Peut-on désormais, grâce à Rosetta, faire des plans sur la comète?

jean-marc.saglio@laposte.net

Société Astronomique de France

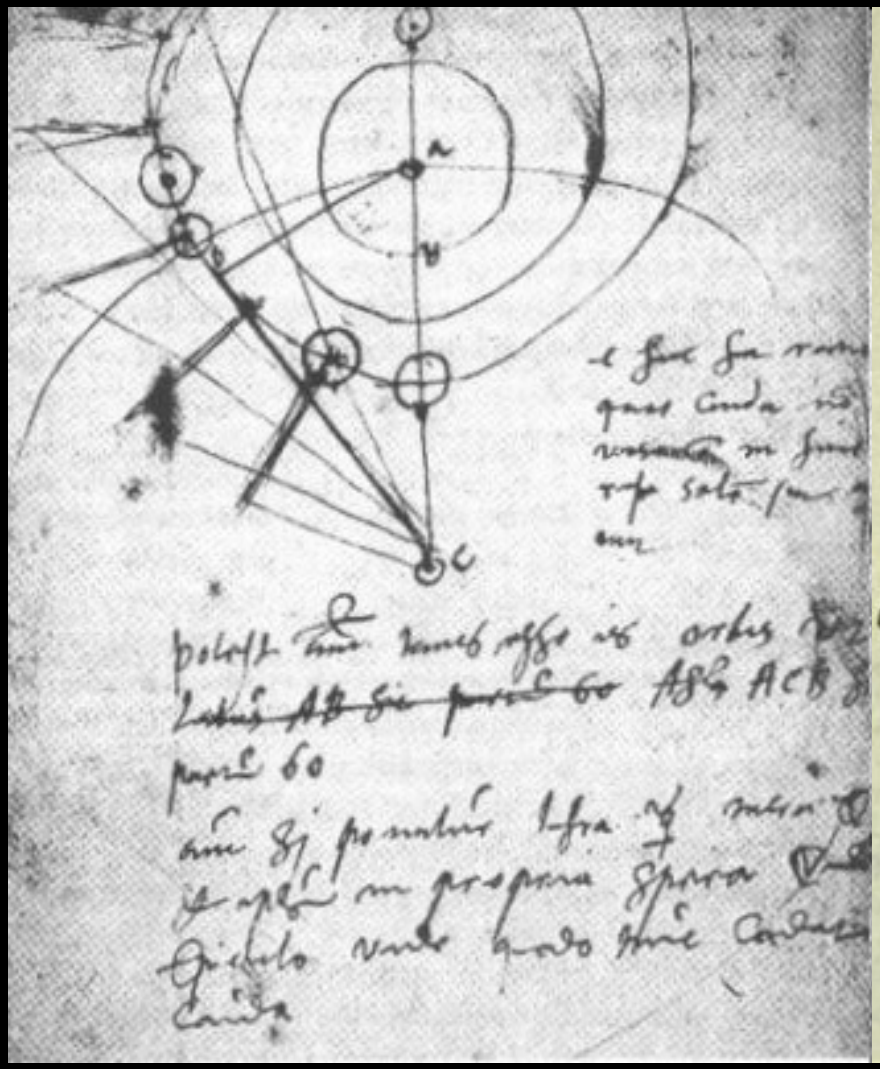
Panstarss, Bourgogne, 2013

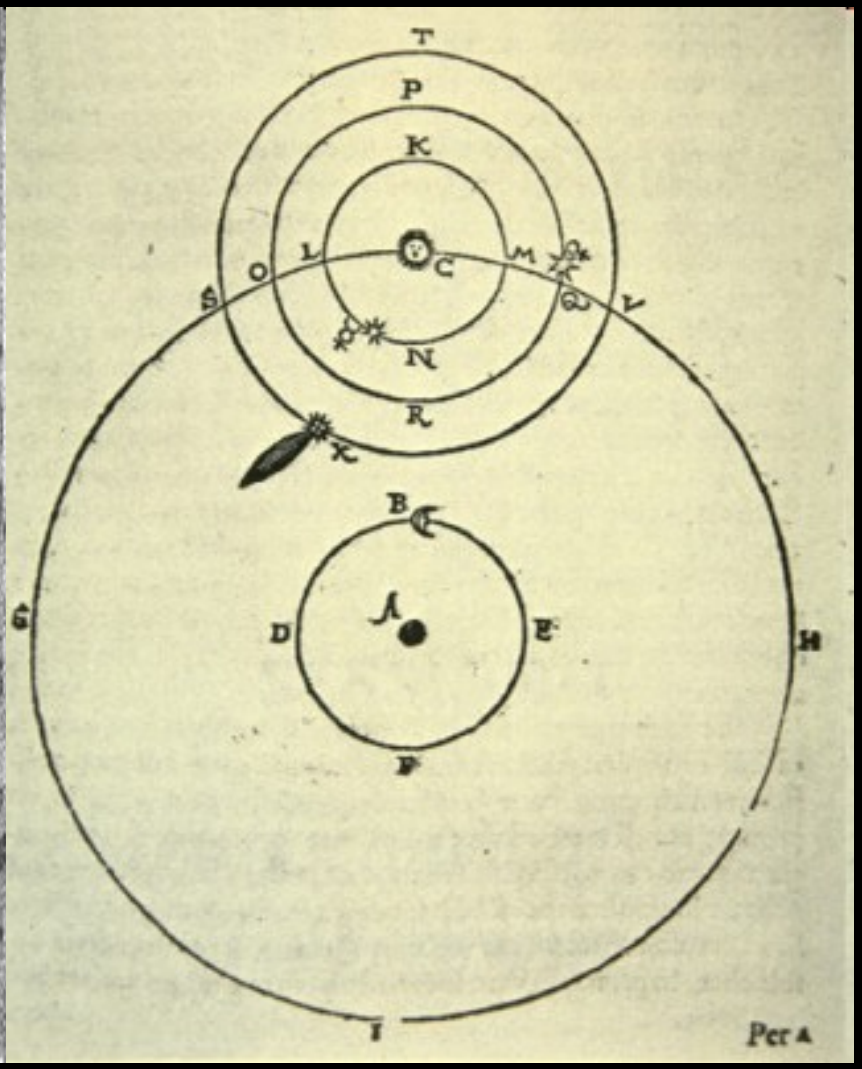
Lemmon et Panstarss, Chili 2013

Mac Naught, Australie, 2007

A.Paré
1528

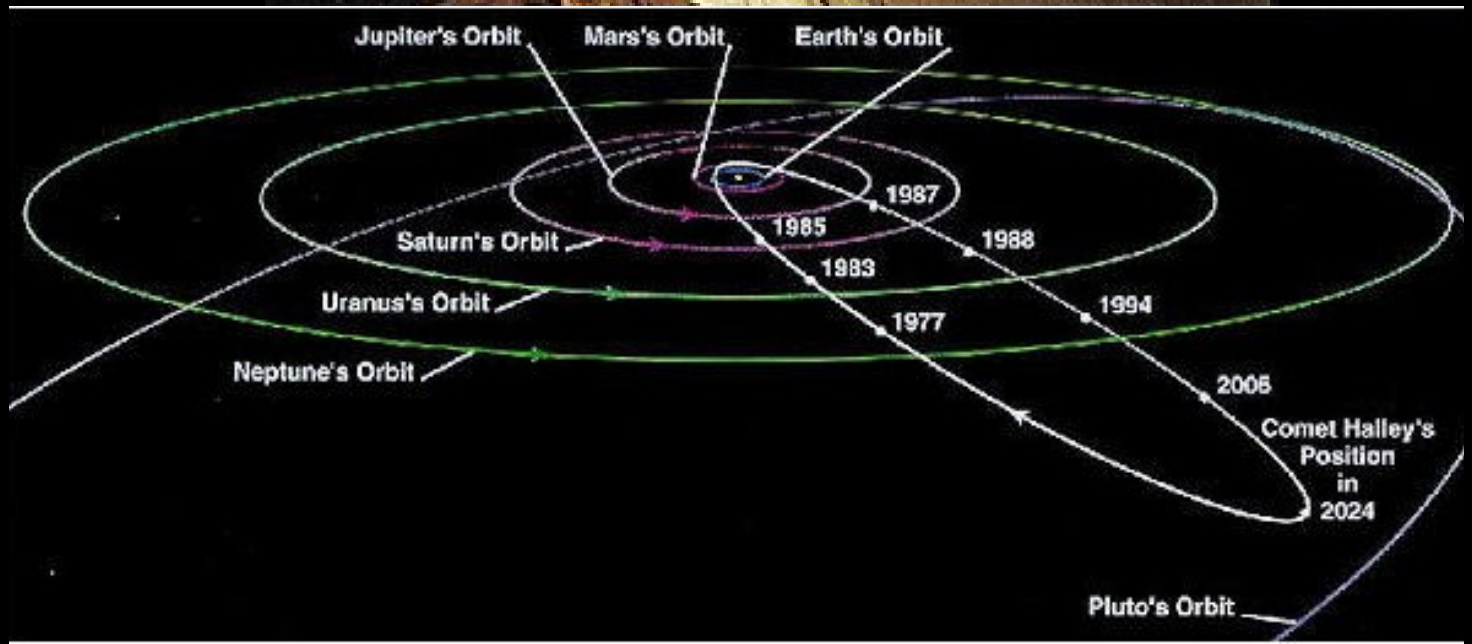
Tycho-Brahé 1587



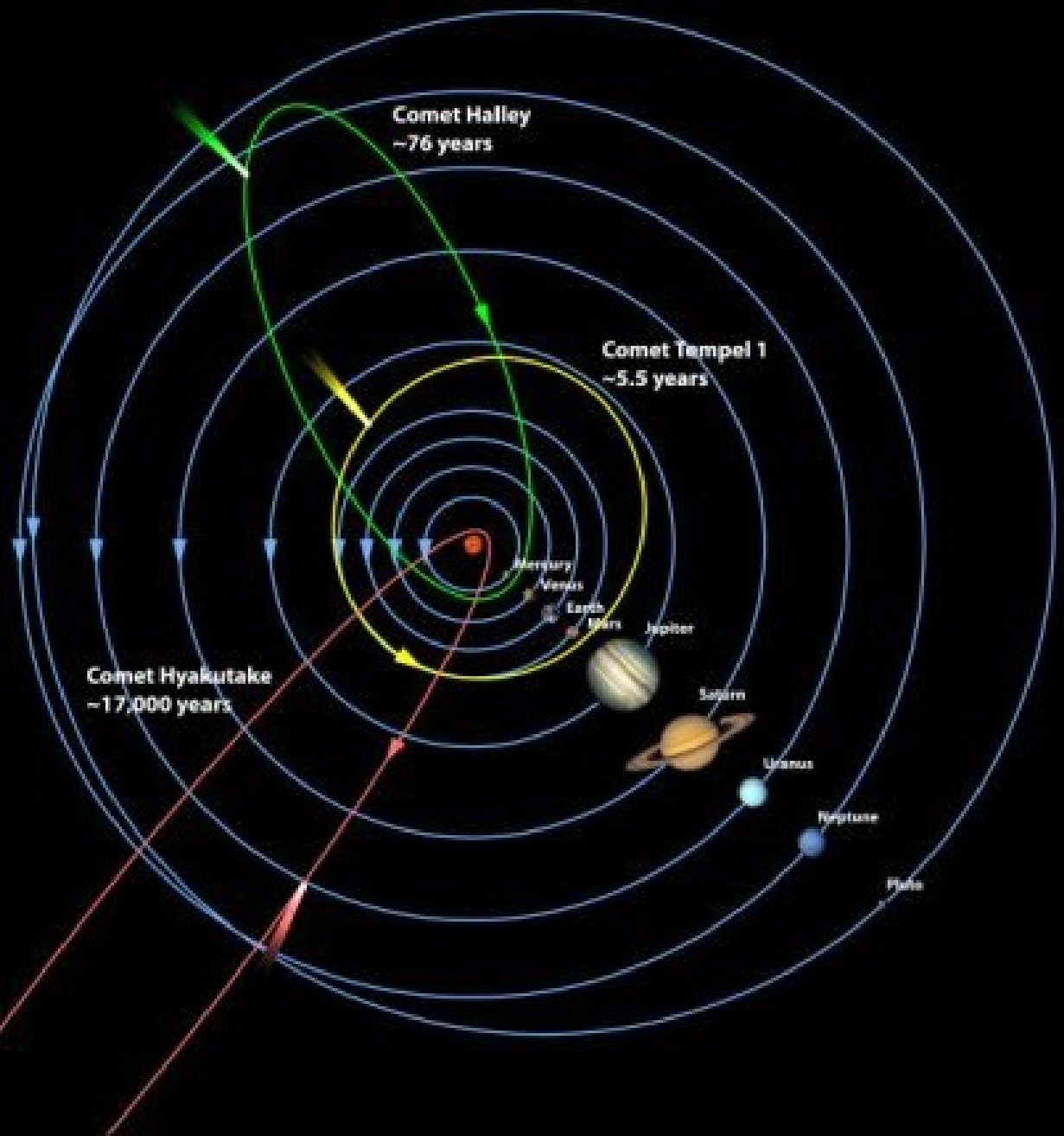


1682 - comète1P/Halley - 1758

1656-1742



