2015 : le grand bond vers les “petits corps” du système solaire

Creysseilles, janvier 2016

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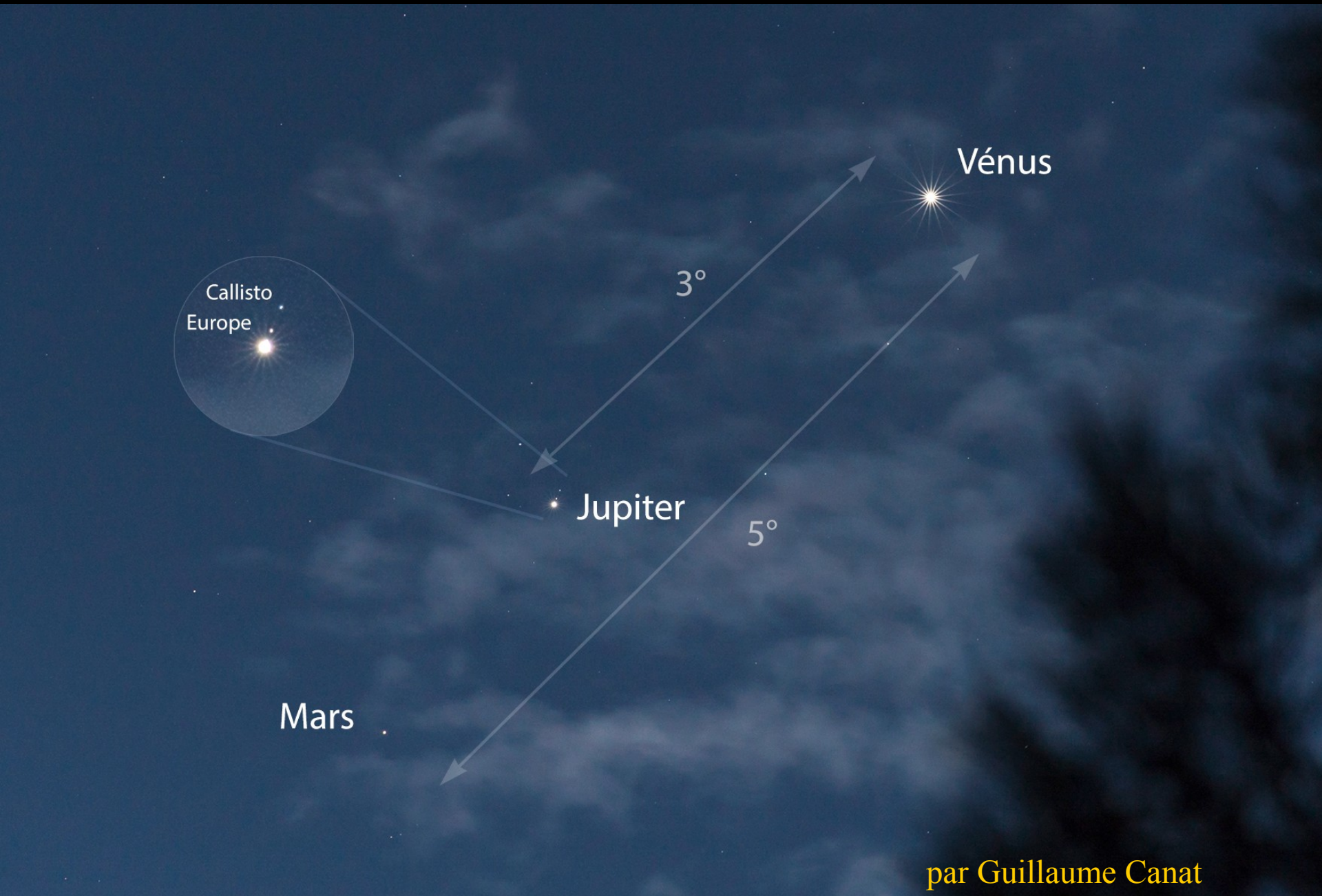
Société Astronomique de France

En ce moment...

le matin : cinq planètes en une seule vue !

vue perspective de la terre

Au matin du 22 octobre 2015

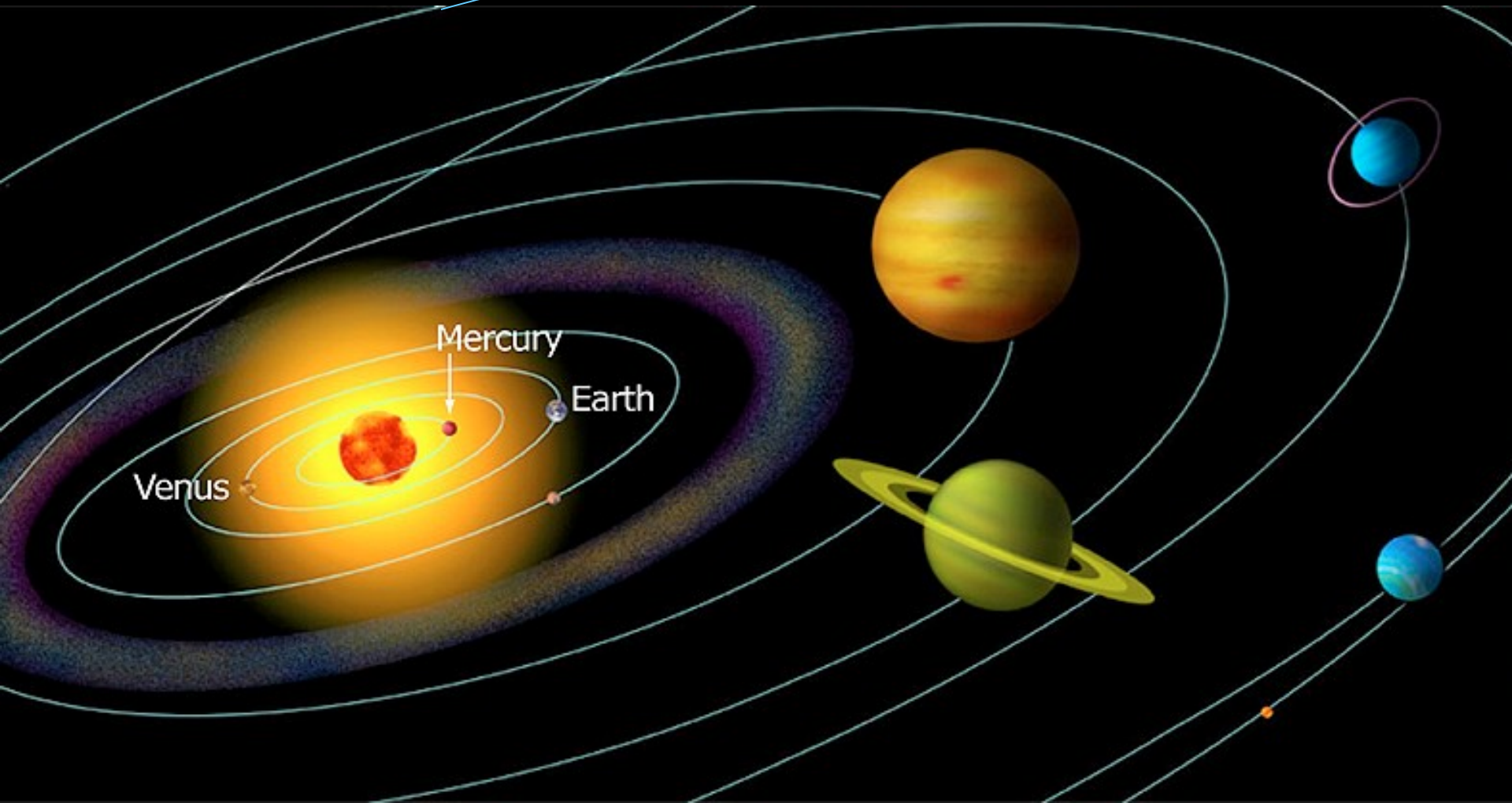


par Guillaume Canat

Au soir du 30 juin 2015

vue de la lune

vue d’un vaisseau spatial éloigné

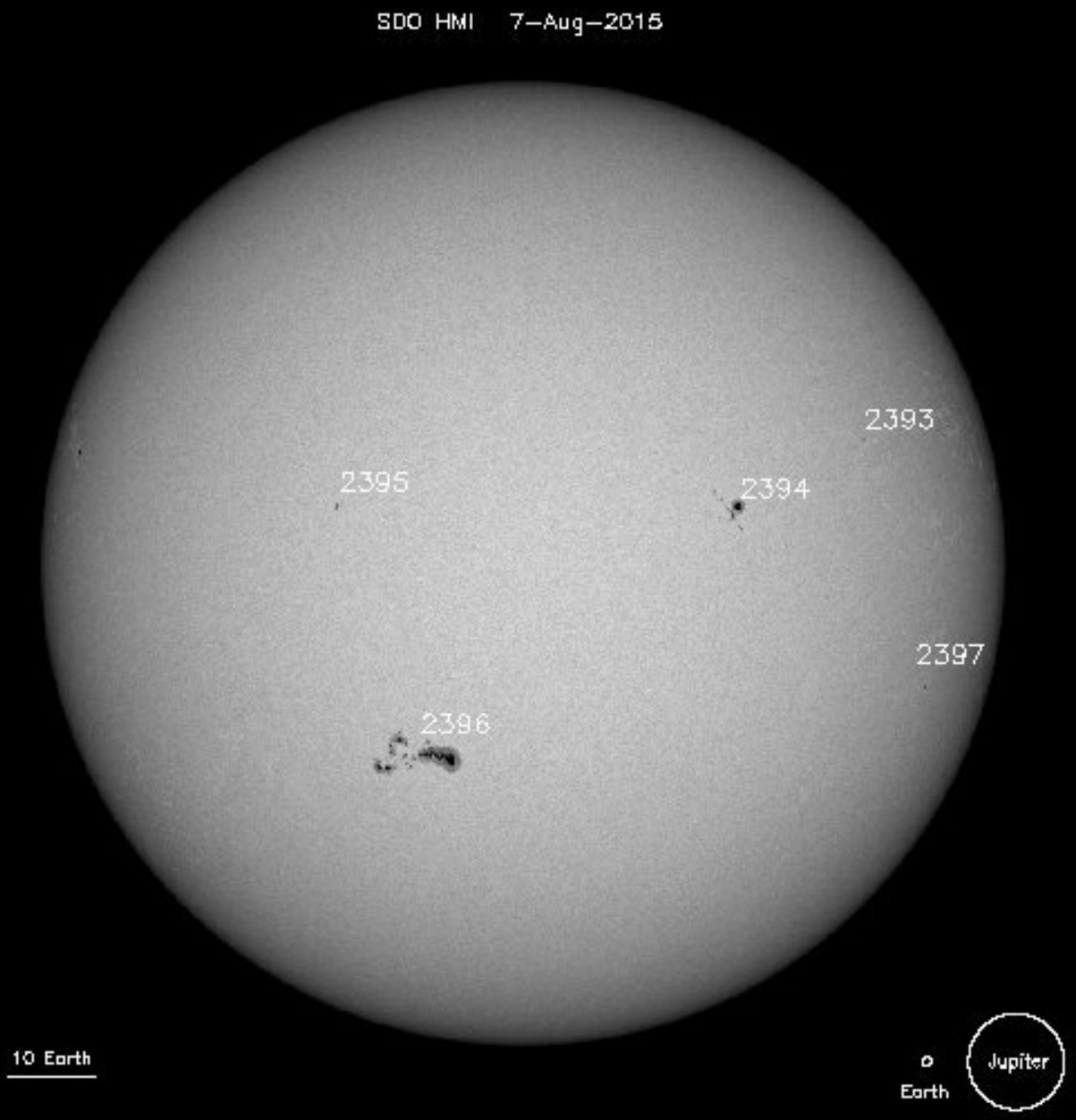


Les planètes classées par taille

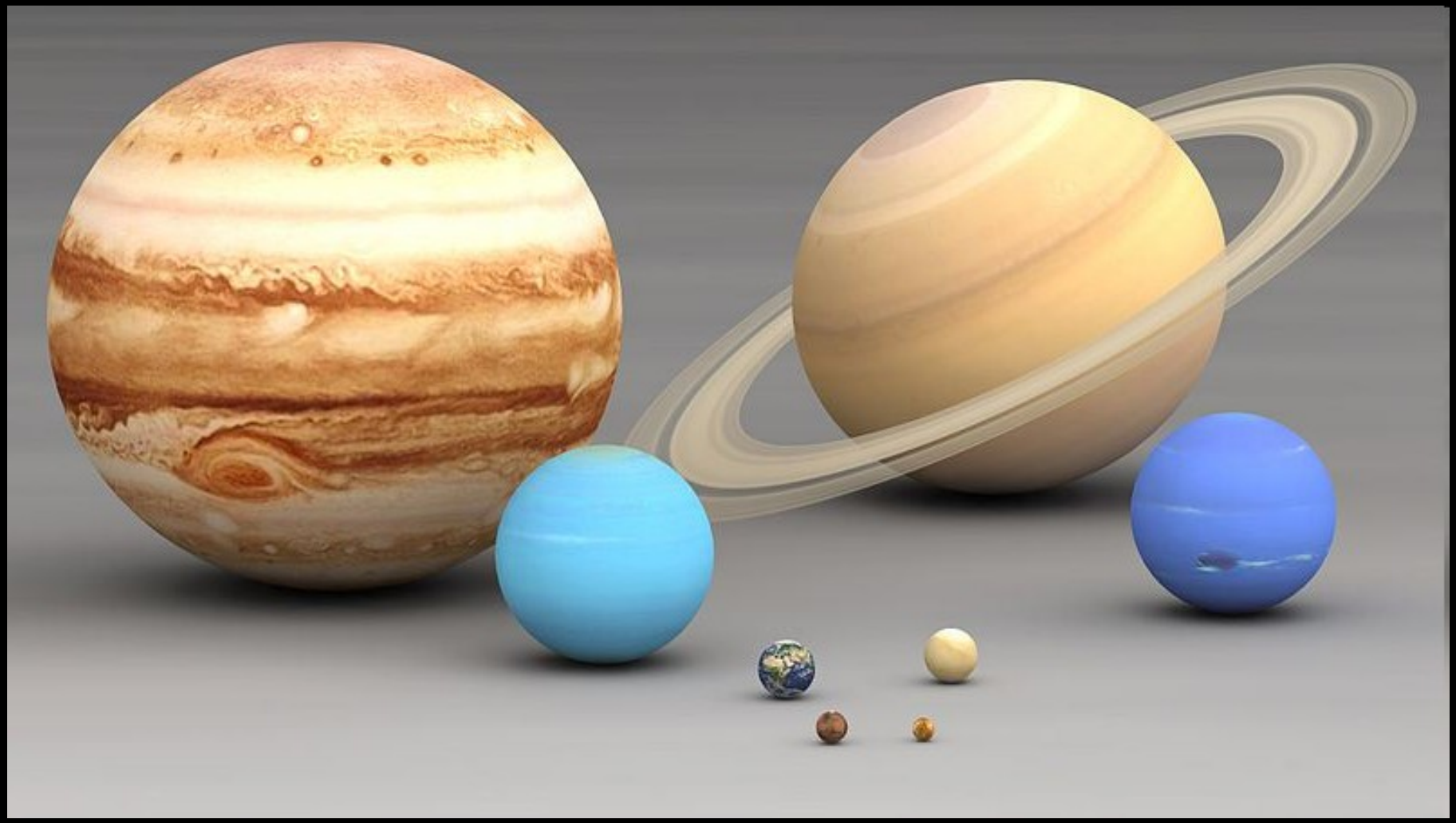
planète :

