

OUR NEAREST NEIGHBOUR, THE MOON

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Moon's

diameter is $\frac{1}{4}$ that of the Earth

average distance is $30 \times$ diameter of the Earth

surface area is less than $1/10^{\text{th}}$ of the Earth's

mass is 1%, and volume is about 2% of the Earth's



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surface area is less than $\frac{1}{10^{\text{th}}}$ of the Earth's

mass is 1%, and volume is about 2% of the Earth's

gravity is $\frac{1}{6^{\text{th}}}$ that of the Earth's

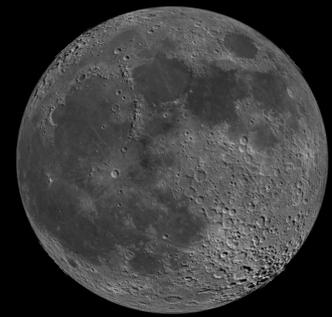




Anne Riou



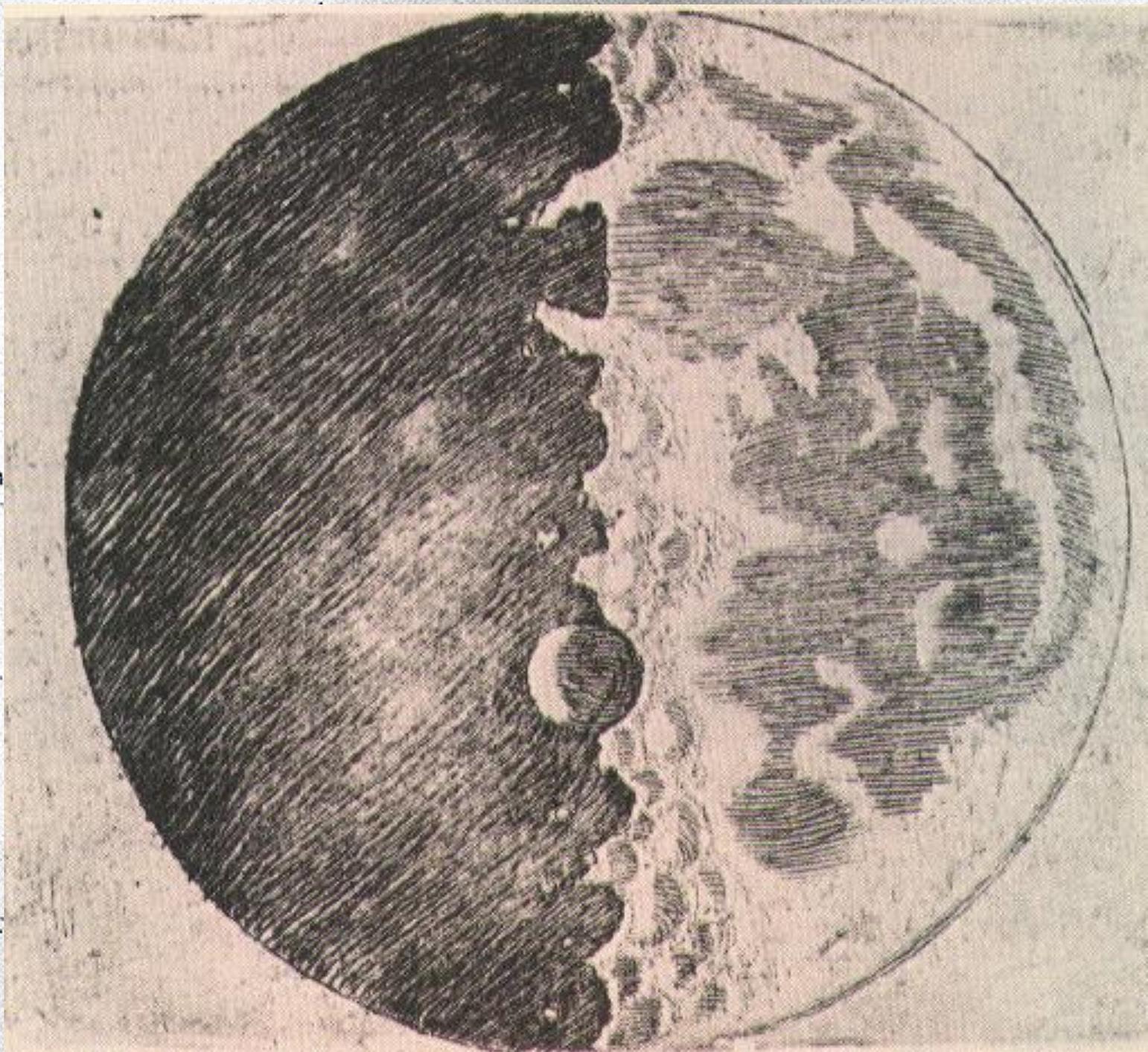


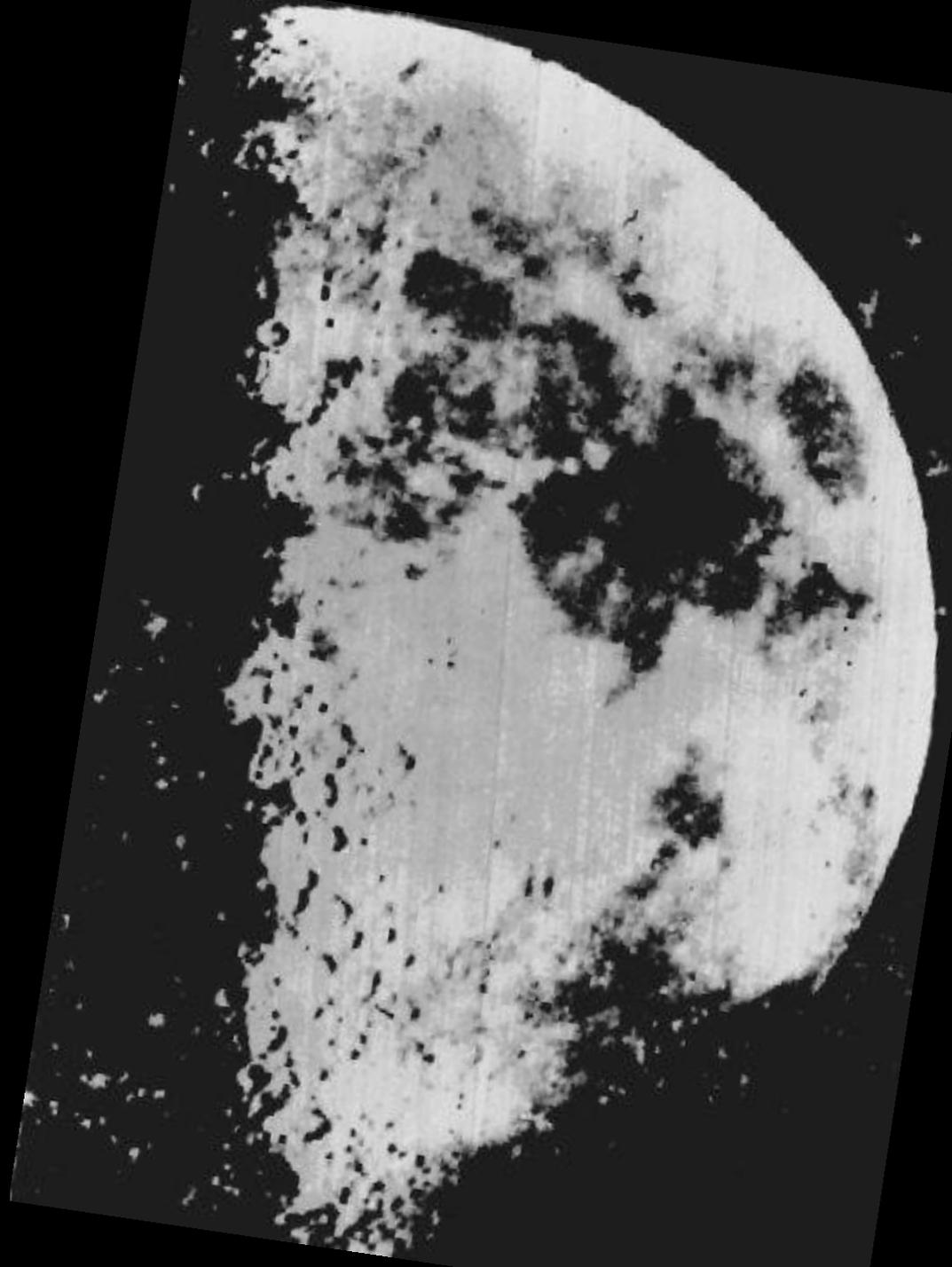


Galileo

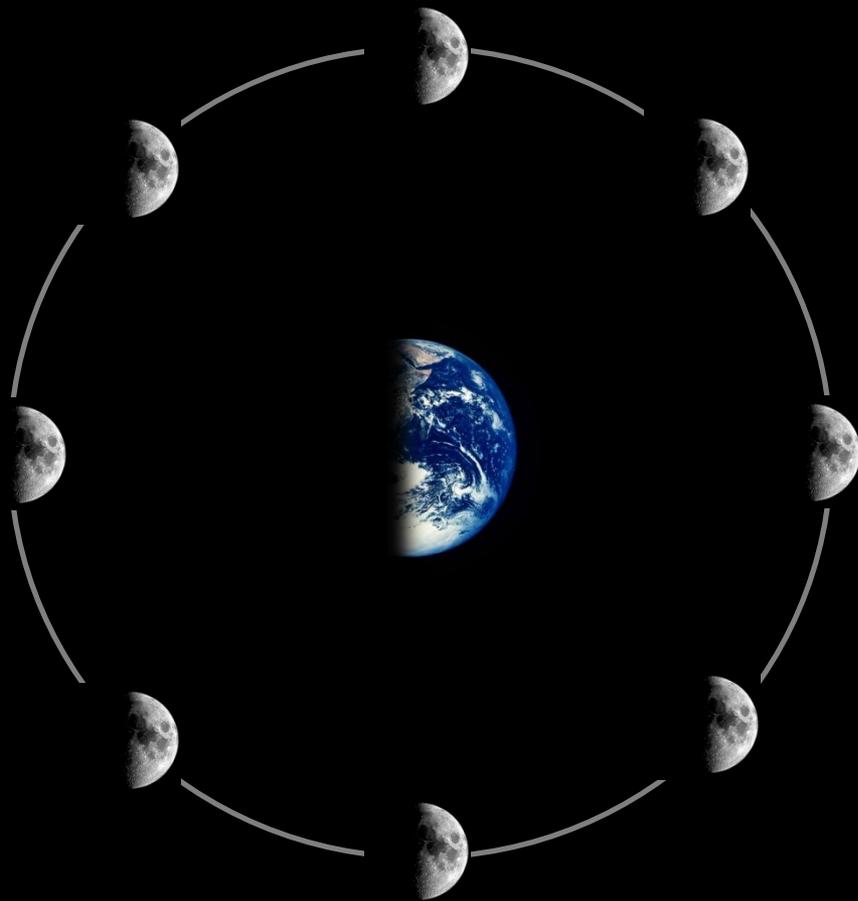
Thomas Harriott

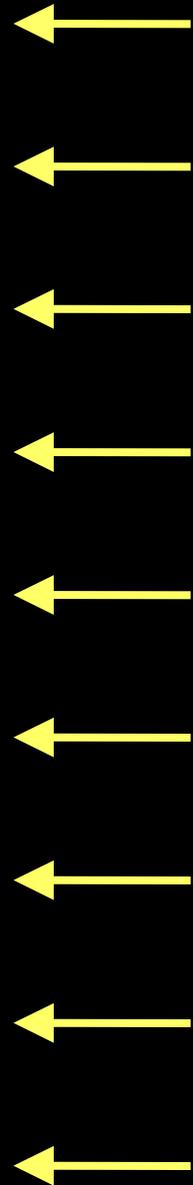
William Gilbert



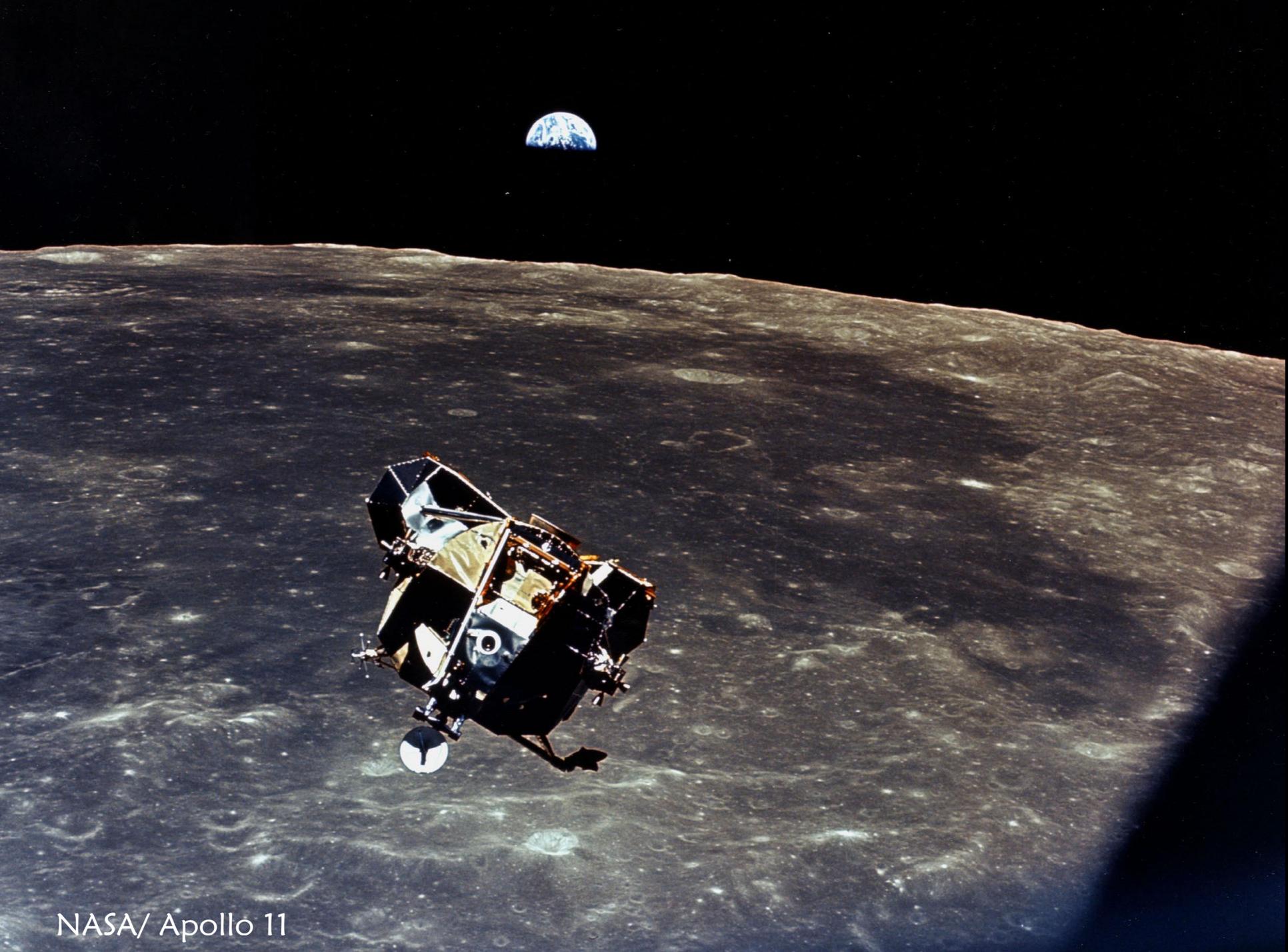


John Adams Whipple



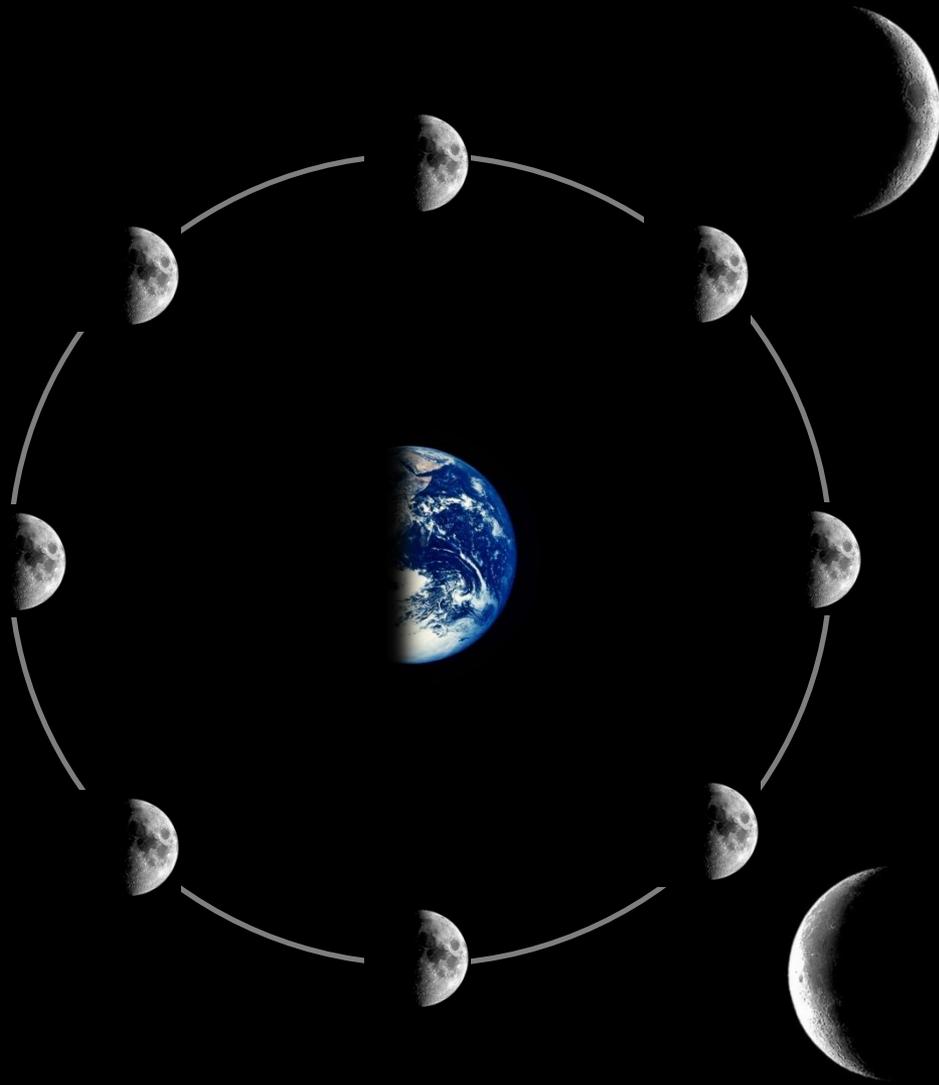


Sunlight



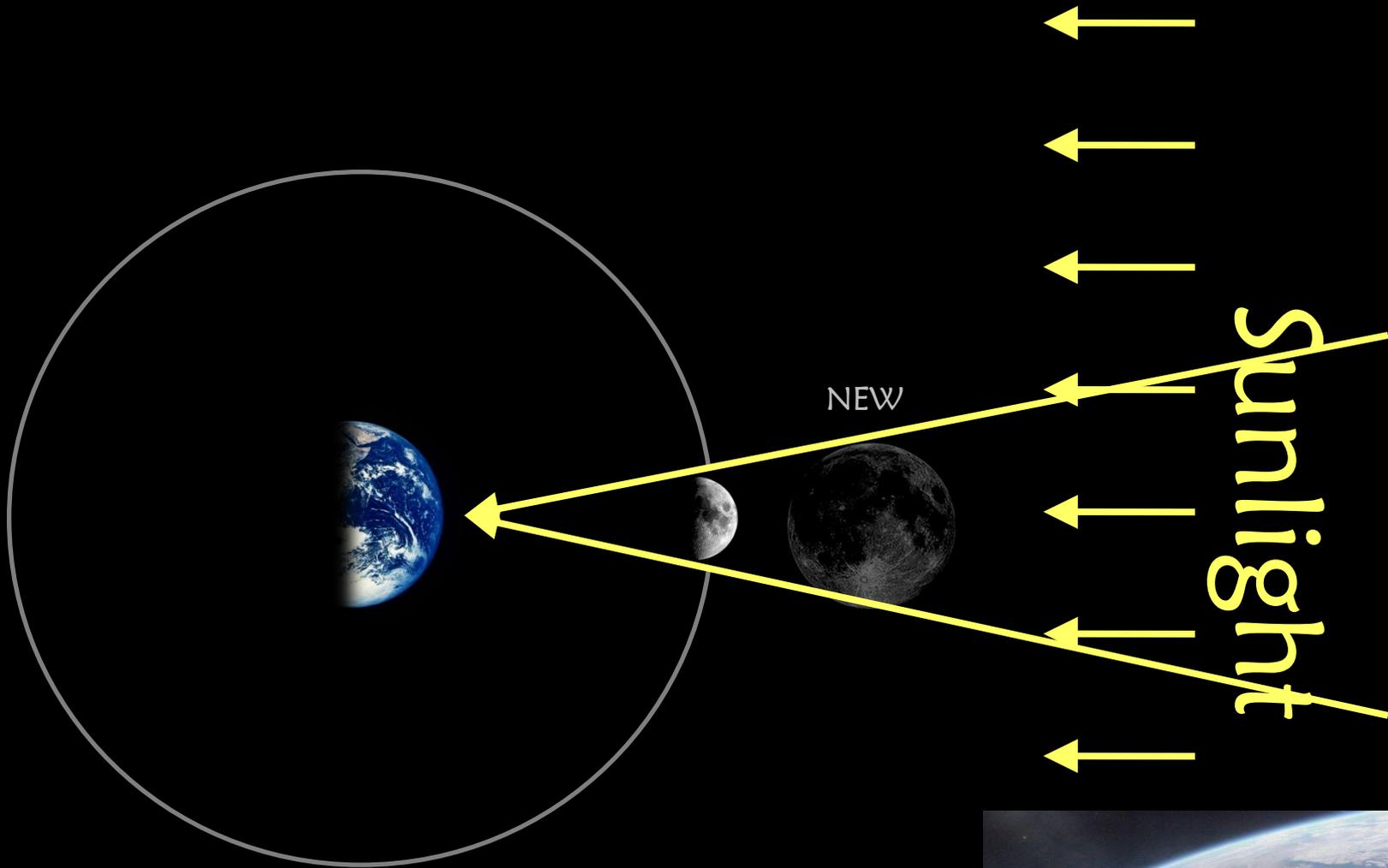
NASA/ Apollo 11







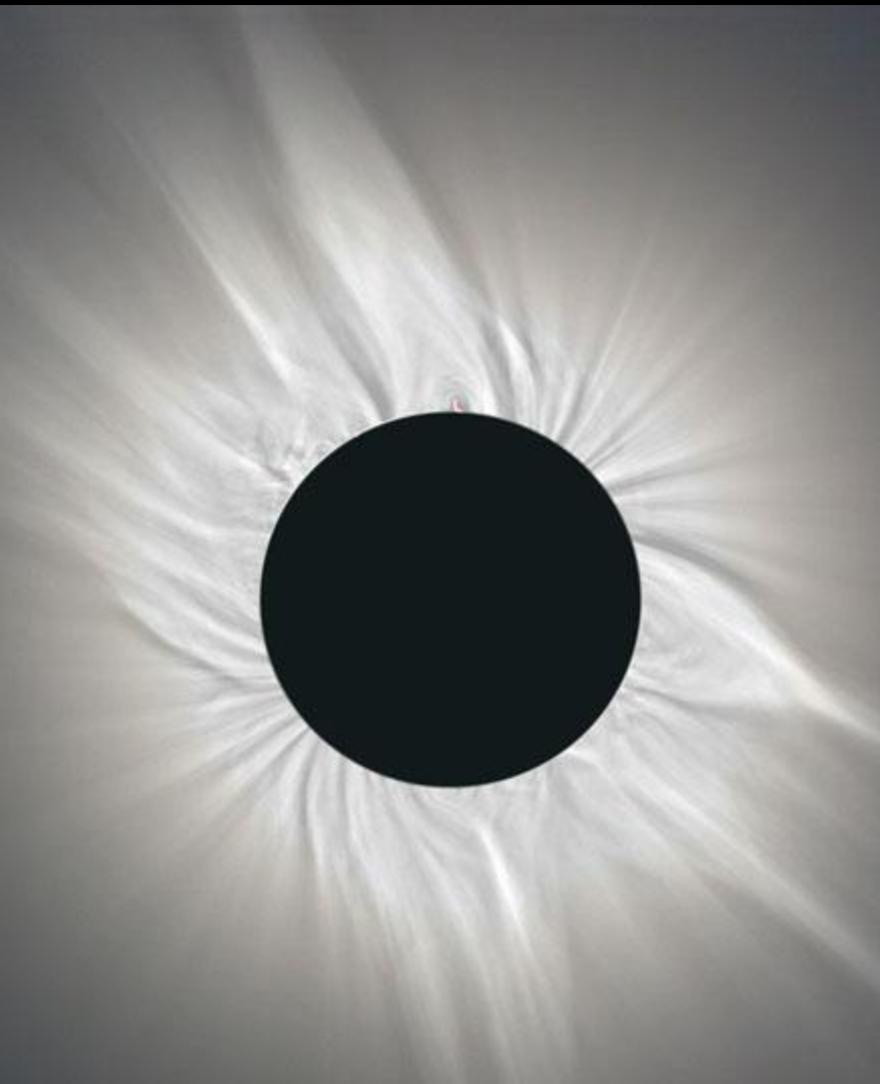
P-M Hedén (Clear Skies)



