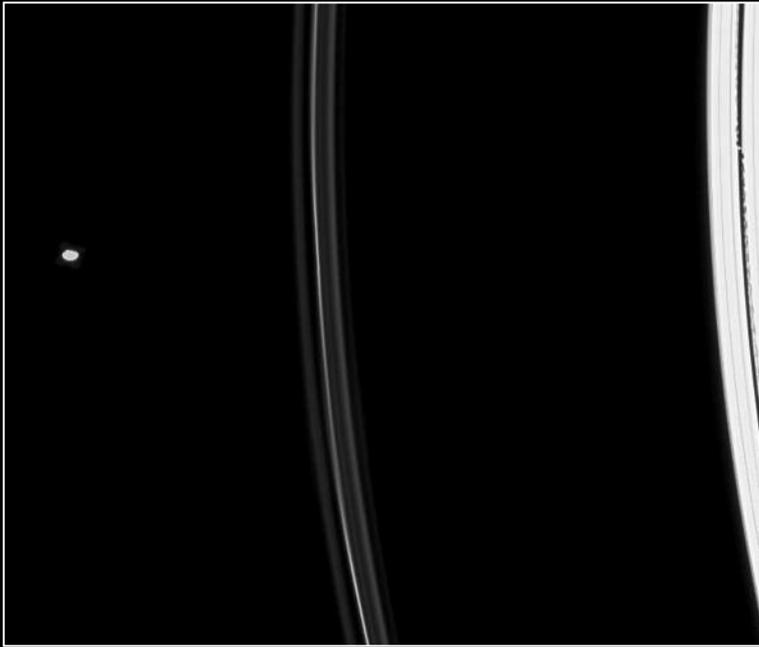


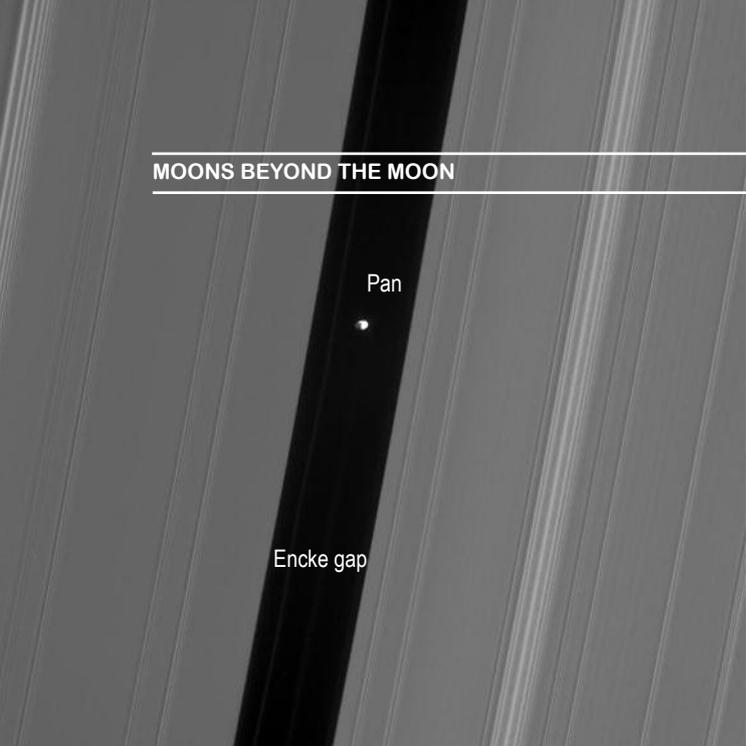
p
a
n
d
o
r
a



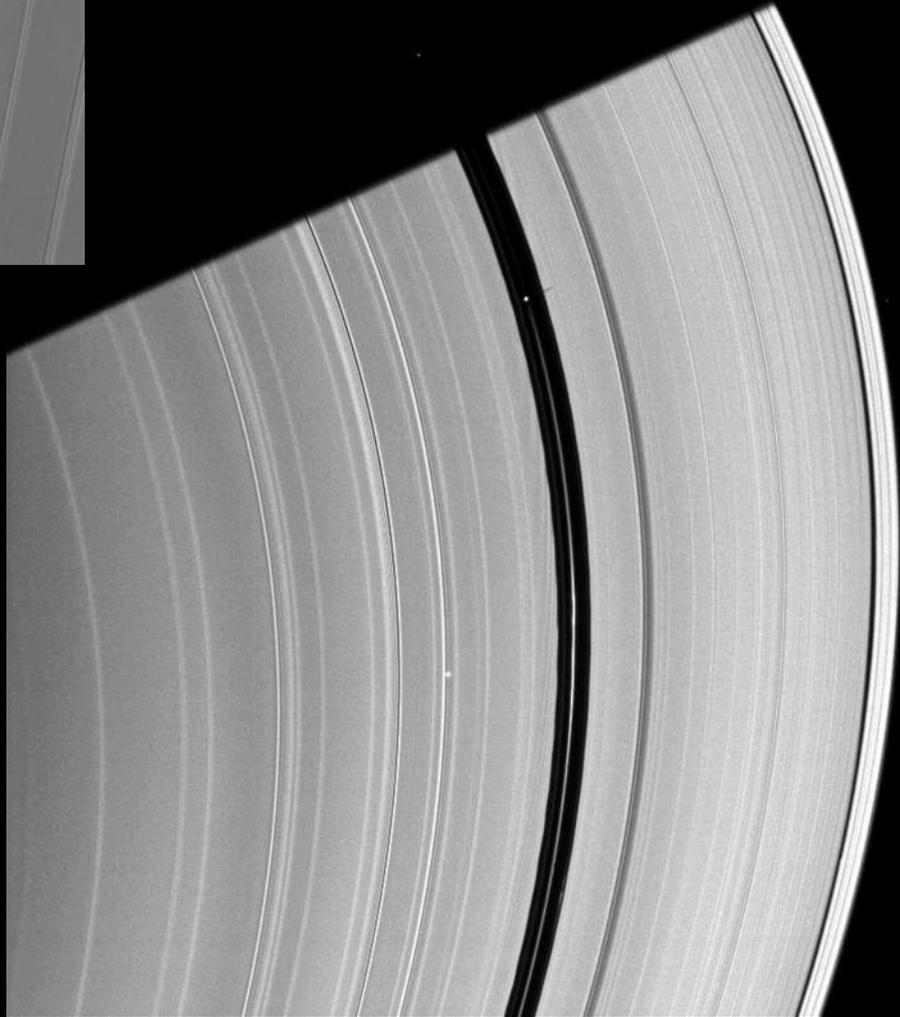
Saturn XVII (Pandora)
Made of clay by Hephaestus at the request of Zeus. She married Epimetheus and opened the box that released a host of plagues upon humanity.
Discovery: October 1980 - Voyager 1 - Voyager Science Team.



