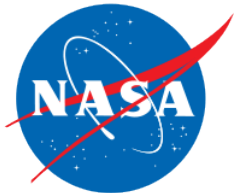
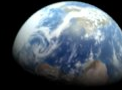




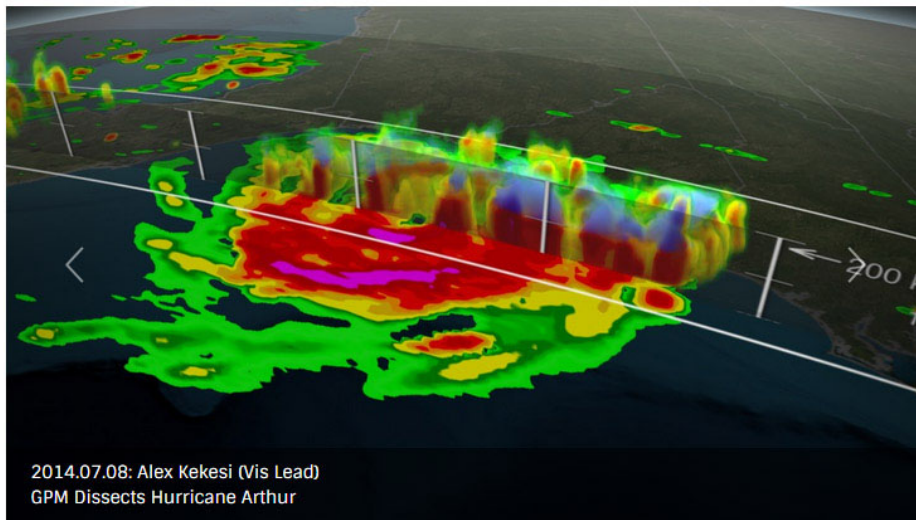


Howard Astronomical League
Meeting Presentation
July 16, 2015



CSI Apollo: Recreating the Iconic Earthrise Photo

Ernie Wright
USRA / NASA



2014.07.08: Alex Kekesi (Vis Lead)
GPM Dissects Hurricane Arthur

Over 5,500 visuals!

Search

MOST RECENT

GALLERIES

PEOPLE

KEYWORDS

Our Mission

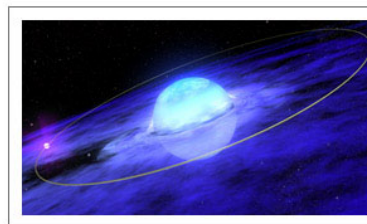
The **Scientific Visualization Studio** wants you to learn about NASA programs through visualization. The SVS works closely with scientists in the creation of visualizations, animations, and images in order to promote a greater understanding of Earth and Space Science research activities at Goddard Space Flight Center and within the NASA research community.

All the visualizations created by the SVS (currently totalling over 5,500) are accessible to you through this web site, and free to download!

MOST POPULAR



FROM OUR ARCHIVES

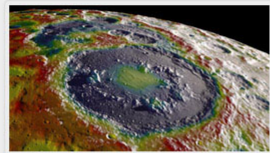


SVS visualizations

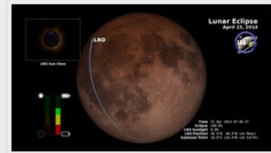
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- Next



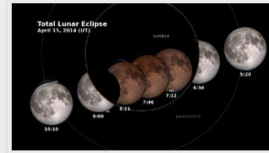
A New Look at the Apollo 11 Landing Site