Comets Follow Different Orbits



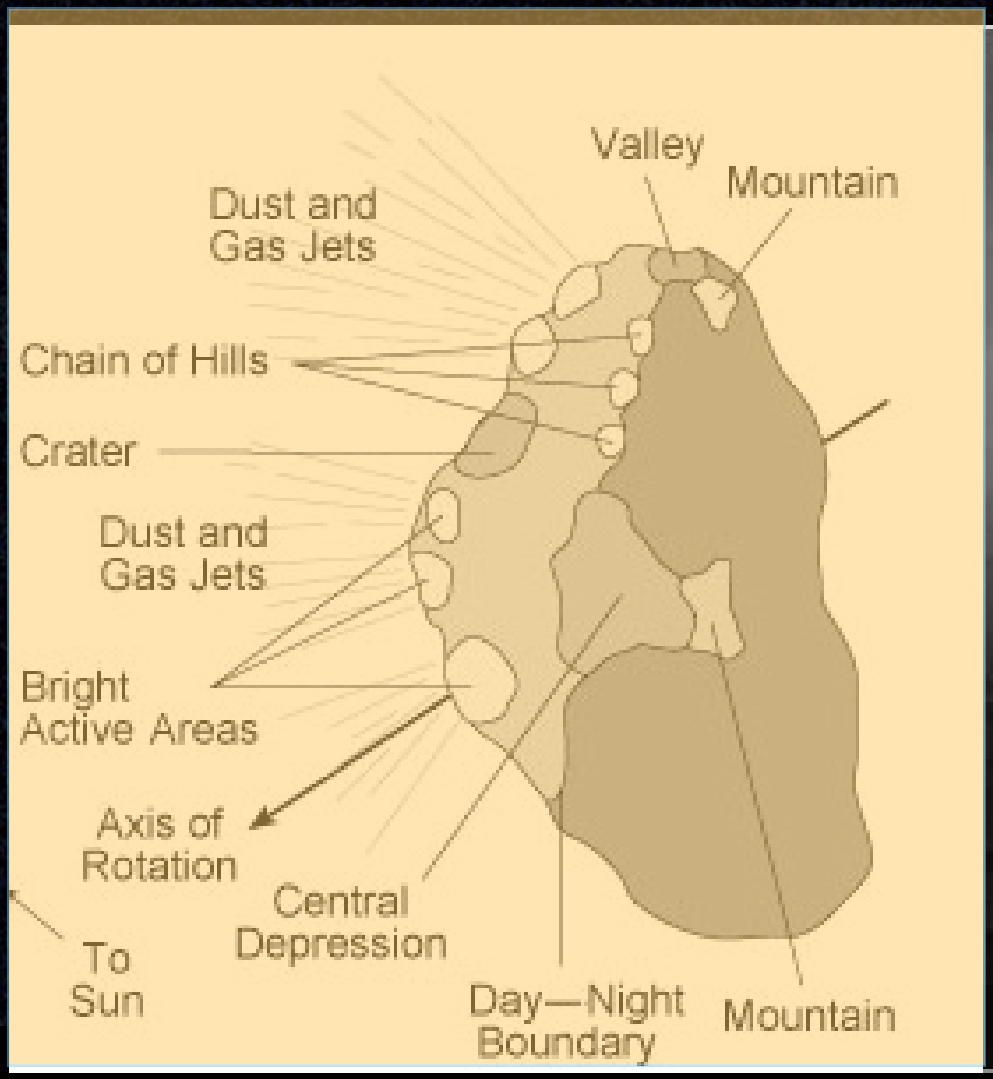
coma = chevelure

Hale-Bopp, 1997

Rosetta & Philae

La grande aventure
de l’exploration spatiale
des comètes

Noyau de la comète de Halley

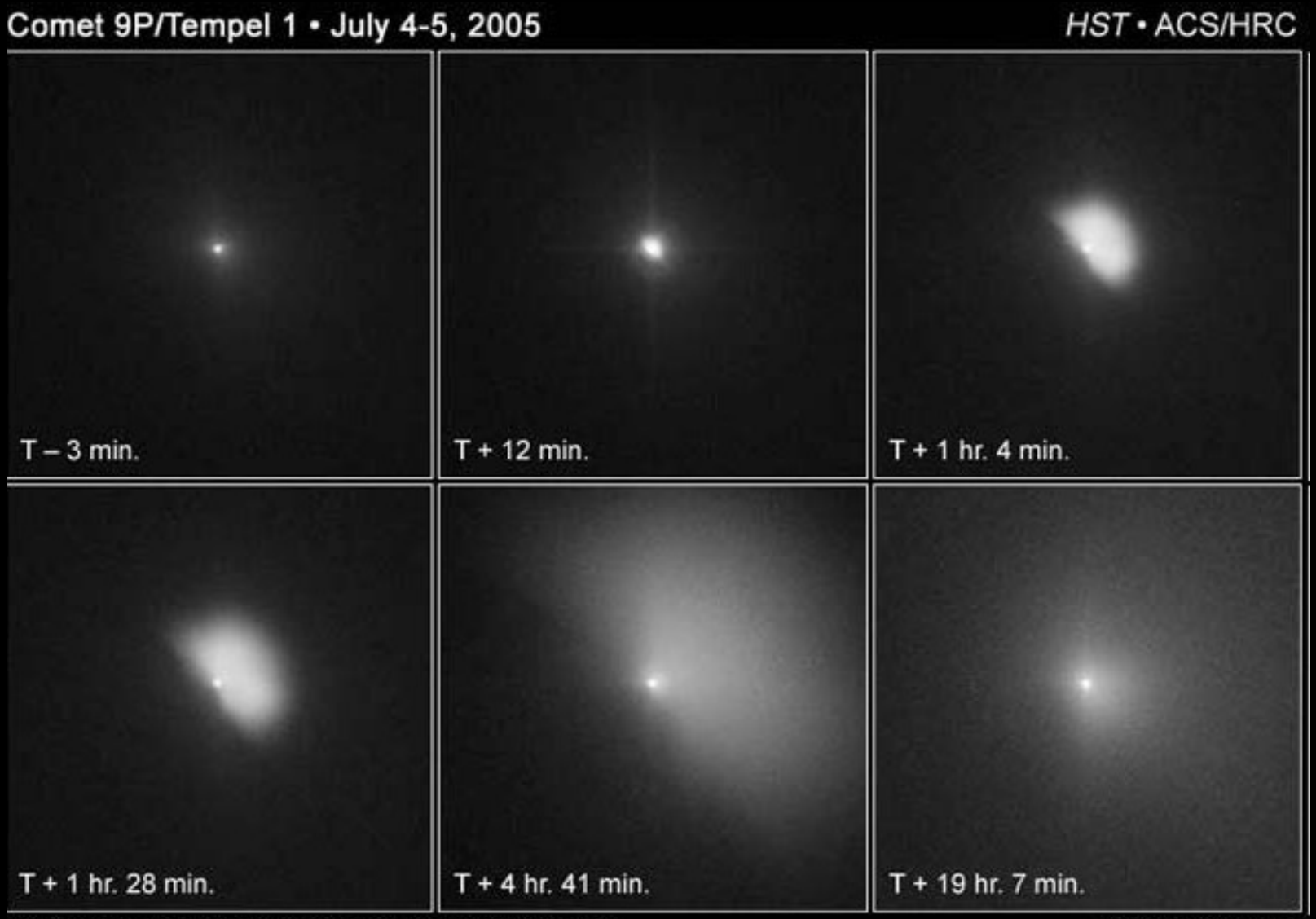


Deep impact

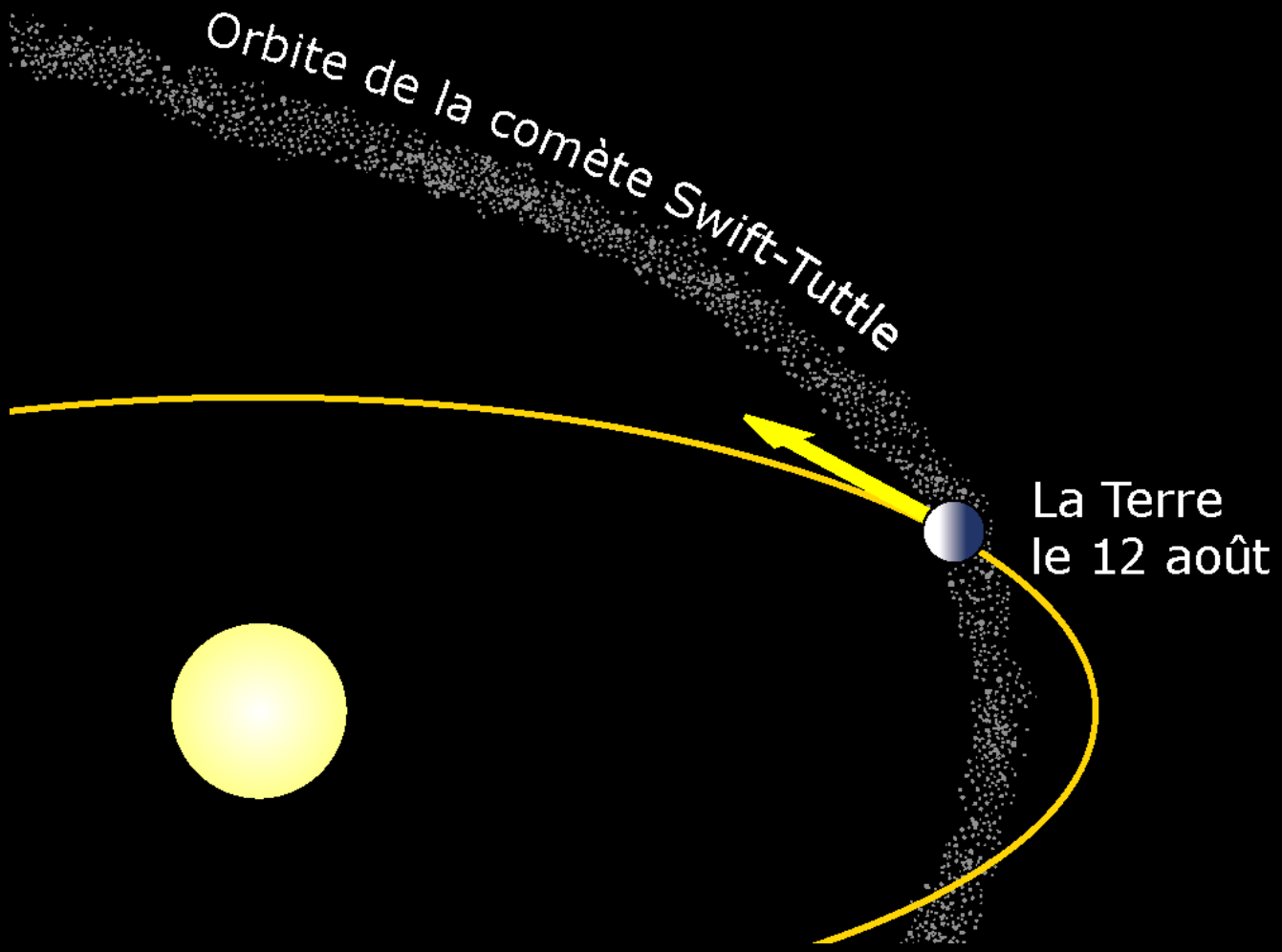
4 juillet 2005

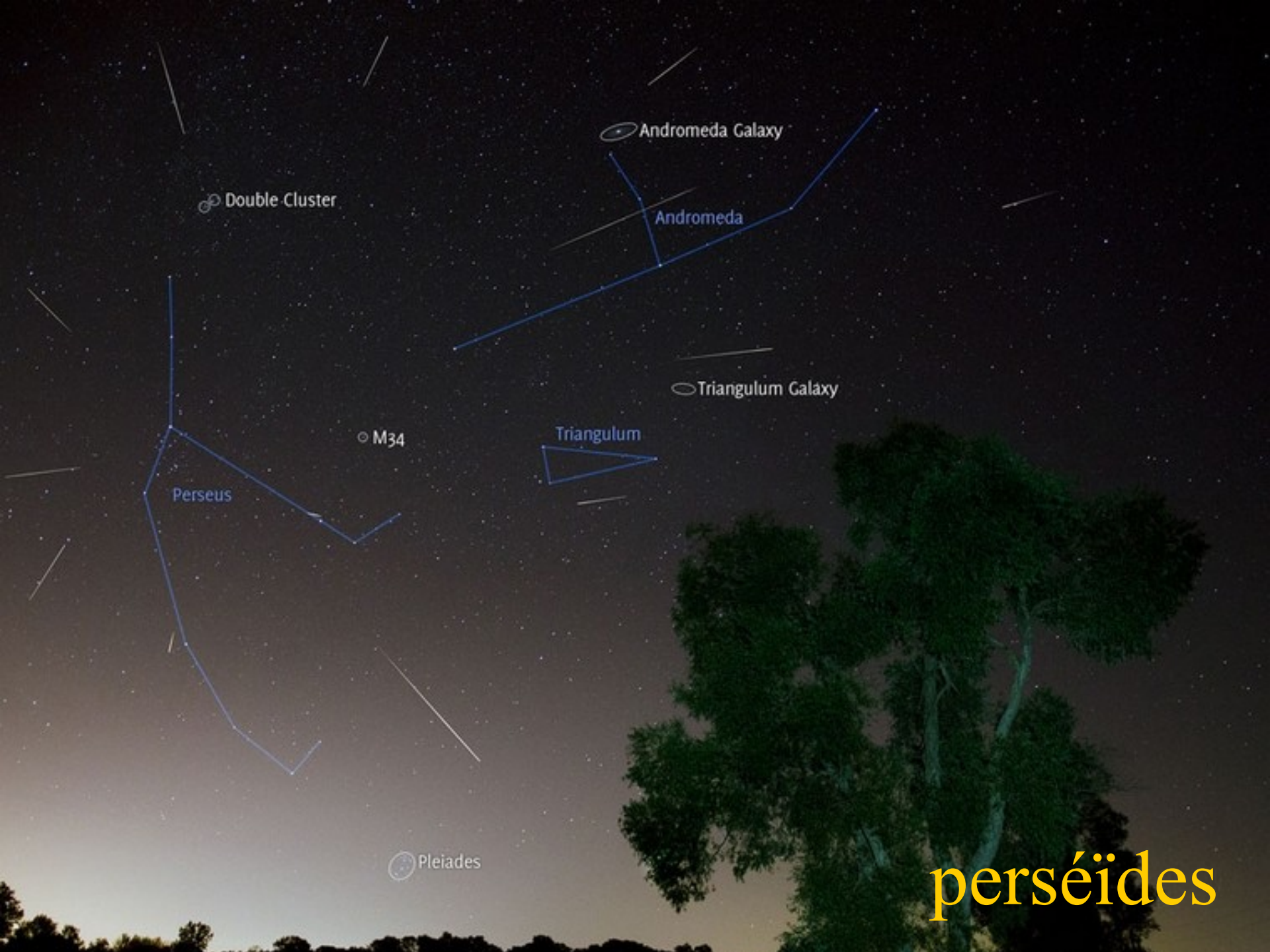
comète Tempel 1

Deep impact sur la comète Tempel 1



ce que les comètes laissent derrière elles