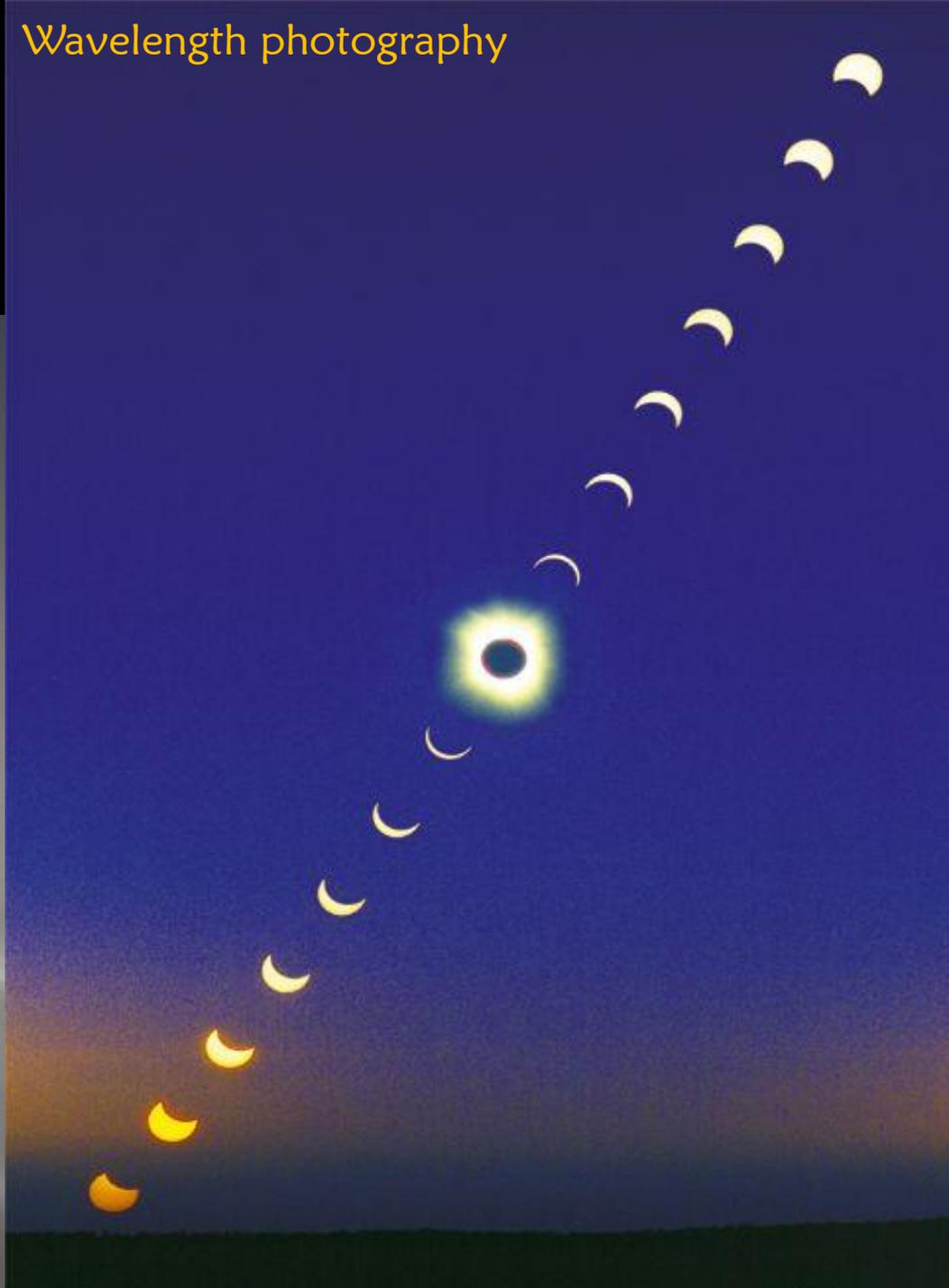
Mir 27 Crew / CNES

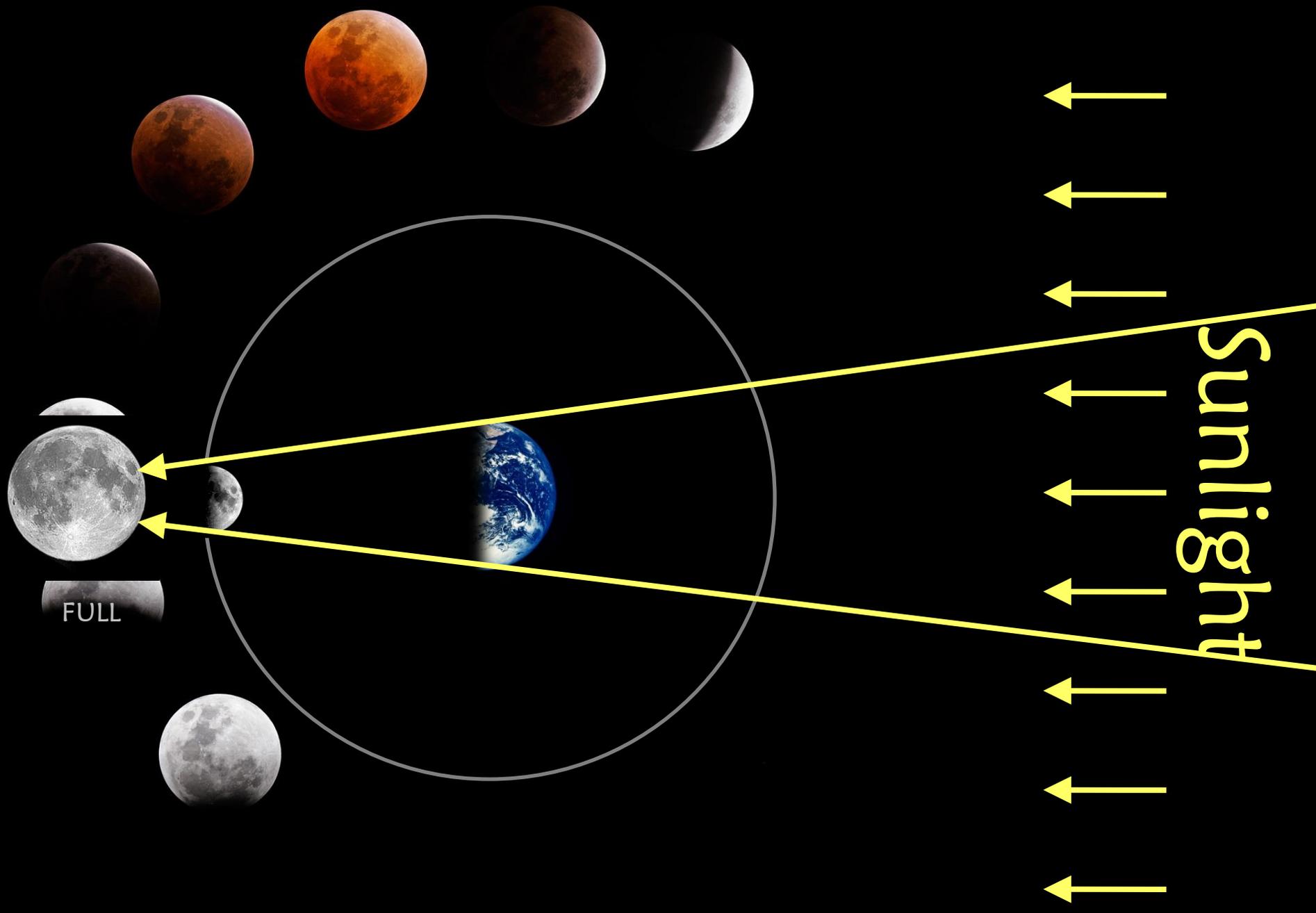


Koen van Gorp



Wavelength photography



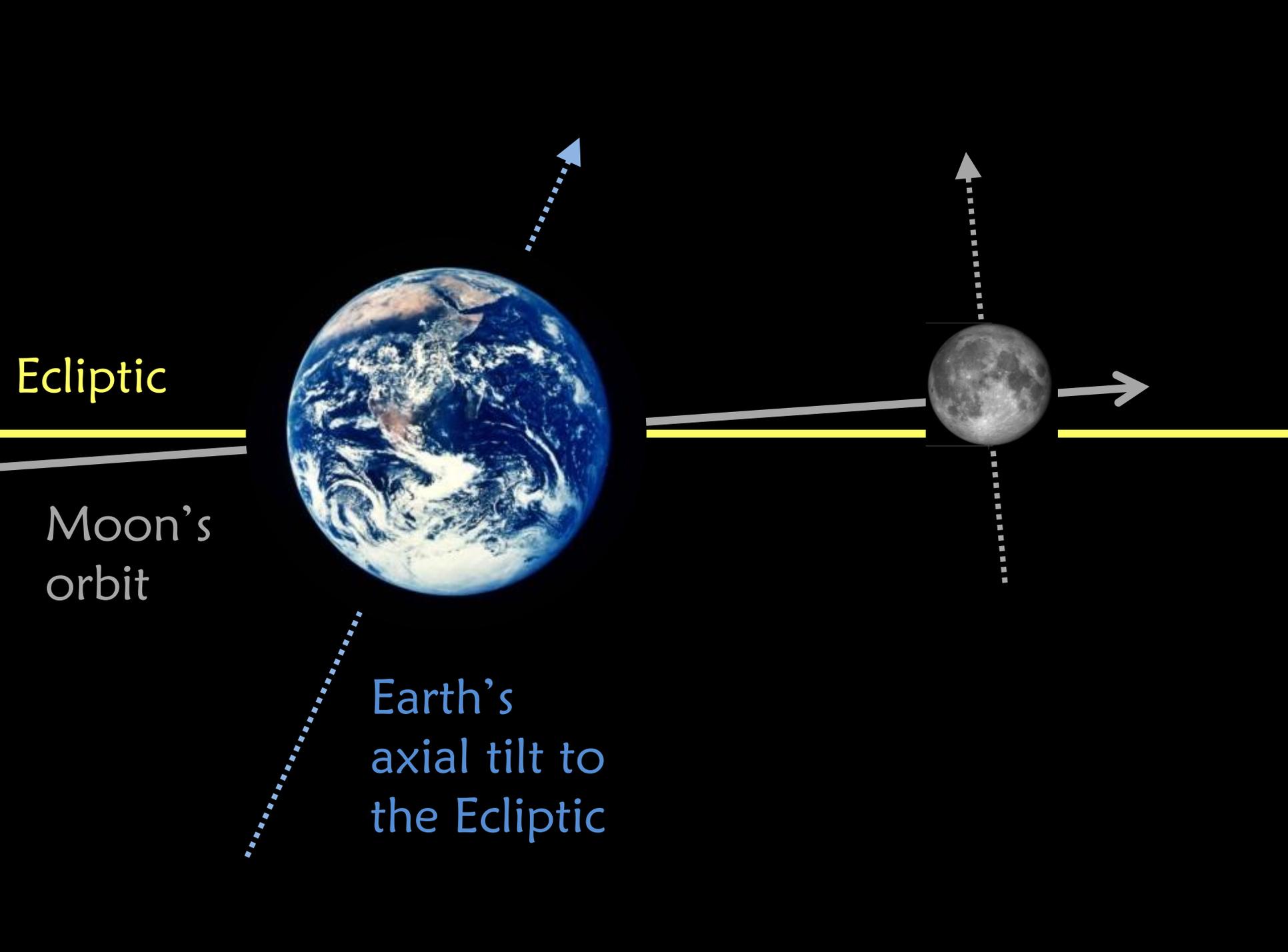


Sunlight

FULL



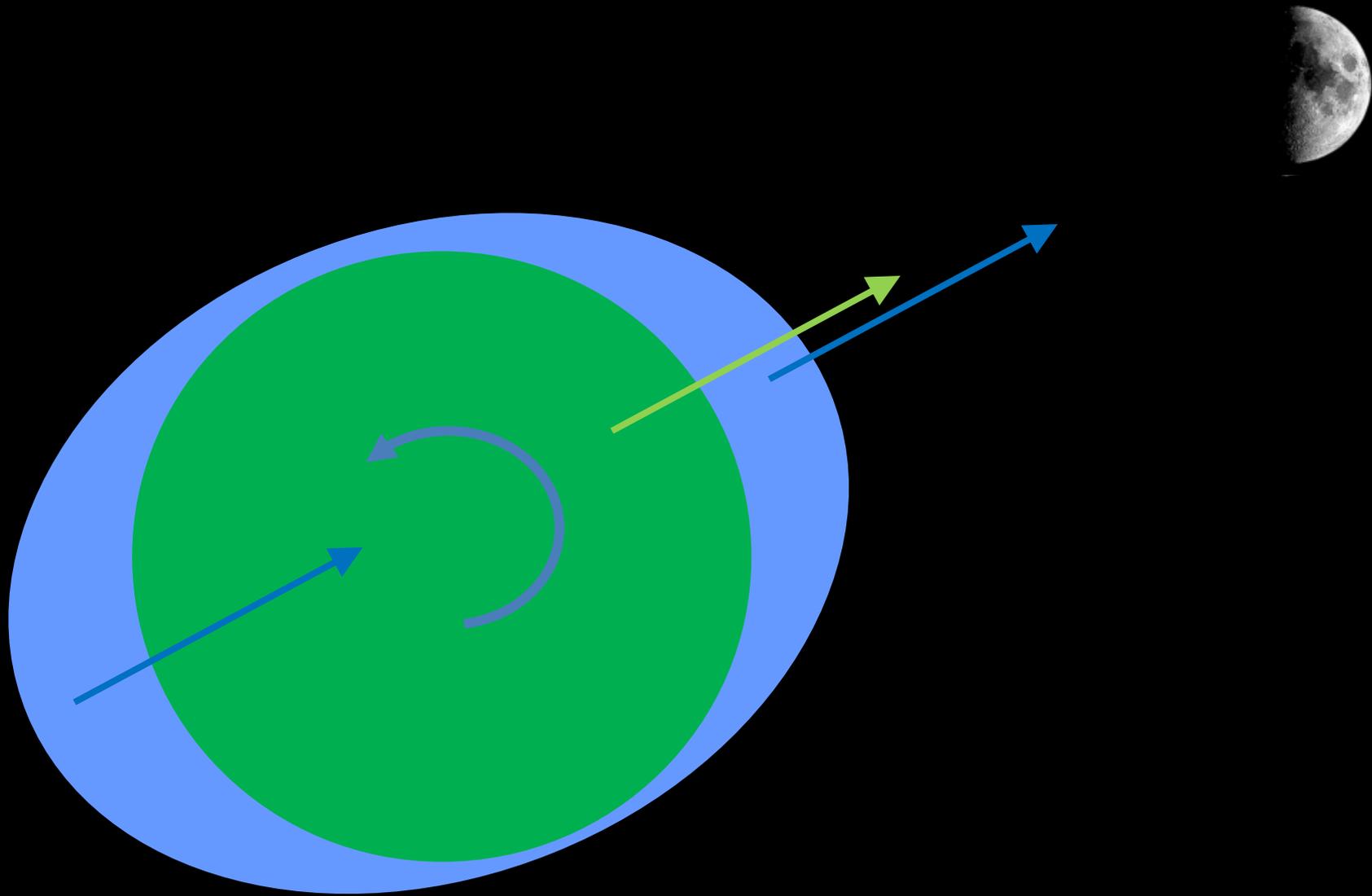
Letian Wang

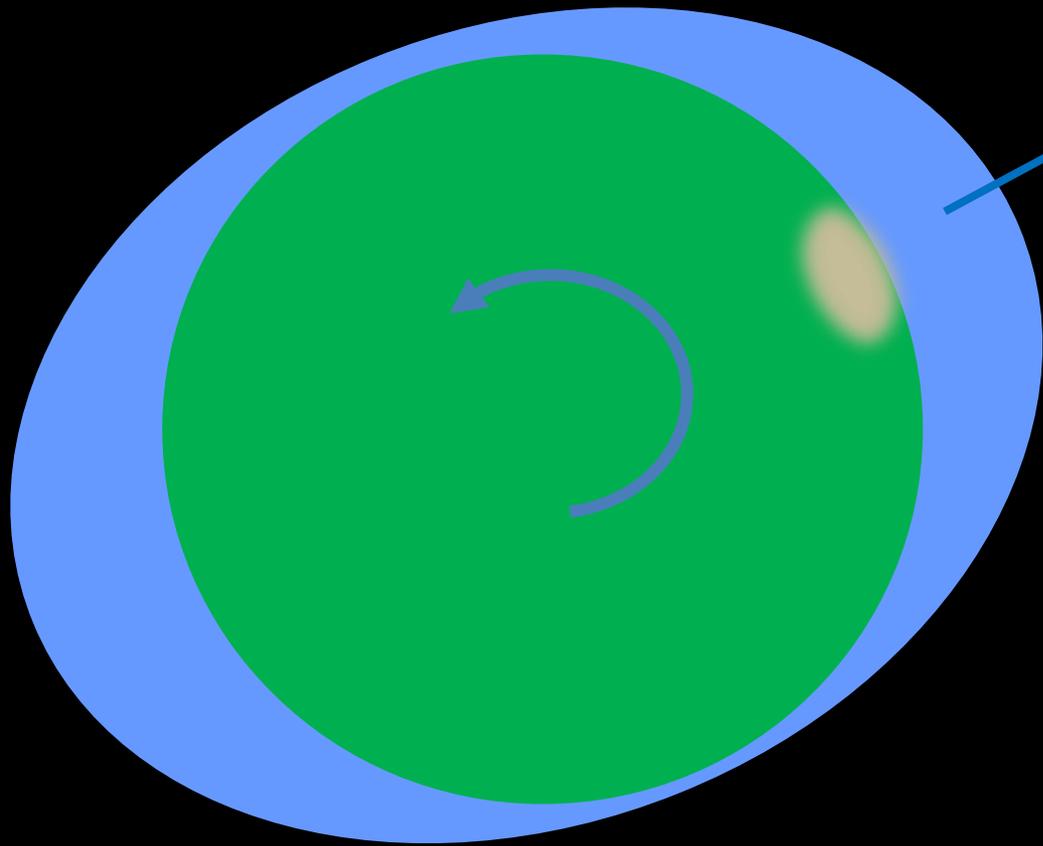