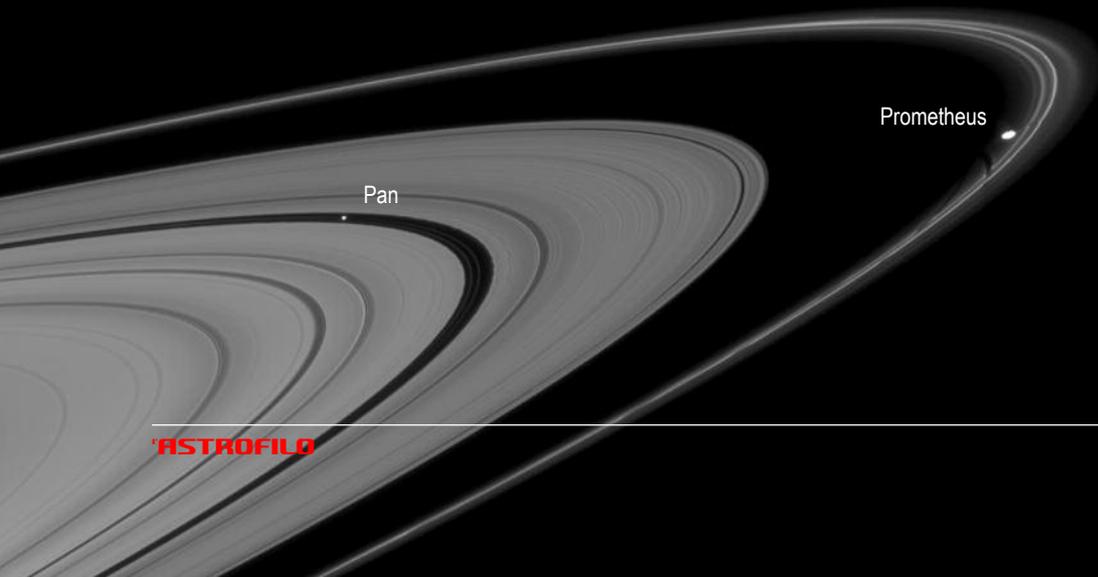
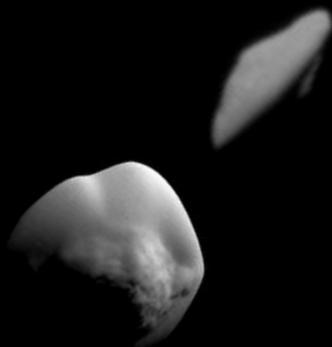