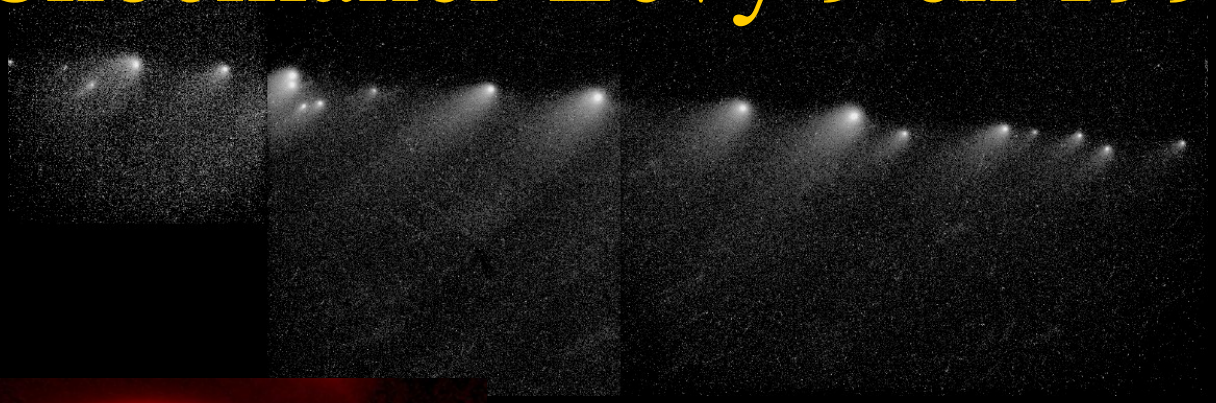



Andromeda Galaxy
Double Cluster
Andromeda
Triangulum Galaxy
M34
Triangulum
Perseus
Pleiades

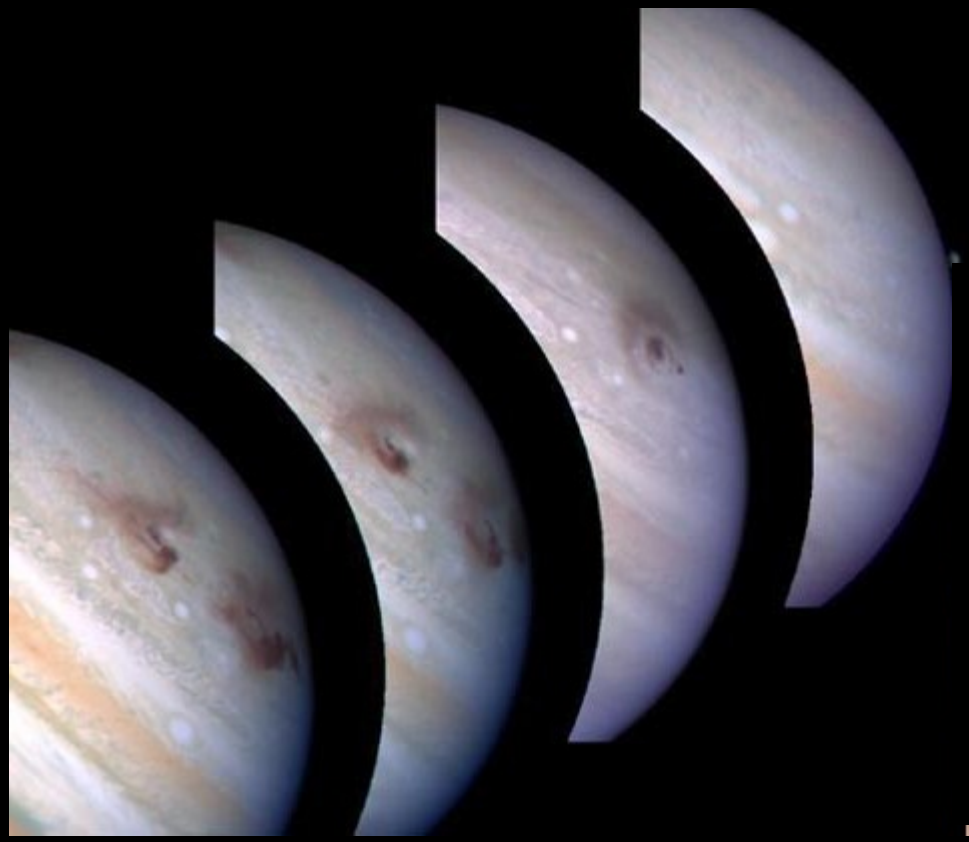
perséïdes

bolide *or fireball (Oklahoma, 2008)*

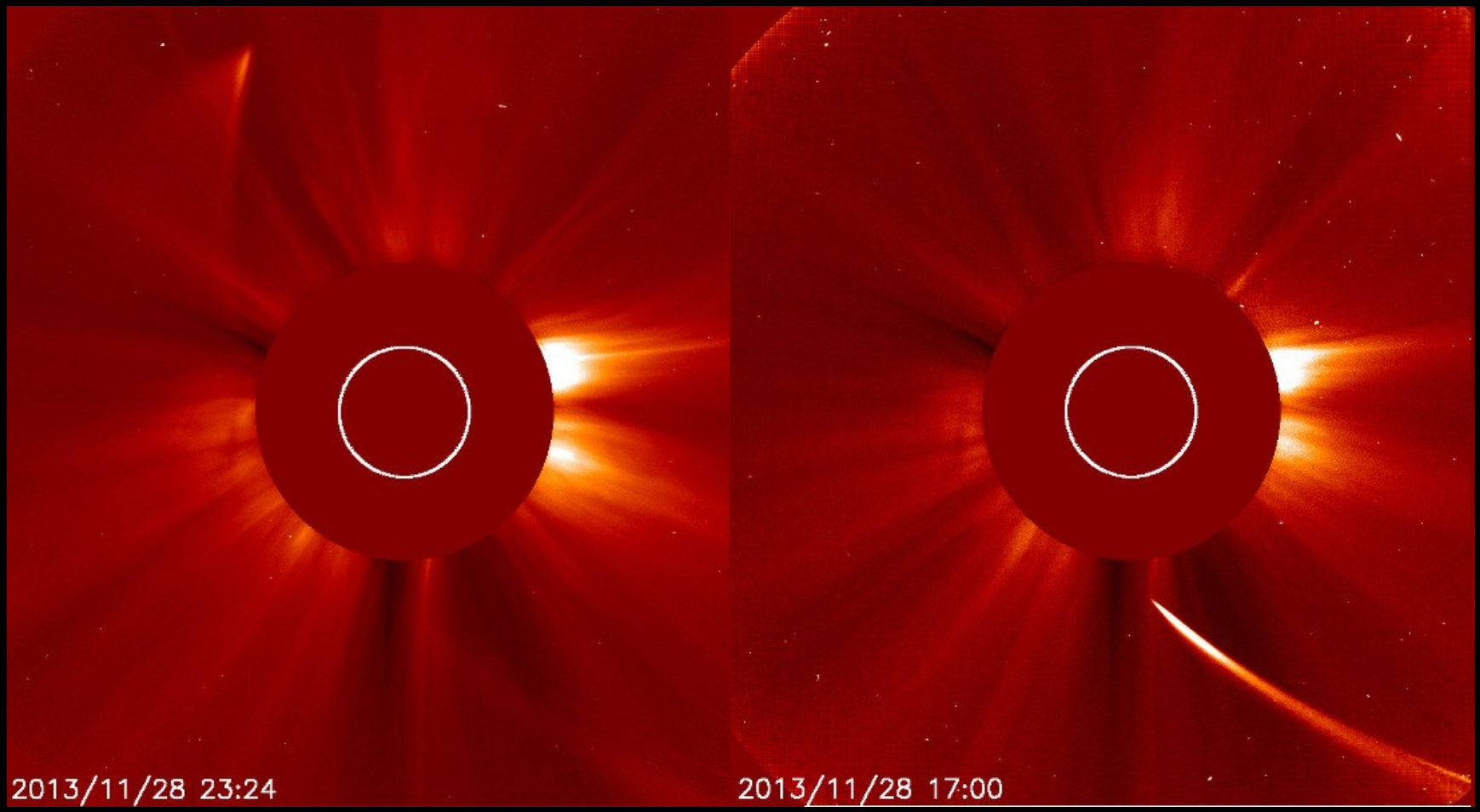
Shoemaker-Levy 9 en 1994



1024x1024 Near-Infrared Camera
University of Hawaii 2.2-meter telescope



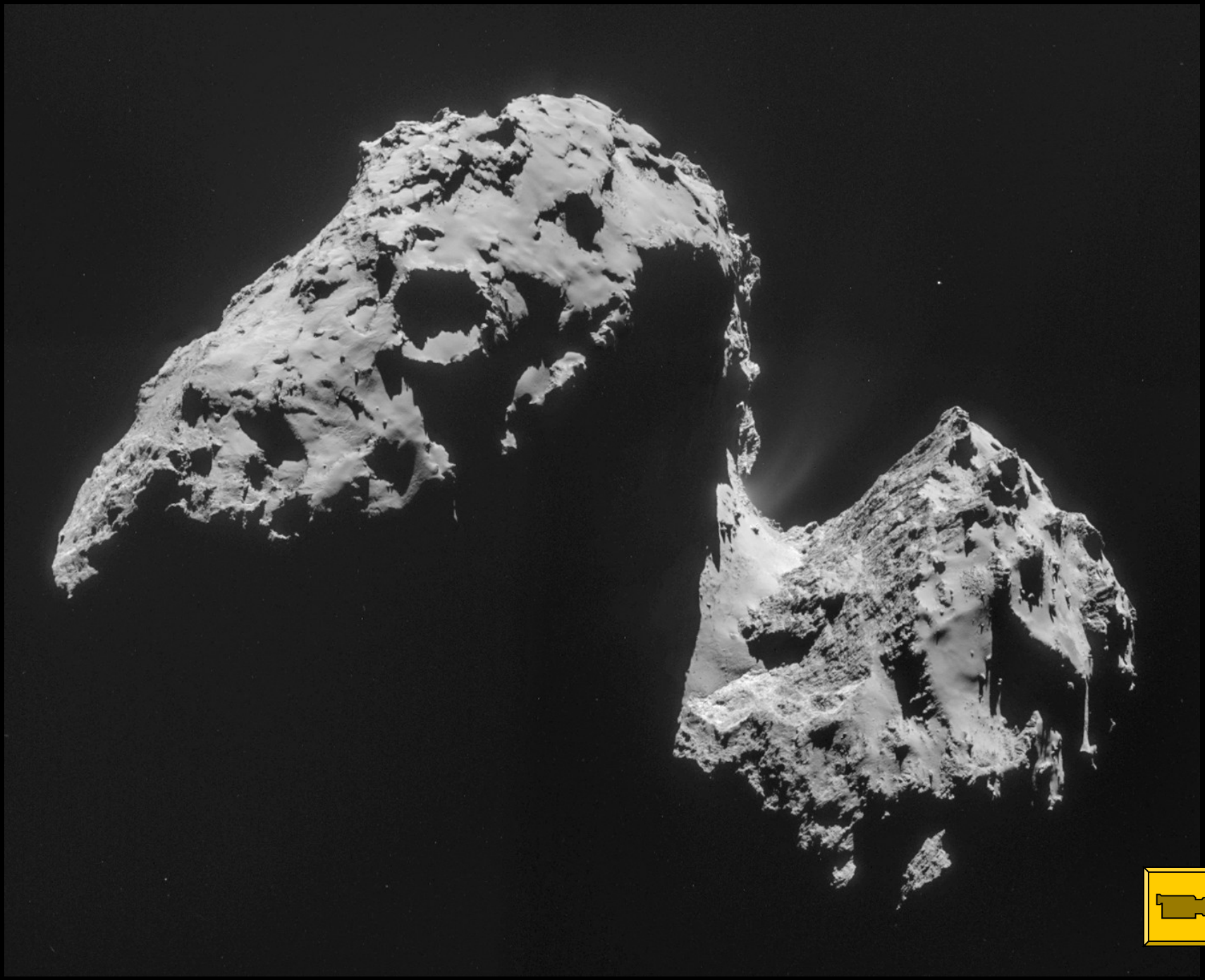
ce que les comètes risquent en passant trop près du soleil