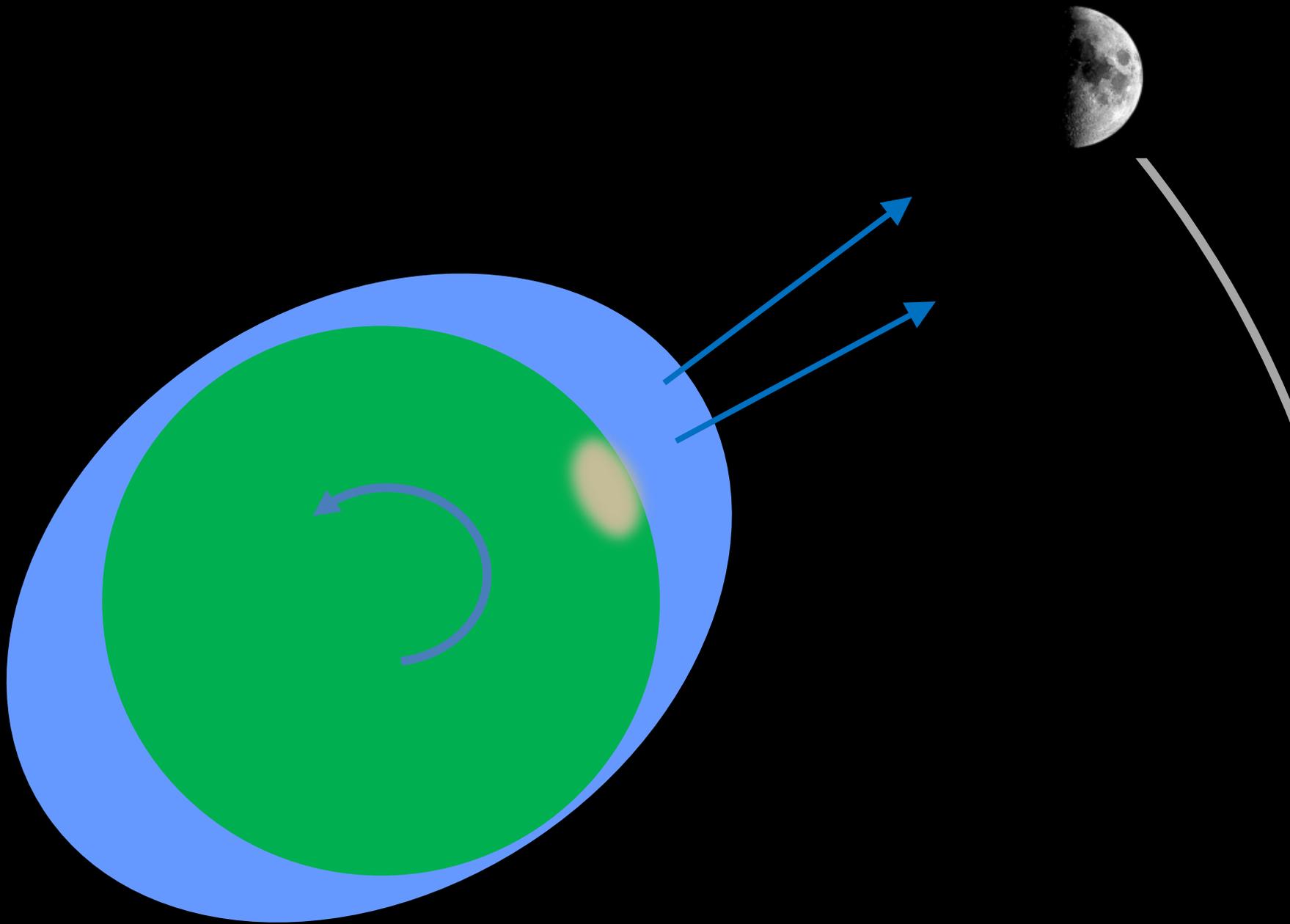
Ecliptic

Moon's orbit

Earth's axial tilt to the Ecliptic

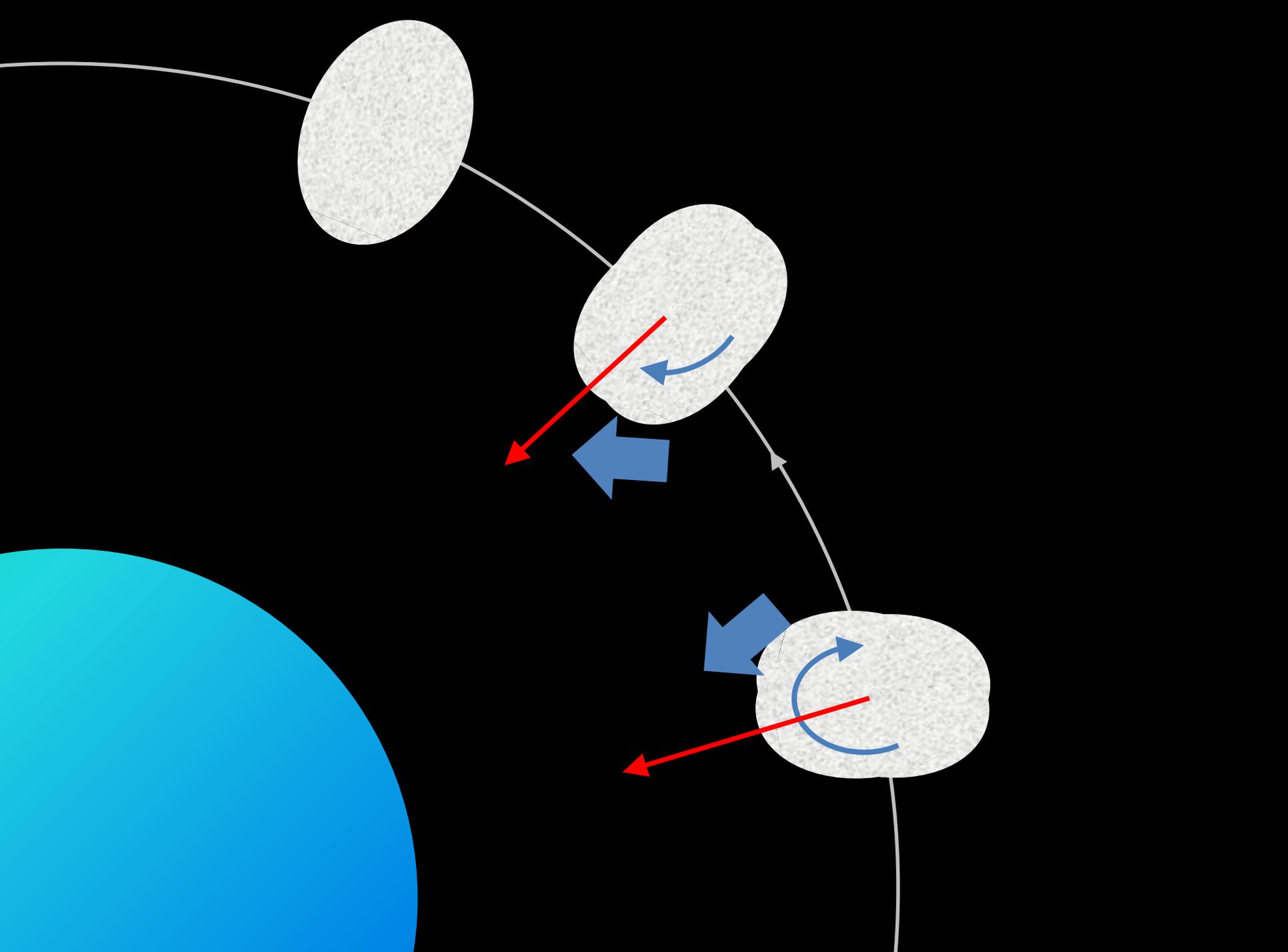


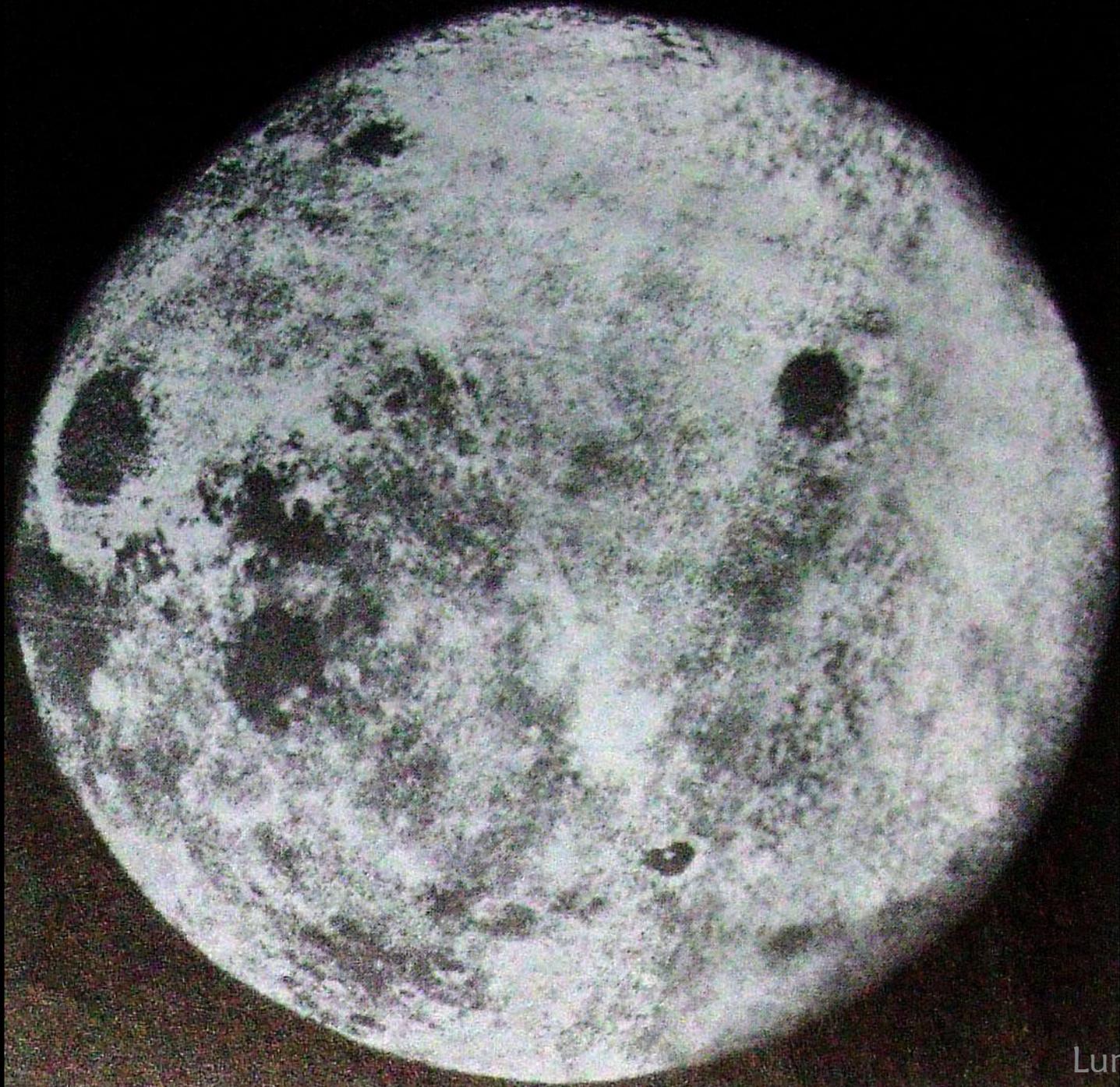






LROC/WAC/Arizona





Luna 3 / USSR





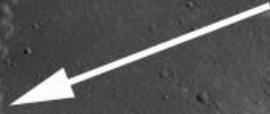
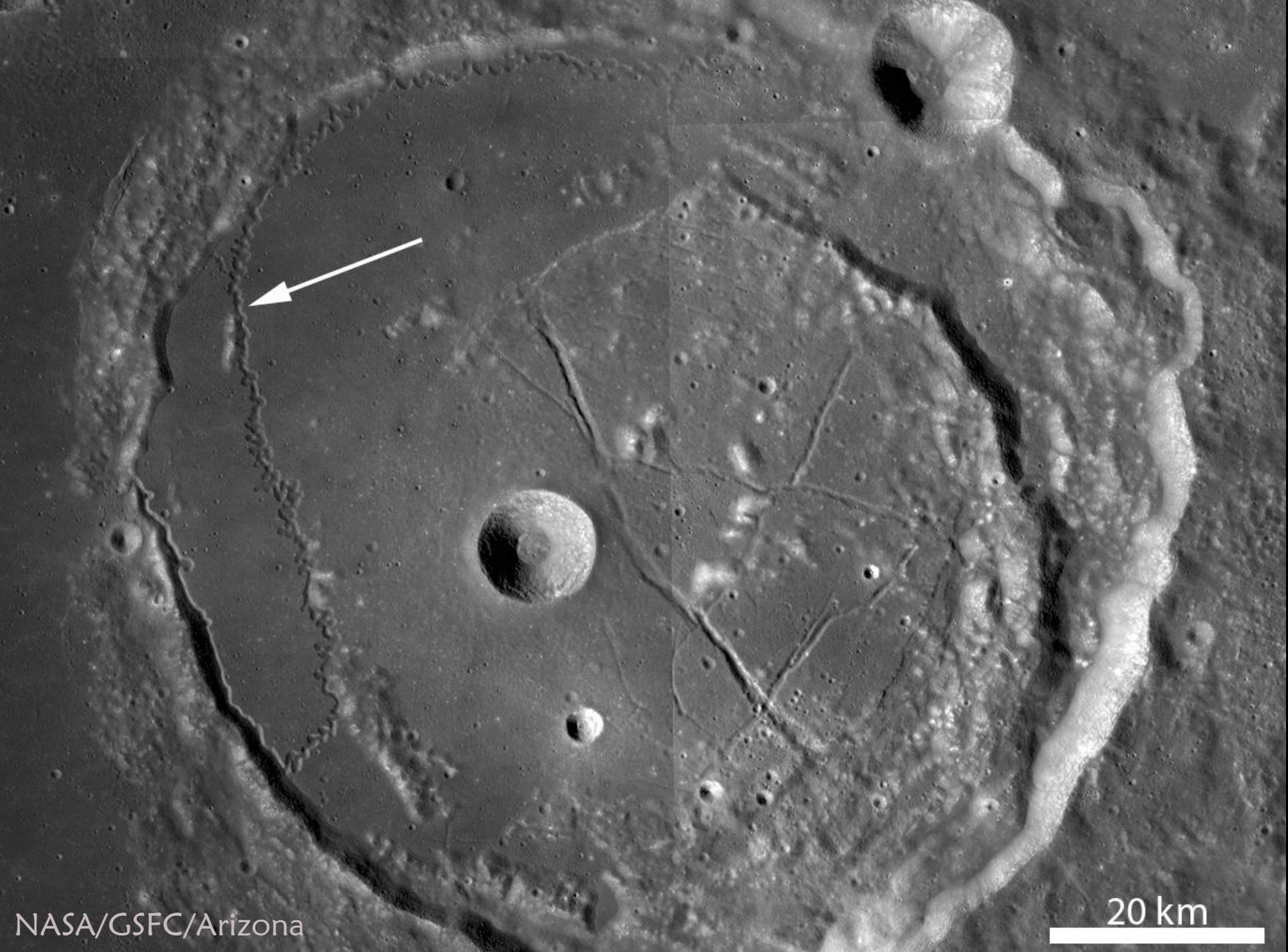
mare