pan



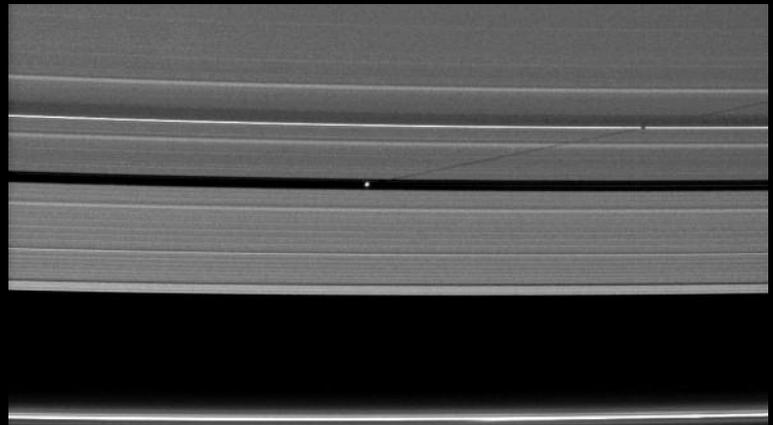
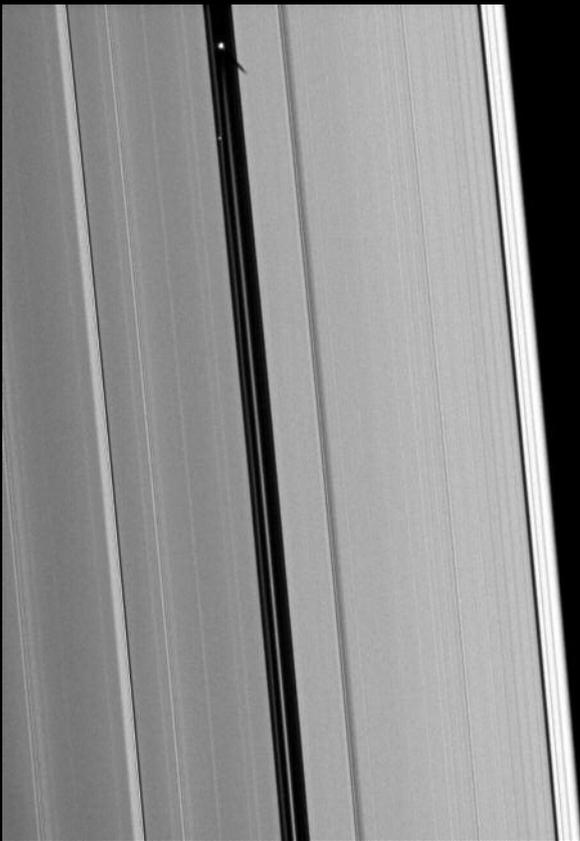
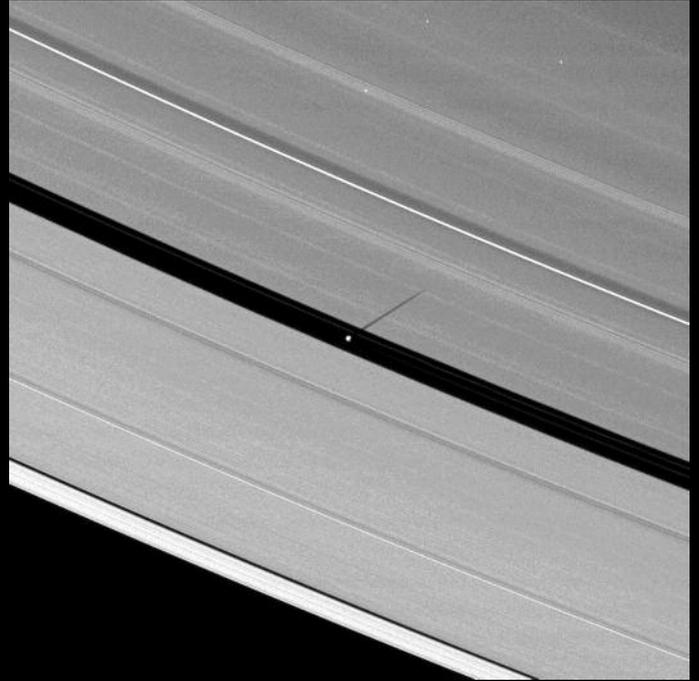
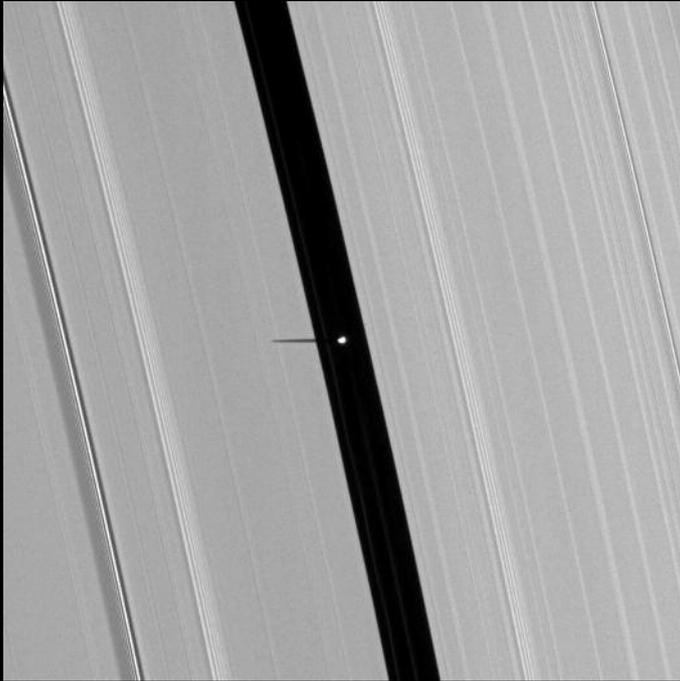
76