- corps orbitant autour du soleil
- à peu près sphérique (équilibre “hydrostatique”)
- dominant (par la gravité) son voisinage

Le Soleil photographié par SOHO

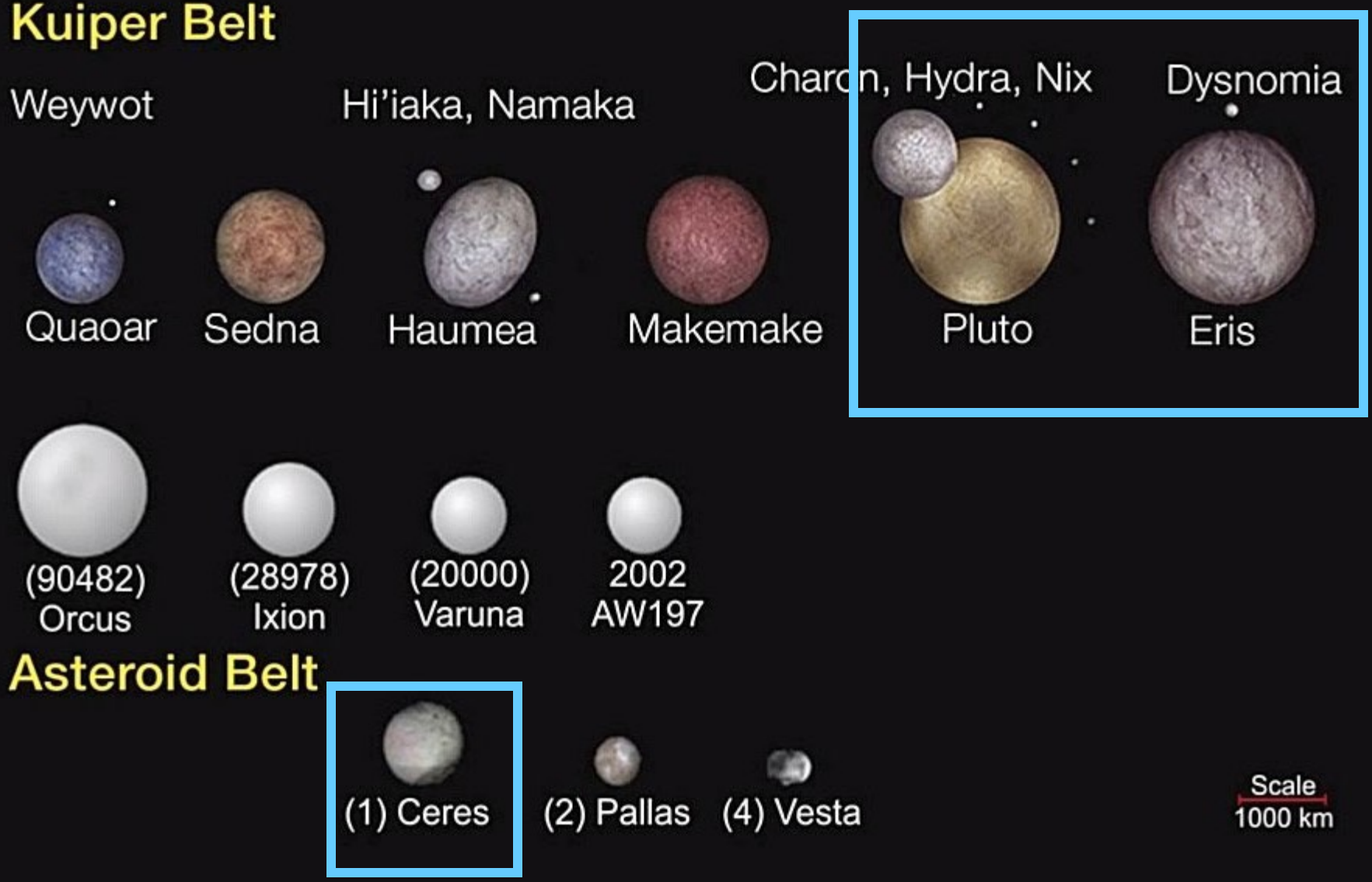


8 planètes = 4 gazeuses + 4 rocheuses



7 gros satellites ou “lunes”

3 planètes “naines” et beaucoup de planètes “mineures”

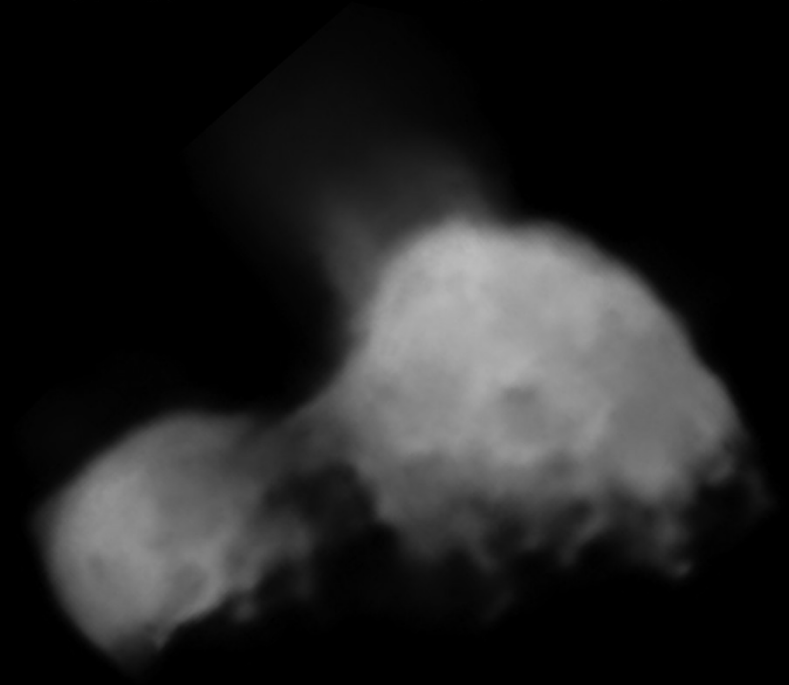


Des myriades d'astéroïdes

Ida & Dactyl

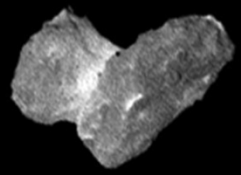
.. et des milliers de comètes !

COMETS VISITED BY SPACECRAFT



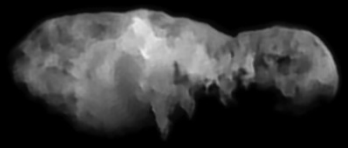
1P/Halley
16 × 8 × 8 km
Vega 2, 1986

81P/Wild 2
5.5 × 4.0 × 3.3 km
Stardust, 2004

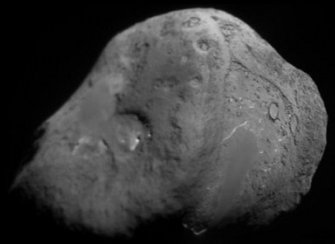


67P/Churyumov-Gerasimenko
4 × 3 km
Rosetta, 2014

103P/Hartley 2
2.2 × 0.5 km
Deep Impact/EPOXI, 2010



19P/Borrelly
8 × 4 km
Deep Space 1, 2001



9P/Tempel 1
7.6 × 4.9 km
Deep Impact, 2005

THE PLANETARY SOCIETY

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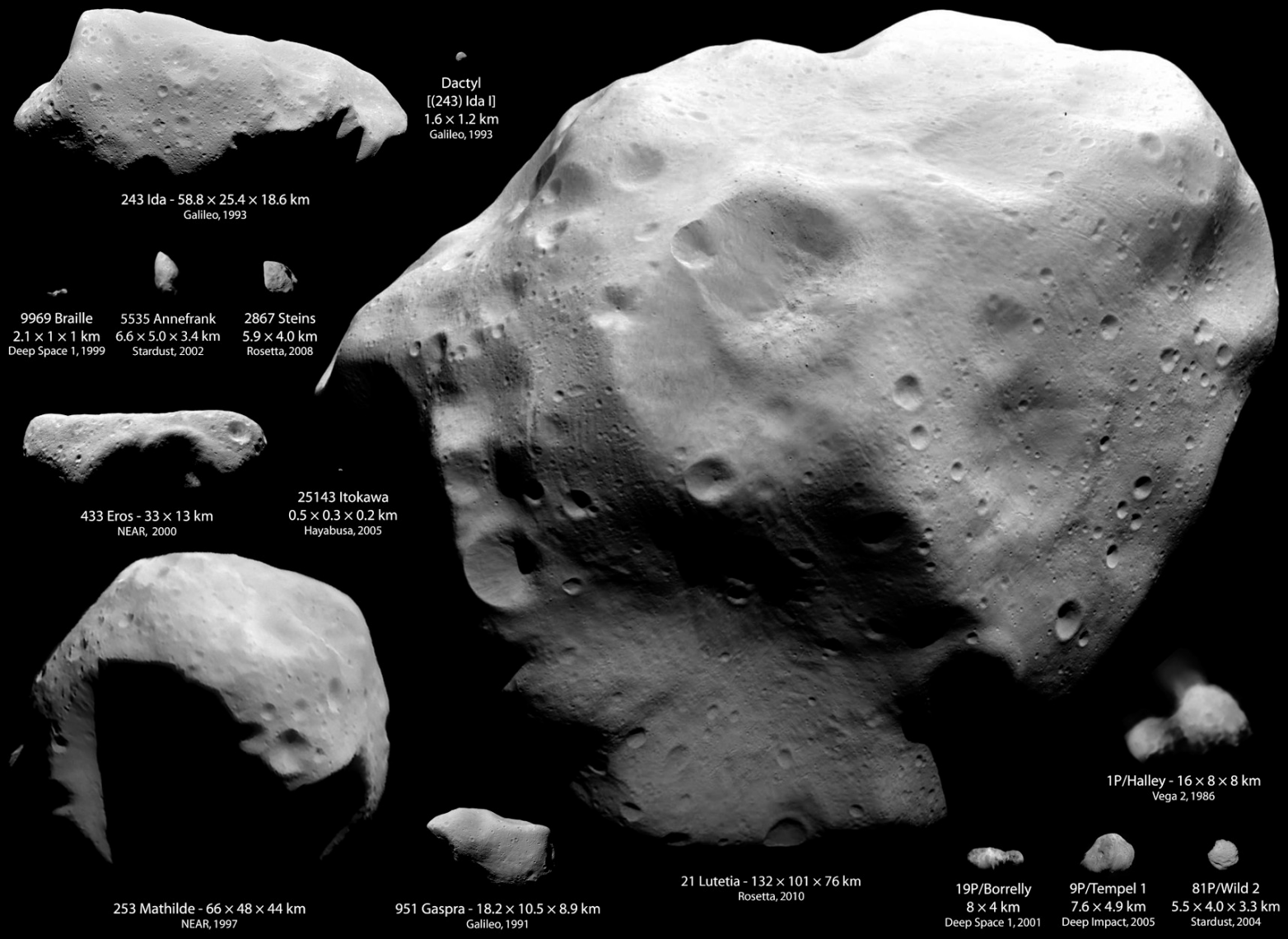
Modified 2014-07-31. For the latest version of this image, visit planetary.org/cometscale

Image credits: Halley: Russian Academy of Sciences / Ted Stryk. Borrelly: NASA / JPL / Ted Stryk. Tempel 1 and Hartley 2: NASA / JPL / UMD. Churyumov-Gerasimenko: ESA / Rosetta / MPS for OSIRIS Team MPS / UPD / LAM / IAA / SSO / INTA / UPM / DASP / IDA. Wild 2: NASA / JPL. Montage by Emily Lakdawalla.