mare



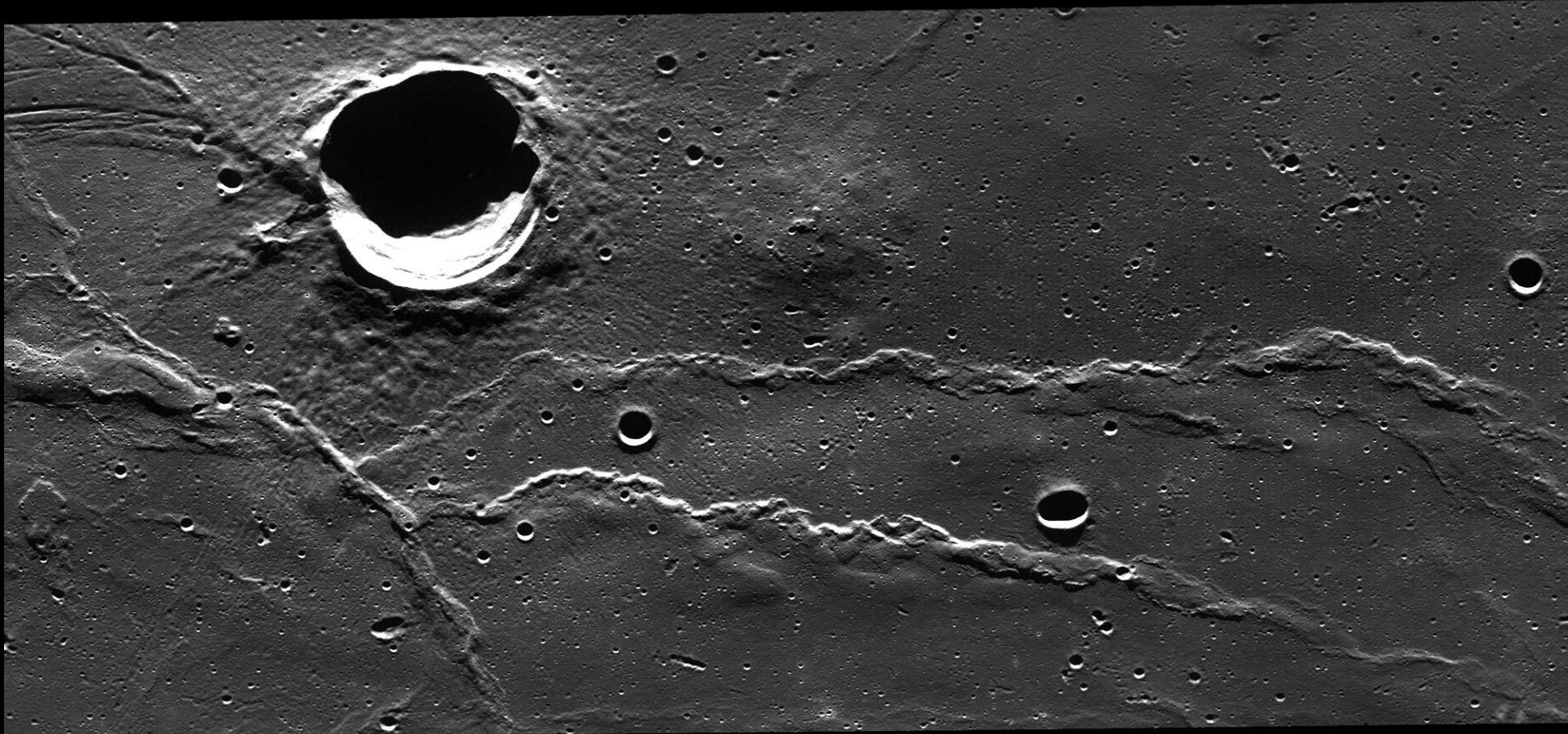
rilles





20 km

wrinkle ridges



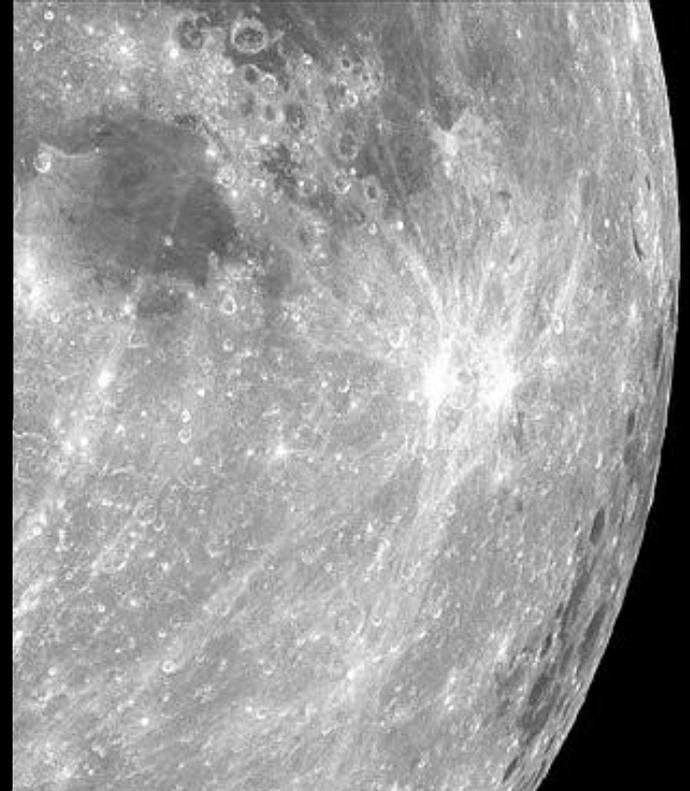
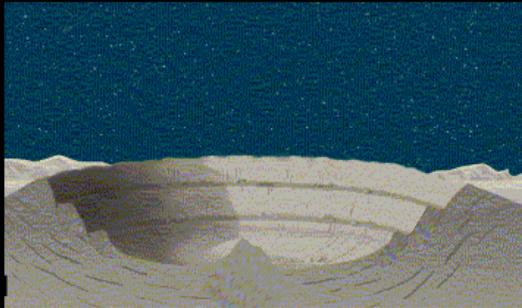
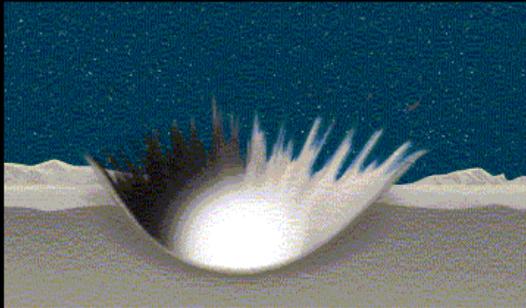
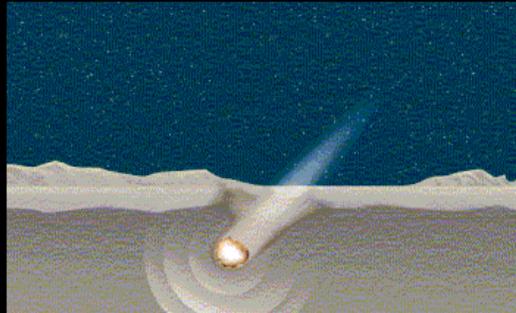