GRAIL Gravity Map for the Cover of Geophysical Research Letters



LRO and the Lunar Eclipse of April 15, 2014: Telescopic View



LRO and the Lunar Eclipse of April 15, 2014: Shadow View



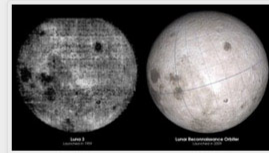
Earthrise: The 45th Anniversary



Moon Phase and Libration, 2014



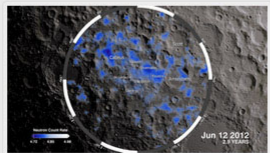
Moon Phase and Libration, 2014 South Up



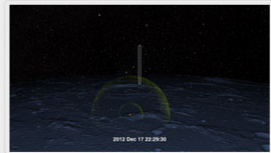
Lunar Far Side: From Luna 3 to LRO



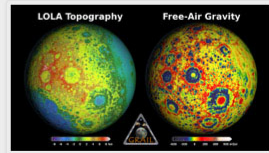
The Moon and the Sun: Two NASA Missions Join Their Images



LEND Looks for Water at the South Pole

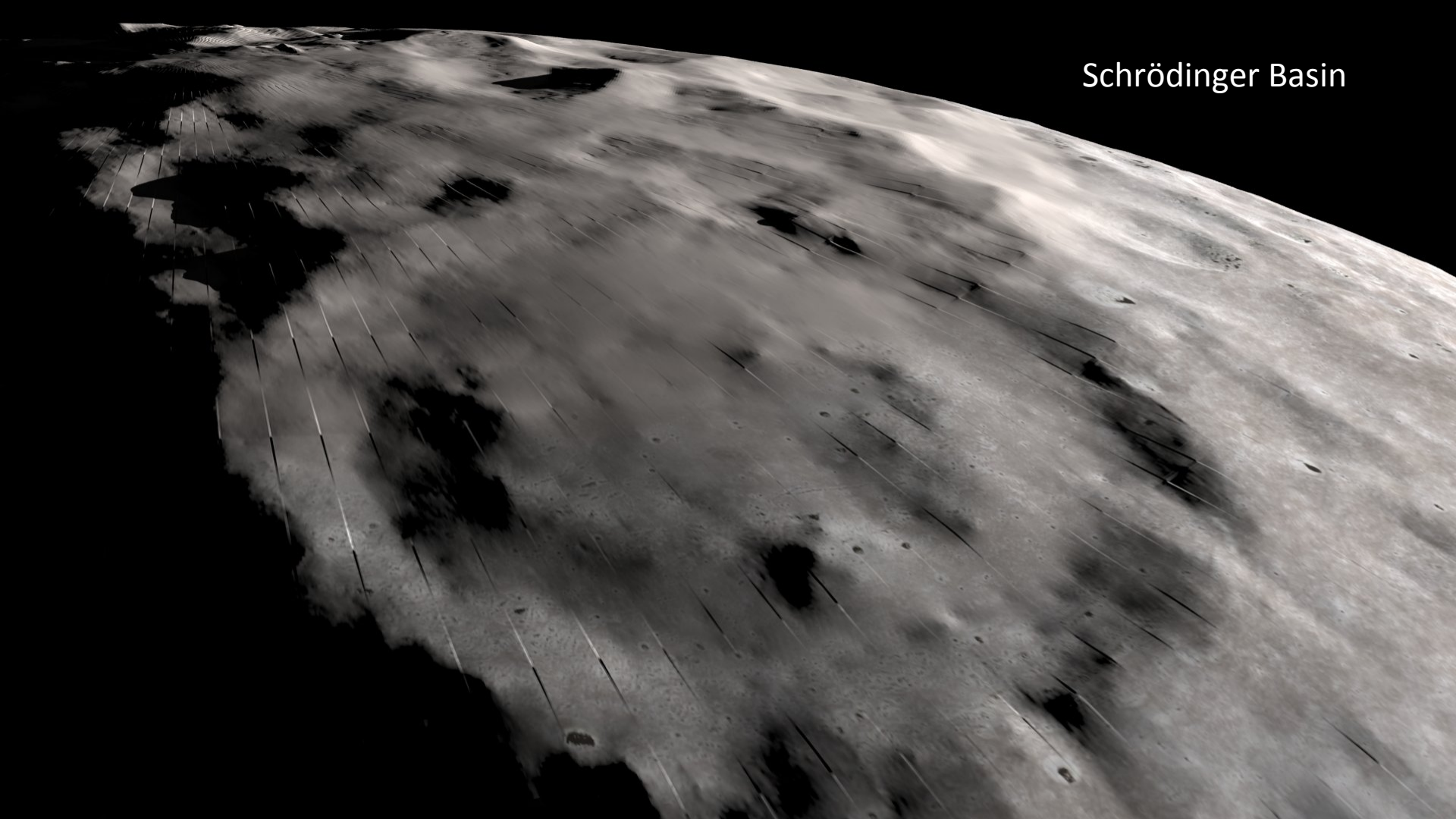


LAMP Observes GRAIL Impact

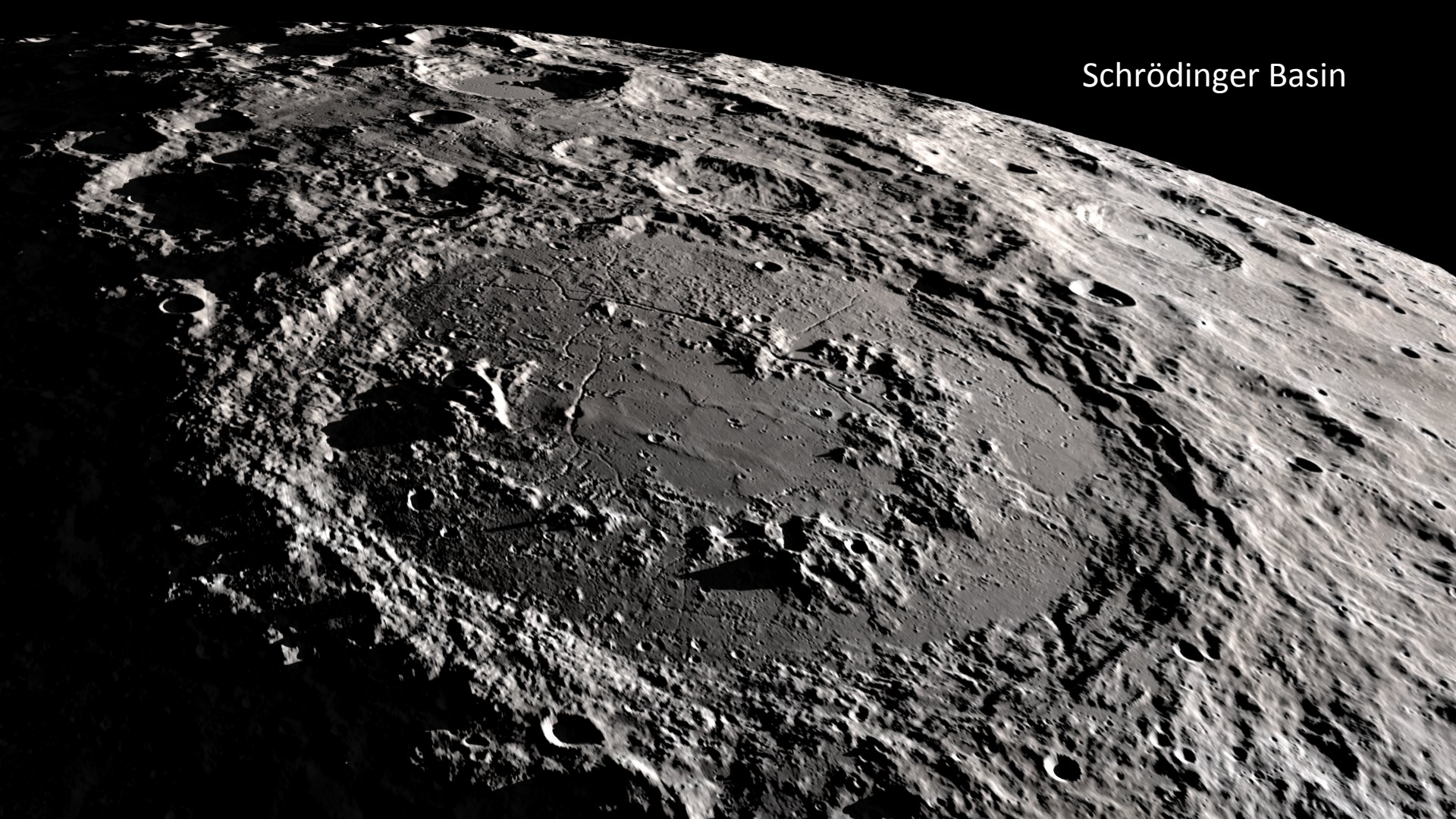