Astéroïdes et comètes

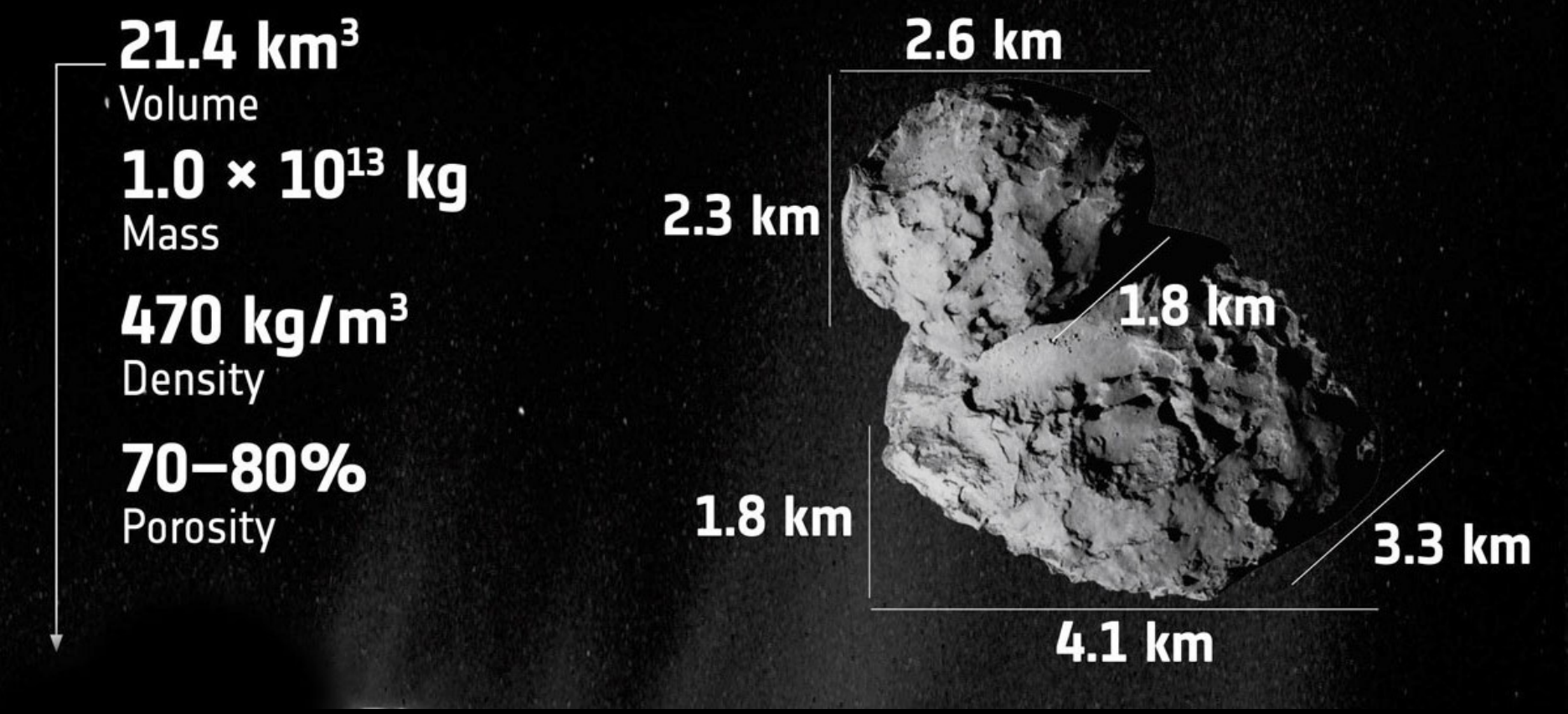


67P / Churyumov-Gerasimenko

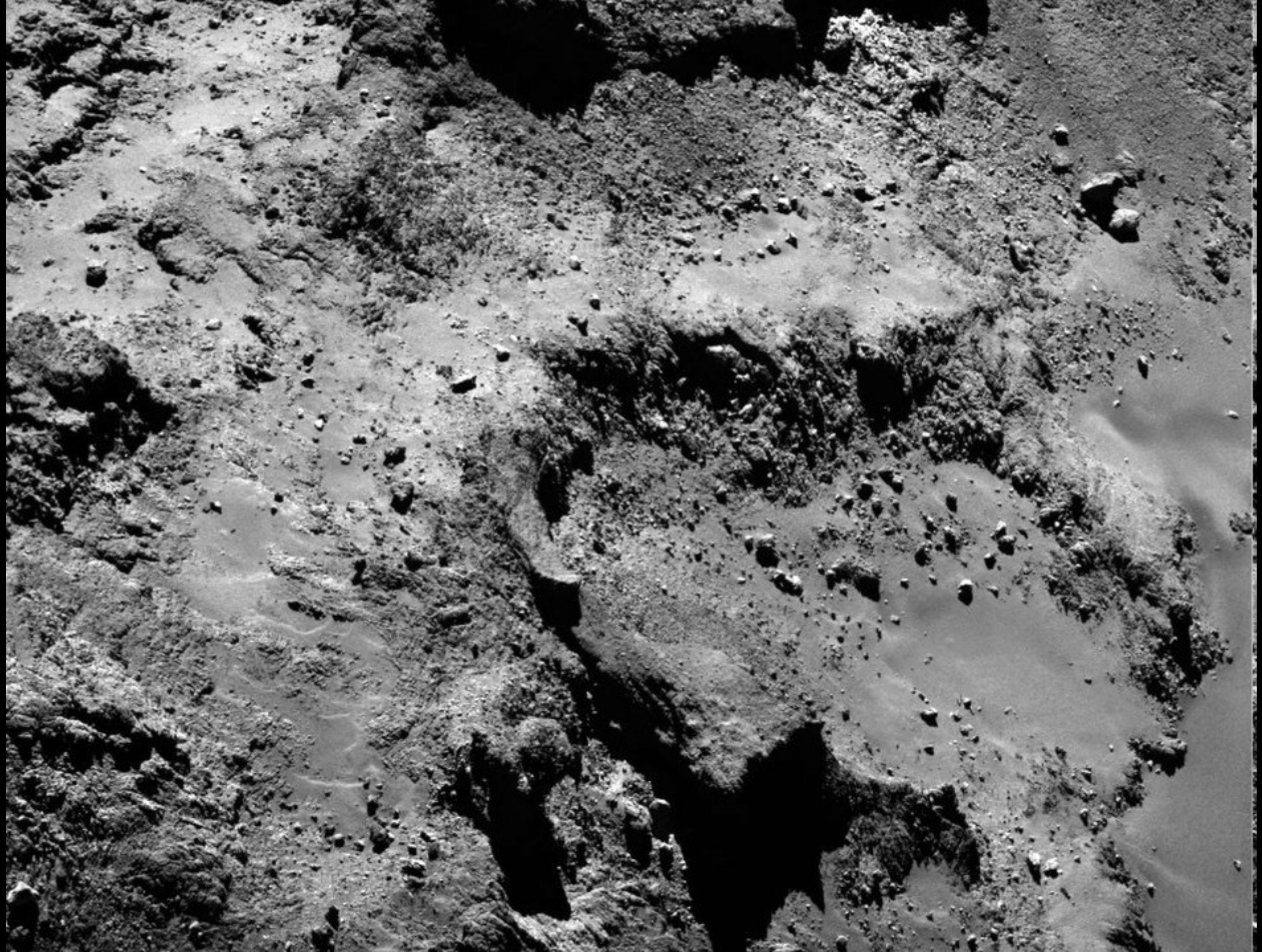
Rosetta & Philae (ESA)

2014-2015+

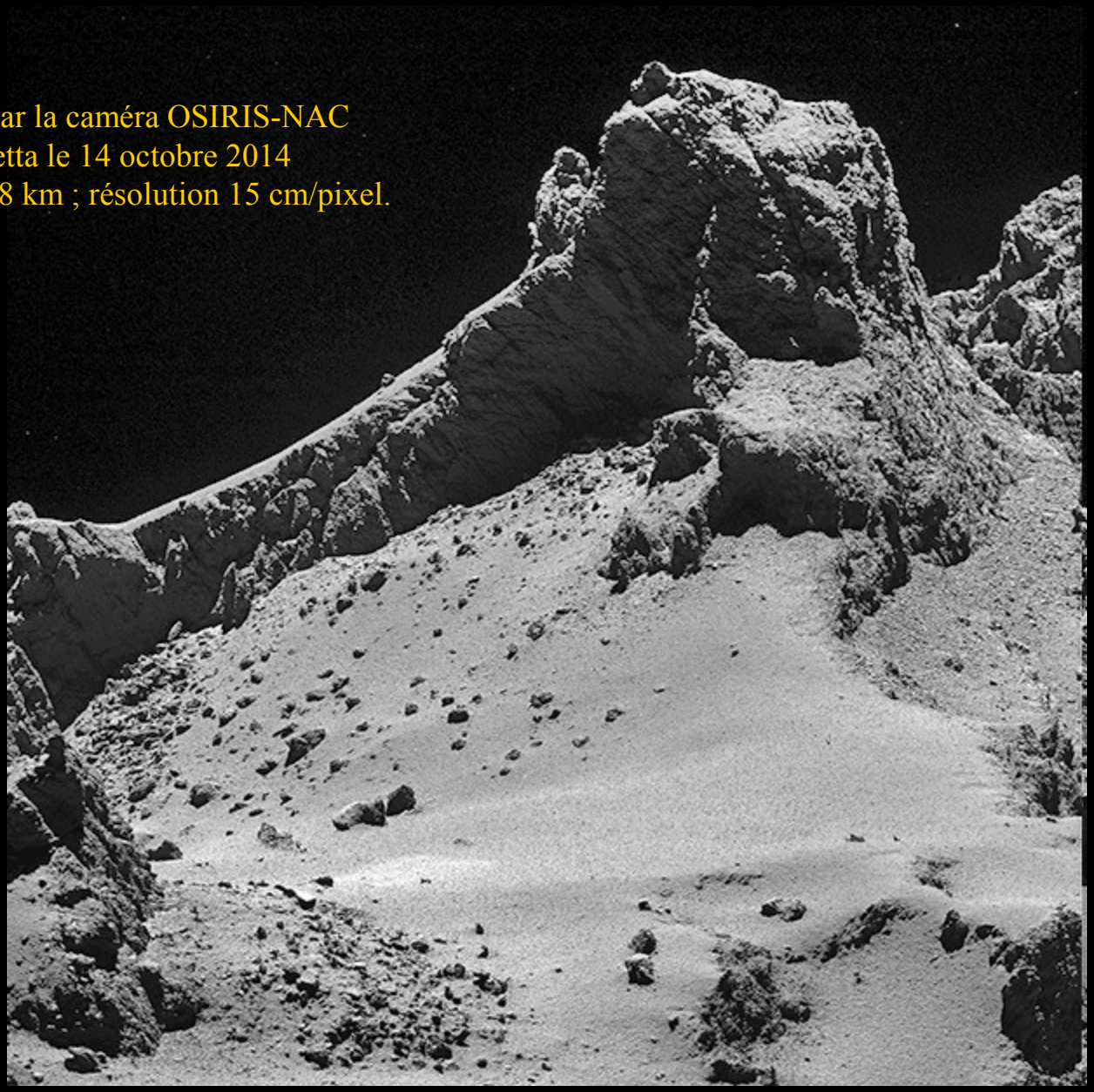
dimensions



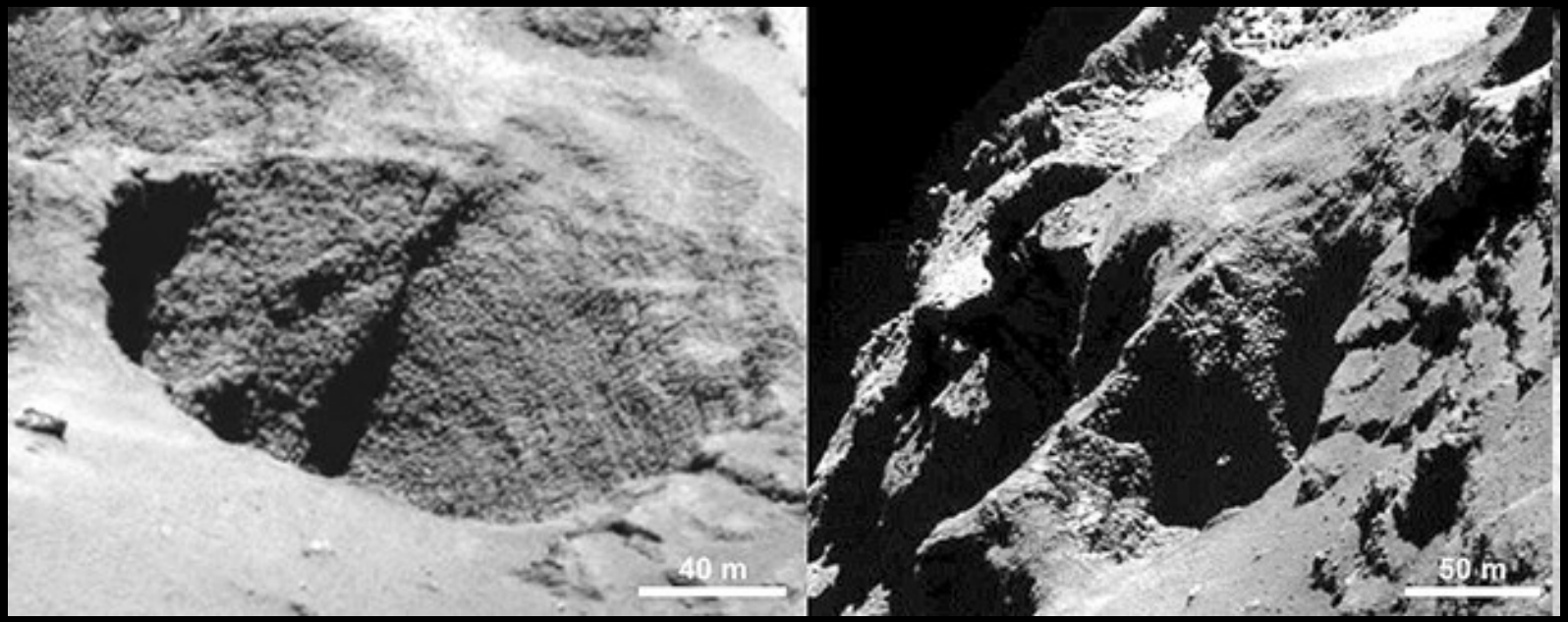
Quelle aventure !



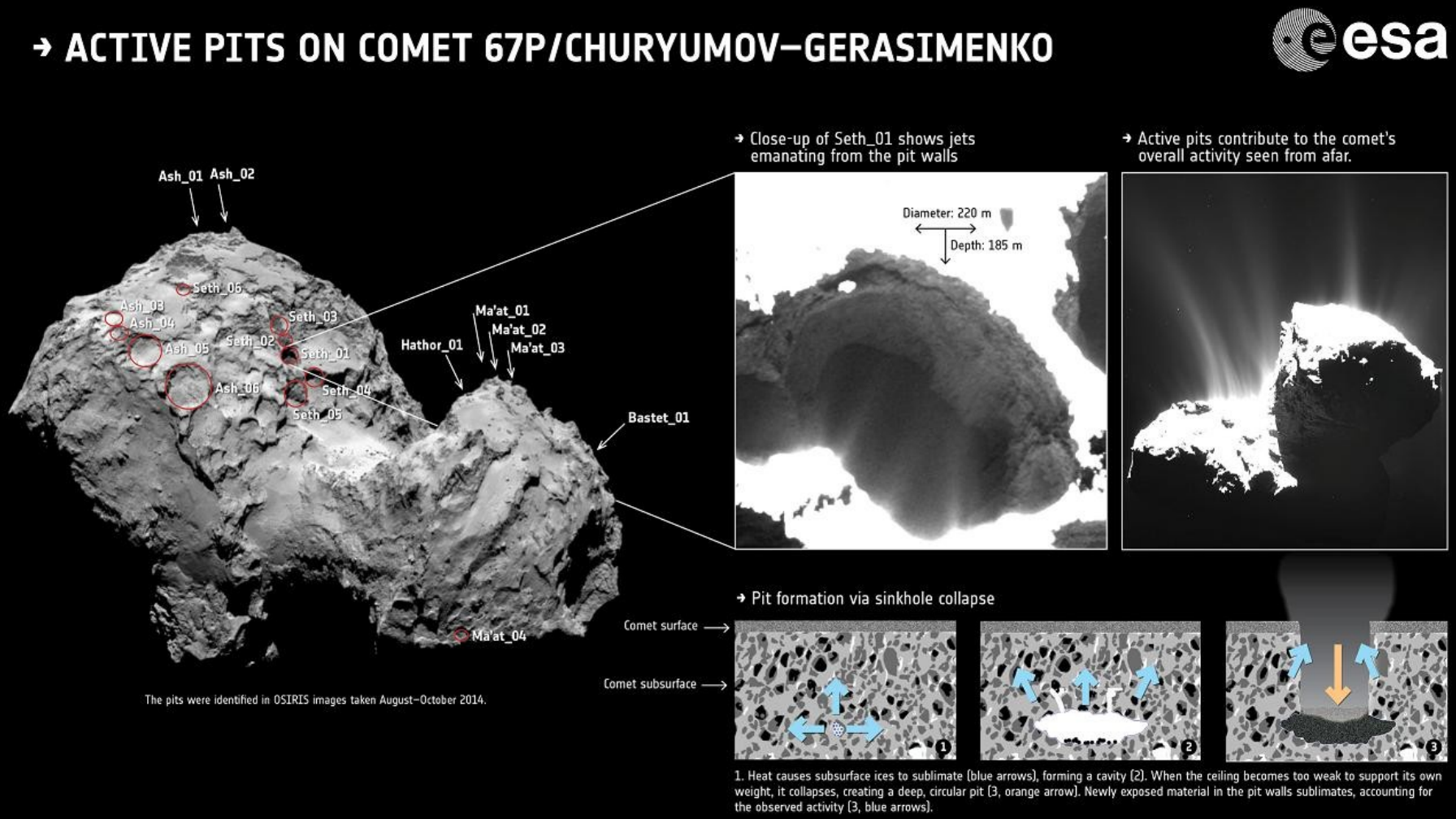
67P pris par la caméra OSIRIS-NAC
de Rosetta le 14 octobre 2014
l'altitude de 8 km ; résolution 15 cm/pixel.



trou circulaire observé sur le noyau 67P ; l'augmentation du contraste révèle la présence d'activité. Caméra OSIRIS-NAC, le 28 août 2014 à 60 km de distance (1 m/pixel)



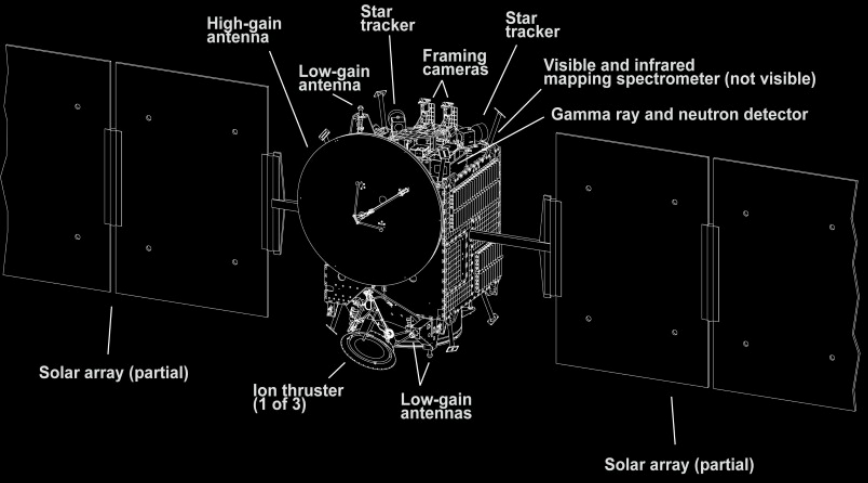
Activité cométaire



16 décembre

et Philae ?