mare

highlands

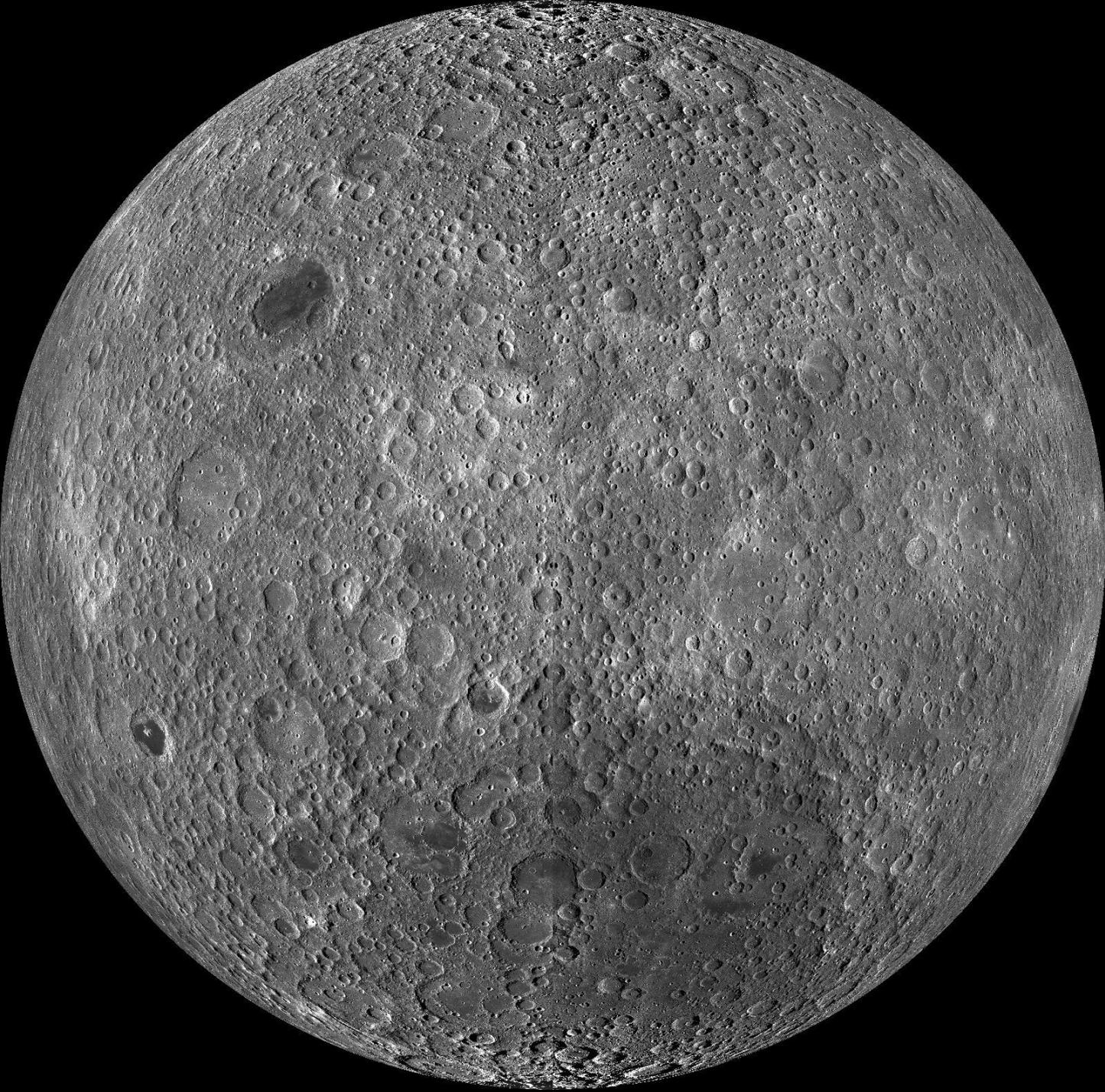


NASA/Apollo 17

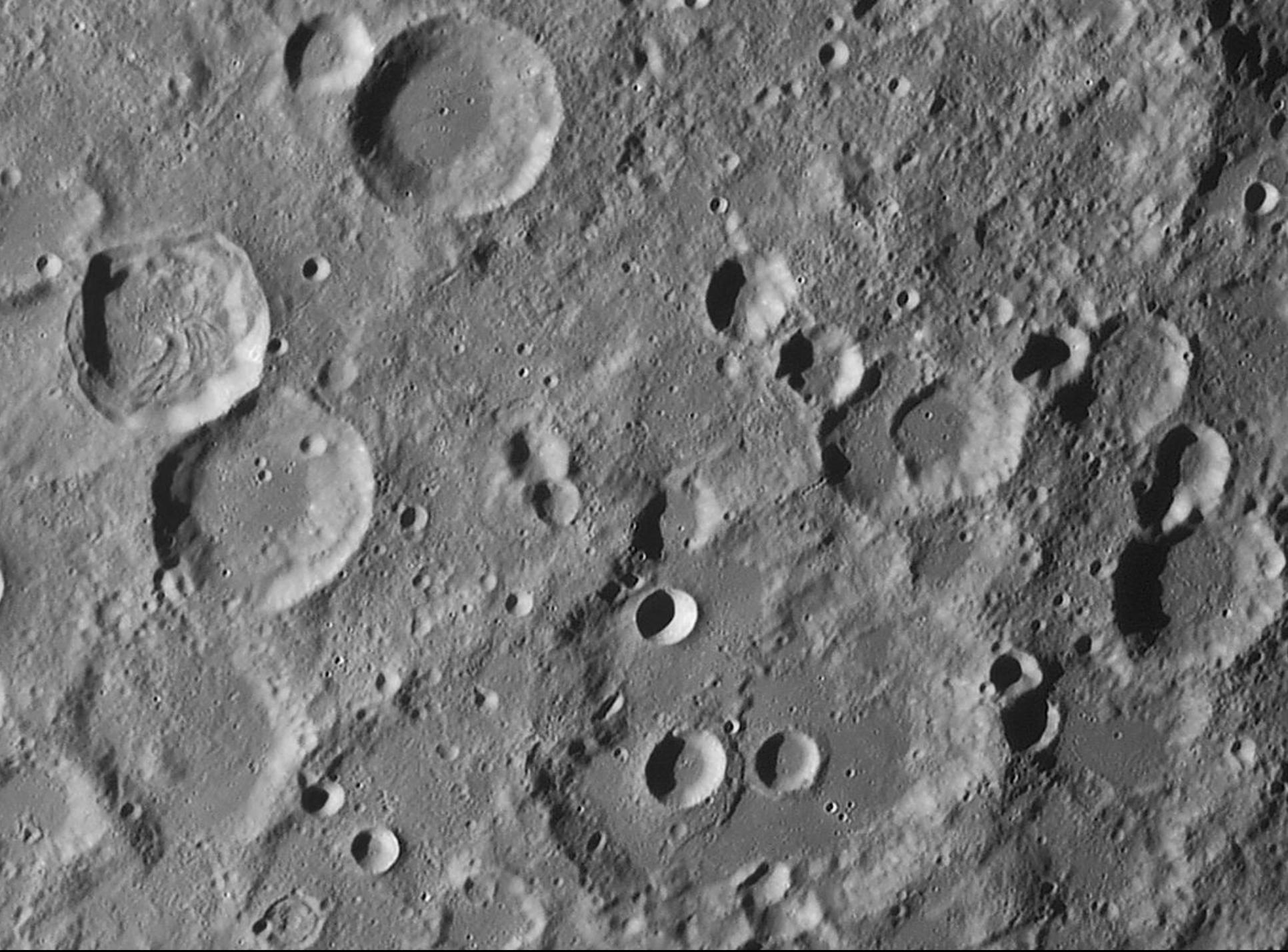








LROC/WAC/Arizona



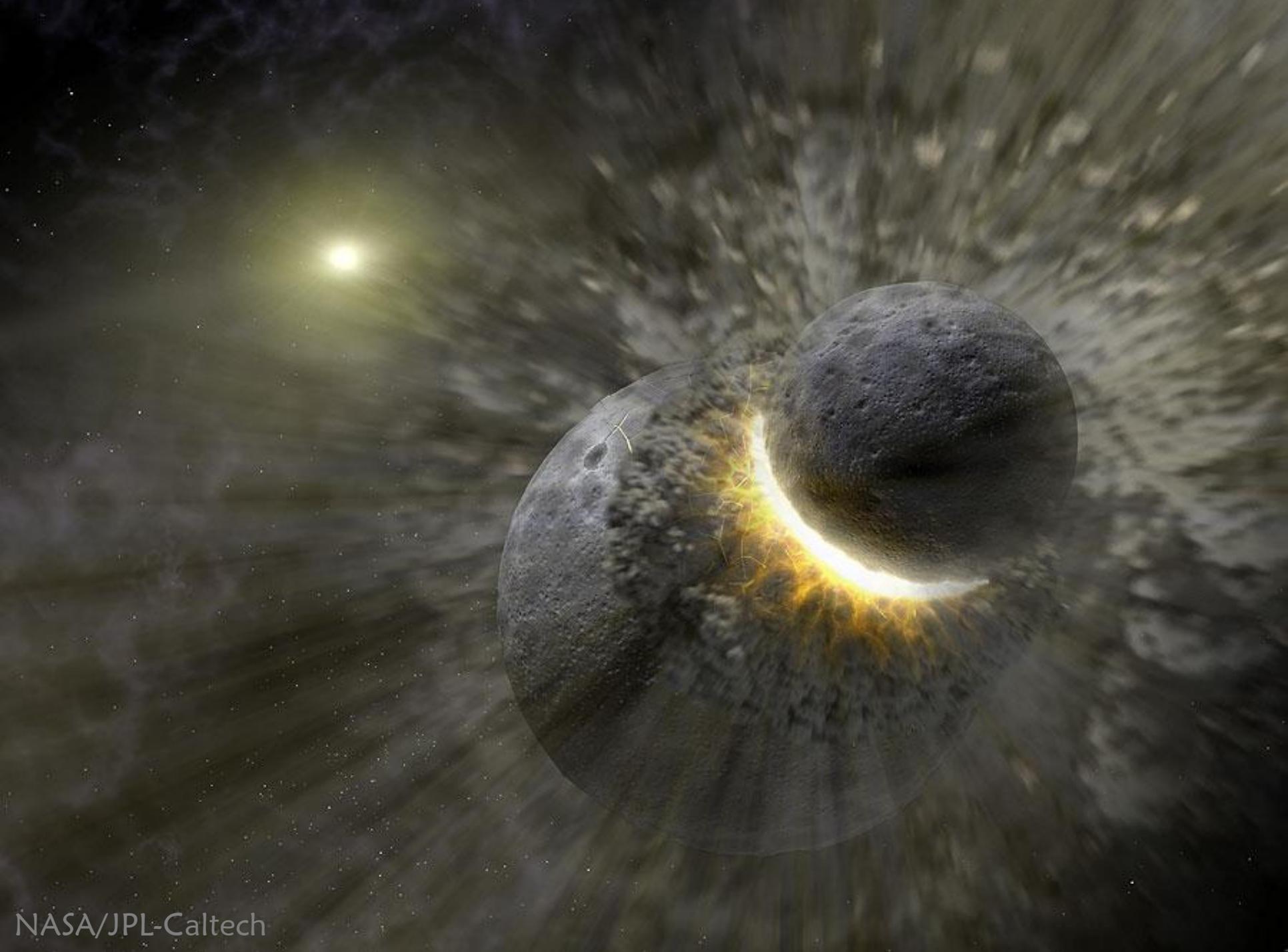


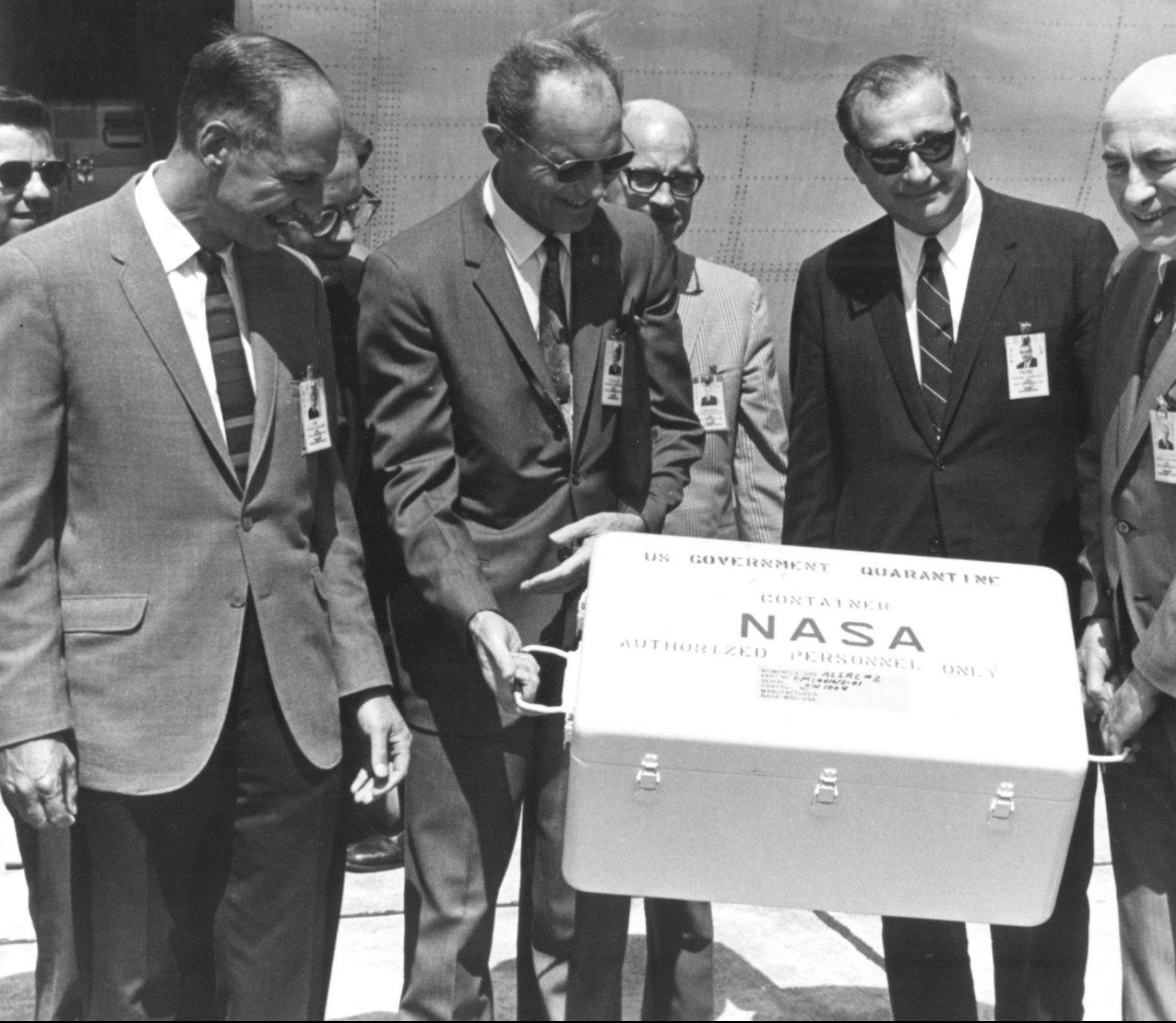
NASA/Apollo 11



NASA/Apollo 17







Highlands - anorthosite

material that has been previously melted and then cooled

~4.6 billion years old

Regolith – breccias

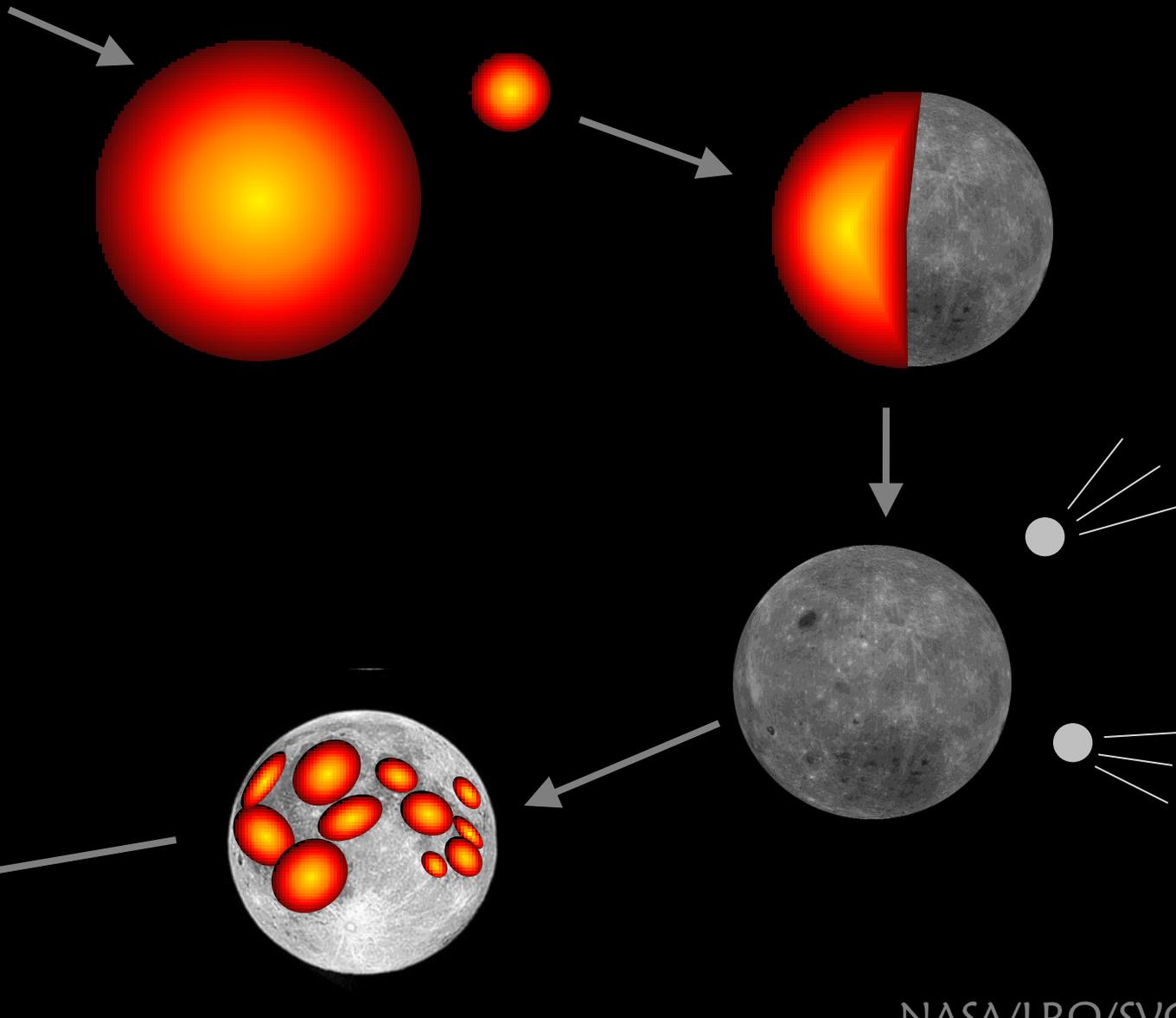
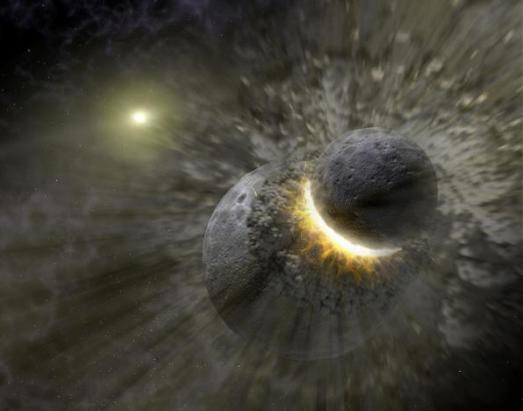
pre-existing rock that has been changed by being crushed and melted

3.9 to 3.8 billion years ago

Mare - basalts

material that erupted in magma-lava outflow

3.2 to 3.9 billion years



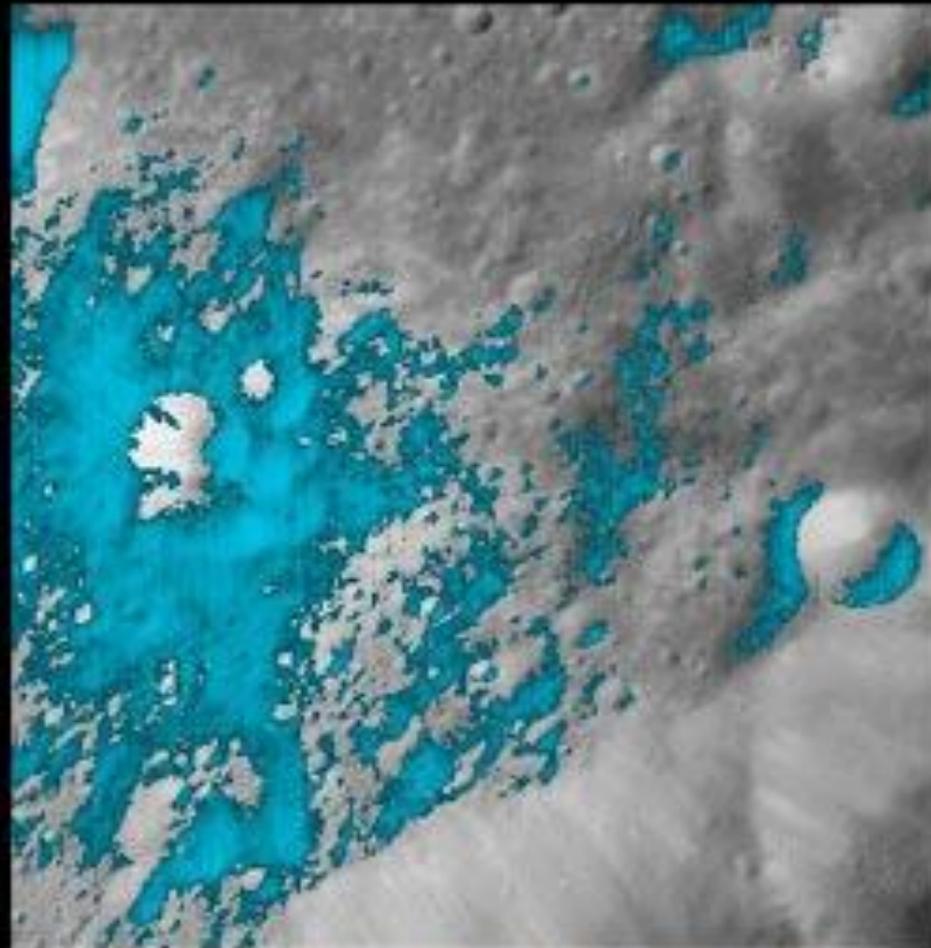




Doug Zubenel



Infrared Reflectance



**Blue = water absorption strength
on Infrared Reflectance**

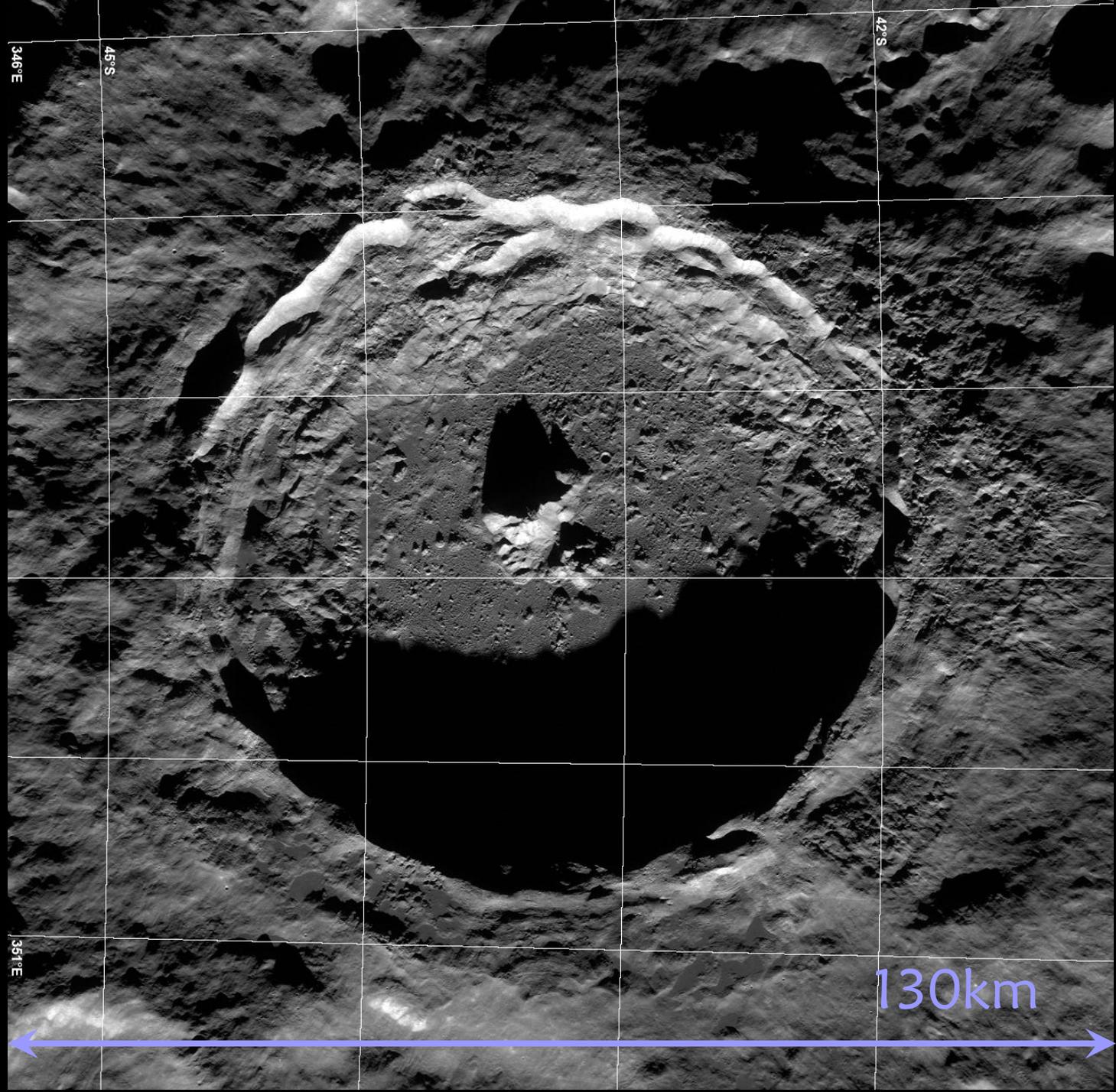
Chandrayaan-1 Moon Mineralogy Mapper

Lunar Reconnaissance Orbiter (LRO)