Comète ISON nov2013

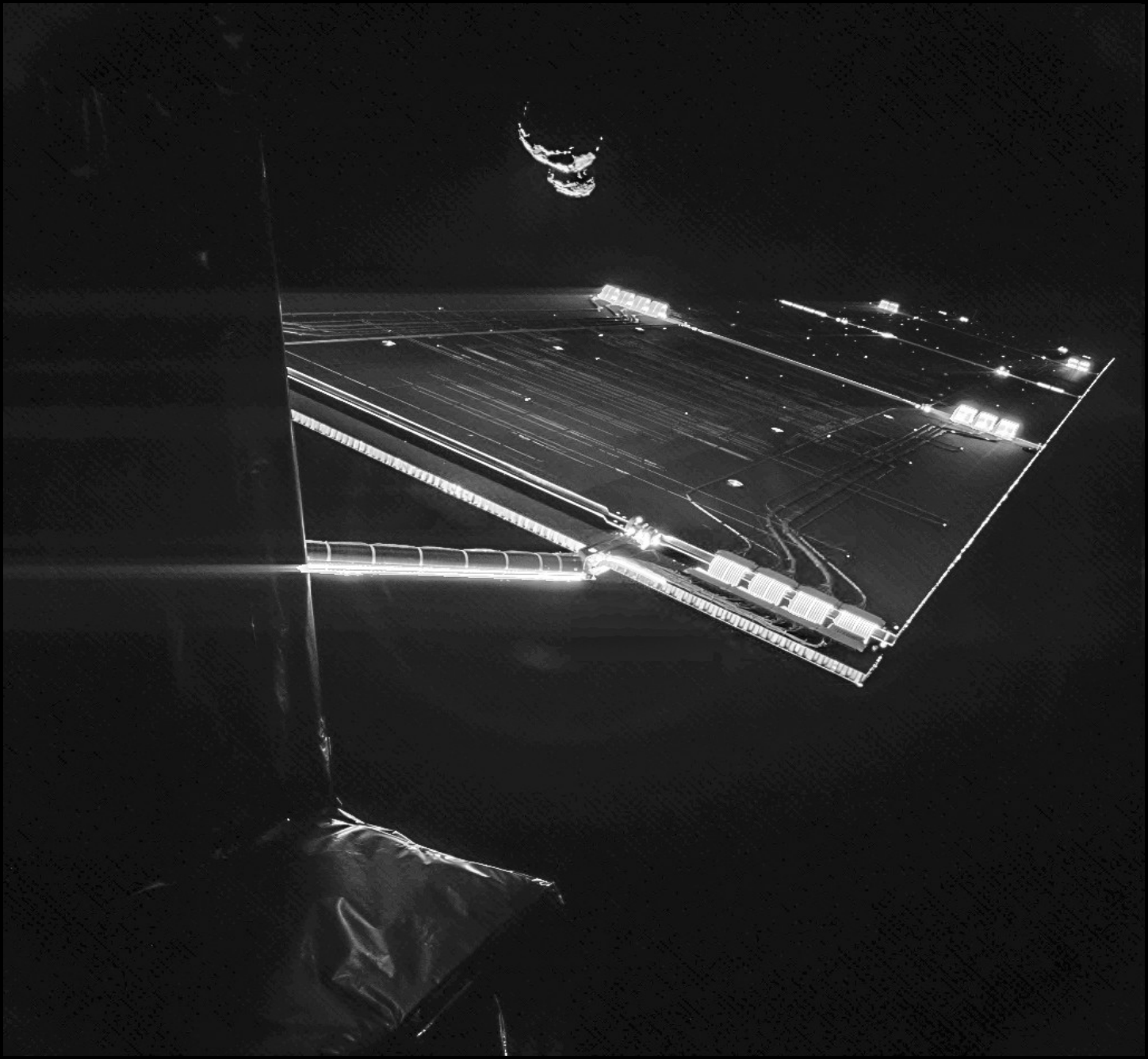
Rosetta & Philae

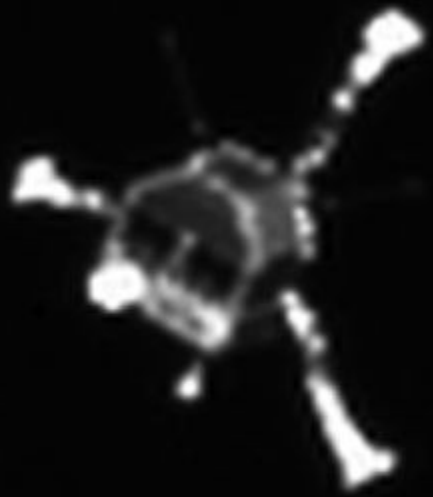
Le réveil après un long voyage



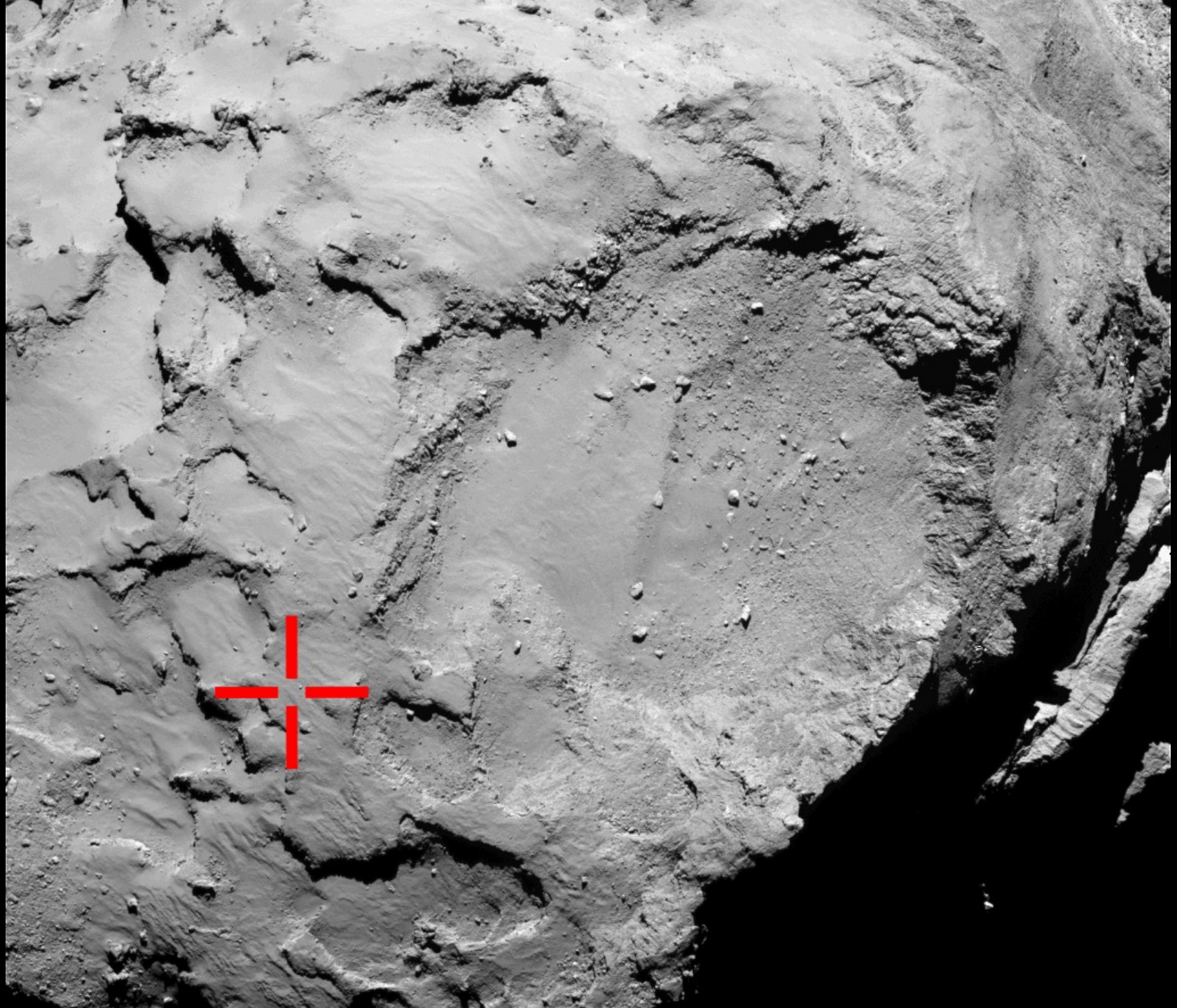
Rosetta & Philae

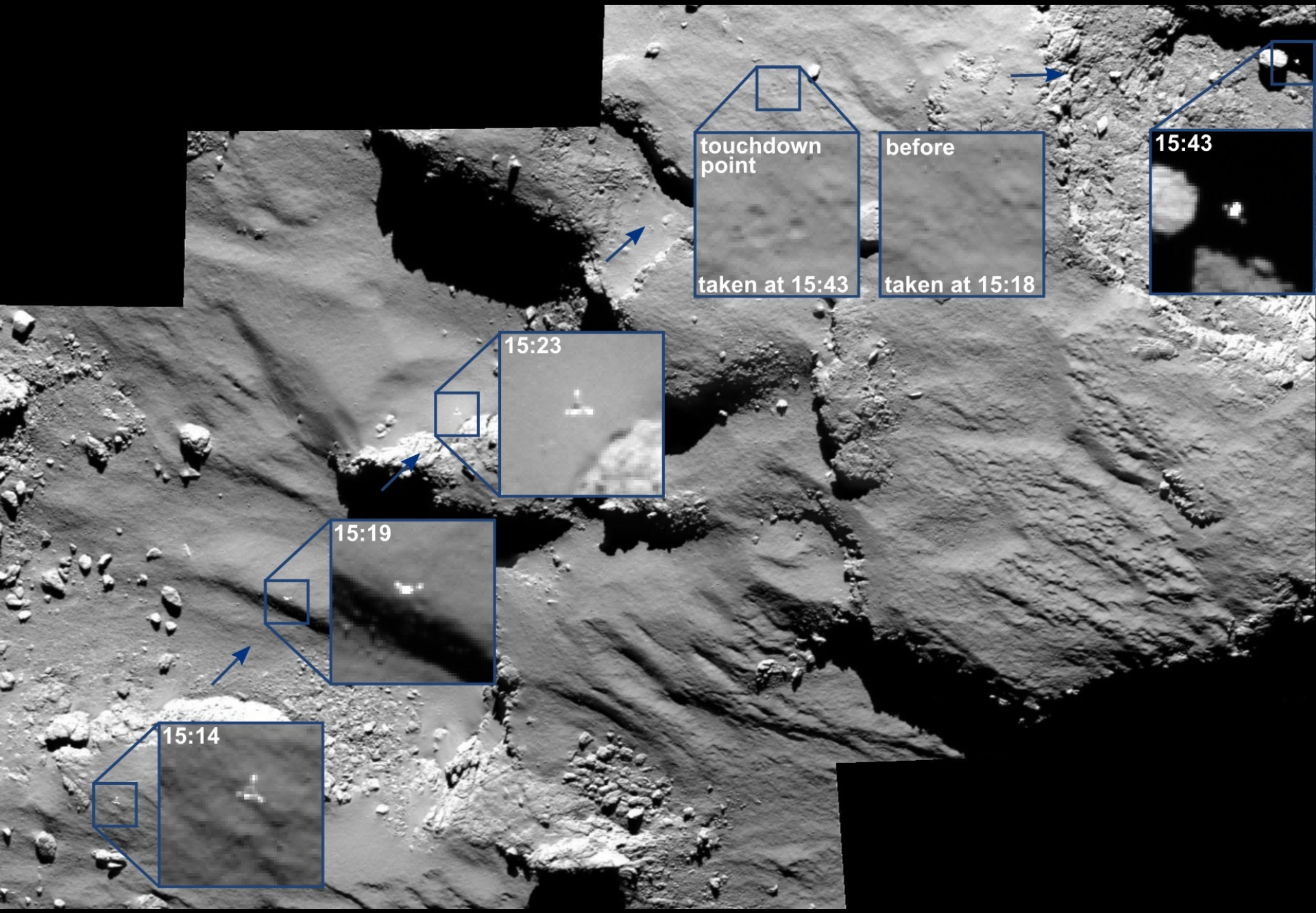
Le rendez-vous avec la comète !