Atterrissage mouvementé !

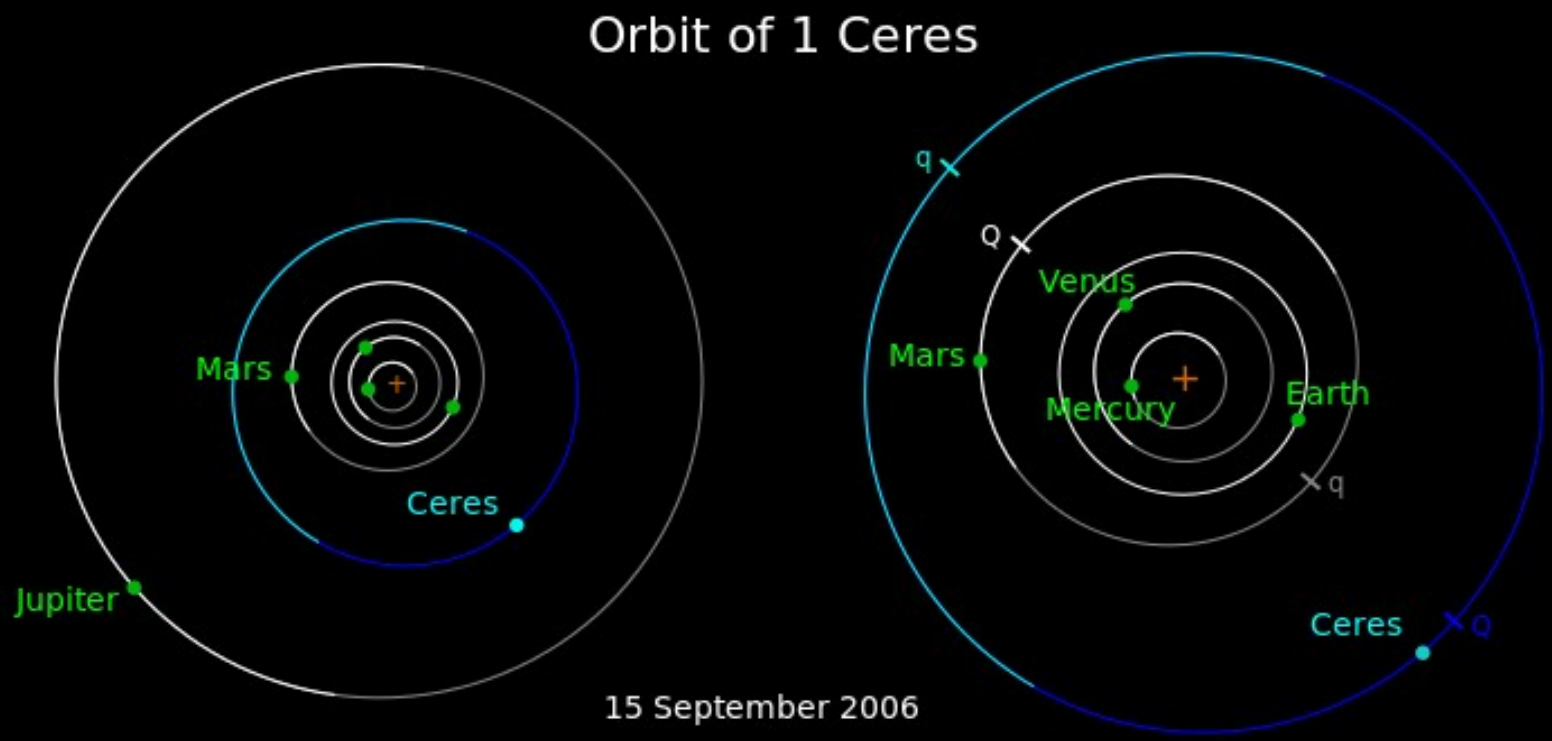


Ceres et Vesta

Dawn (NASA)