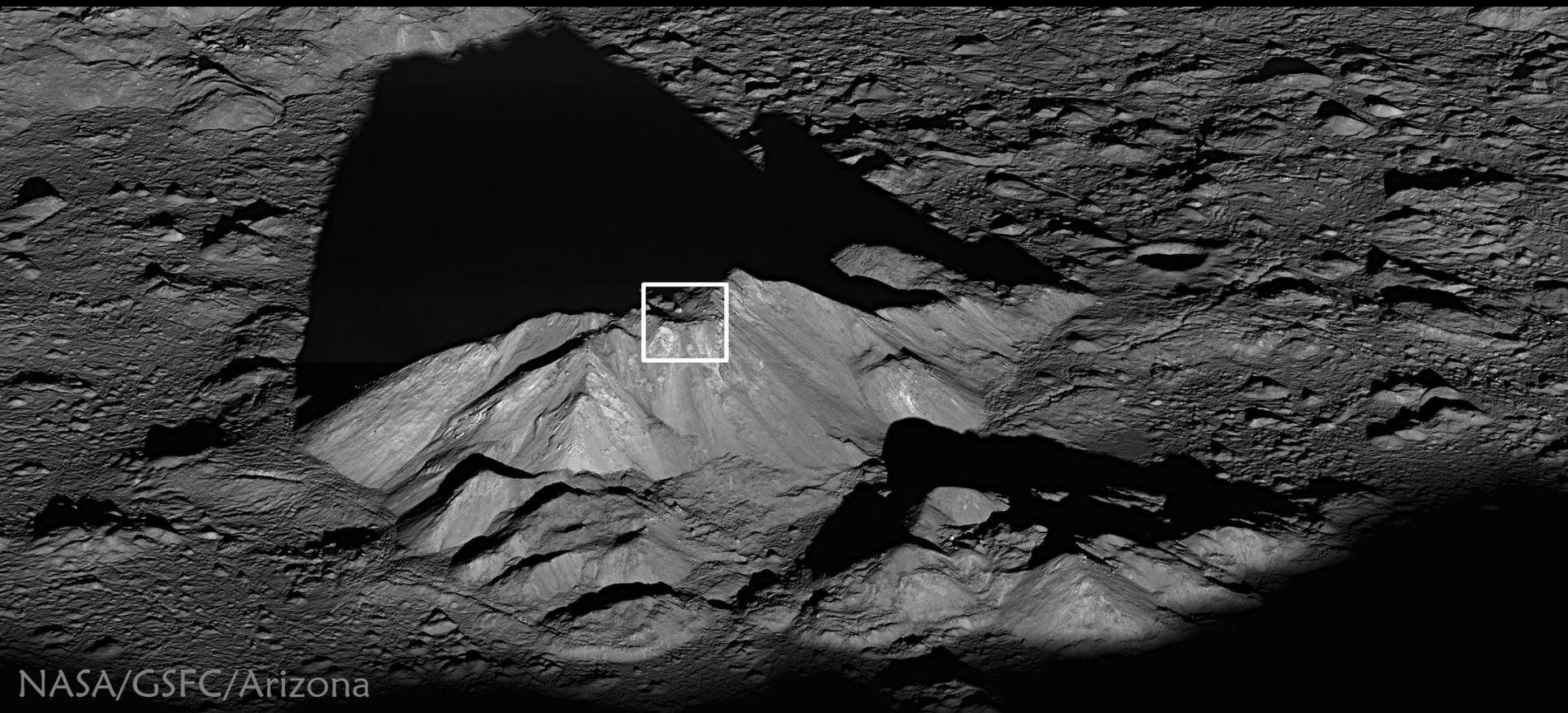


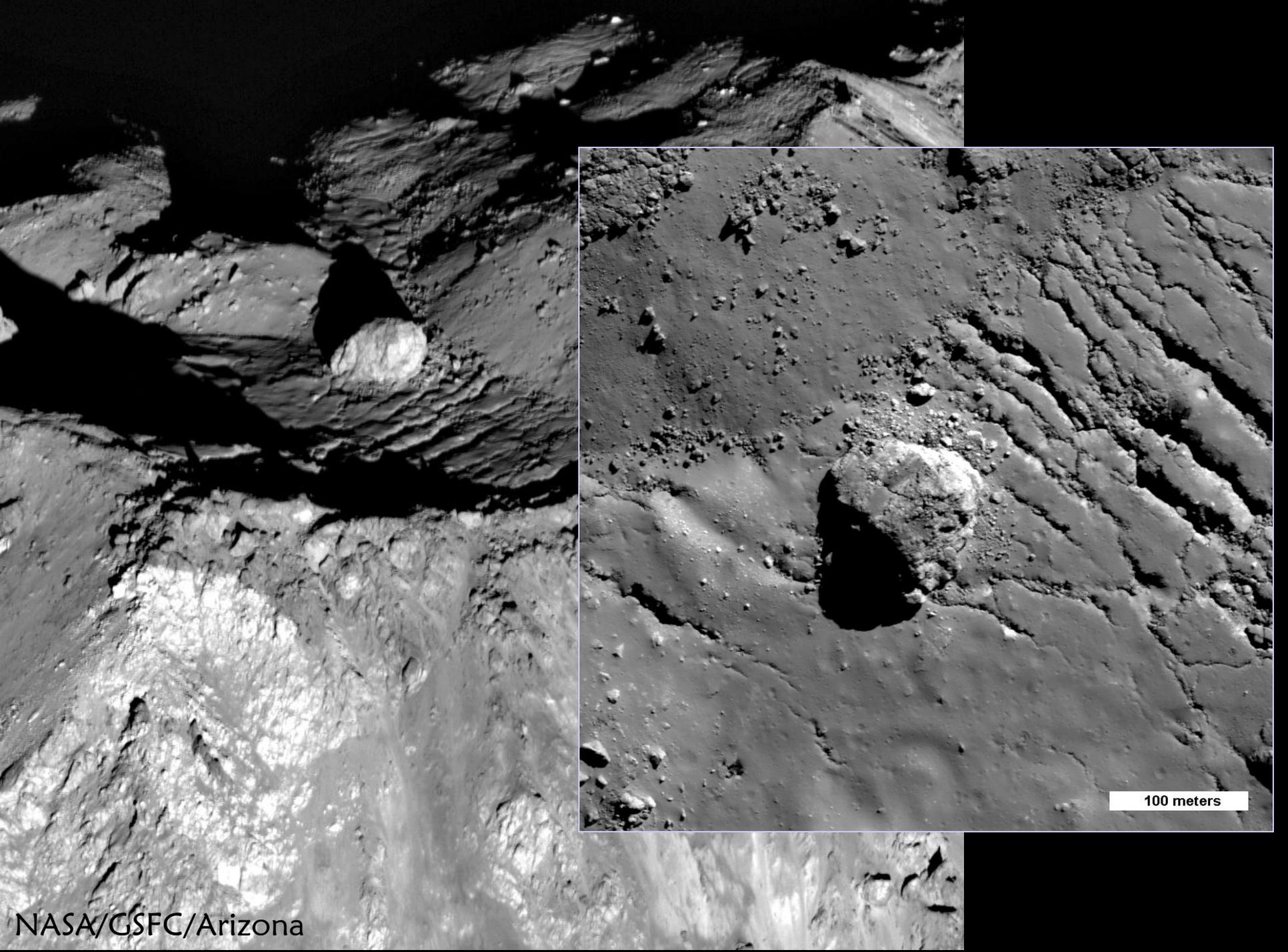


Tycho



130km



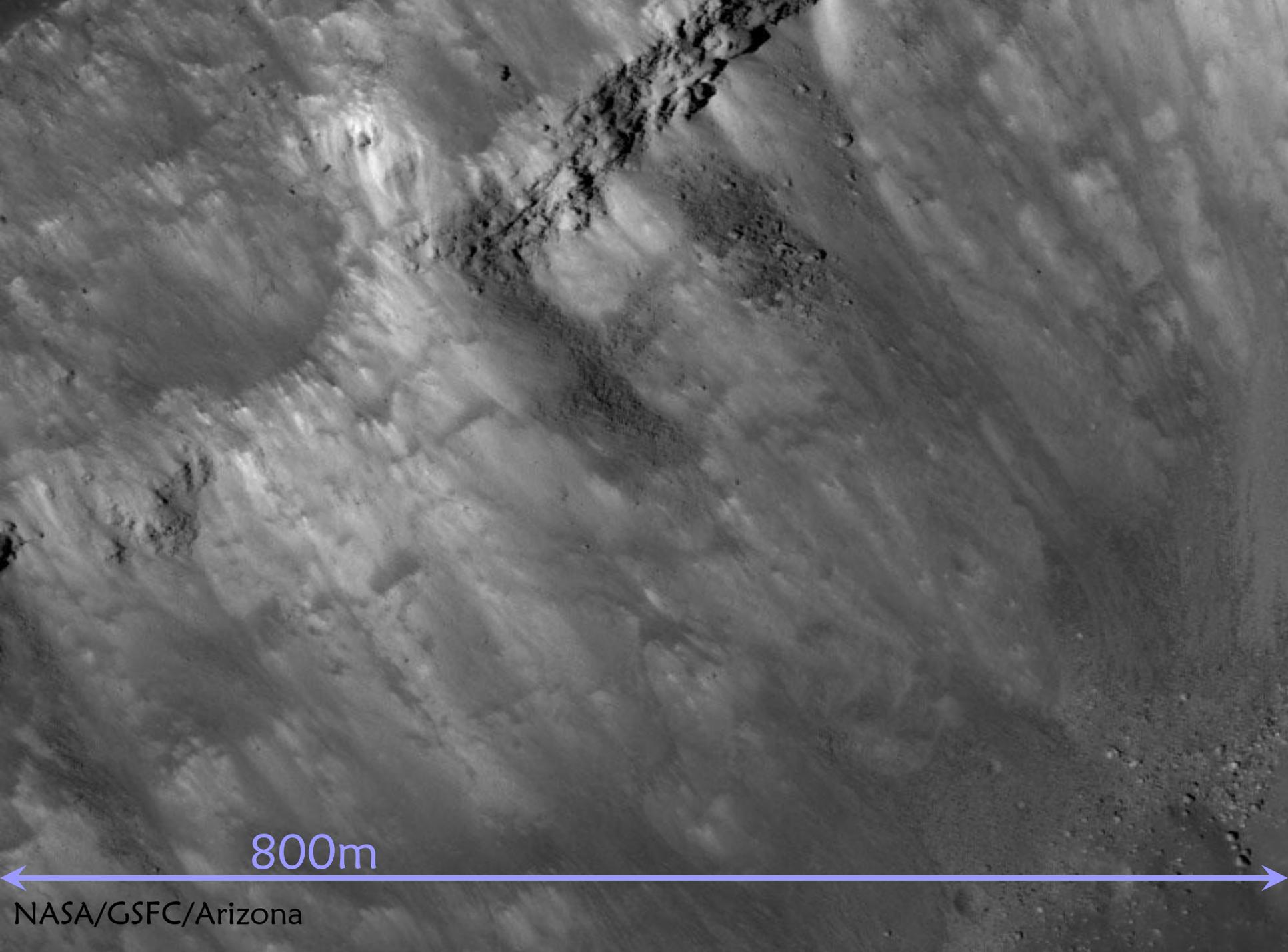


100 meters

Kepler



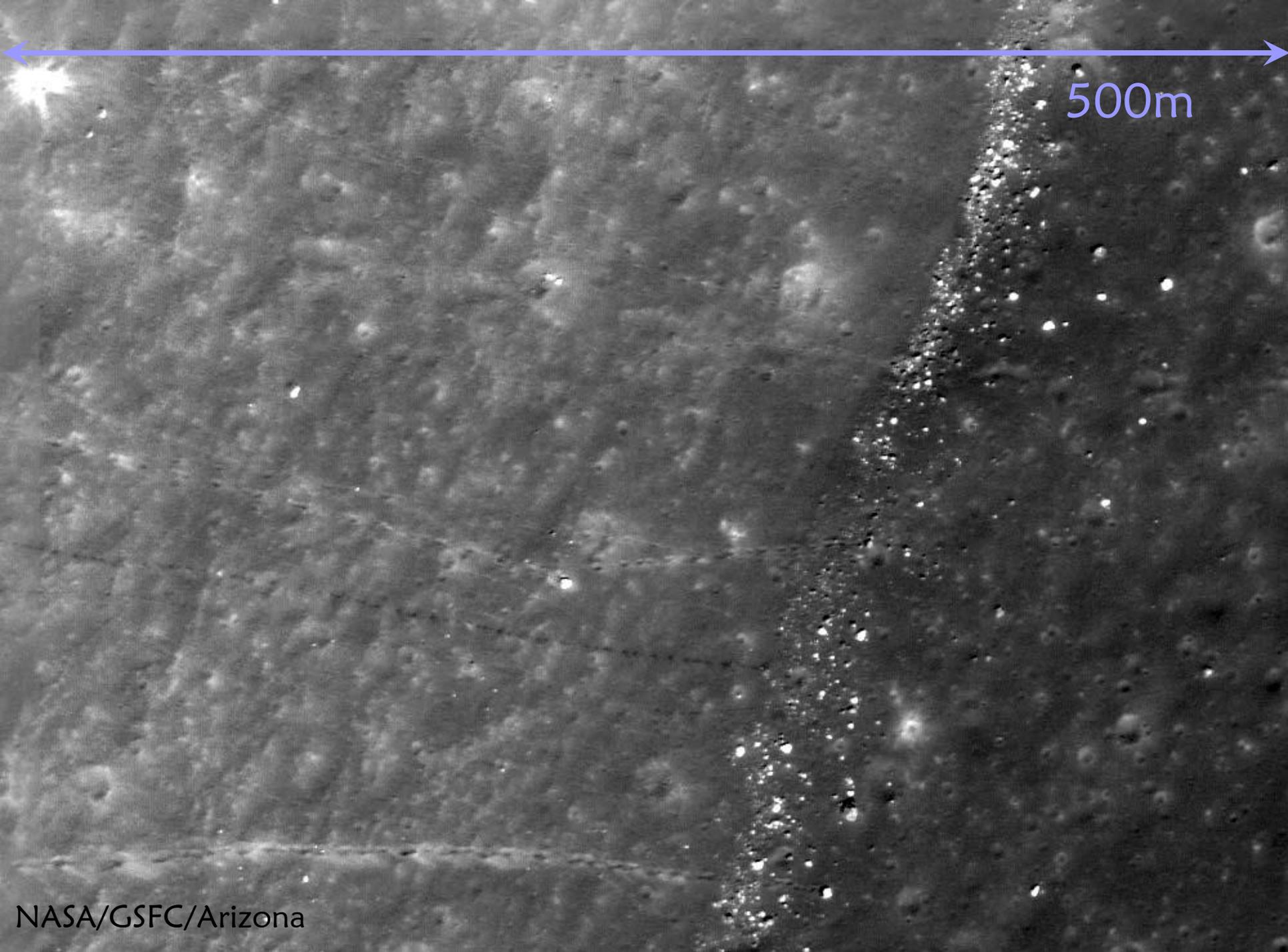
NASA/Apollo 12



800m

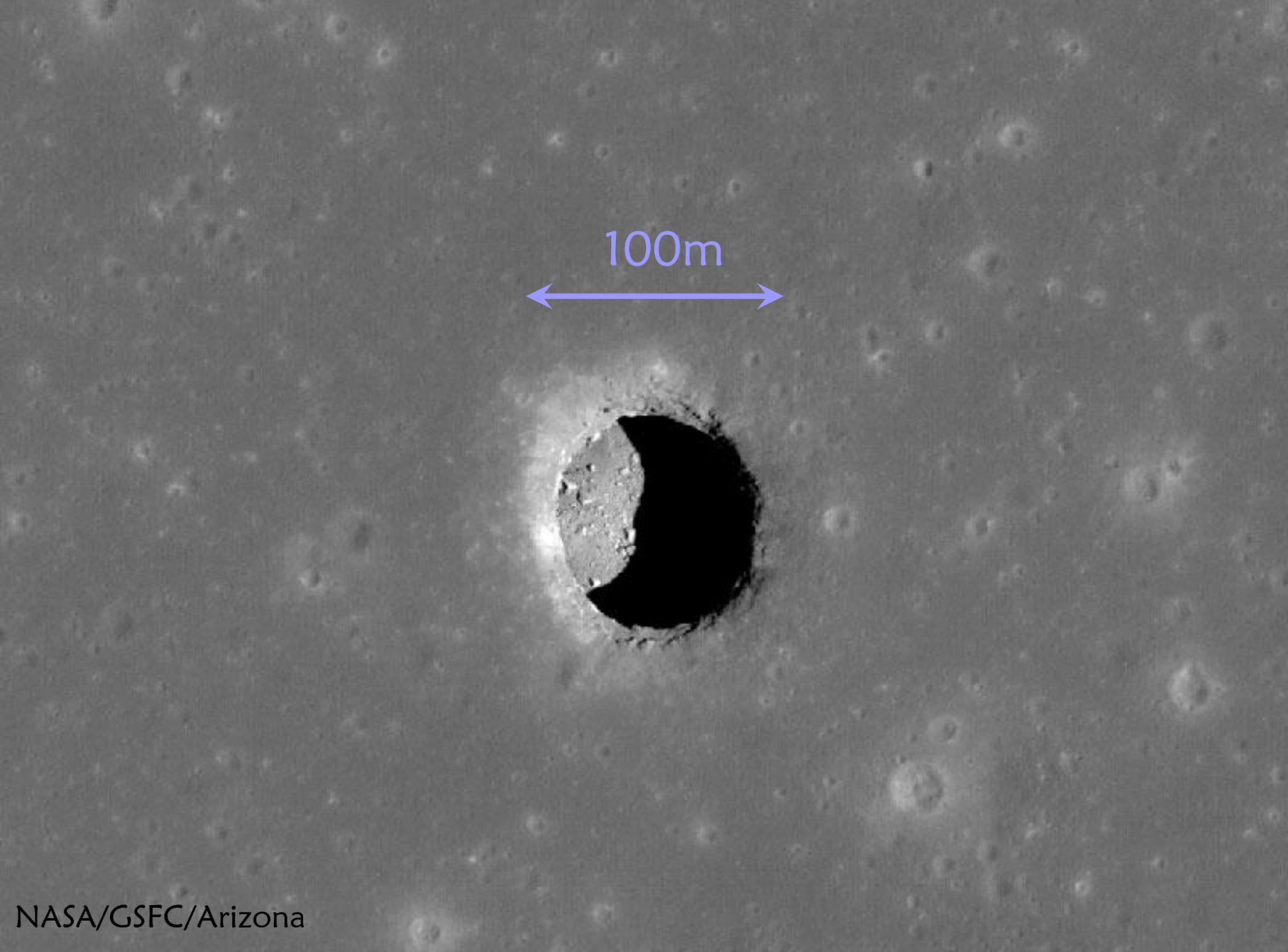


NASA/GSFC/Arizona



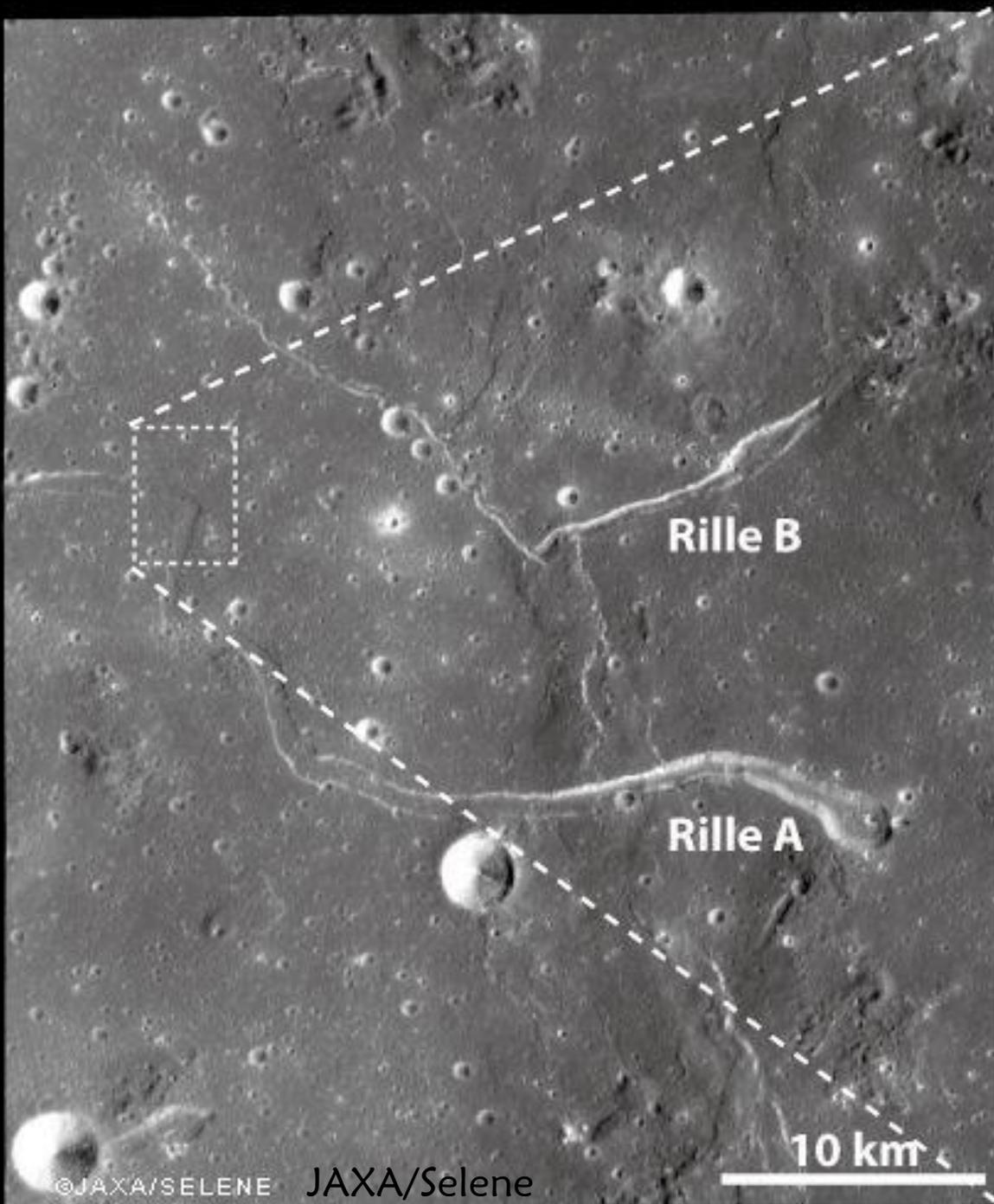
500m



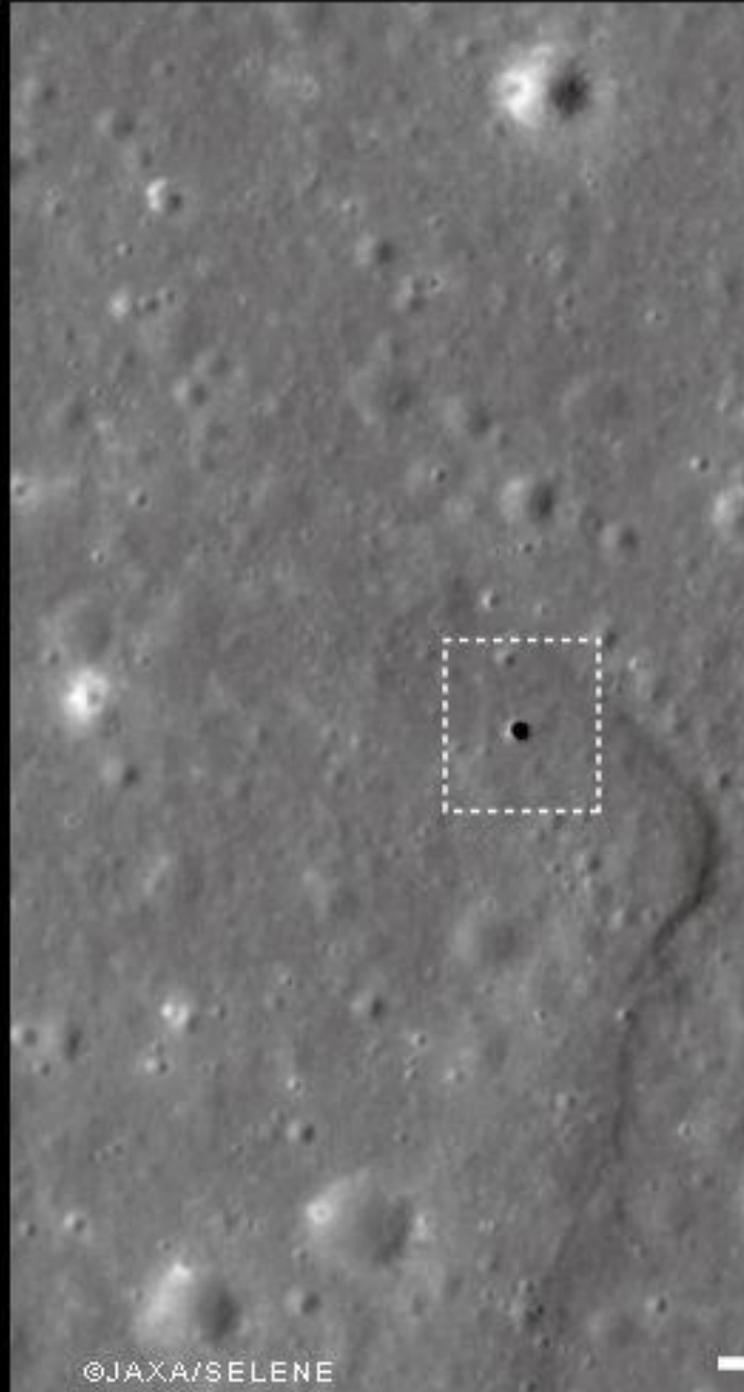