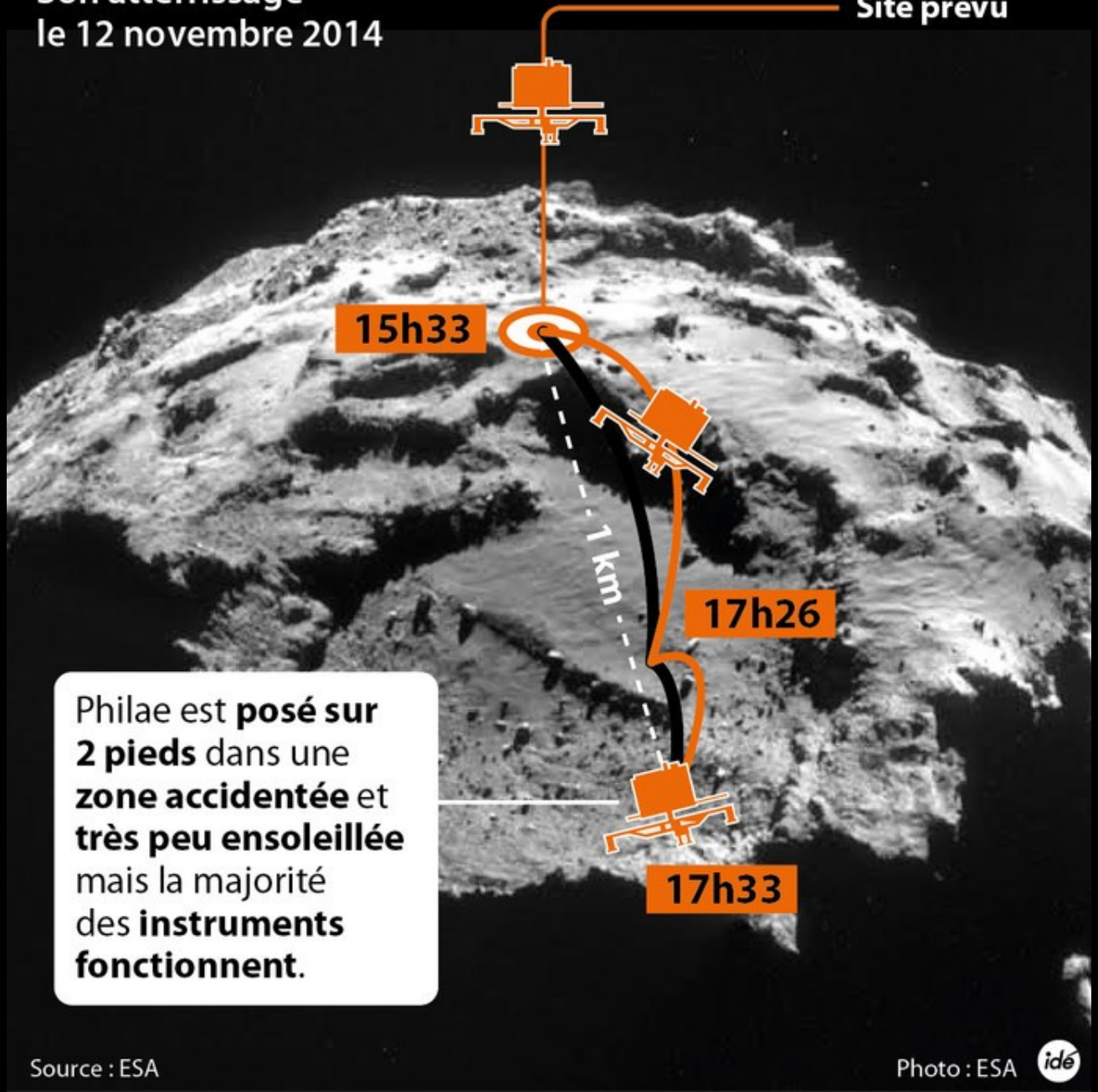

esa




touchdown point
taken at 15:43
before
taken at 15:18
15:43
15:23
15:19
15:14

Philae sur la comète « Tchouri »

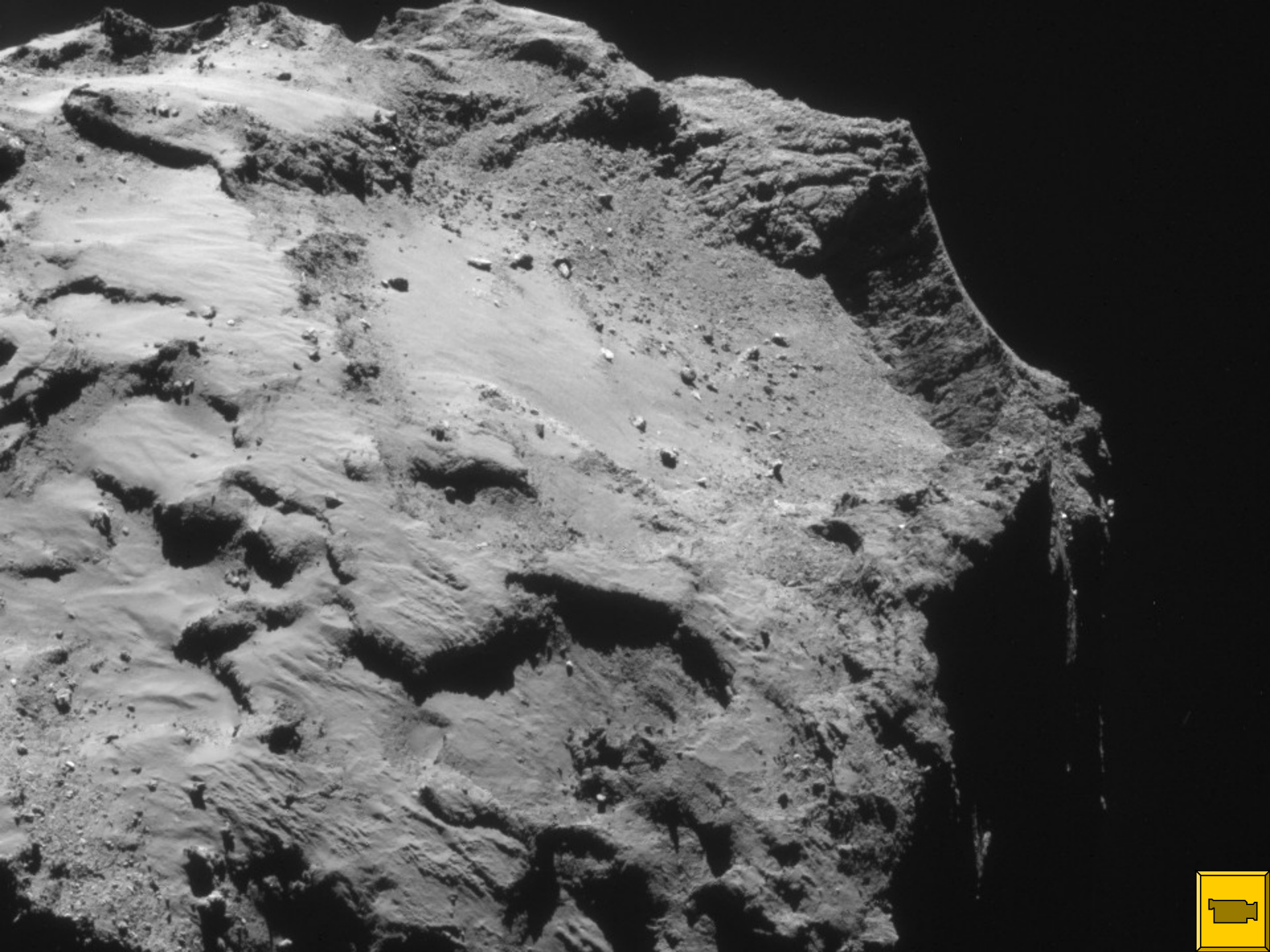
Son atterrissage
le 12 novembre 2014

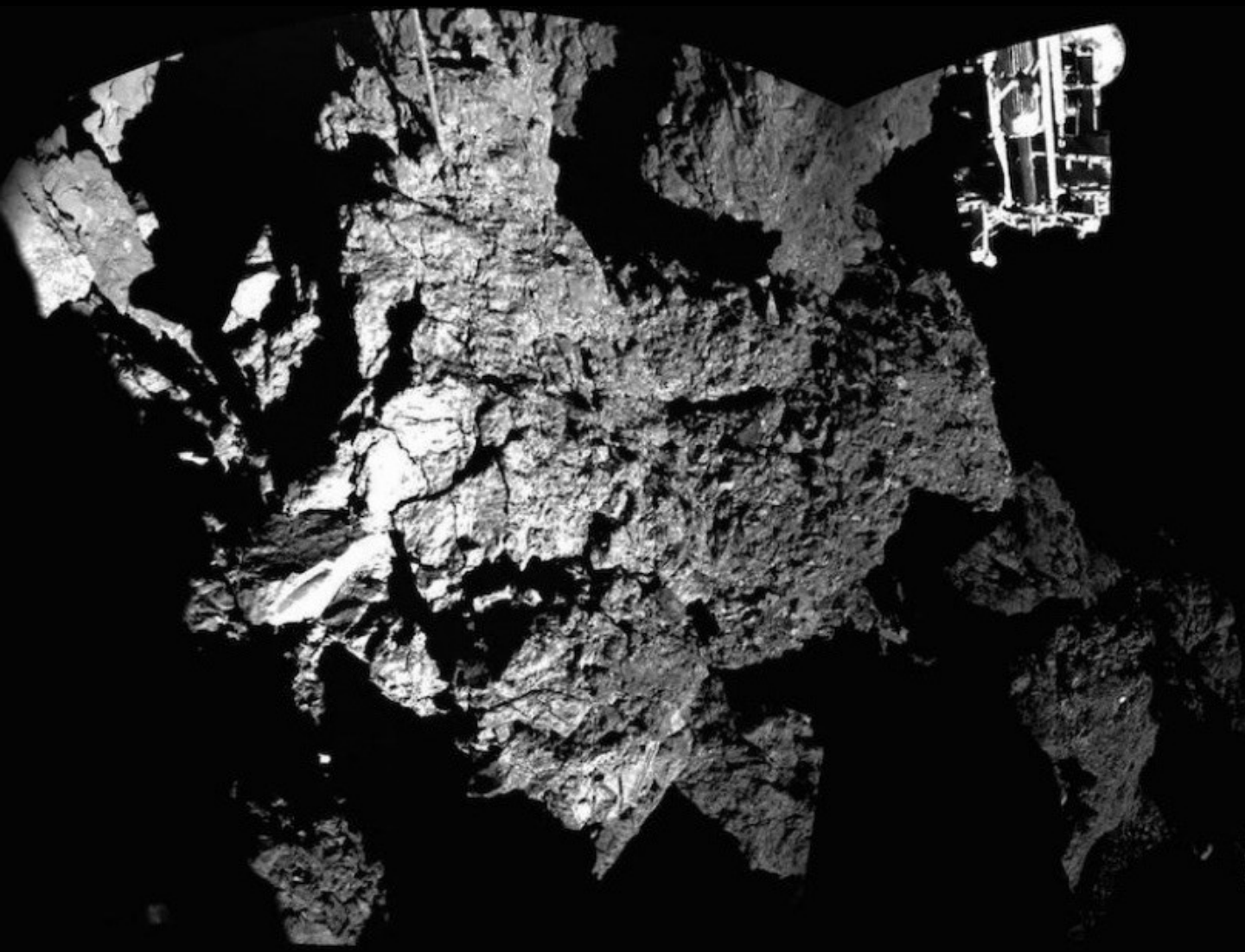


Philae est **posé sur 2 pieds** dans une **zone accidentée** et **très peu ensoleillée** mais la majorité des **instruments fonctionnent**.