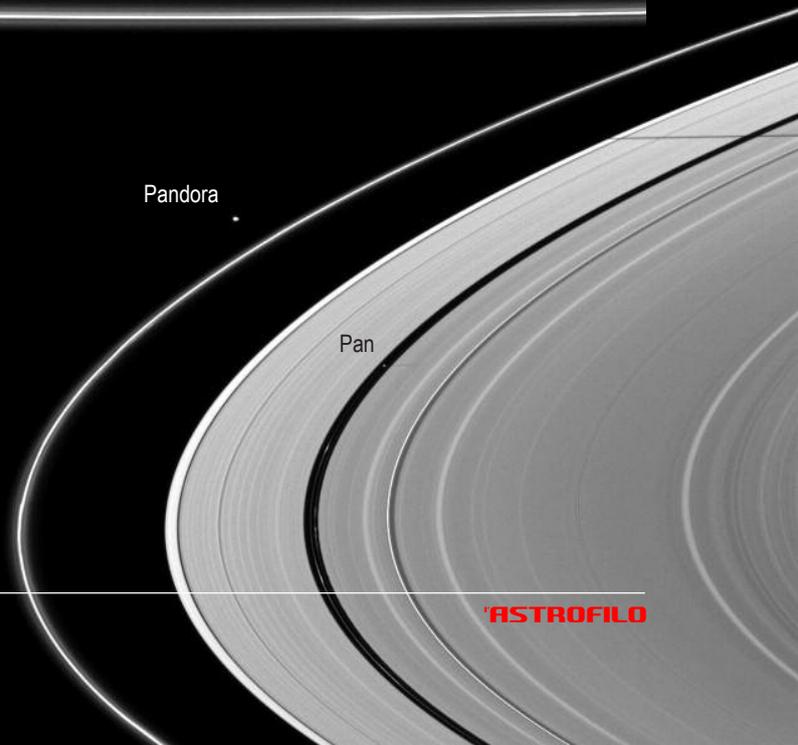
Saturn XVIII (Pan)

Greek god of shepherds and flocks, he was half goat and half human. Son of Hermes, brother of Daphnis, and a descendant of the Titans. Discovered orbiting in the Encke division in Saturn's A ring.

Discovery: 1990 - Voyager 2 - M.R. Showalter.



??



Saturn XIX (Ymir)

Ymir is the primordial Norse giant and the progenitor of the race of frost giants.

Discovery: August 7, 2000 - La Silla - B. Gladman, J. Kavelaars, J.-M. Petit, H. Scholl, M. Holman, B.G. Marsden, P. Nicholson and J.A. Burns.

Saturn XX (Paaliaq)

Named after an Inuit giant.
Discovery: August 7, 2000 - La Silla - B. Gladman, J. Kavelaars, J.-M. Petit, H. Scholl, M. Holman, B.G. Marsden, P. Nicholson and J.A. Burns.

Saturn XXI (Tarvos)

Named after a Gallic giant.
Discovery: September 23, 2000 - Mauna Kea - B. Gladman, J. Kavelaars, J.-M. Petit, H. Scholl, M. Holman, B.G. Marsden, P. Nicholson and J.A. Burns.

Saturn XXII (Ijiraq)

Named after an Inuit giant.
Discovery: September 23, 2000 - Mauna Kea - B. Gladman, J. Kavelaars, J.-M. Petit, H. Scholl, M. Holman, B.G. Marsden, P. Nicholson and J.A. Burns.

Saturn XXIII (Suttungr)

Named after a Norse giant who kindled flames that destroyed the world.
Discovery: September 23, 2000 - Mauna Kea - B. Gladman, J. Kavelaars,

J.-M. Petit, H. Scholl, M. Holman, B.G. Marsden, P. Nicholson and J.A. Burns.

Saturn XXIV (Kiviuq)

Named after an Inuit giant.
Discovery: August 7, 2000 - La Silla - B. Gladman, J. Kavelaars, J.-M. Petit, H. Scholl, M. Holman, B.G. Marsden, P. Nicholson and J.A. Burns.

Saturn XXV (Mundilfari)

Named after a Norse giant.
Discovery: September 23, 2000 - Mauna Kea - B. Gladman, J. Kavelaars, J.-M. Petit, H. Scholl, M. Holman, B.G. Marsden, P. Nicholson and J.A. Burns.

Saturn XXVI (Albiorix)

Named after a Gallic giant who was considered to be the king of the world.
Discovery: November 9, 2000 Mt. Hopkins - M. Holman.

Saturn XXVII (Skathi)

Named after a Norse giantess.
Discovery: September 23, 2000 - Mauna Kea - B. Gladman, J. Kavelaars, J.-M. Petit, H. Scholl, M. Holman, B.G. Marsden, P. Nicholson and J.A. Burns.

Saturn XXVIII (Erriapus)

Named after a Gallic giant.
Discovery: September 23, 2000 - Mauna Kea - B. Gladman, J. Kavelaars, J.-M. Petit, H. Scholl, M. Holman, B.G. Marsden, P. Nicholson and J.A. Burns.

Saturn XXIX (Siarnaq)

Named after an Inuit giant.
Discovery: September 23, 2000 - Mauna Kea - B. Gladman, J. Kavelaars, J.-M. Petit, H. Scholl, M. Holman, B.G. Marsden, P. Nicholson and J.A. Burns.

Saturn XXX (Thrymr)

Named after a Norse giant.
Discovery: September 23, 2000 - Mauna Kea - B. Gladman, J. Kavelaars, J.-M. Petit, H. Scholl, M. Holman, B.G. Marsden, P. Nicholson and J.A. Burns.

Saturn XXXI (Narvi)

Named after a Norse giant.
Discovery: February 5, 2003 - Mauna Kea - S.S. Sheppard, D.C. Jewitt, and J. Kleyna.