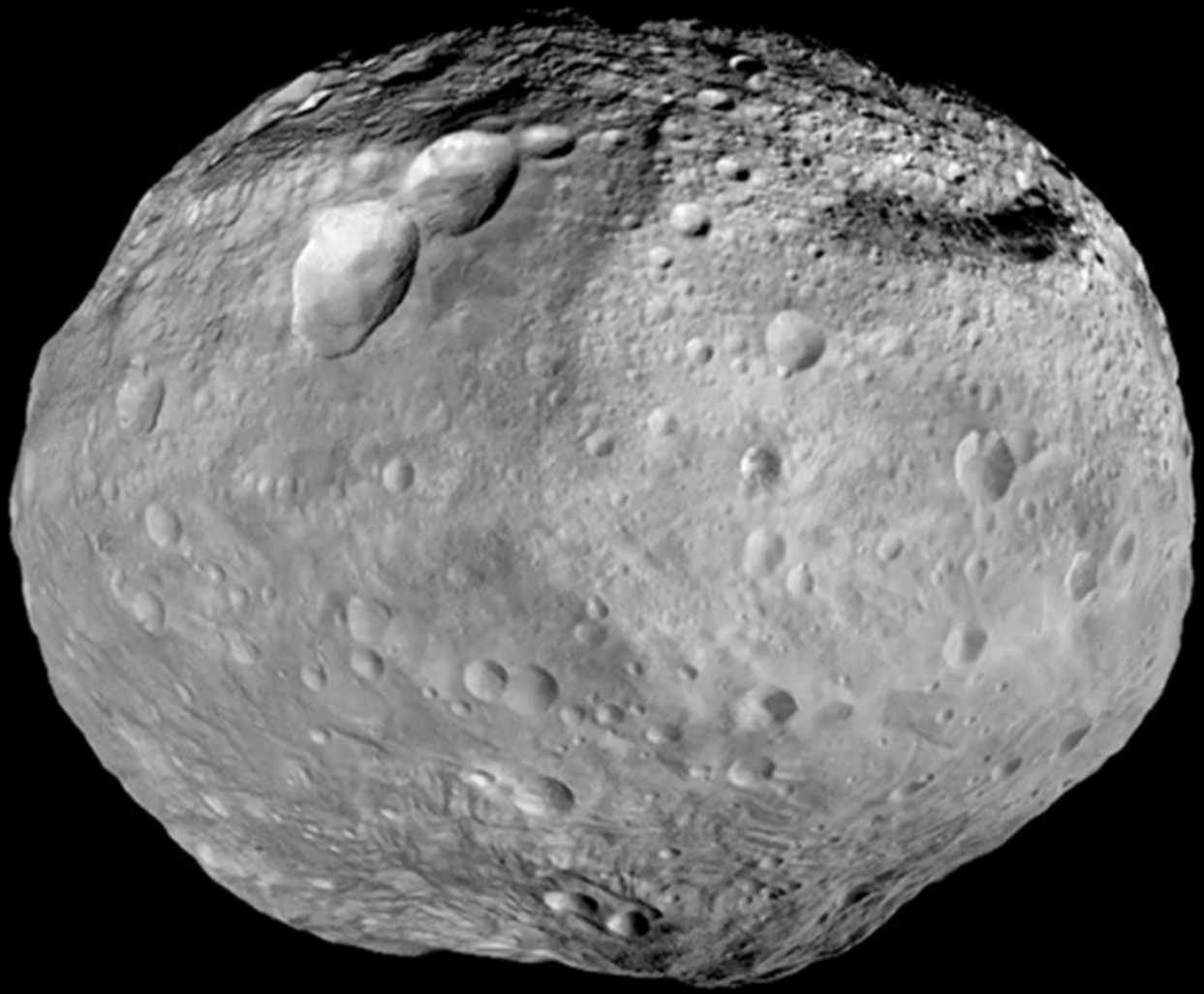
2011-2015+

Orbite de Cérès



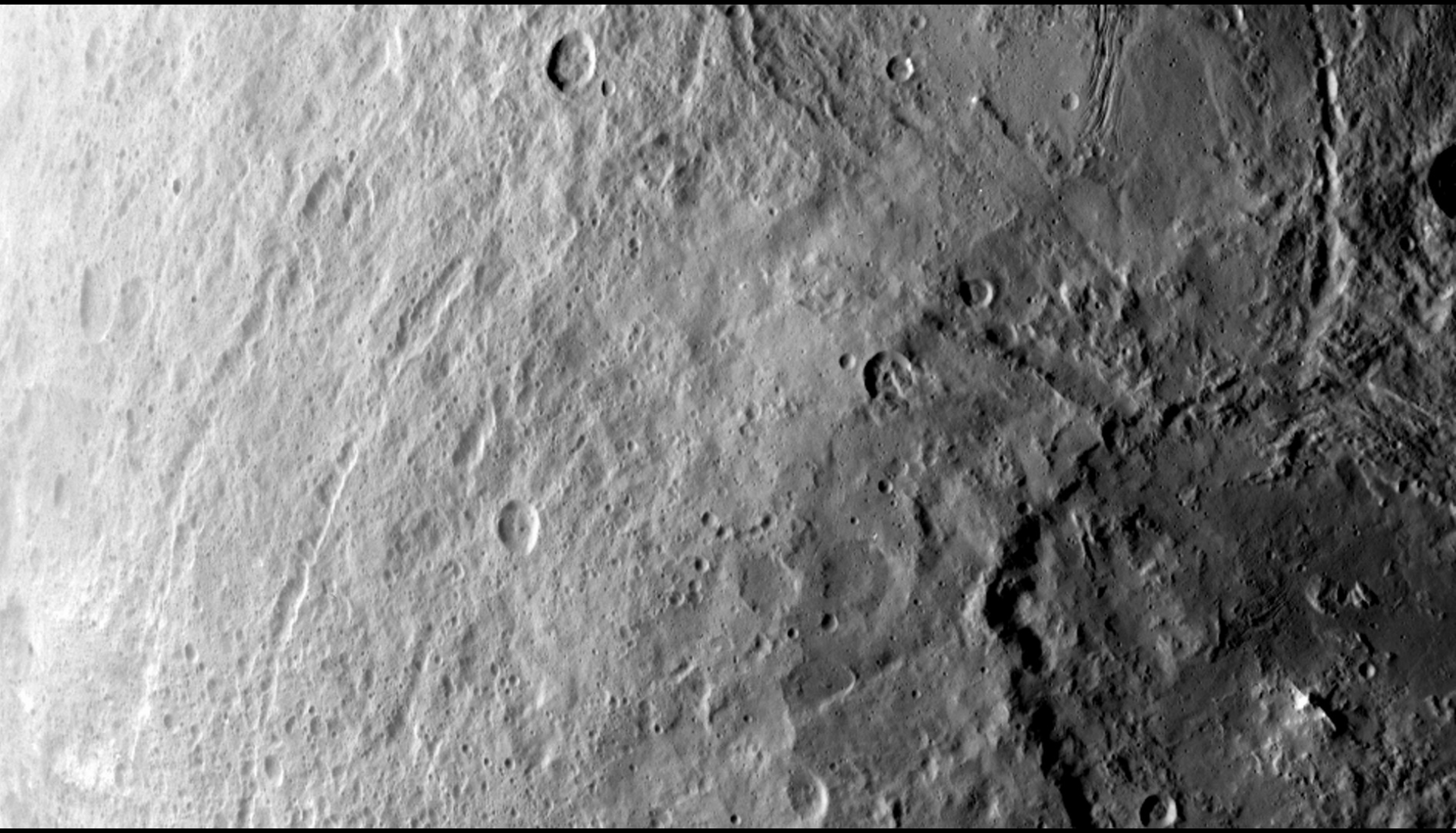
Tailles comparées

La petite Vesta

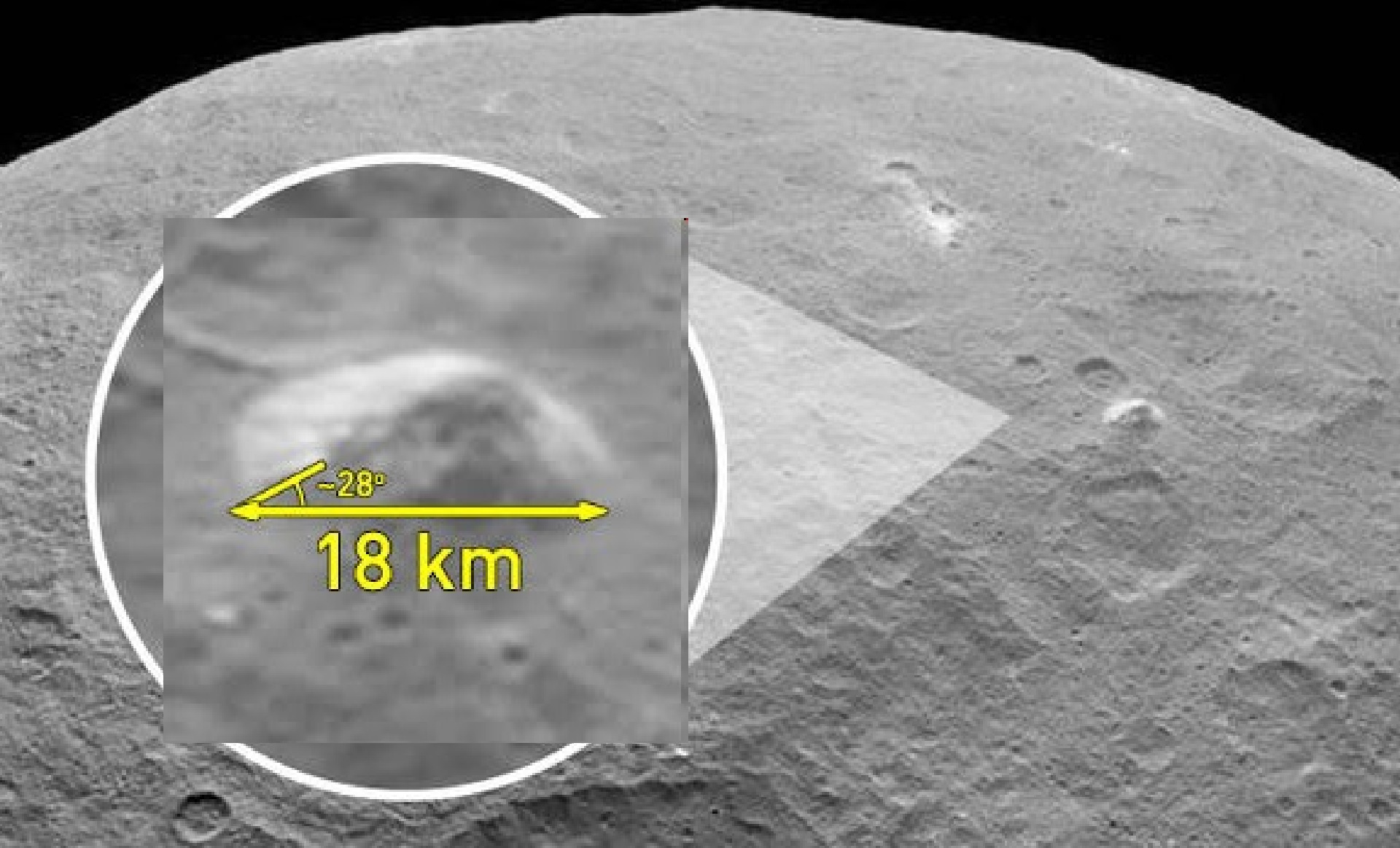


Cérès, petite encore, mais sphérique

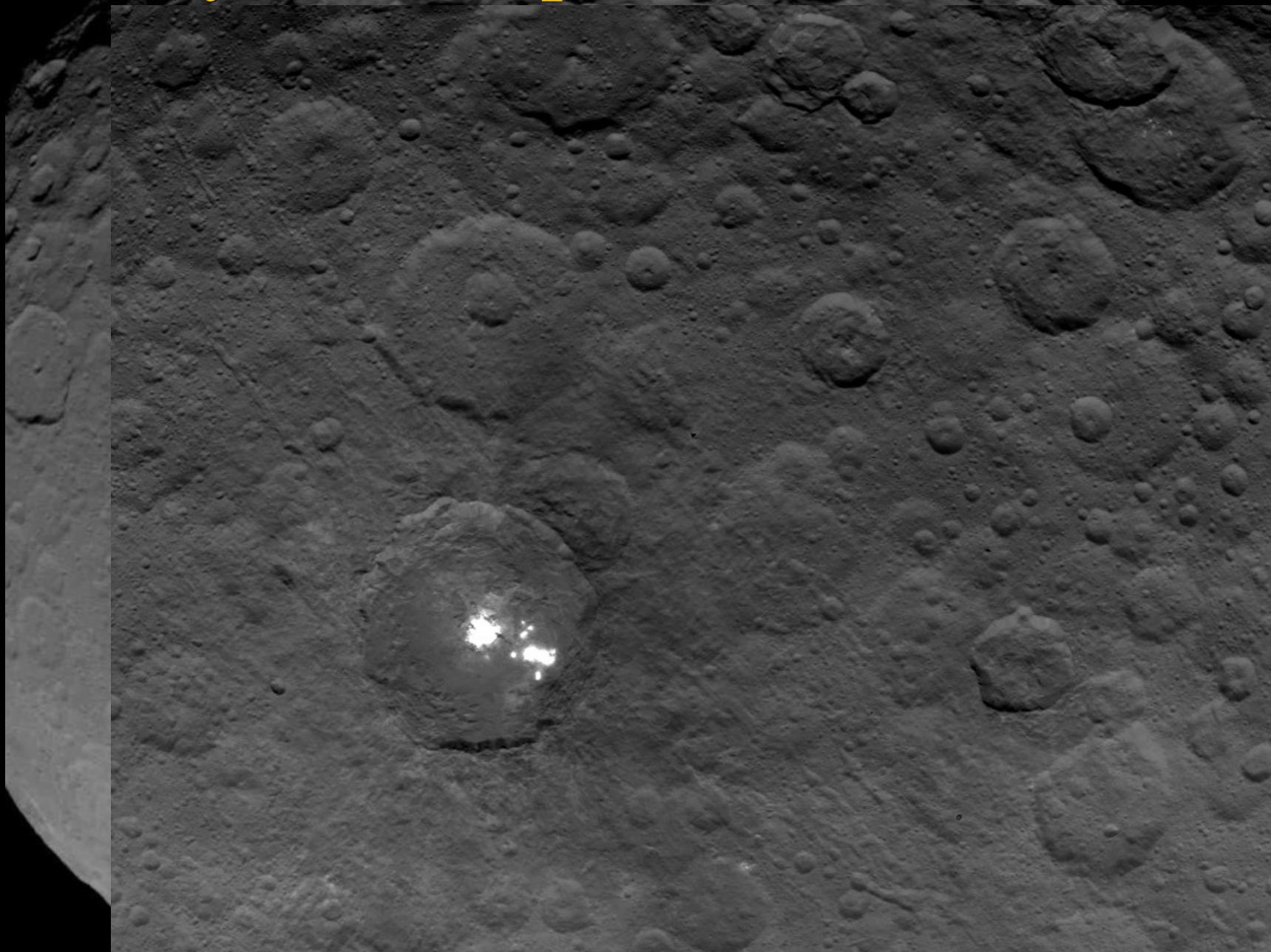
détails



La mystérieuse pyramide de Cérès

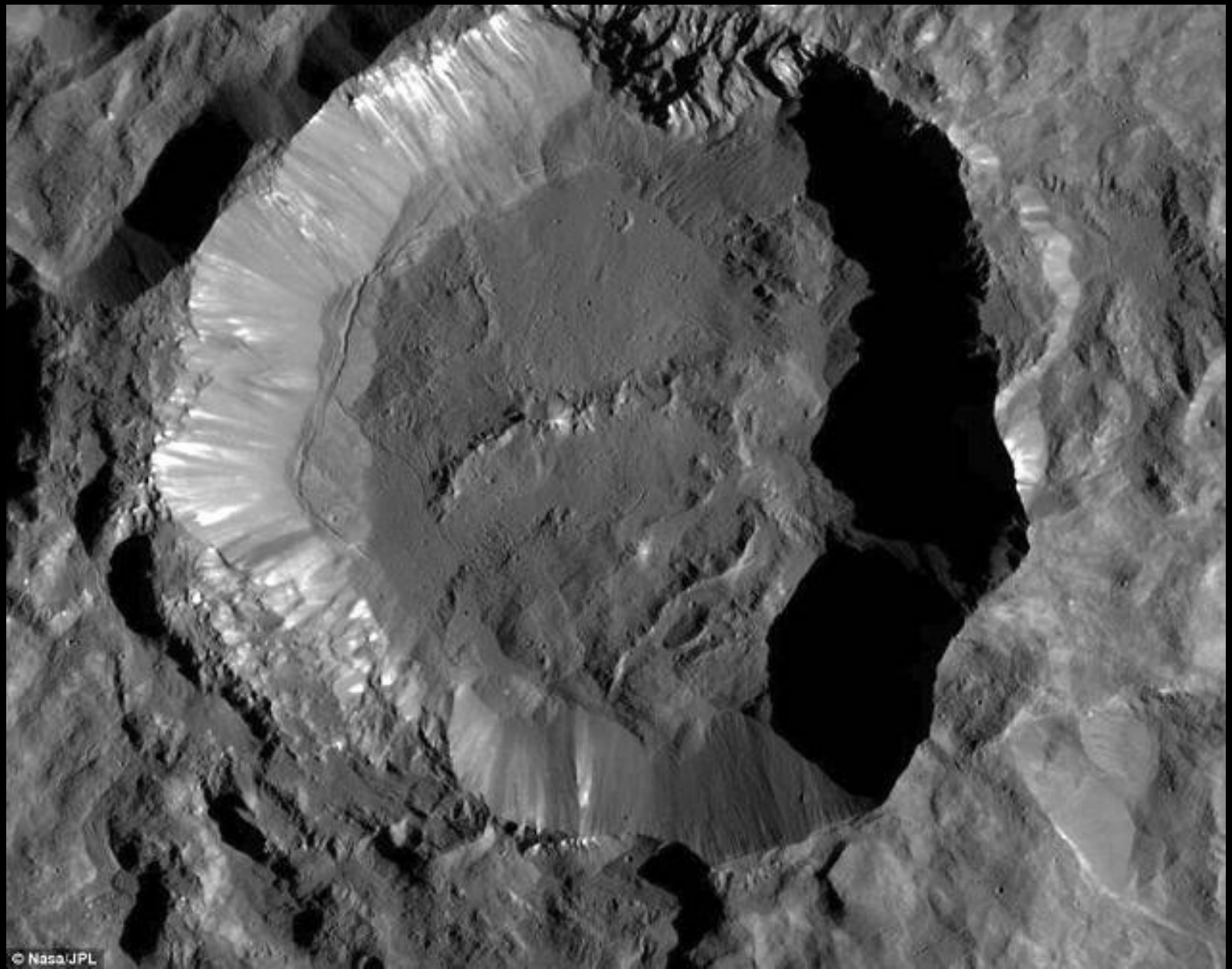


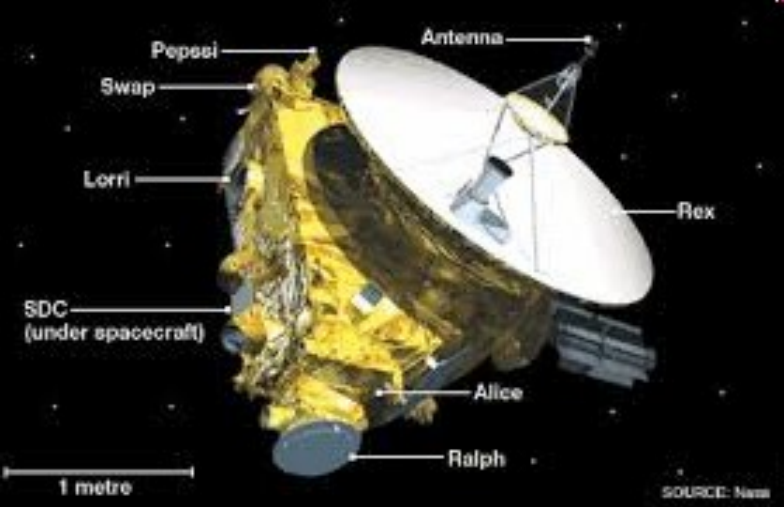
les mystérieux points lumineux



le cratère Occator

le cratère Kupalo



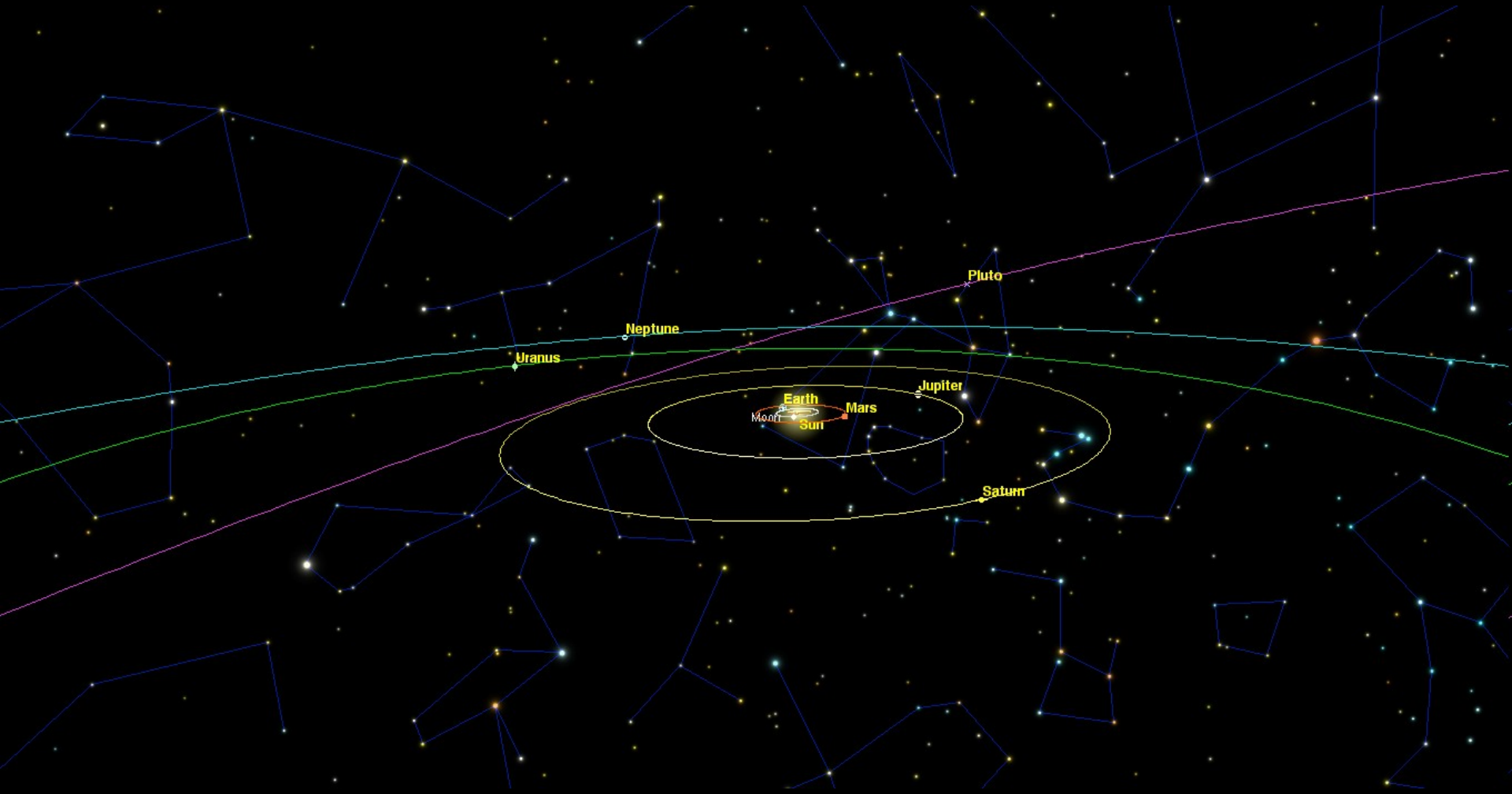


Pluton et Charon

New Horizon (NASA)