GRAIL Primary Mission Gravity Maps (AGU 2012)

Schrödinger Basin



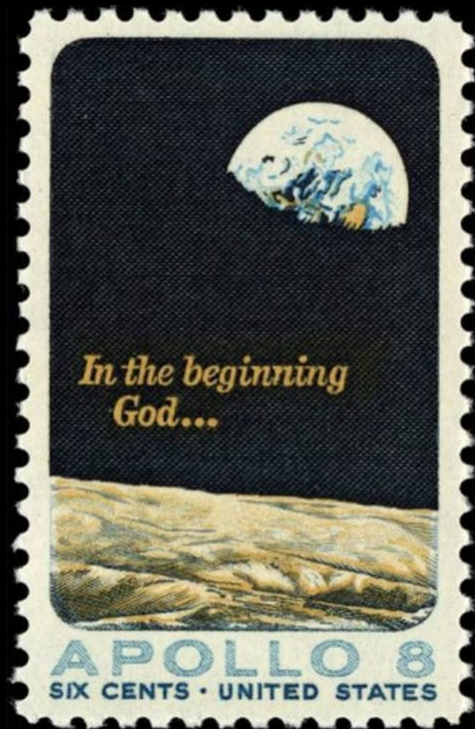
Schrödinger Basin





Earthrise
Apollo 8
December 24, 1968



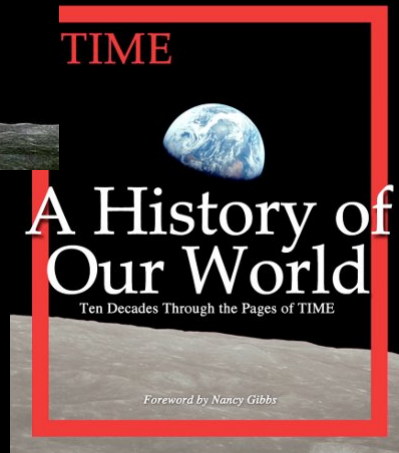
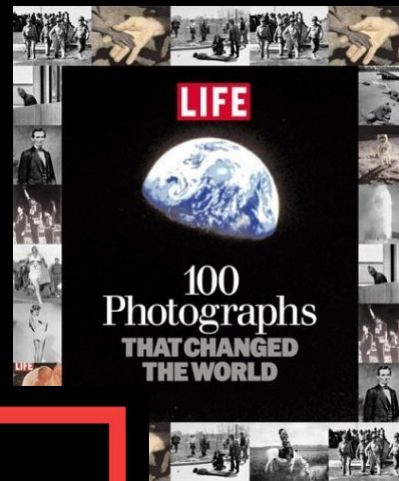
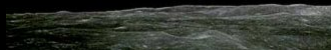


Earthrise

How Man First Saw
the Earth



Robert Poole





Lovell: Got it?

Anders: Yep.