Saturn XXXII (Methone)

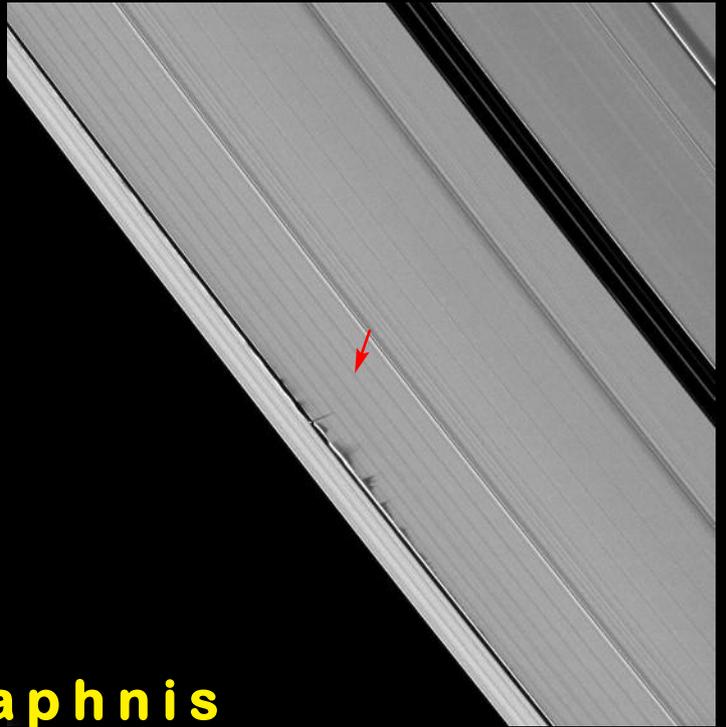
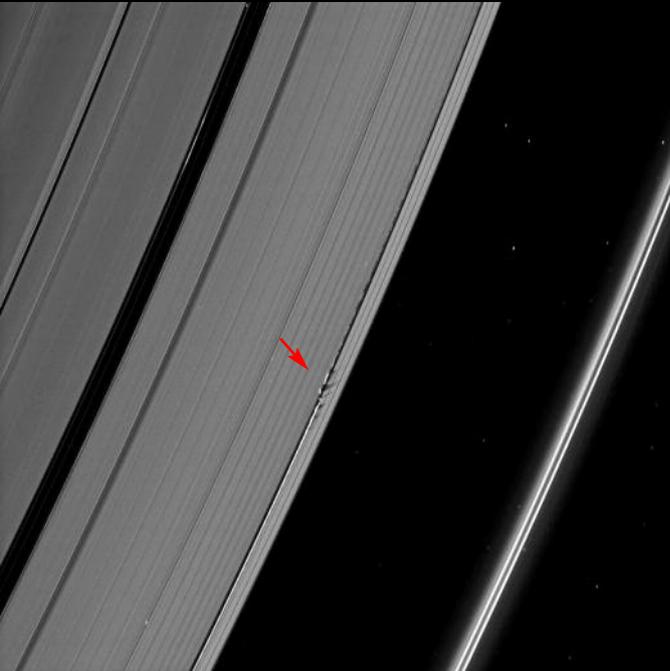
One of the Alkyonides, the seven beautiful daughters of the Giant Alkyoneos.
Discovery: June 1, 2004 - Cassini Imaging Science Team.

Saturn XXXIII (Pallene)

One of the Alkyonides, the seven beautiful daughters of the Giant Alkyoneos.
Discovery: June 1, 2004 - Cassini Imaging Science Team .

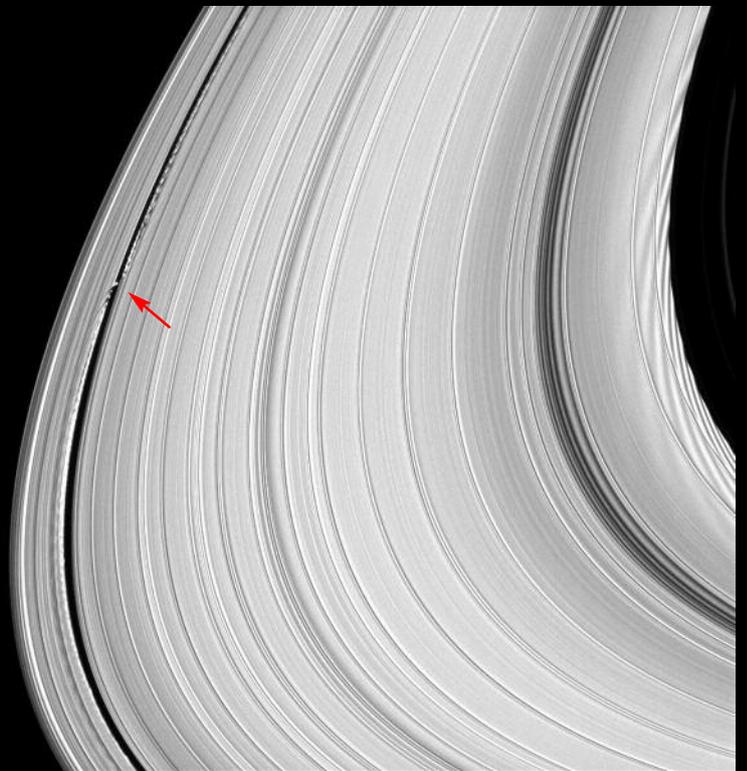
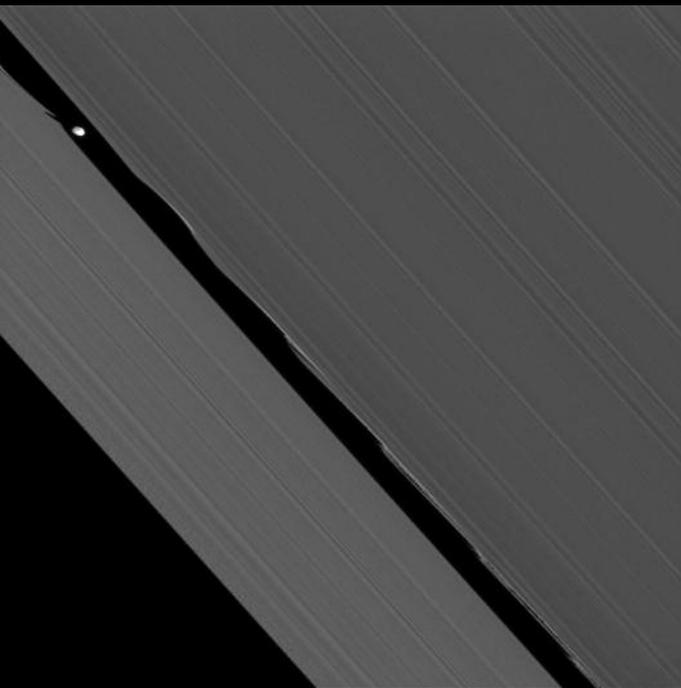
Saturn XXXIV (Polydeuces)