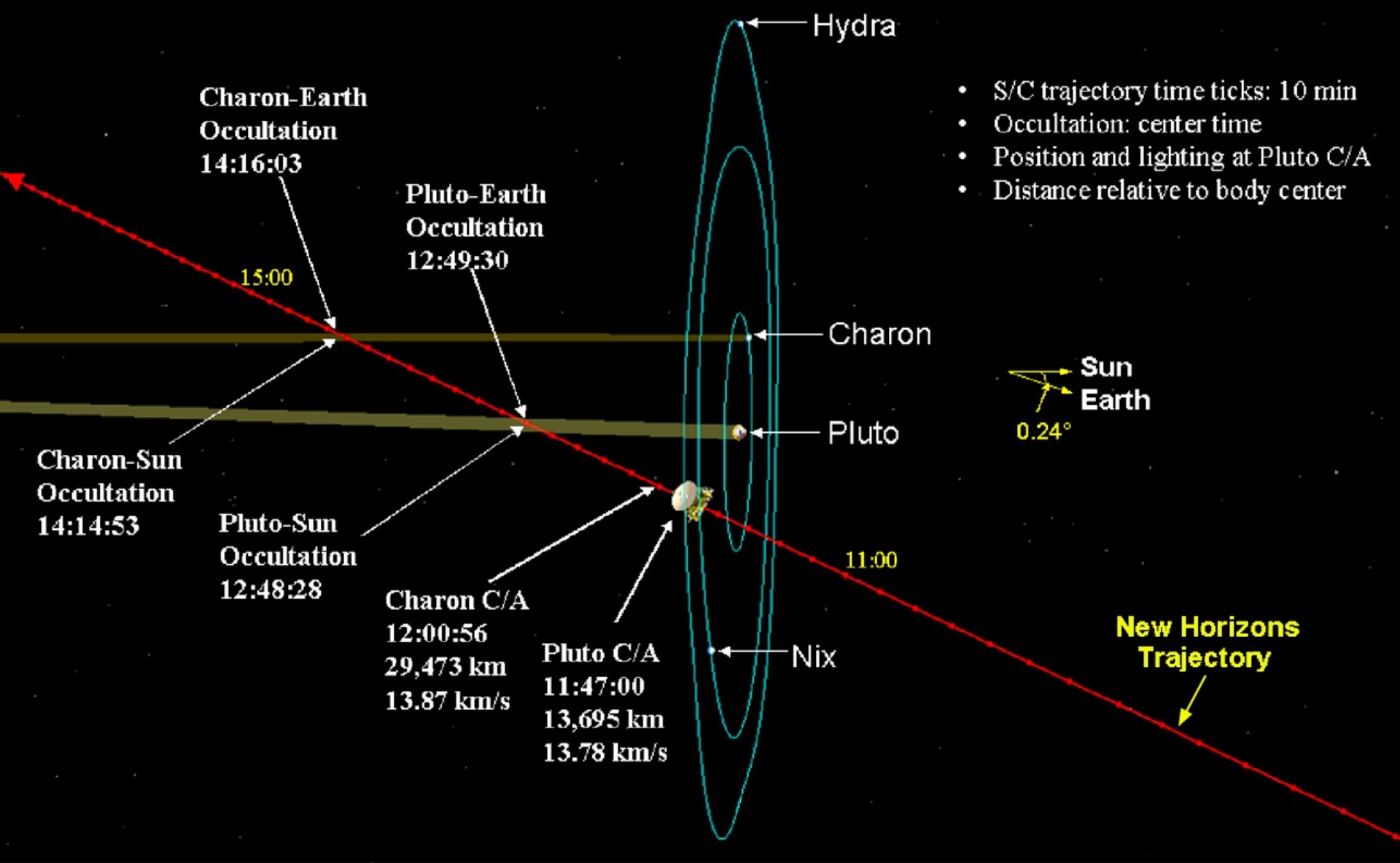
14 juillet 2015

Où est Pluton ?

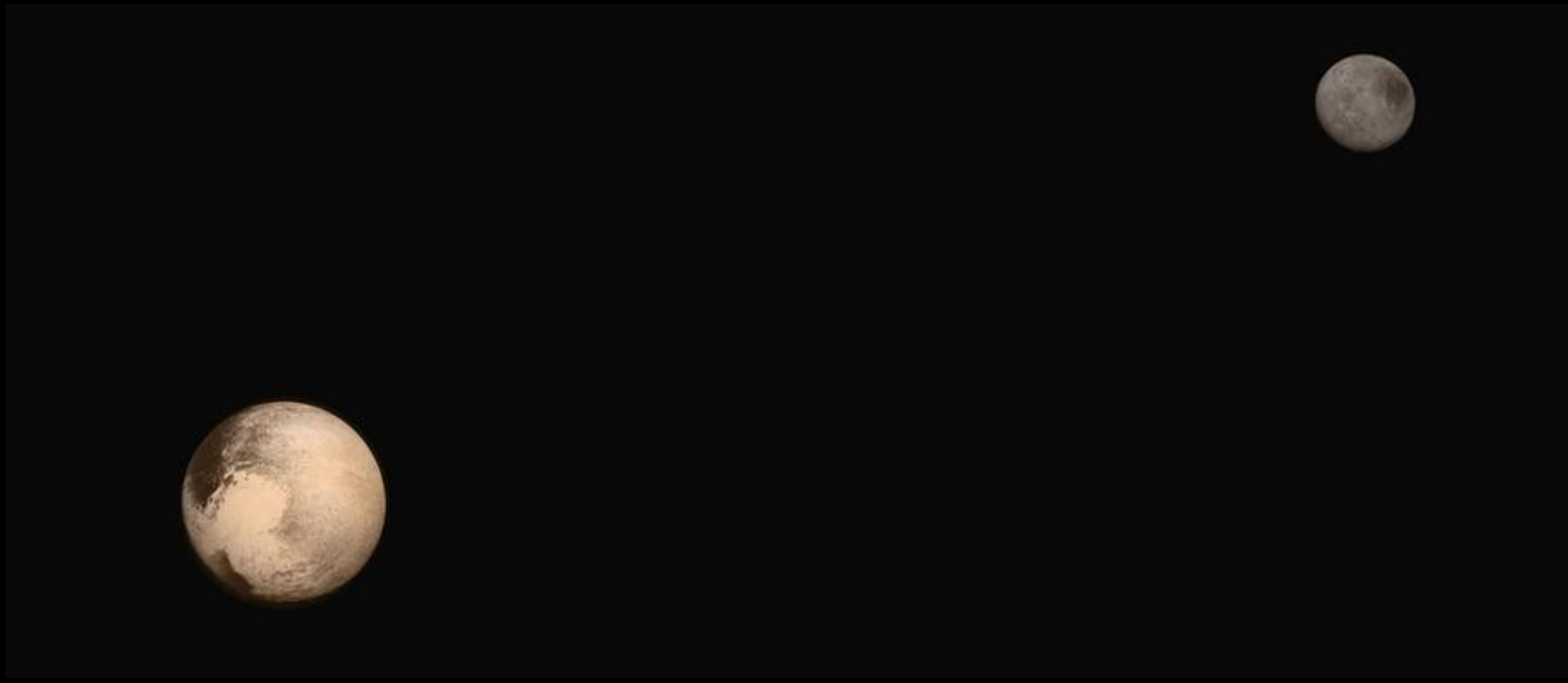


Passer par le trou de l'aiguille !

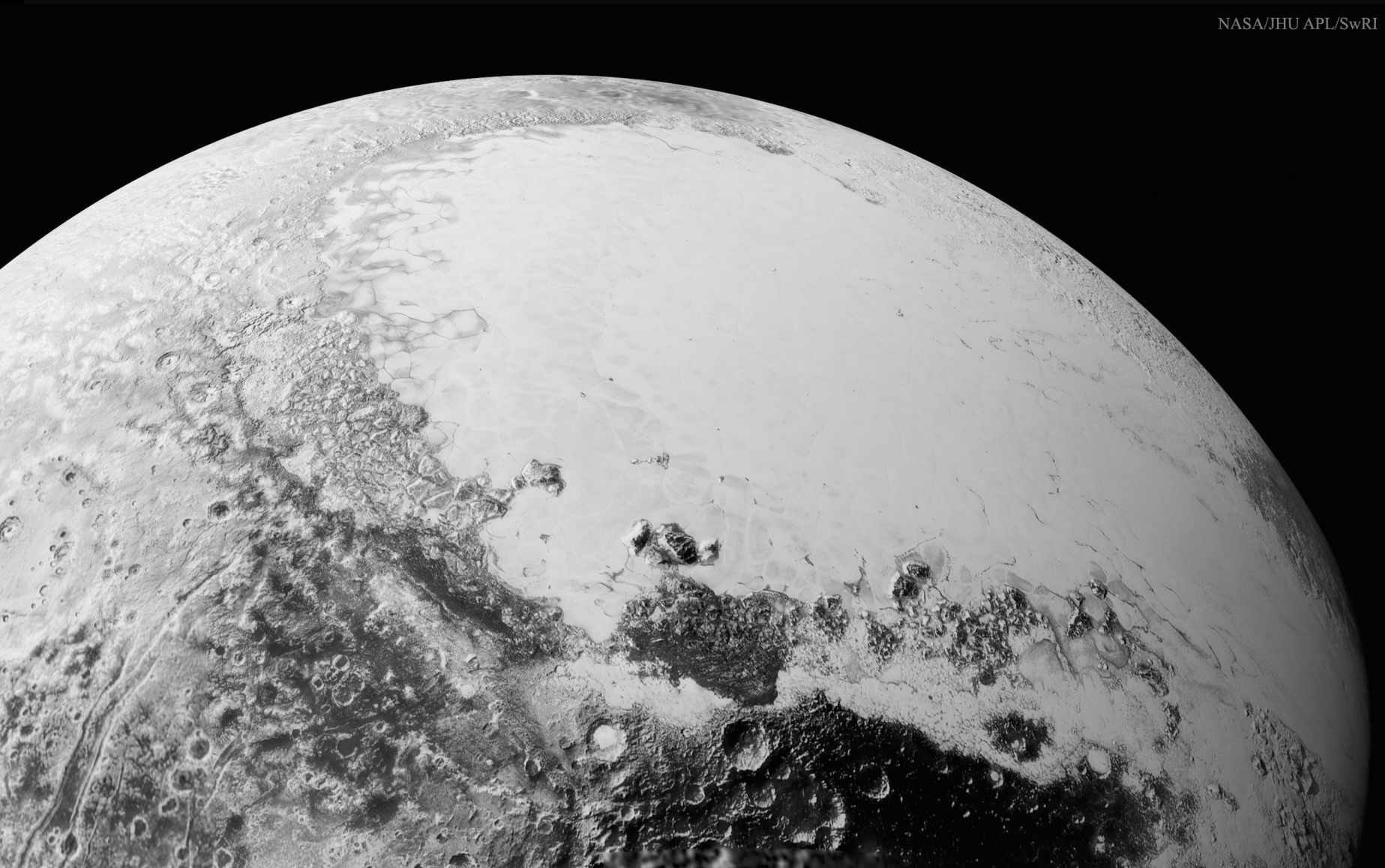
à plus de 30 fois la distance terre-soleil