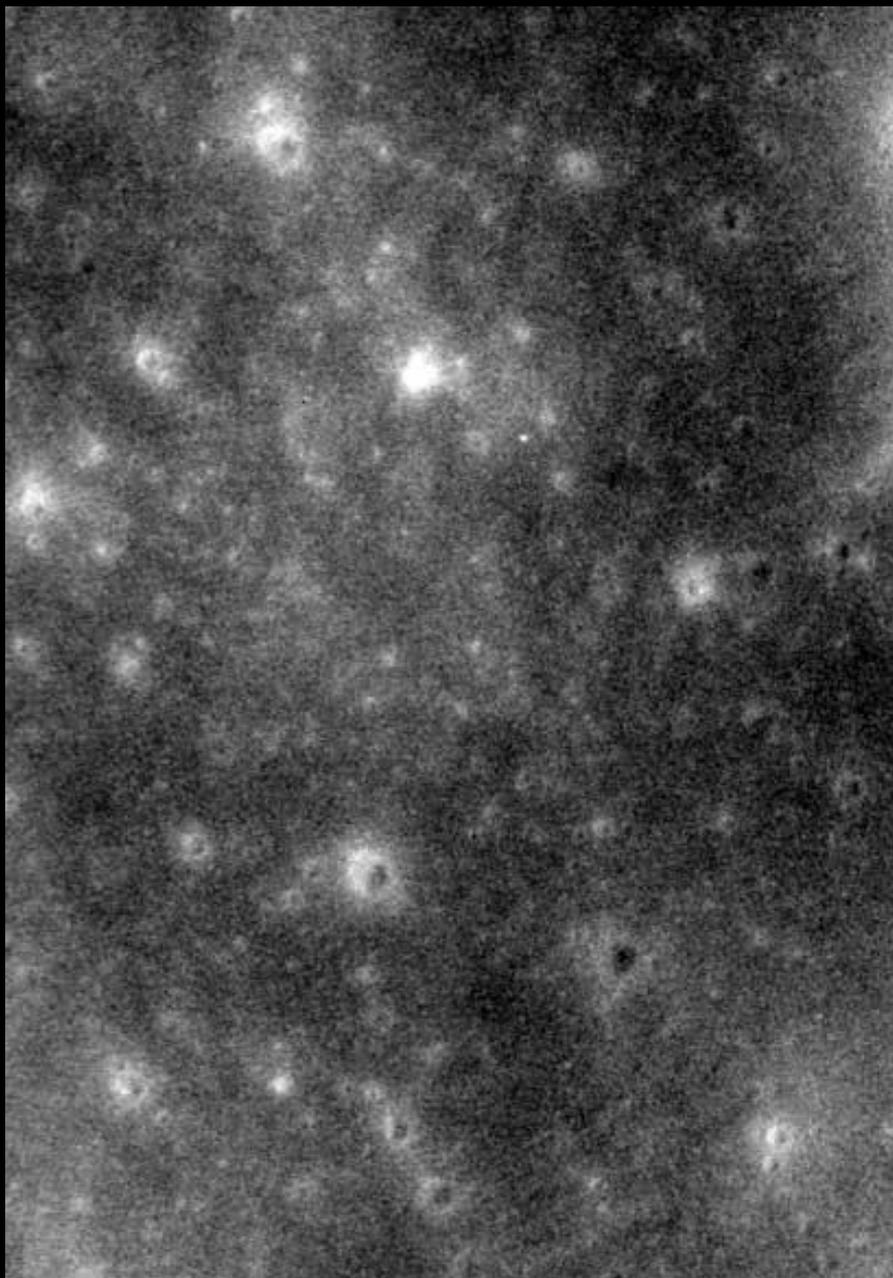
100m



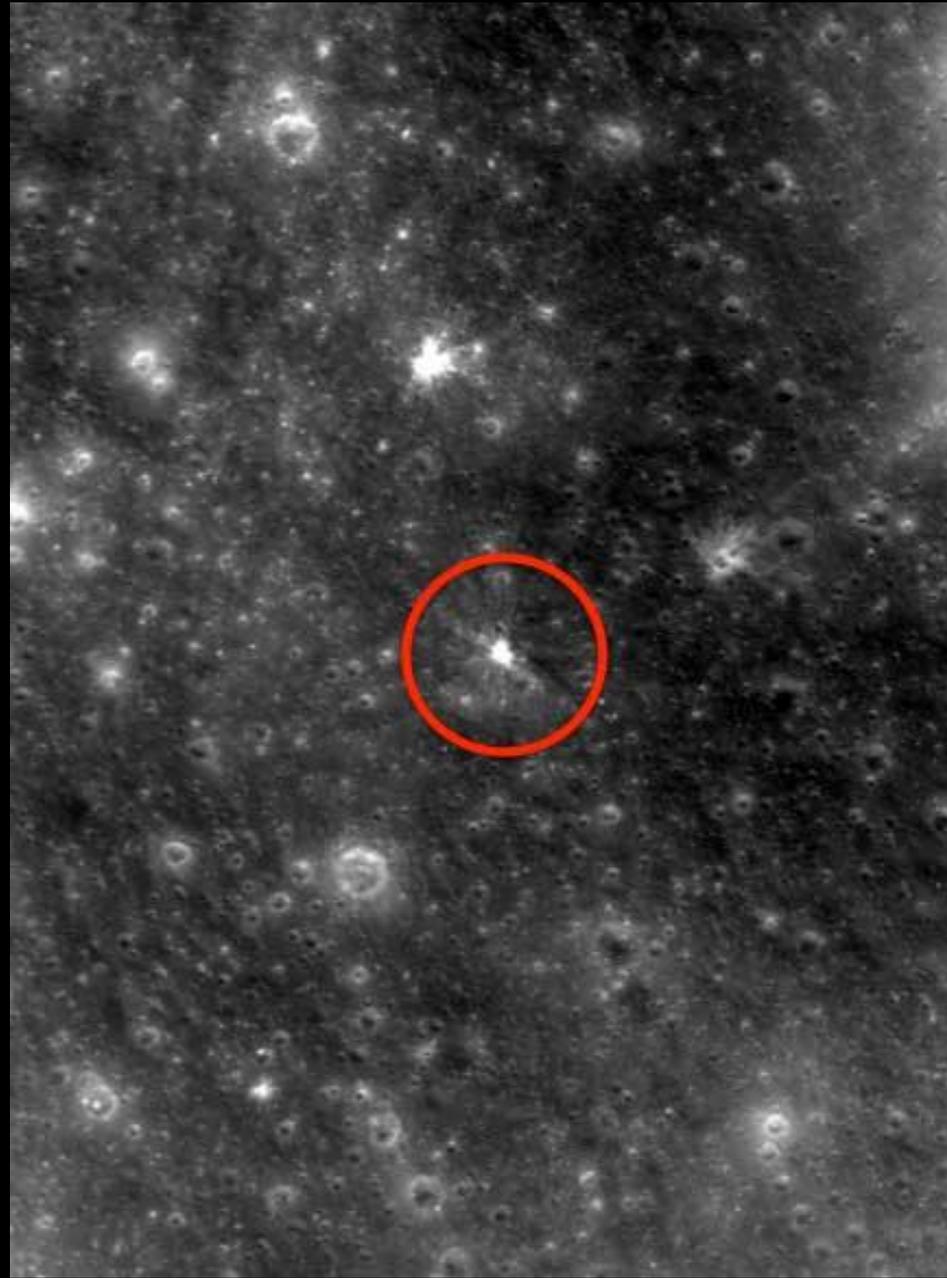


10 km

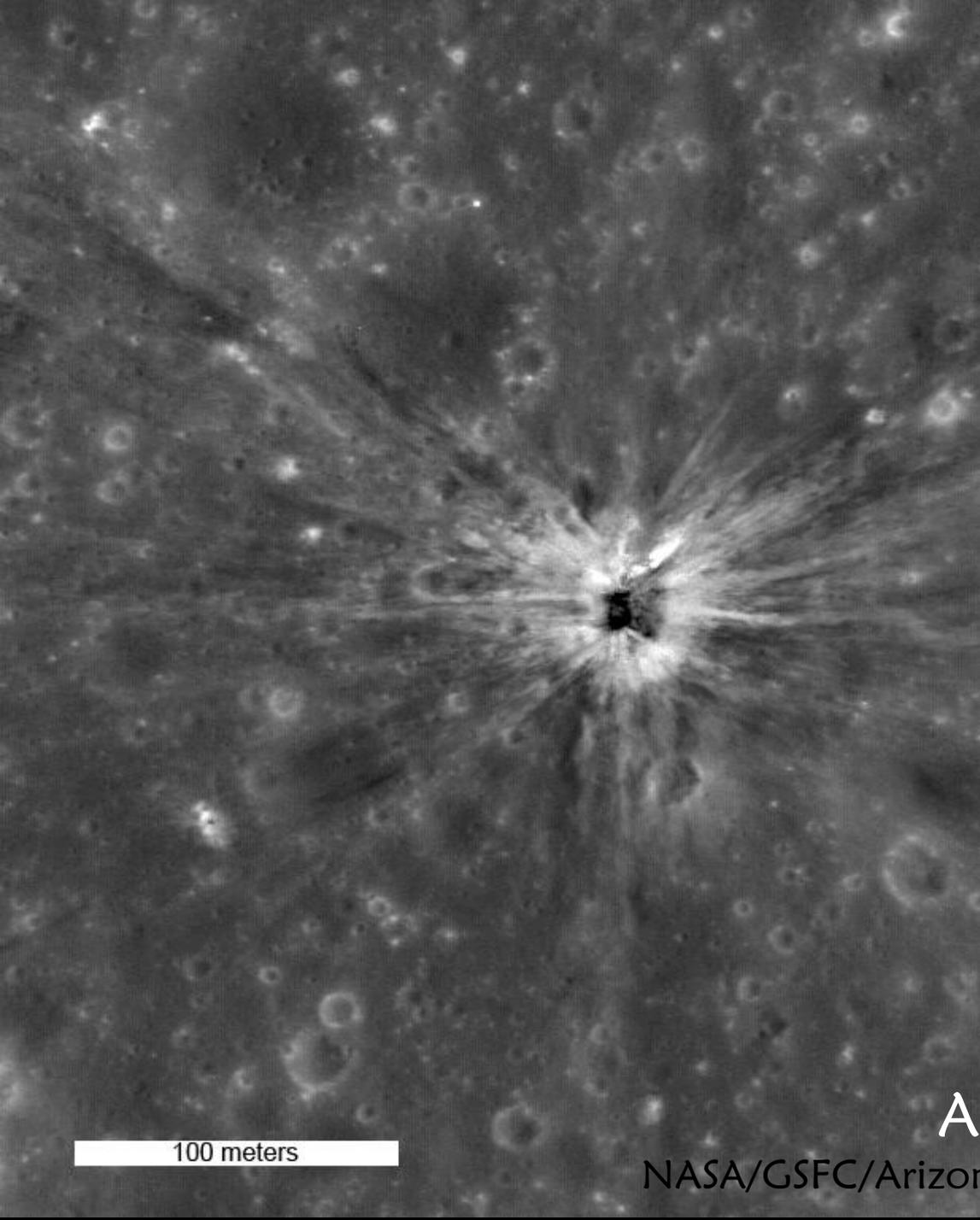




NASA/Apollo 15



NASA/GSFC/Arizona



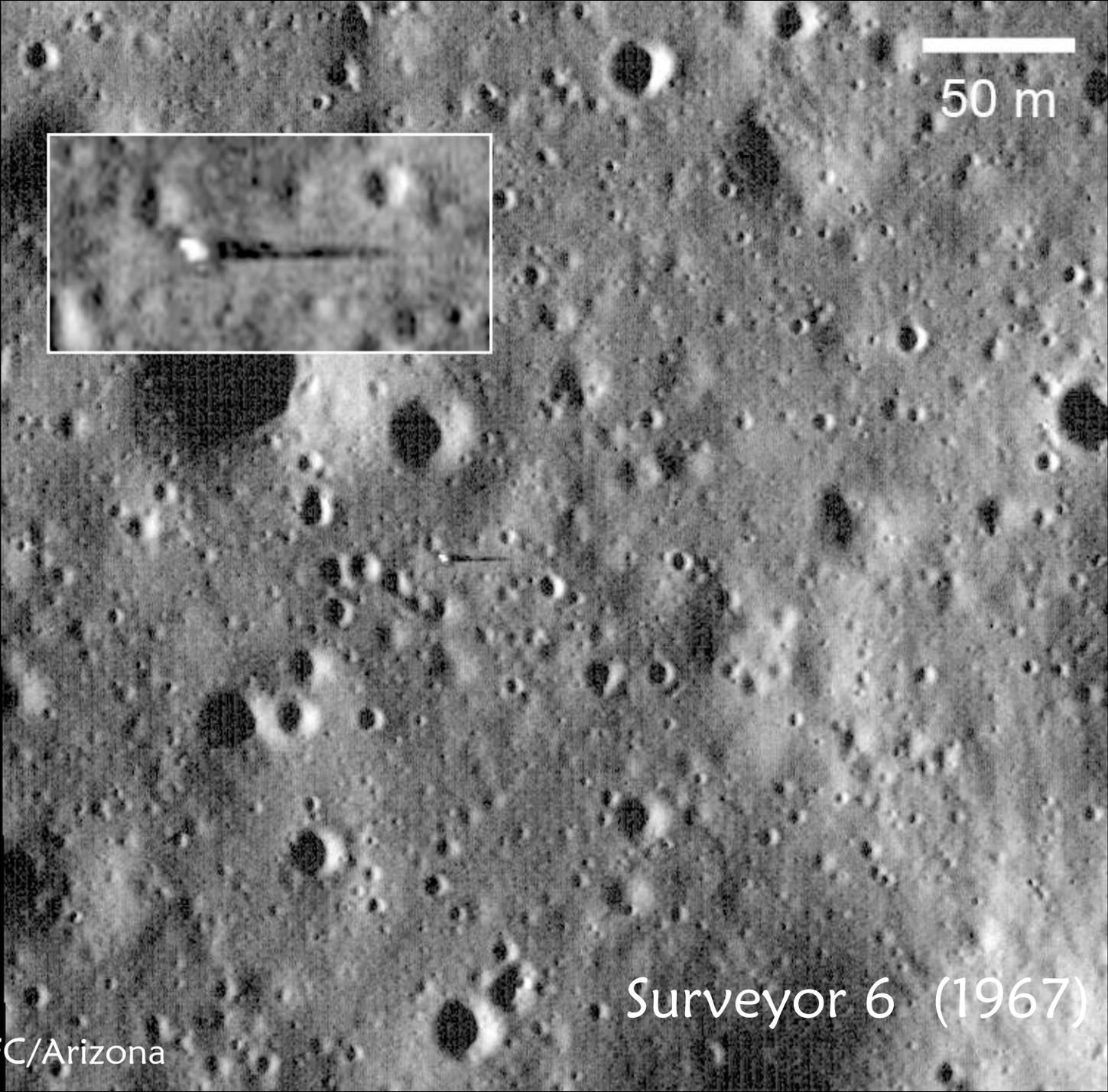
100 meters



67-HC-26

Apollo 13 (1969)

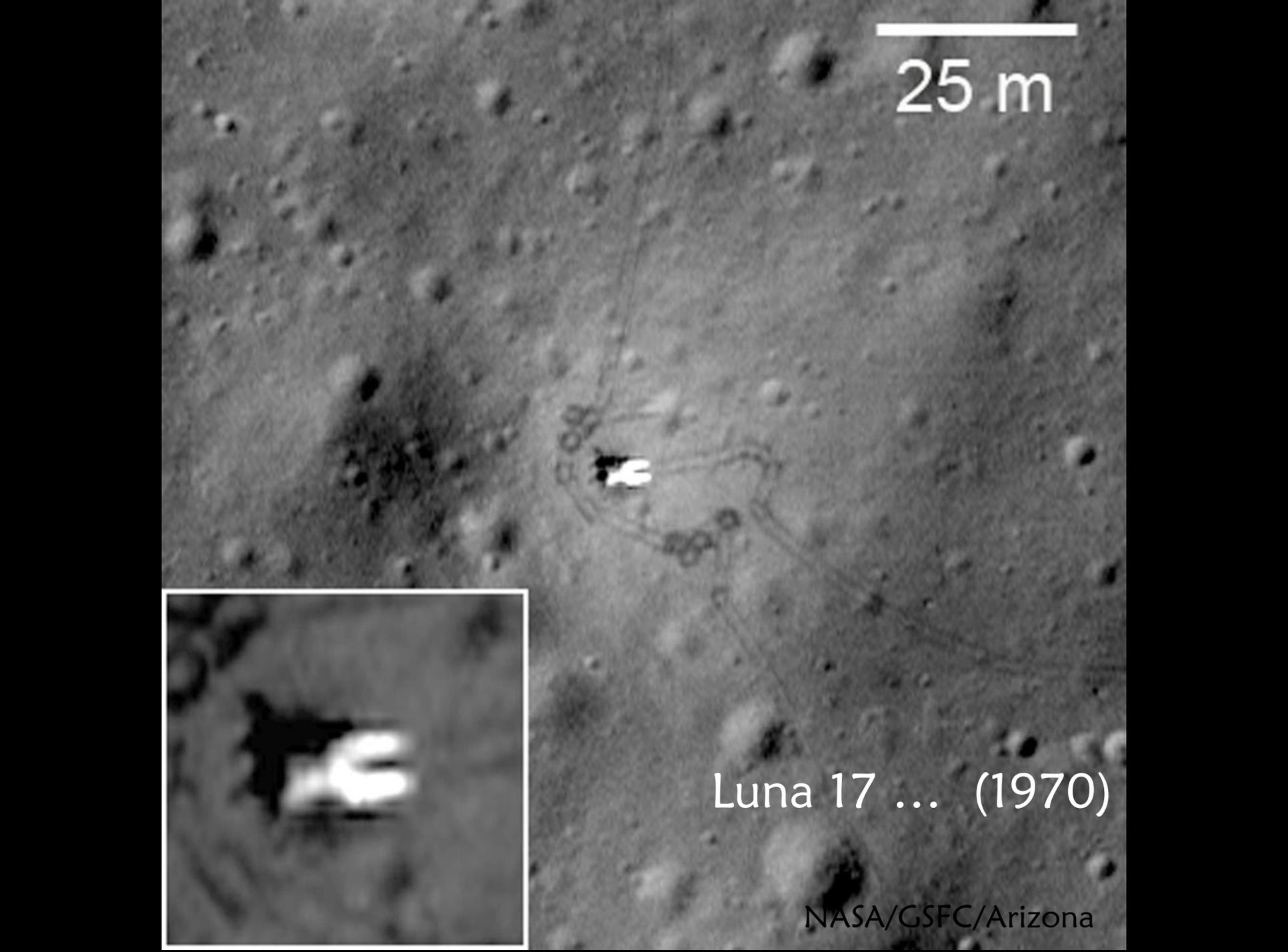
NASA/GSFC/Arizona



50 m

Surveyor 6 (1967)