Twin brother of Castor, son of Zeus and Leda.
Discovery: October 21, 2004 - Cassini Imaging Science Team.



daphnis

79





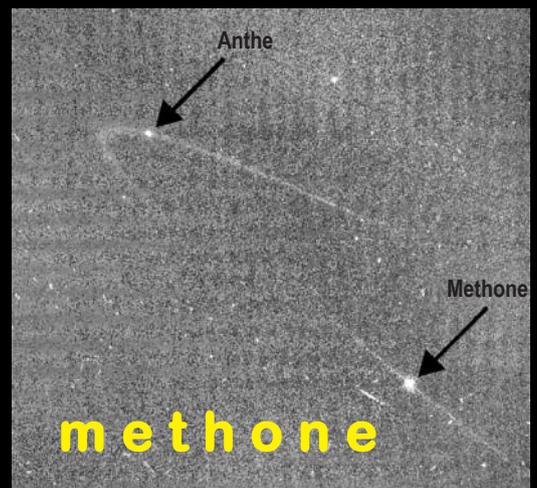
anthe



polydeuces



pallene



methone

Saturn XXXV (Daphnis)

Shepherd, pipes player, and pastoral poet in Greek mythology. Son of Hermes, brother of Pan, and descendant of the Titans.

Discovered orbiting in the Keeler gap in Saturn's A ring.

Discovery: May 1, 2005 - Cassini Imaging Science Team.

Saturn XXXVI (Aegir)

Norse ocean giant who represents the peaceful sea, calmer of storms.

Discovery: December 12, 2004
Mauna Kea - S. Sheppard,
D.C. Jewitt, J. Kleyna.

Saturn XXXVII (Bebhionn)

Beautiful Celtic giantess.

Discovery: December 12, 2004
Mauna Kea - S. Sheppard,
D.C. Jewitt, J. Kleyna.

Saturn XXXVIII (Bergelmir)

Norse frost giant, son of Ymir and one of the Hrimthursar, one of only two members of the frost giant race to escape being drowned in Ymir's blood.

Discovery: December 12, 2004
- Mauna Kea - S. Sheppard,
D.C. Jewitt, J. Kleyna.

Saturn XXXIX (Bestla)

Norse primeval goddess, mother of deities, daughter of the giant Bolthorn.

Discovery: December 13, 2004
Mauna Kea - S. Sheppard,
D.C. Jewitt, J. Kleyna.

Saturn XL (Farbauti)

Norse storm giant, father of Loki.

Discovery: December 12, 2004
Mauna Kea - S. Sheppard,
D.C. Jewitt, J. Kleyna.

Saturn XLI (Fenrir)

Norse monstrous wolf, son of Loki and the giantess Angurboda, father of Hati and Skoll.

Discovery: December 13, 2004 - Mauna Kea - S. Sheppard, D.C. Jewitt, J. Kleyna.

Saturn XLII (Fornjot)

Early Norse storm giant, father of Aegir, Kari, and Loge.

Discovery: December 12, 2004 - Mauna Kea - S. Sheppard, D.C. Jewitt, J. Kleyna.

Saturn XLIII (Hati)

Gigantic Norse wolf, twin of Skoll.

Discovery: December 12, 2004 - Mauna Kea - S. Sheppard, D.C. Jewitt, J. Kleyna.

Saturn XLIV (Hyrrokkin)

Norse giantess who launched Balder's funeral ship. (Spelling changed from Hyrokkin.)

Discovery: December 12, 2004 - Mauna Kea - S. Sheppard, D.C. Jewitt, J. Kleyna.

Saturn XLV (Kari)

Norse wind giant.

Discovery: January 4, 2006 - Mauna Kea - S. Sheppard,
D.C. Jewitt, J. Kleyna.

Saturn XLVI (Loge)

Norse fire giant, son of Fornjot.

Discovery: January 5, 2006 - Mauna Kea - S. Sheppard,
D.C. Jewitt, J. Kleyna.