Source : ESA

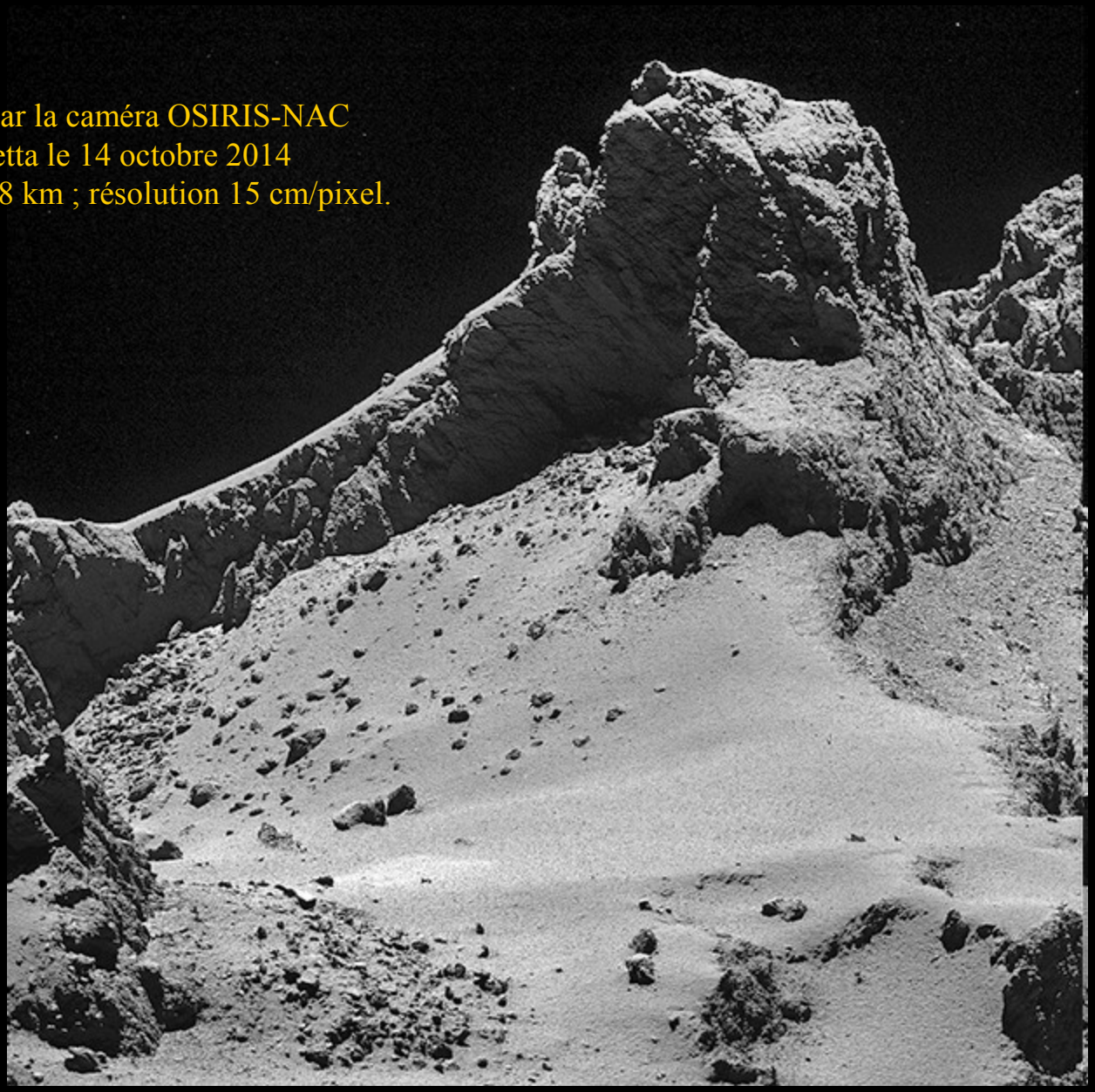
Photo : ESA

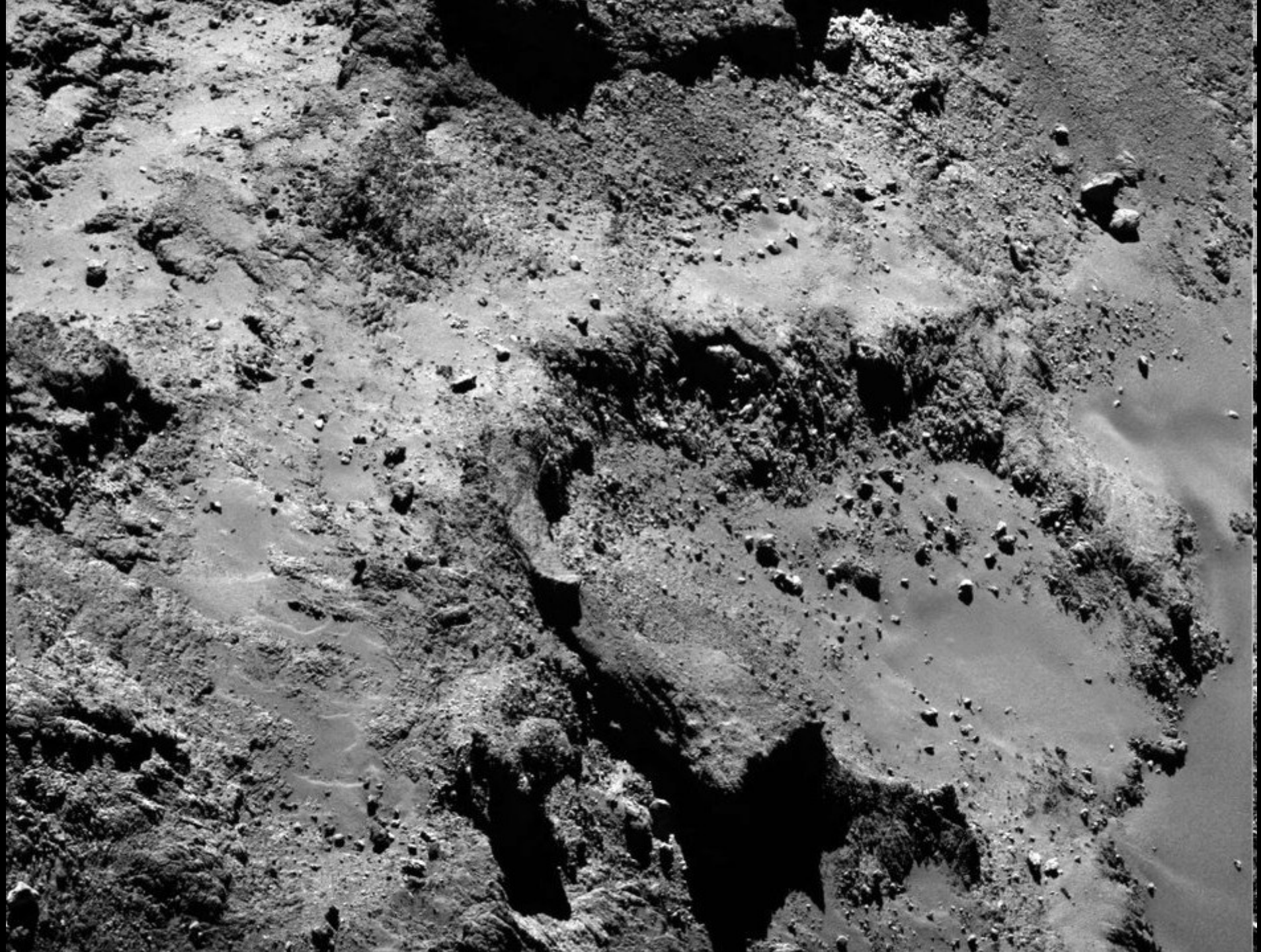




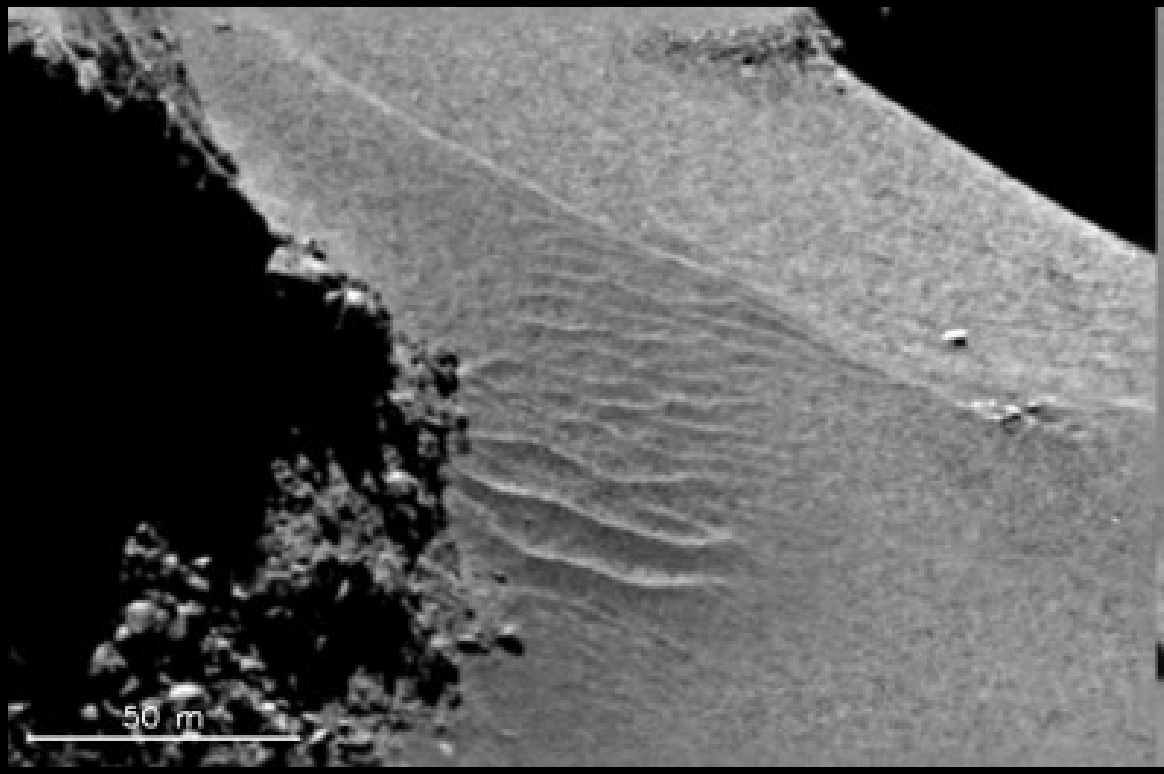

esa
1
COMET LANDING
2
COMET LANDING
3
COMET LANDING

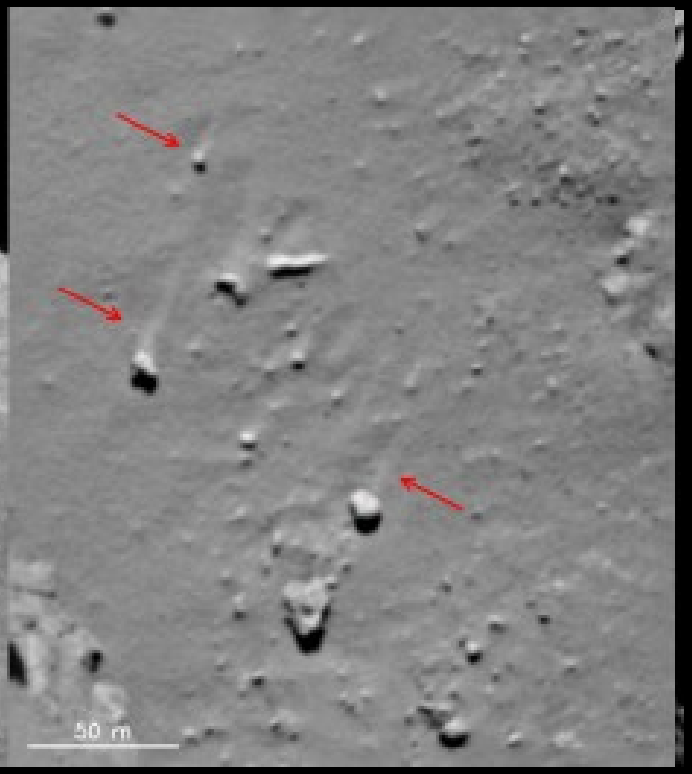
67P pris par la caméra OSIRIS-NAC
de Rosetta le 14 octobre 2014
l'altitude de 8 km ; résolution 15 cm/pixel.



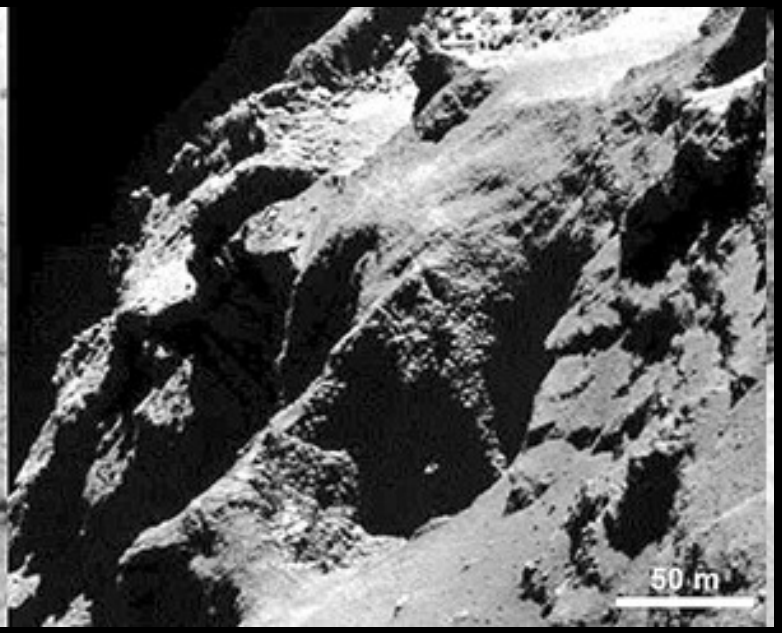


Dunes et trainées de poussières… sans vent!