NASA/GSFC/Arizona

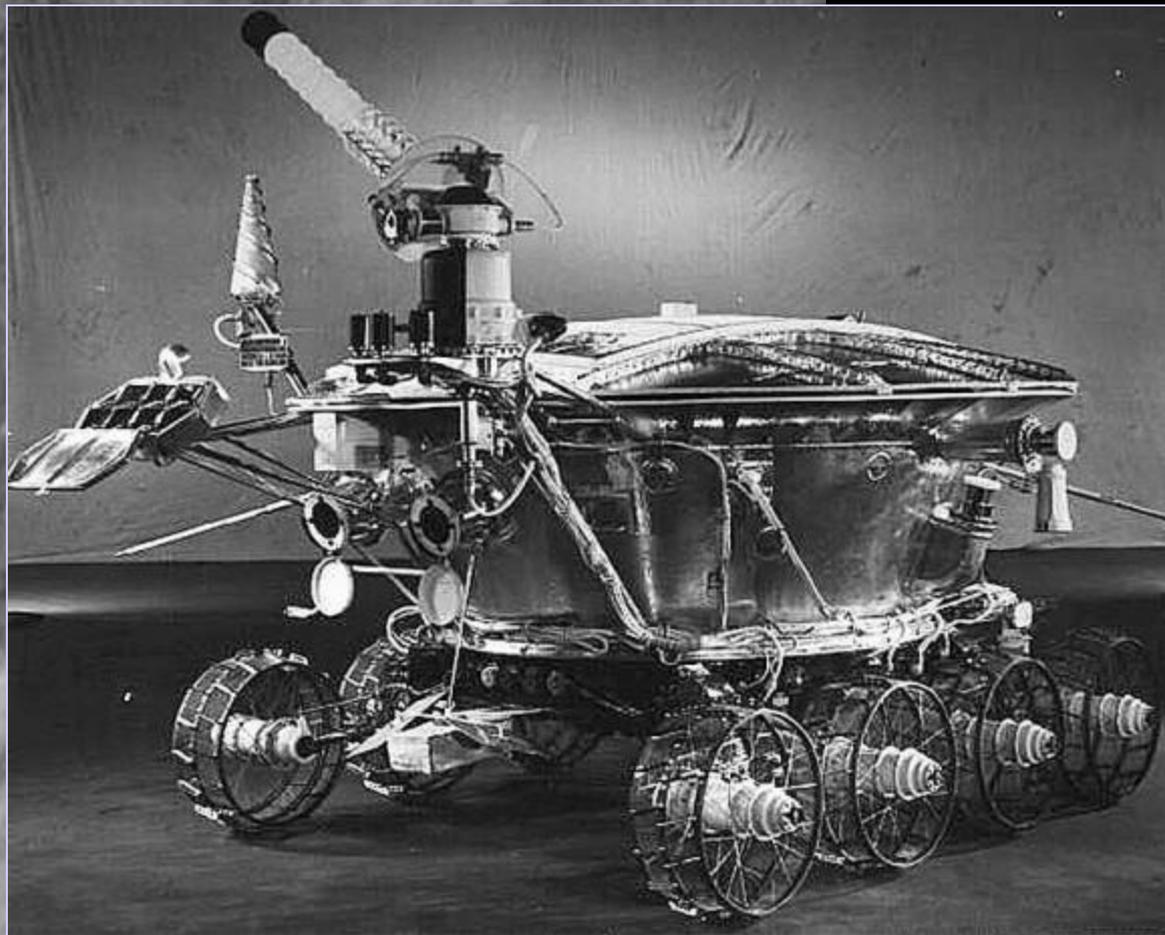


25 m

Luna 17 ... (1970)

NASA/GSFC/Arizona

25 m

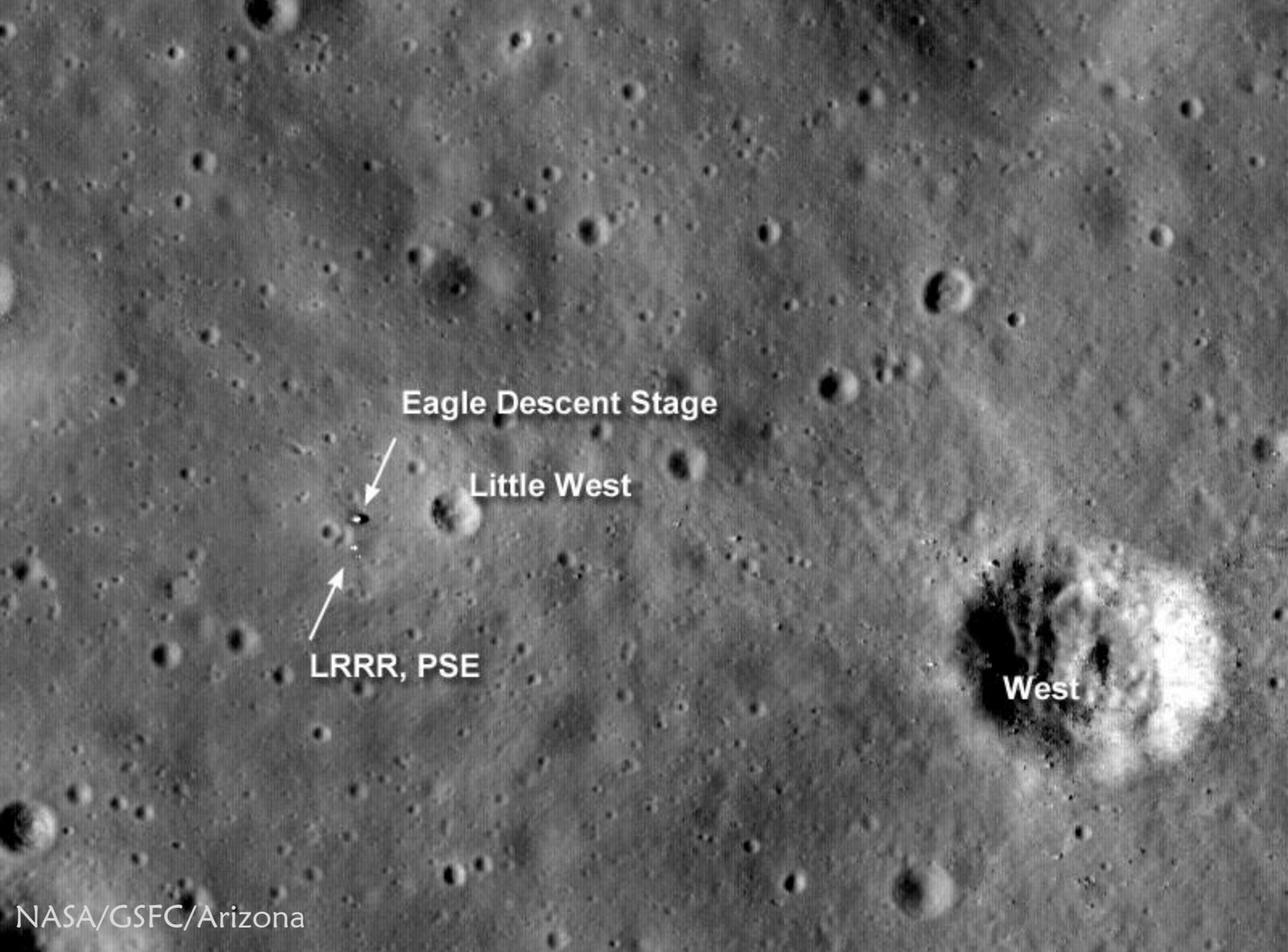


...& Lunakhod 1 ... (1970)

NASA/GSFC/Arizona



NASA/Apollo 11

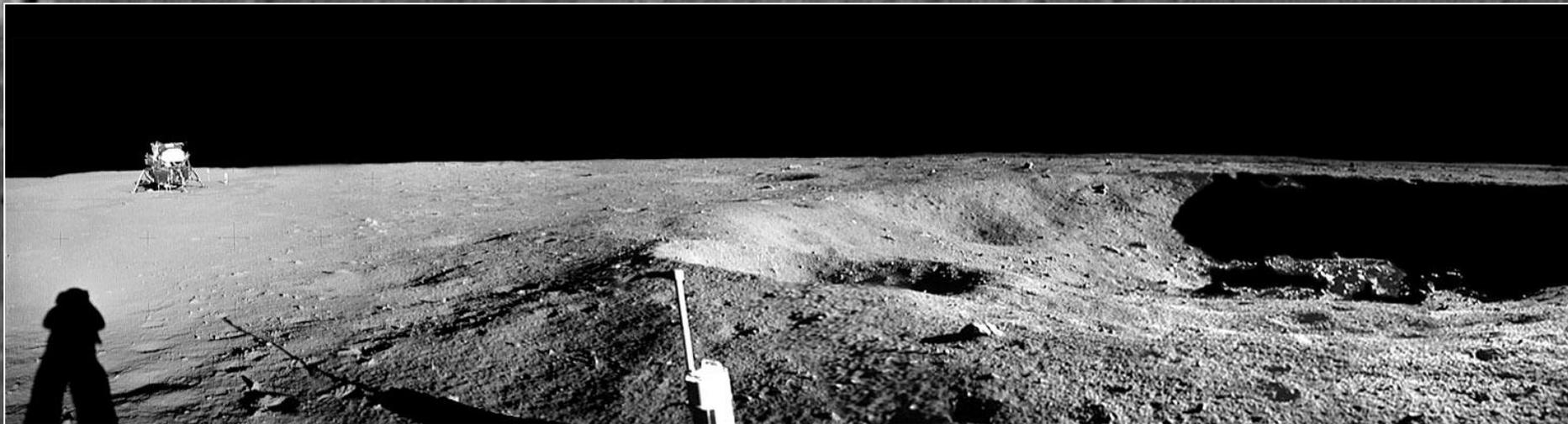


Eagle Descent Stage

Little West

LRRR, PSE

West



Camera



LM



LRRR



Discarded Cover



PSEP





NASA/Apollo 12

ALSEP
Equipment

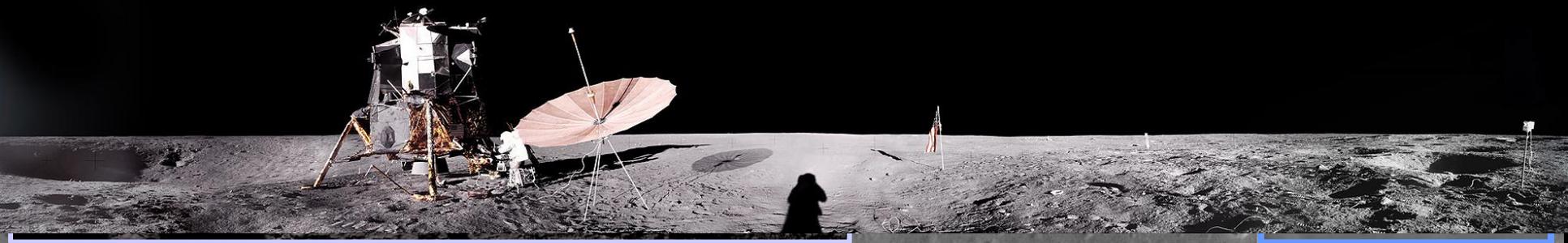
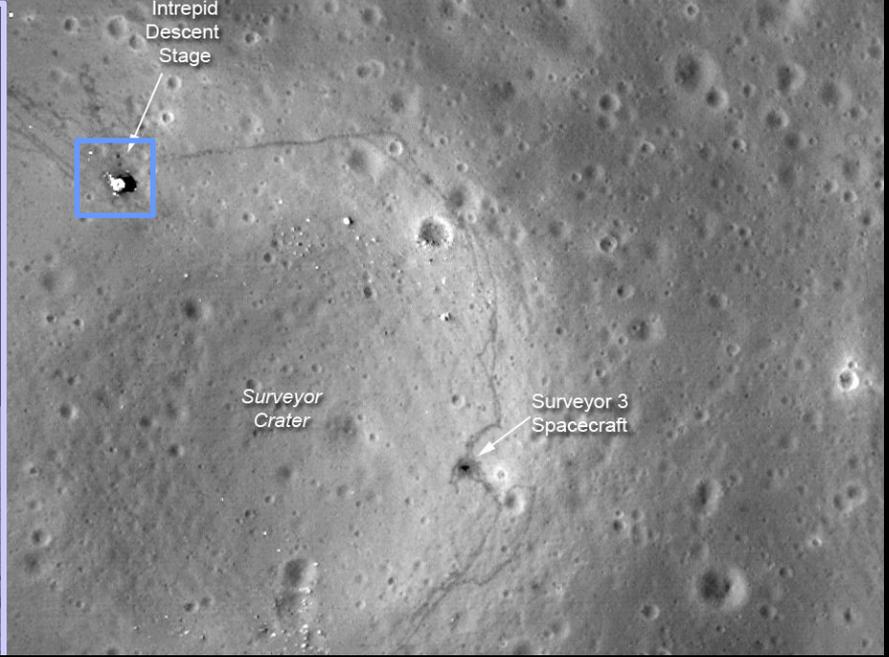
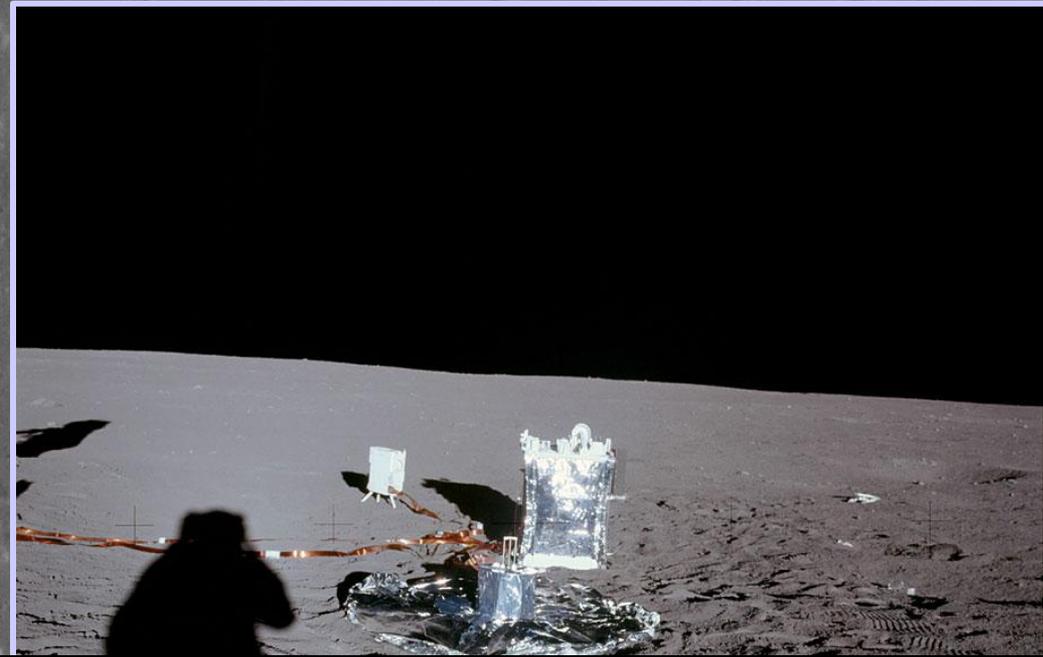


Intrepid
Descent
Stage



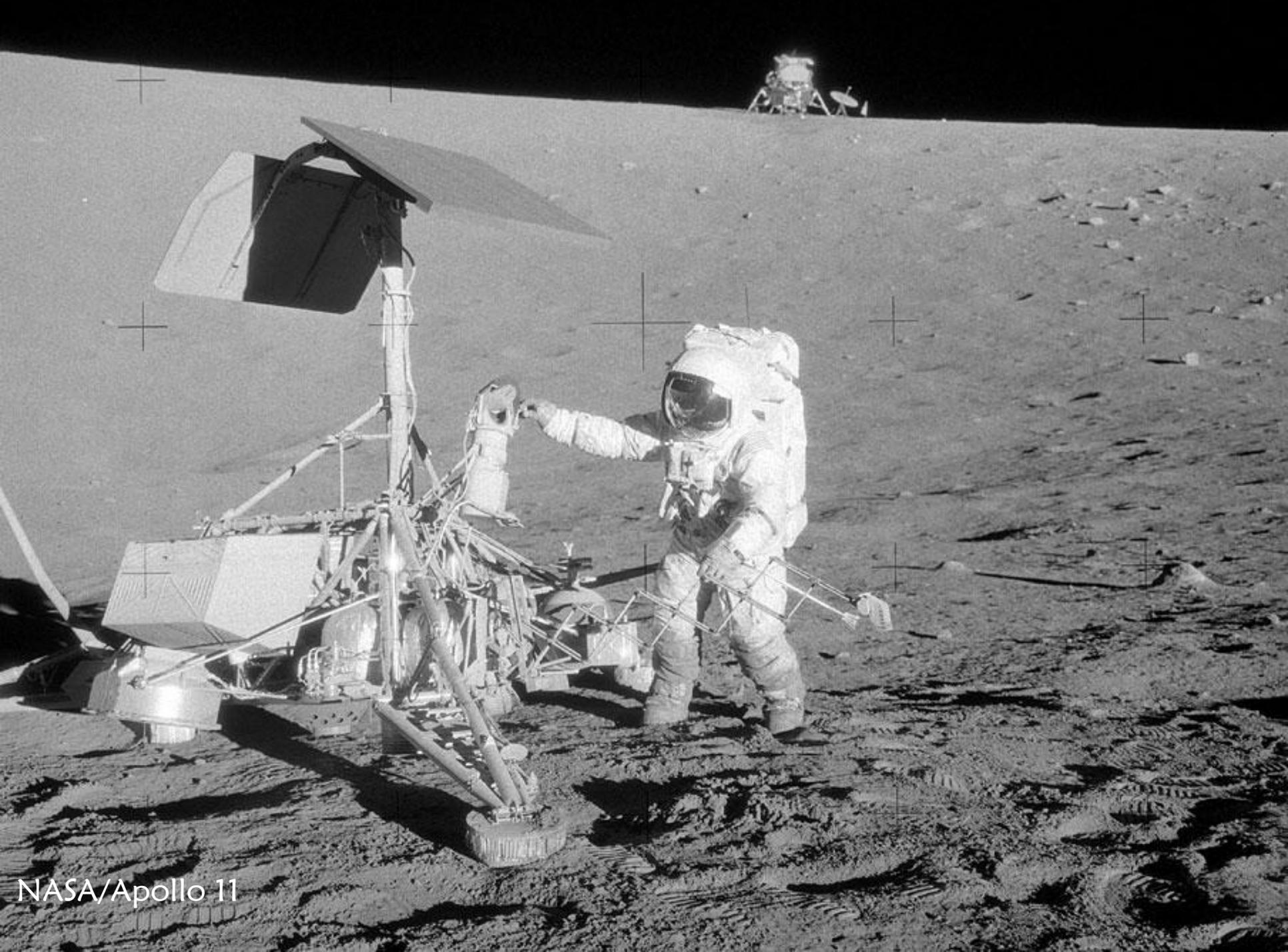
Surveyor
Crater

Surveyor 3
Spacecraft





NASA/Apollo 12



NASA/Apollo 11

www.nasa.gov/mission_pages/LRO/multimedia/

X-RAY ASTROPHYSICS – THE HIGH ENERGY COSMOS
7TH NOVEMBER 2012 1PM

NASA/Apollo 17