Saturn XLVII (Skoll)

Gigantic Norse wolf, twin of Hati.

Discovery: January 5, 2006 - Mauna Kea - S. Sheppard,
D.C. Jewitt, J. Kleyna.

Saturn XLVIII (Surtur)

Norse leader of the fire giants.

Discovery: January 5, 2006 - Mauna Kea - S. Sheppard,
D.C. Jewitt, J. Kleyna.

Saturn XLIX (Anthe)

One of the Alkyonides, the seven beautiful daughters of the Giant Alkyoneos.

Discovery: May 30, 2007 - Cassini Imaging Science Team.

Saturn L (Jarnsaxa)

Norse giantess and Thor's lover.

Discovery: January 5, 2006 - Mauna Kea - S. Sheppard,
D.C. Jewitt, J. Kleyna.

Saturn LI (Greip)

Norse giantess.

Discovery: January 5, 2006 - Mauna Kea - S. Sheppard,
D.C. Jewitt, J. Kleyna.

Saturn LII (Tarqeq)

Inuit moon spirit.

Discovery: January 16, 2007 - Mauna Kea - S. Sheppard,
D.C. Jewitt, J. Kleyna.

Saturn LIII (Aegaeon)

Greek hundred-armed giant, called Briareus by the gods.

Discovery: August 15, 2008 - Cassini Imaging Science Team.

Numeral	Name	Mean radius (km)	Semi-major axis (km)	Sidereal period (d) (r = retrograde)	Discovery date	Discovered by	Notes
SI	Mimas	198.8 ± 1.5	185,540	0.942	1789	Herschel	Main group moon
SII	Enceladus	252.3 ± 0.6	238,040	1.370	1789	Herschel	Main group moon
SIII	Tethys	536.3 ± 1.5	294,670	1.888	1684	Cassini	Main group moon (Sidera Lodoicea)
SIV	Dione	562.5 ± 1.5	377,420	2.737	1684	Cassini	Main group moon (Sidera Lodoicea)
SV	Rhea	764.5 ± 2.0	527,070	4.518	1672	Cassini	Main group moon (Sidera Lodoicea)
SVI	Titan	2575.5 ± 2.0	1,221,870	15.95	1655	Huygens	Main group moon
SVII	Hyperion	133.0 ± 8.0	1,500,880	21.28	1848	W.Bond, G. Bond, and Lassell	Main group moon
SVIII	Iapetus	734.5 ± 4.0	3,560,840	79.33	1671	Cassini	Main group moon (Sidera Lodoicea)
SIX	Phoebe	106.6 ± 1.1	12,947,780	550.31 (r)	1899	Pickering	Retrograde irregular (Norse)
SX	Janus	90.4 ± 3.0	151,460	0.695	1966	Dollfus; Pasco (Voyager 1)	Inner moon (co-orbital)
SXI	Epimetheus	58.3 ± 3.1	151,410	0.694	1980	Fountain, Larson (1977); D. Cruikshank, R.Walker	Inner moon (co-orbital)
SXII	Helene	16 ± 4	377,420	2.737	1980	Laques, Lecacheux	Main group trojan
SXIII	Telesto	12 ± 3	294,710	1.888	1980	Smith, Reitsema, Larson, Fountain (Voyager 1)	Main group trojan
SXIV	Calypso	9.5 ± 1.5	294,710	1.888	1980	Pasco, Seidelmann, Baum, Currie	Main group trojan
SXV	Atlas	15.3 ± 1.2	137,670	0.602	1980	Terrile (Voyager 1)	Inner moon (shepherd)
SXVI	Prometheus	46.8 ± 5.6	139,380	0.613	1980	Collins (Voyager 1)	Inner moon (shepherd)
SXVII	Pandora	40.6 ± 4.5	141,720	0.629	1980	Collins (Voyager 1)	Inner moon (shepherd)
SXVIII	Pan	12.8	133,580	0.575	1990	Showalter (Voyager 2)	Inner moon (shepherd)
SXIX	Ymir	9	23,040,000	1,315.14 (r)	2000	Gladman	Retrograde irregular (Norse)
SXX	Paaliaq	11	15,200,000	686.95	2000	Gladman	Prograde irregular (Inuit)
SXXI	Tarvos	7.5	17,983,000	926.23	2000	Gladman, Kavelaars	Prograde irregular (Gallic)
SXXII	Ijiraq	6	11,124,000	451.42	2000	Gladman, Kavelaars	Prograde irregular (Inuit)
SXXIII	Suttungr	3.5	19,459,000	1,016.67 (r)	2000	Gladman, Kavelaars	Retrograde irregular (Norse)
SXXIV	Kiviuq	8	11,110,000	449.22	2000	Gladman	Prograde irregular (Inuit)
SXXV	Mundilfari	3.5	18,628,000	952.77 (r)	2000	Gladman, Kavelaars	Retrograde irregular (Norse)
SXXVI	Albiorix	16	16,182,000	783.45	2000	Holman, Spahr	Prograde irregular (Gallic)
SXXVII	Skathi	4	15,540,000	728.20 (r)	2000	Gladman, Kavelaars	Retrograde irregular (Norse)
SXXVIII	Erriapus	5	17,343,000	871.19	2000	Gladman, Kavelaars	Prograde irregular (Gallic)
SXXIX	Siarnaq	20	17,531,000	895.53	2000	Gladman, Kavelaars	Prograde irregular (Inuit)
SXXX	Thrymr	3.5	20,314,000	1,094.11 (r)	2000	Gladman, Kavelaars	Retrograde irregular (Norse)