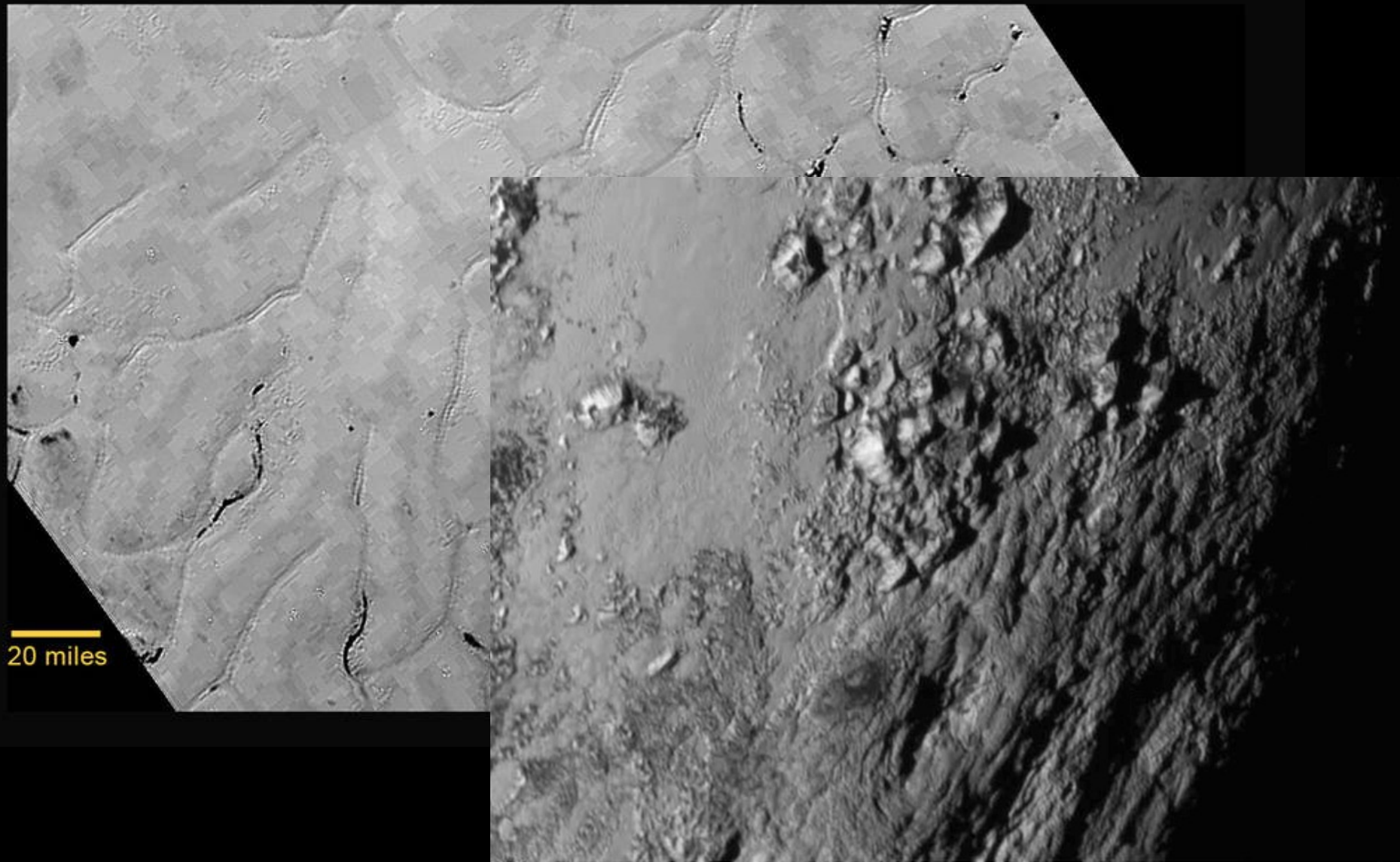
Le couple Pluton-Charon



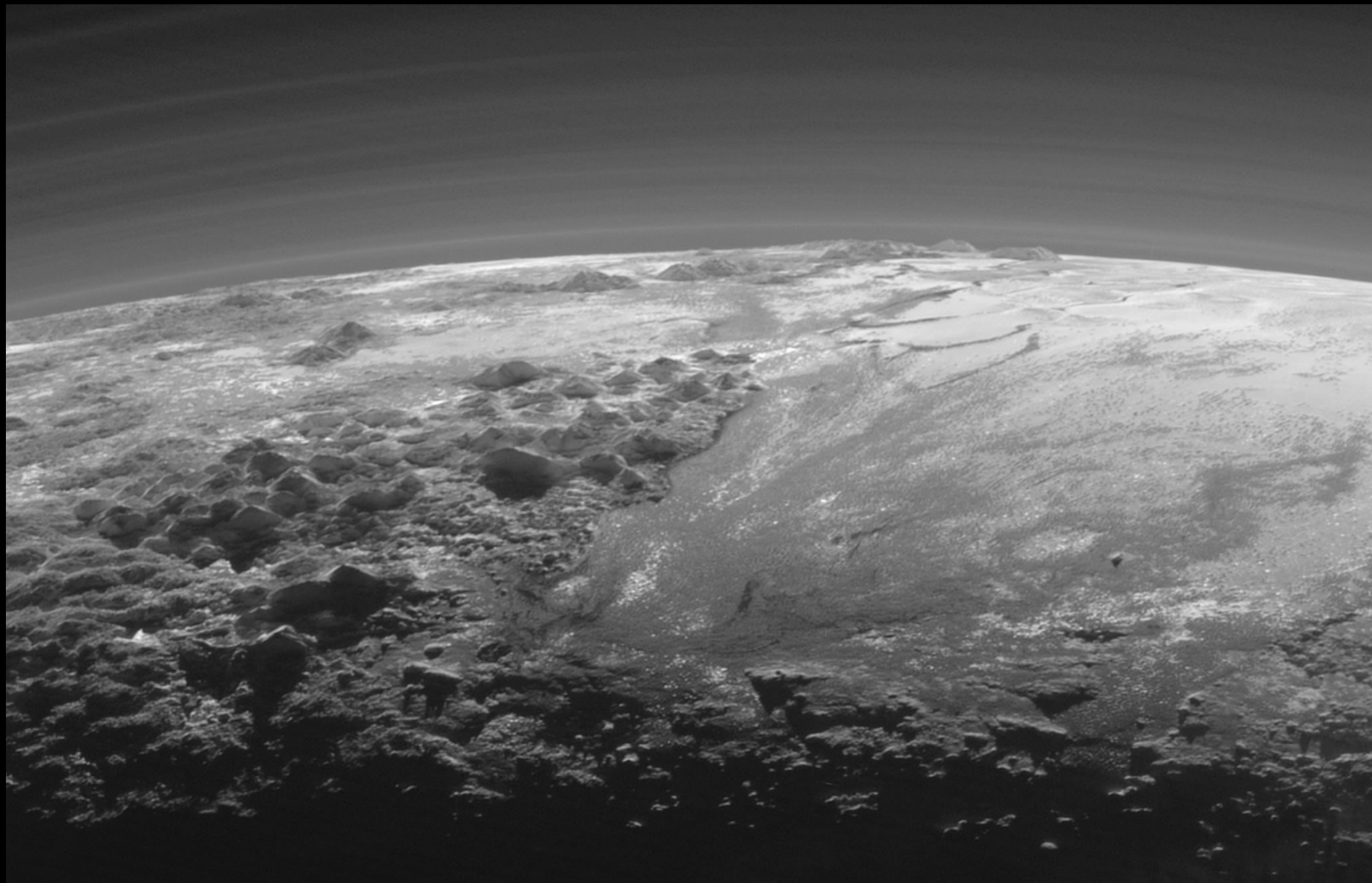
Pluton



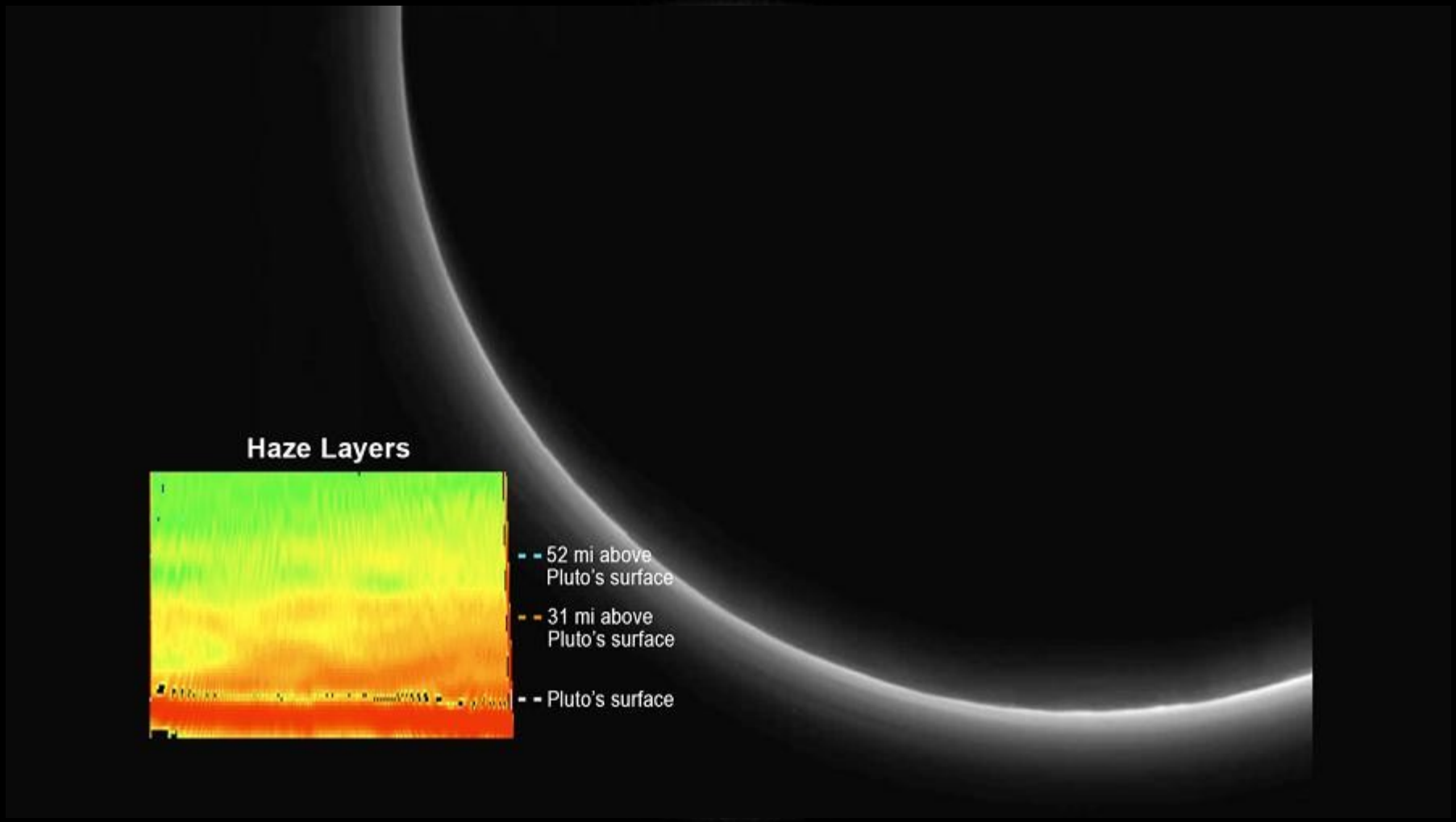
détails



en perspective !

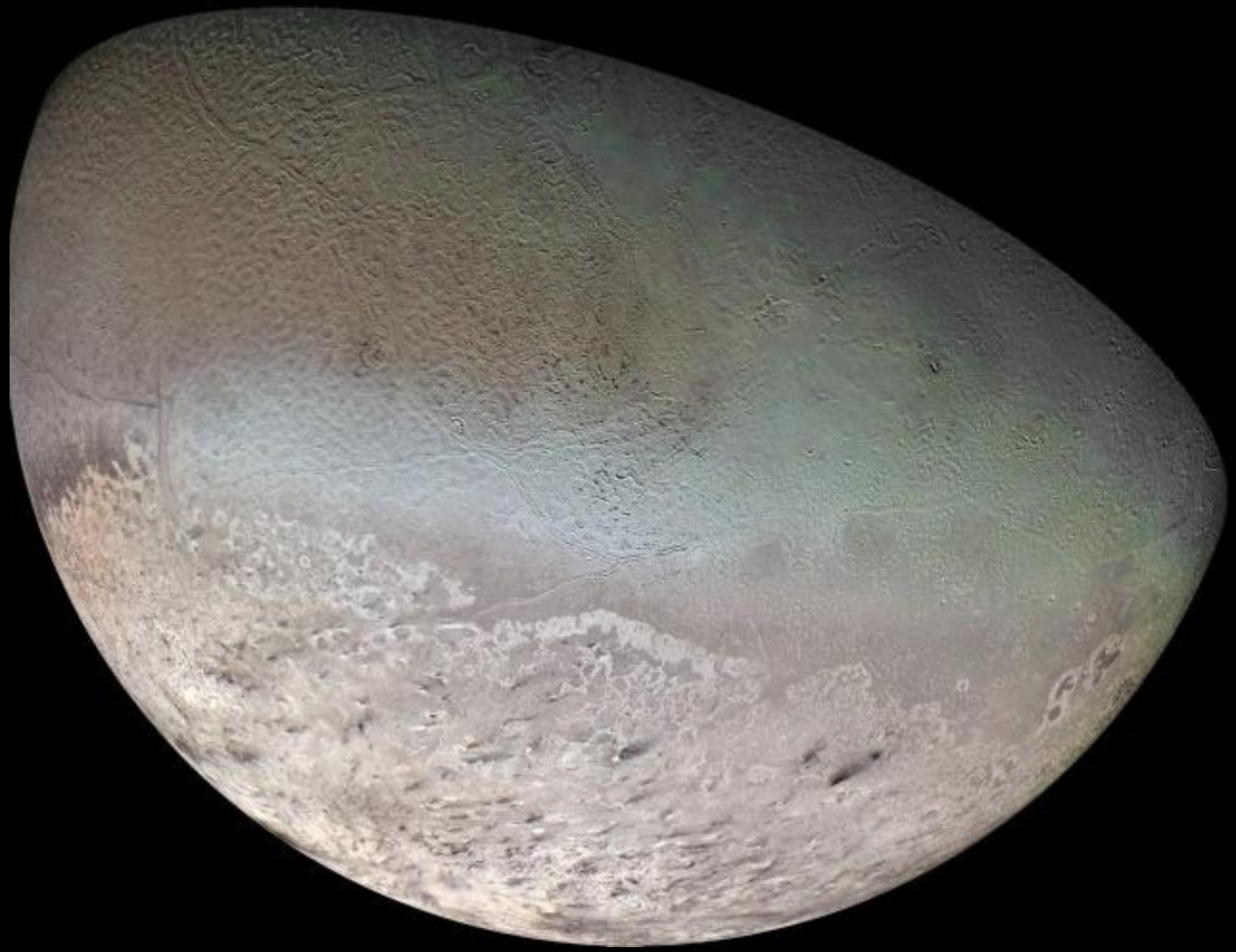


Pluton a une atmosphère !



Charon

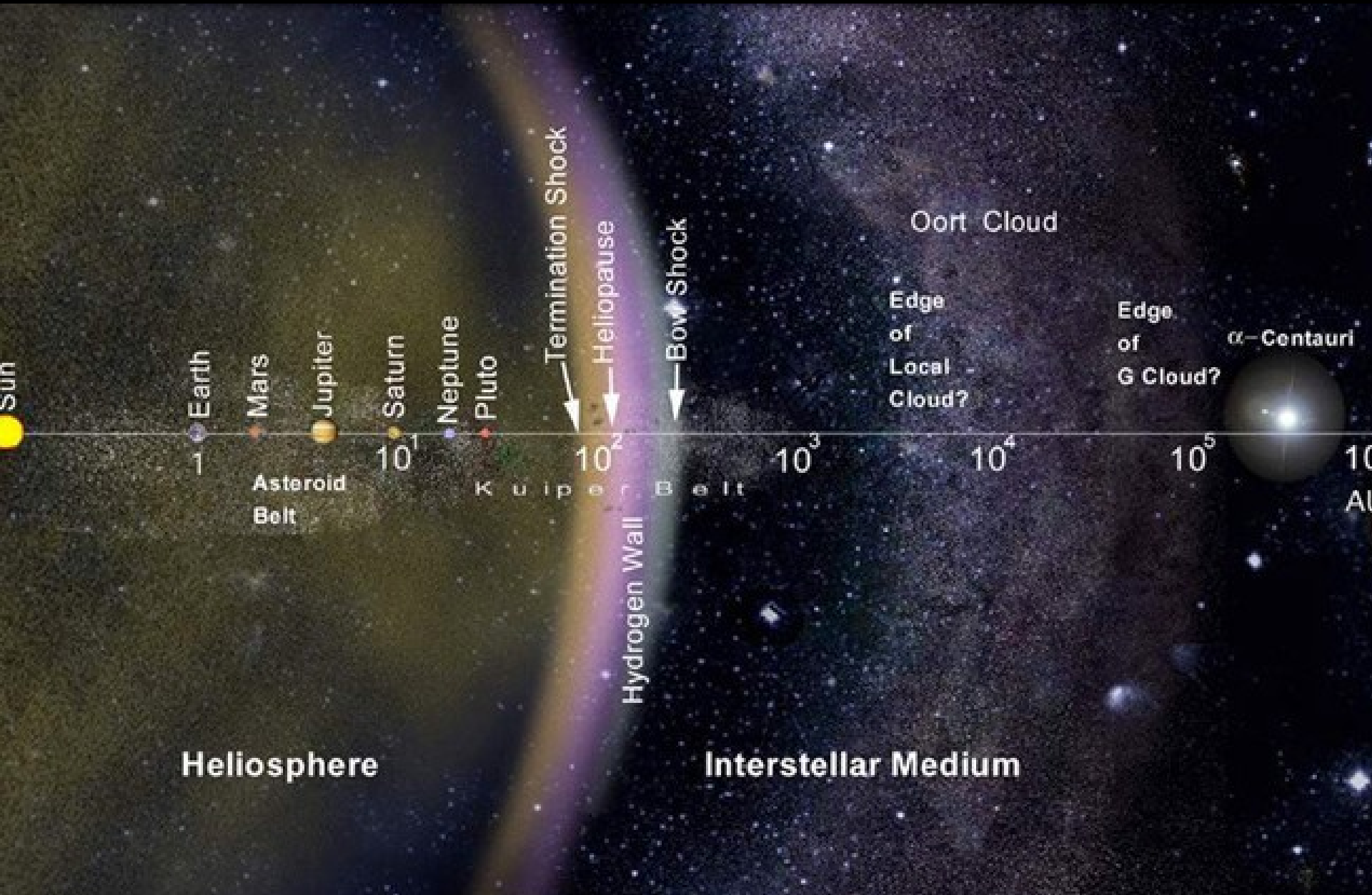
Triton, un autre transneptunien ?