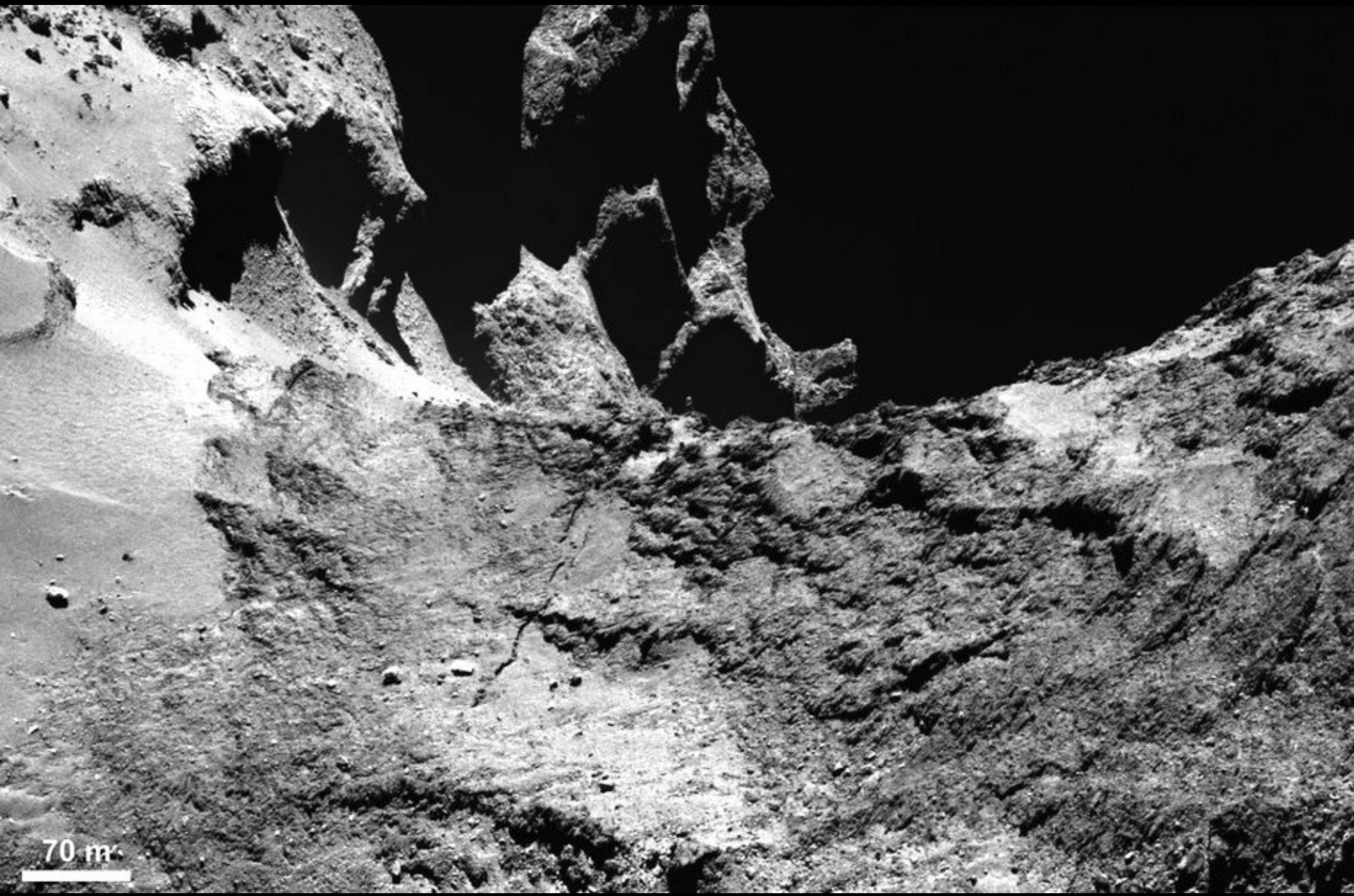




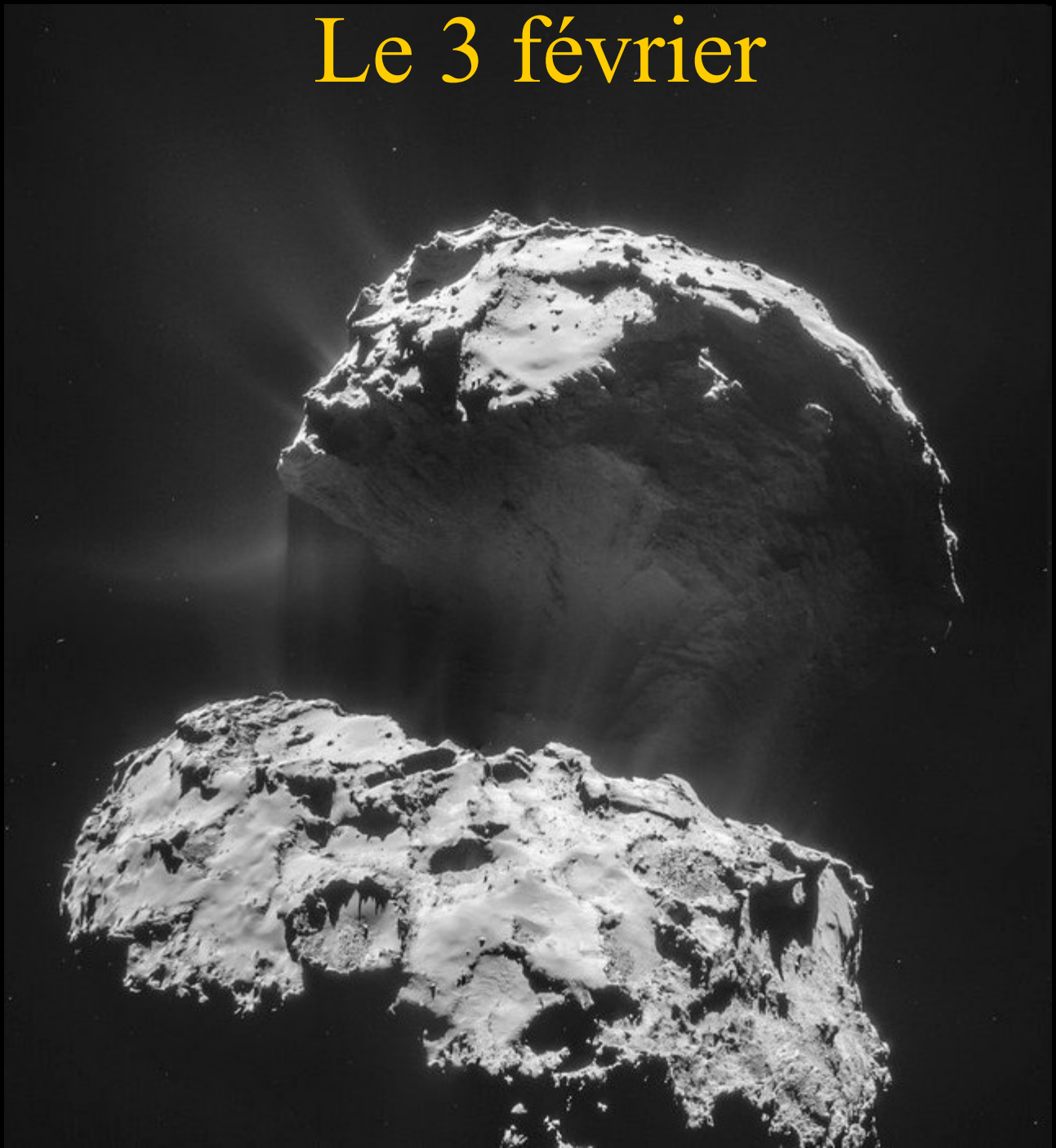
trou circulaire observé sur le noyau 67P ; l'augmentation du contraste révèle la présence d'activité. Caméra OSIRIS-NAC, le 28 août 2014 à 60 km de distance (1 m/pixel)



Et si la comète se brisait?



Le 3 février



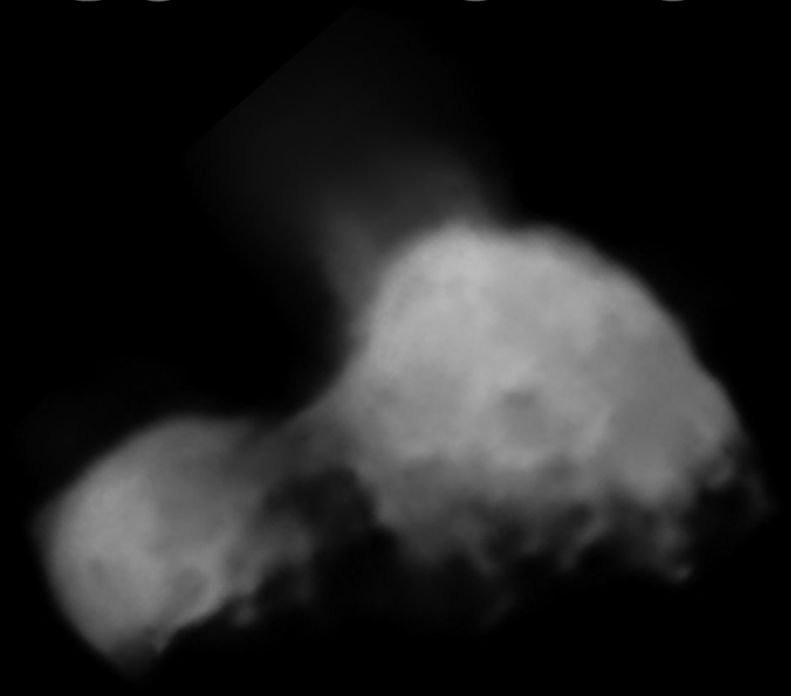
Webographie :

- CNES http://smsc.cnes.fr/ROSETTA/Fr/
- ESA http://rosetta.esa.int/
- NASA http://rosetta.jpl.nasa.gov/

(à suivre)

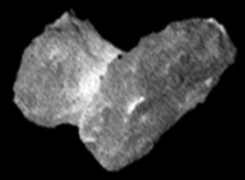
... des questions ?

COMETS VISITED BY SPACECRAFT



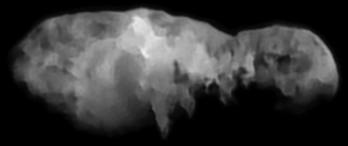
1P/Halley
16 × 8 × 8 km
Vega 2, 1986

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

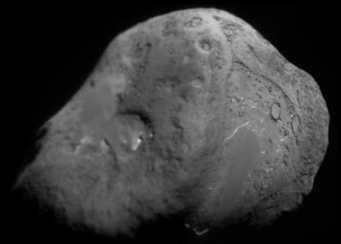


67P/Churyumov-Gerasimenko
4 × 3 km
Rosetta, 2014

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

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.