S XXXI	Narvi	3.5	19,007,000	1,003.86 (r)	2003	Sheppard, Jewitt, Kleyna	Retrograde irregular (Norse)
S XXXII	Methone	1.5	194,440	1.010	2004	Porco, Charnoz, Brahic, Dones (Cassini-Huygens)	Alcyonid moon
S XXXIII	Pallene	2	212,280	1.154	2004	Gordon, Murray, Beurle, et al. (Cassini-Huygens)	Alcyonid moon
S XXXIV	Polydeuces	1.25	377,200	2.737	2004	Porco et al. (Cassini-Huygens)	Main group trojan
S XXXV	Daphnis	3–4	136,500	0.594	2005	Porco et al. (Cassini-Huygens)	Inner moon (shepherd)
S XXXVI	Aegir	3	20,751,000	1,117.52 (r)	2004	Sheppard, Jewitt, Kleyna, Marsden	Retrograde irregular (Norse)
S XXXVII	Bebhionn	3	17,119,000	834.84	2004	Sheppard, Jewitt, Kleyna, Marsden	Prograde irregular (Gallic)
S XXXVIII	Bergelmir	3	19,336,000	1,005.74 (r)	2004	Sheppard, Jewitt, Kleyna, Marsden	Retrograde irregular (Norse)
S XXXIX	Bestla	3.5	20,192,000	1,088.72 (r)	2004	Sheppard, Jewitt, Kleyna, Marsden	Retrograde irregular (Norse)
S XL	Farbauti	2.5	20,377,000	1,085.55 (r)	2004	Sheppard, Jewitt, Kleyna, Marsden	Retrograde irregular (Norse)
S XLI	Fenrir	2	22,454,000	1,260.35 (r)	2004	Sheppard, Jewitt, Kleyna, Marsden	Retrograde irregular (Norse)
S XLII	Fornjot	3	25,146,000	1,494.2 (r)	2004	Sheppard, Jewitt, Kleyna, Marsden	Retrograde irregular (Norse)
S XLIII	Hati	3	19,846,000	1,038.61 (r)	2004	Sheppard, Jewitt, Kleyna, Marsden	Retrograde irregular (Norse)
S XLIV	Hyrrokkin	4	18,437,000	931.86 (r)	2006	Sheppard, Jewitt, Kleyna	Retrograde irregular (Norse)
S XLV	Kari	3.5	22,089,000	1,230.97 (r)	2006	Sheppard, Jewitt, Kleyna	Retrograde irregular (Norse)
S XLVI	Loge	3	23,058,000	1,311.36 (r)	2006	Sheppard, Jewitt, Kleyna	Retrograde irregular (Norse)
S XLVII	Skoll	3	17,665,000	878.29 (r)	2006	Sheppard, Jewitt, Kleyna	Retrograde irregular (Norse)
S XLVIII	Surtur	3	22,704,000	1,297.36 (r)	2006	Sheppard, Jewitt, Kleyna	Retrograde irregular (Norse)
S XLIX	Anthe	1	197,700	1.0365	2007	Porco et al. (Cassini-Huygens)	Alcyonid moon
SL	Jarnsaxa	3	18,811,000	964.74 (r)	2006	Sheppard, Jewitt, Kleyna	Retrograde irregular (Norse)
SLI	Greip	3	18,206,000	921.19 (r)	2006	Sheppard, Jewitt, Kleyna	Retrograde irregular (Norse)
SLII	Tarqeq	3.5	18,009,000	887.48	2007	Sheppard, Jewitt, Kleyna	Prograde irregular (Inuit)
SLIII	Aegaeon	0.25	167,500	0.808	2008	Cassini Imaging Science Team Cassini-Huygens	G-ring moonlet
—	S/2004 S 7	3	20,999,000	1,140.24 (r)	2004	Sheppard, Jewitt, Kleyna, Marsden	Retrograde irregular (Norse)
—	S/2004 S 12	2.5	19,878,000	1,046.19 (r)	2004	Sheppard, Jewitt, Kleyna, Marsden	Retrograde irregular (Norse)
—	S/2004 S 13	3	18,404,000	933.48 (r)	2004	Sheppard, Jewitt, Kleyna, Marsden	Retrograde irregular (Norse)
—	S/2004 S 17	2	19,447,000	1,014.70 (r)	2004	Sheppard, Jewitt, Kleyna, Marsden	Retrograde irregular (Norse)
—	S/2006 S 1	3	18,790,000	963.37 (r)	2006	Sheppard, Jewitt, Kleyna	Retrograde irregular (Norse)
—	S/2006 S 3	3	22,096,000	1,227.21 (r)	2006	Sheppard, Jewitt, Kleyna	Retrograde irregular (Norse)
—	S/2007 S 2	3	16,725,000	808.08 (r)	2007	Sheppard, Jewitt, Kleyna	Retrograde irregular (Norse)
—	S/2007 S 3	3	18,975,000	977.8 (r)	2007	Sheppard, Jewitt, Kleyna	Retrograde irregular (Norse)
—	S/2009 S 1	0.3	117,000	?	2009	Cassini Imaging Science Team Cassini-Huygens	B-ring