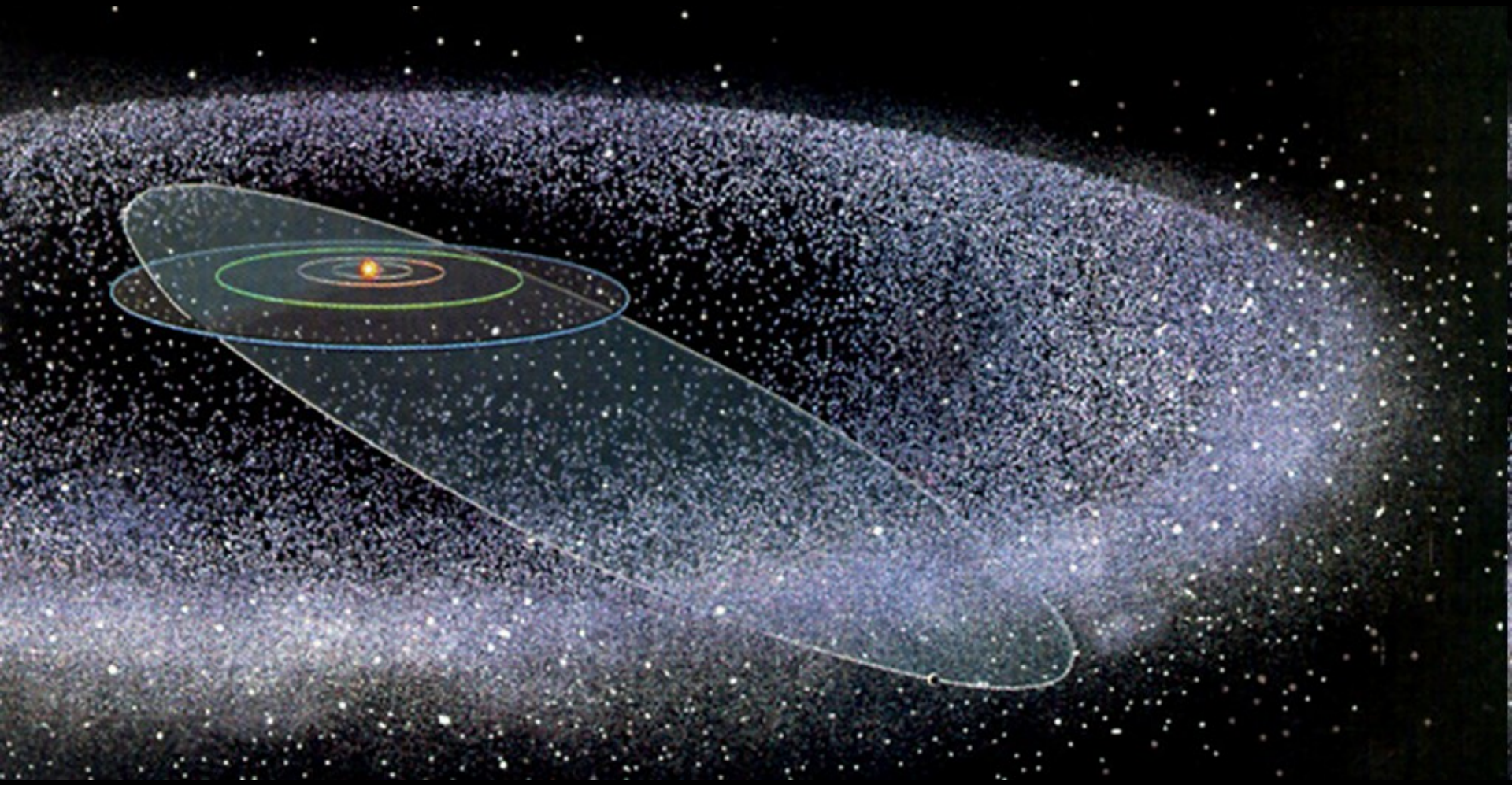
Transneptuniens, ceinture de Kuiper, nuage de Oort

de 40 UA à 40 000 UA

Dimensions (puissances de 10)

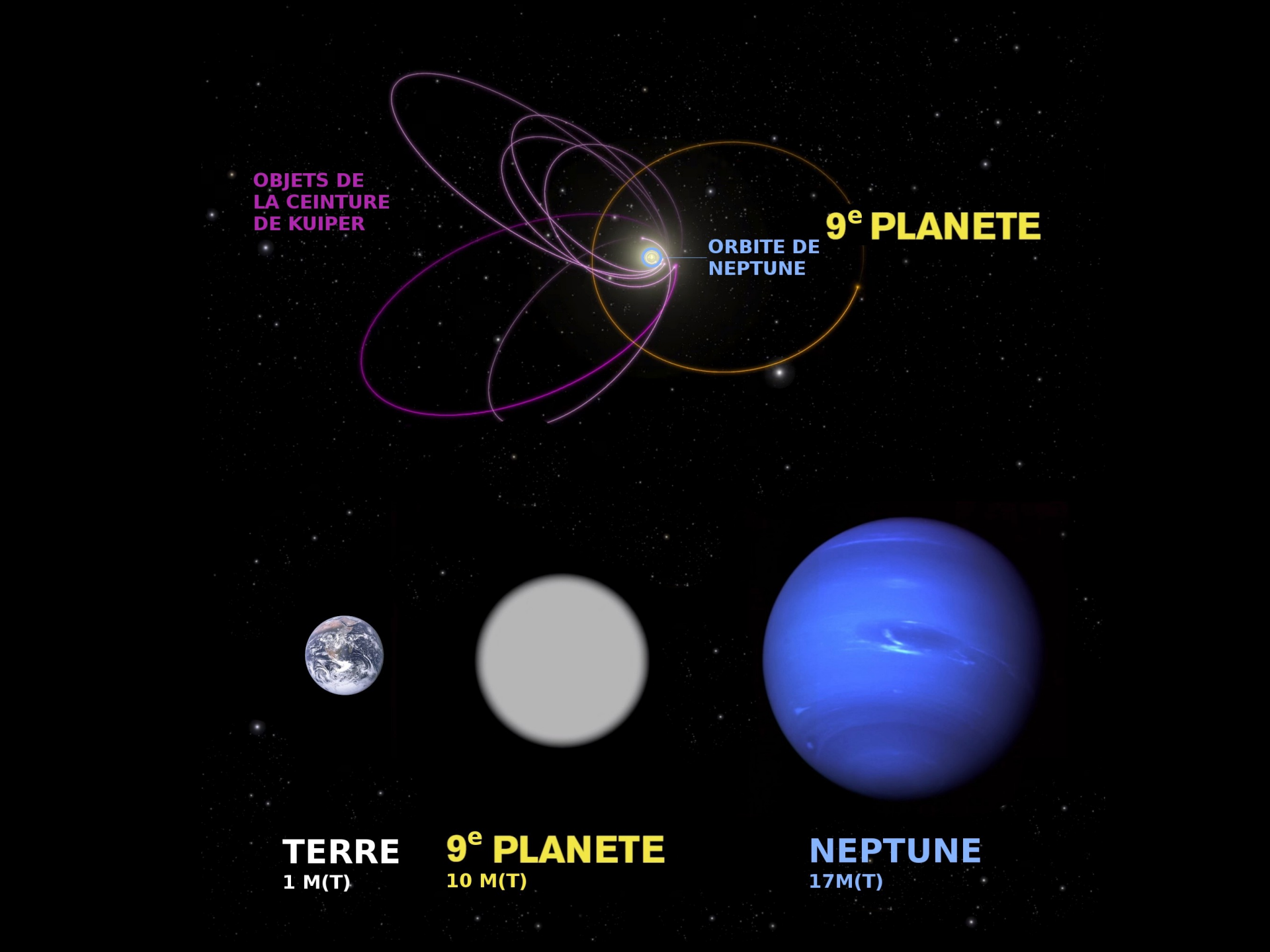


la ceinture de Kuiper

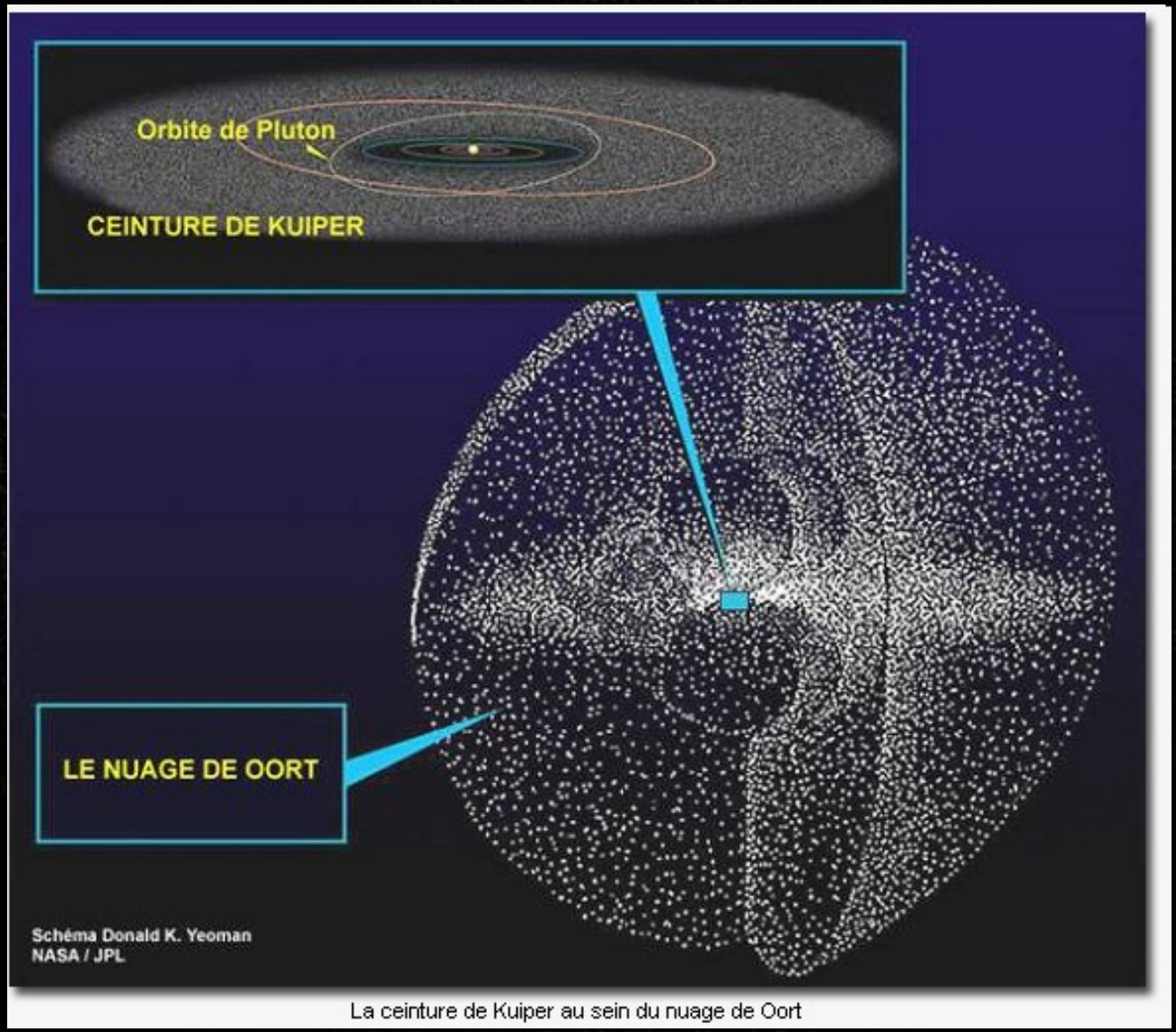


100 à 200 UA

beaucoup de petits corps et ...


OBJETS DE
LA CEINTURE
DE KUIPER
ORBITE DE
NEPTUNE
9e PLANETE
TERRE
1 M(T)
9e PLANETE
10 M(T)
NEPTUNE
17M(T)

Le “réservoir” des comètes



La ceinture de Kuiper au sein du nuage de Oort

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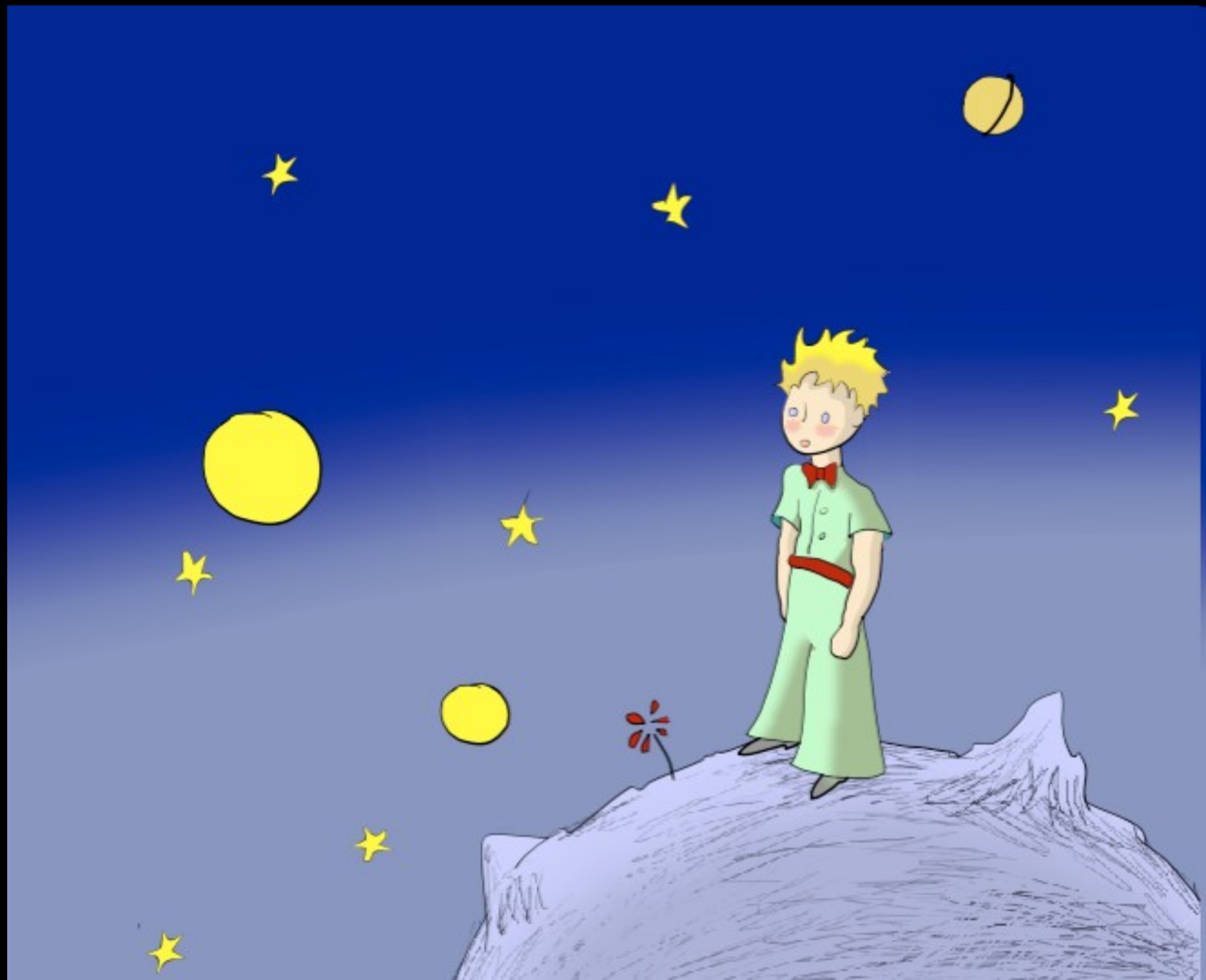
Les “petits corps” racontent

la formation
du
système solaire
...
mais ceci est
une autre
histoire
(à suivre)