→ COMET 67P/CHURYUMOV–GERASIMENKO'S VITAL STATISTICS

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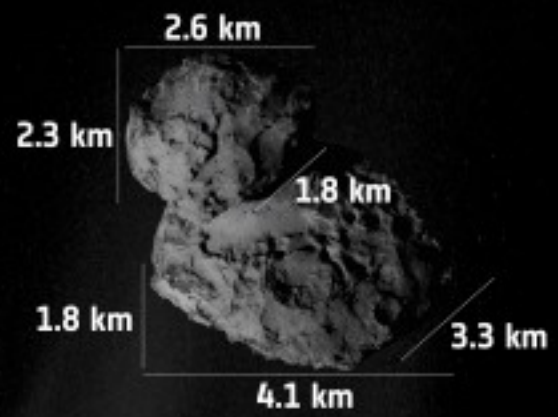
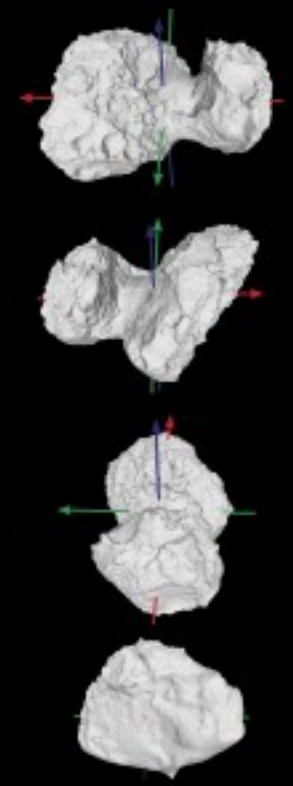
21.4 km³
Volume

1.0 × 10¹³ kg
Mass

470 kg/m³
Density

70–80%
Porosity





Rotation period
12.4043 hours

Spin axis:
69.3°
Right Ascension

64.1°
Declination

52°
Obliquity of the comet's rotational axis

X,Y Equatorial axes
Z Spin axis

4
Dust/gas ratio

5.3 × 10⁻⁴
D/H ratio

Average water vapour production
300 ml/s → June 2014
600 ml/s → July 2014
1200 ml/s → August 2014

–93°C to –43°C
Surface temperature

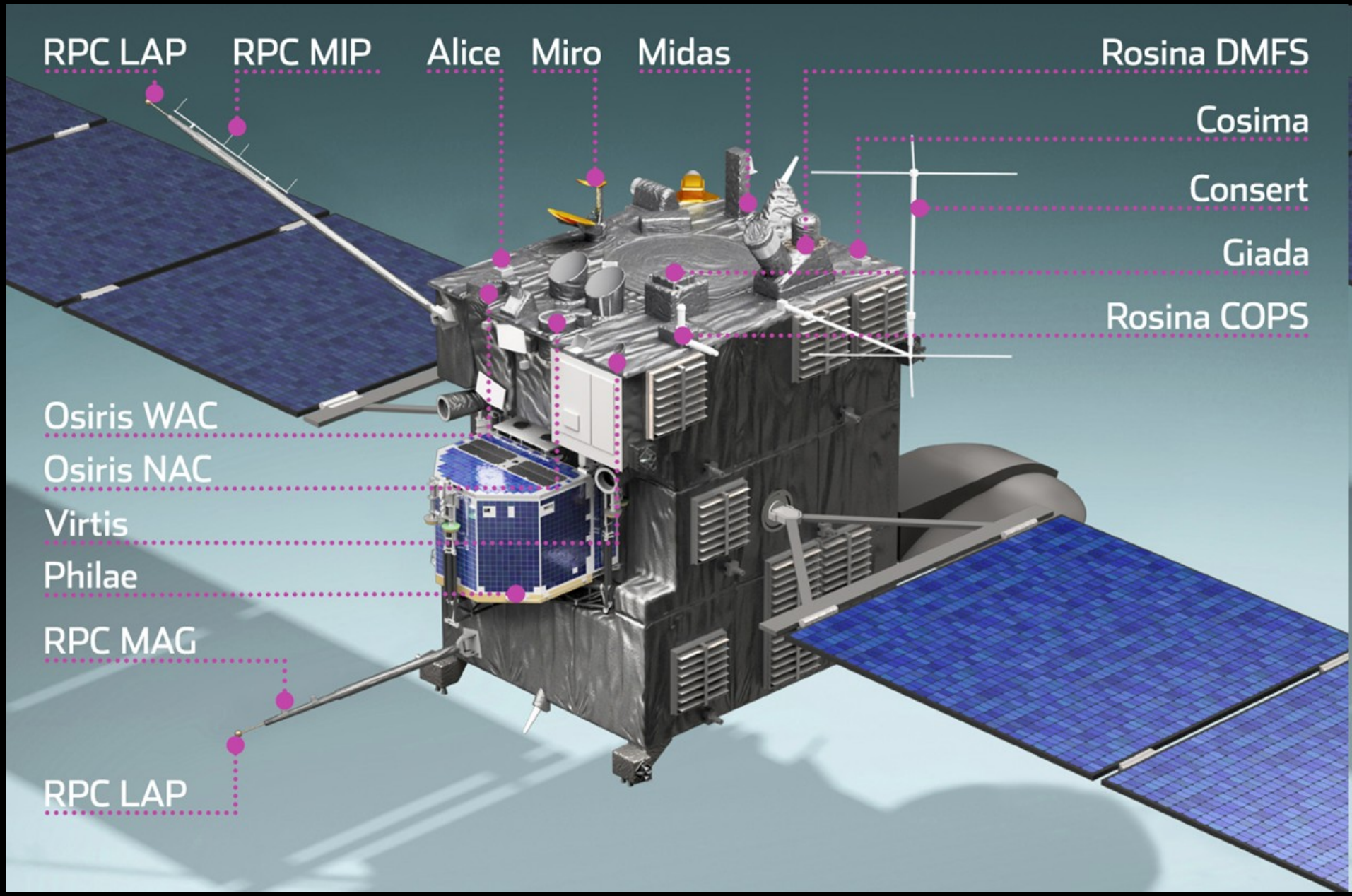
–243°C to –113°C
Subsurface temperature

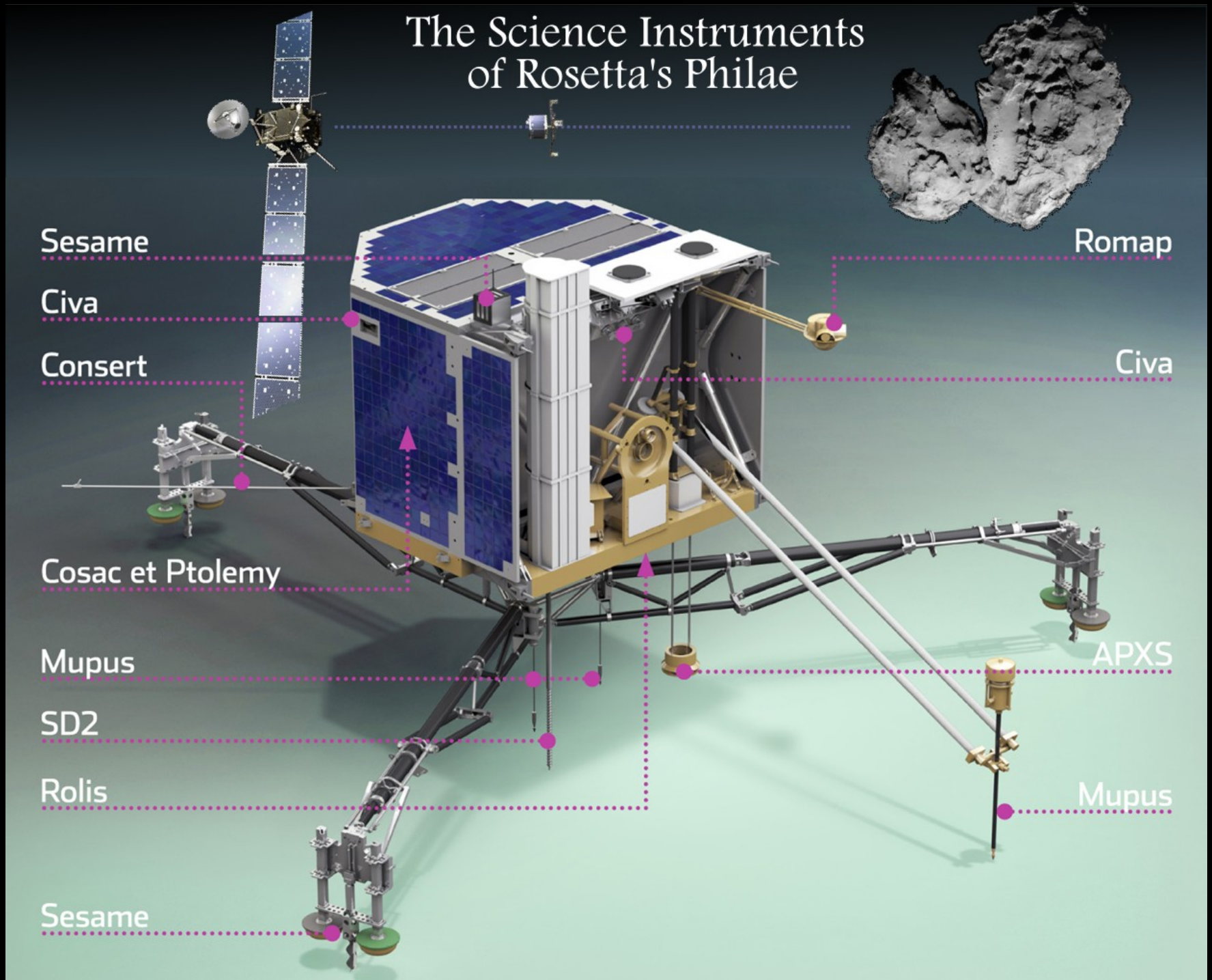
6%
Average albedo

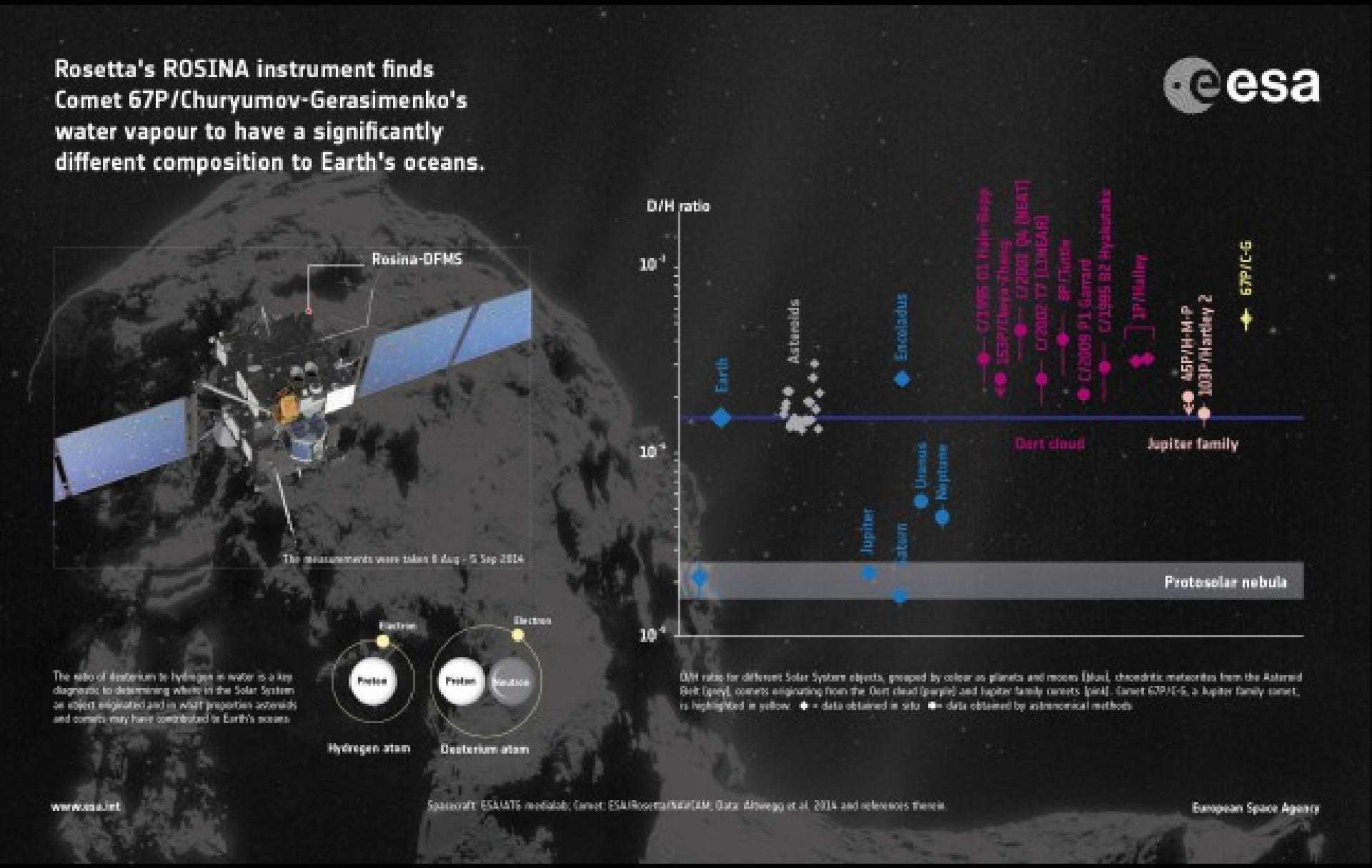
Rotation/shape model: OSIRIS; surface temperature: VIRTIS; subsurface temperature: MIRO; water production rate: MIRO; D/H: ROSINA; dust/gas: GIADA, MIRO, ROSINA; volume: OSIRIS; mass: RSI; density: RSI/OSIRIS; albedo: OSIRIS, VIRTIS; comet images: NavCam
Data based on values published in January 2015

www.esa.int

European Space Agency


RPC LAP
RPC MIP
Alice
Miro
Midas
Rosina DMFS
Cosima
Consert
Giada
Rosina COPS
Osiris WAC
Osiris NAC
Virtis
Philae
RPC MAG
RPC LAP


The Science Instruments
of Rosetta's Philae
Sesame
Civa
Consert
Cosac et Ptolemy
Mupus
SD2
Rolis
Sesame
Romap
Civa
APXS
Mupus



http://sci.esa.int/rosetta/55117-first-measurements-of-comets-water-ratio/