Date	24 Dec 1968
Time	16:39:44.8 UT
Elapsed	75:48:44 MET
Lon	113.54°E
Lat	11.13°S
Alt	110.0 km
Roll	179.1°

See the video at
<http://svs.gsfc.nasa.gov/goto?4129>

Orbit 4



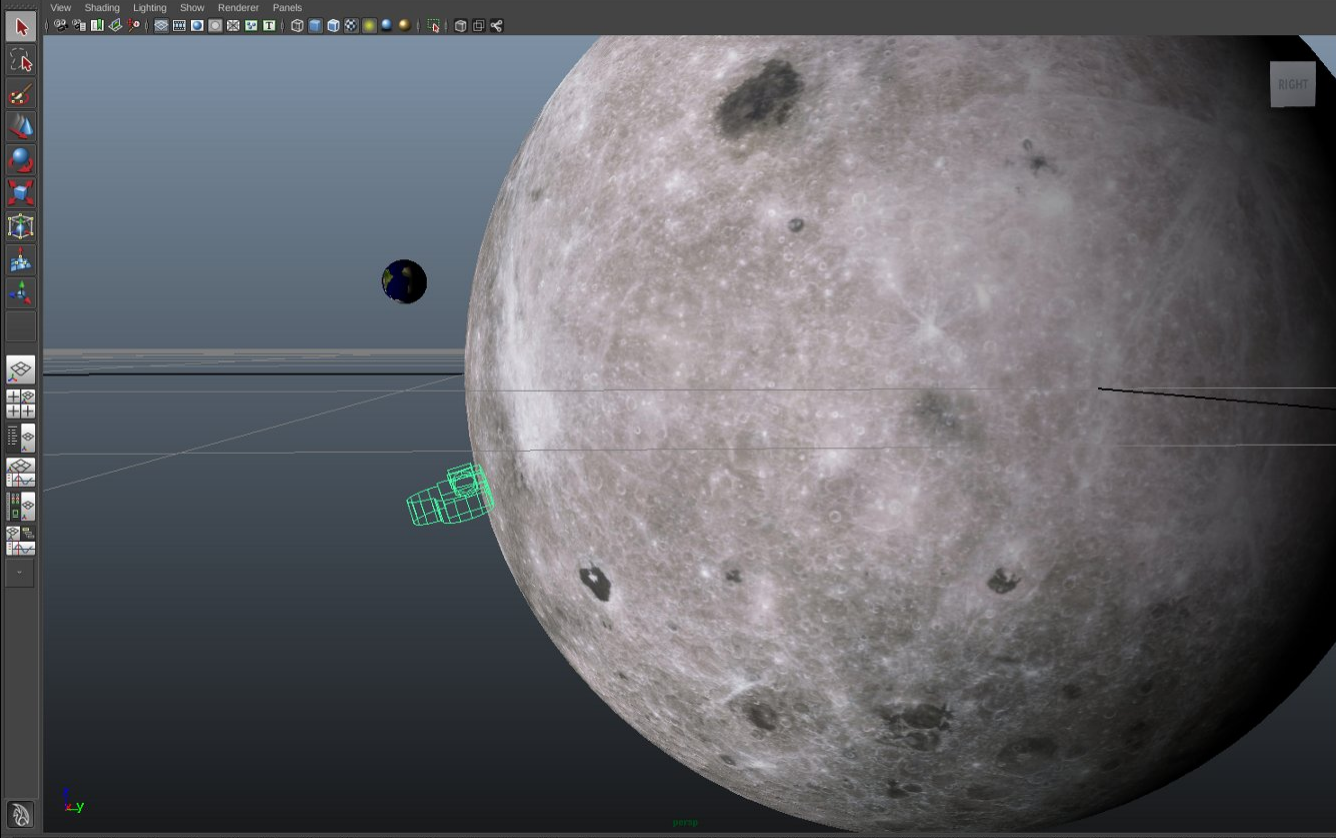
To recreate what the astronauts saw:

- Calculate the geometry
 - Apollo 8 orbit
 - Moon
 - Earth
 - Sun
- Texture the Moon
 - Image map
 - Displacement map
- Texture the Earth
 - Seasonally appropriate vegetation and snow cover
 - Sea Ice
 - Clouds

File Edit Modify Create Display Window Assets Select Mesh Edit Mesh Proxy Normals Color Create UVs Edit UVs Muscle RenderMan Help

Polygons

General Curves Surfaces Polygons Subdivs Deformation Animation Dynamics Rendering PaintEffects Toon Muscle Fluids Fur Hair nCloth Custom RenderMan



Channel Box / Layer Editor

Channels Edit Object Show

camera_apollo

- Translate X 0
- Translate Y 0
- Translate Z 1.063
- Rotate X 77
- Rotate Y 6
- Rotate Z 90
- Scale X 0.1
- Scale Y 0.1
- Scale Z 0.1
- Visibility on

SHAPES

camera_apolloShape

- Horizontal Film Aperture 1.417
- Vertical Film Aperture 0.945
- Focal Length 50
- Lens Squeeze Ratio 1
- F Stop 5.6
- Focus Distance 5
- Shutter Angle 144
- Center Of Interest 5

Display Render Anim

Layers Options Help

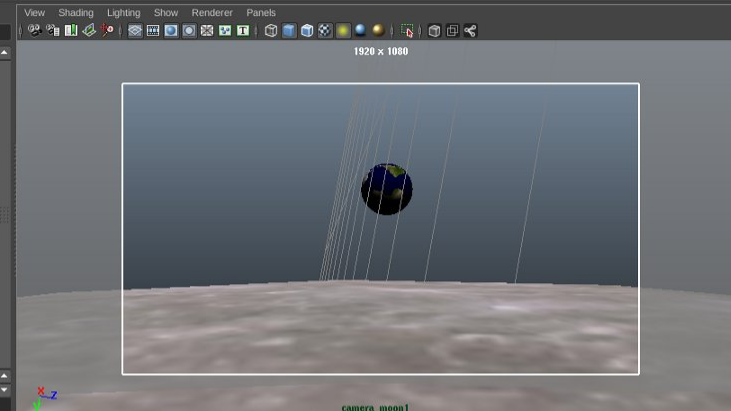
File Edit Modify Create Display Window Assets Select Mesh Edit Mesh Proxy Normals Color Create UVs Edit UVs Muscle RenderMan Help

Polygons

General Curves Surfaces Polygons Subdvs Deformation Animation Dynamics Rendering PaintEffects Toon Muscle Fluids Fur Hair nCloth Custom RenderMan

Display Show Panels

- persp
- top
- front
- side
- moonCentered
 - moonSurface
 - camera_moon1
- sunGroup
- moon
- ambientLight1
- GEO
- freeCamGroup
- dateMapper1
- defaultLightSet
- defaultObjectSet

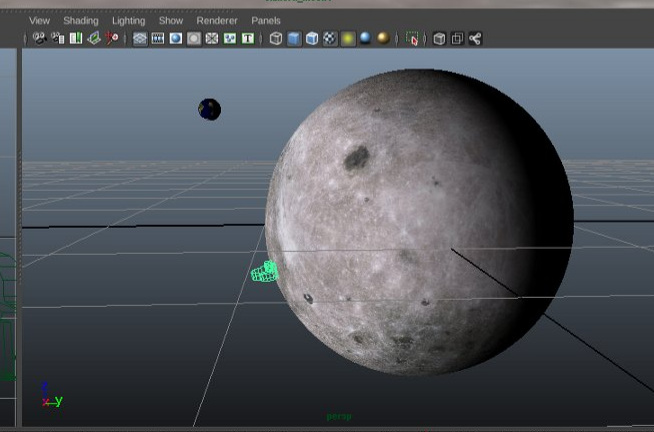


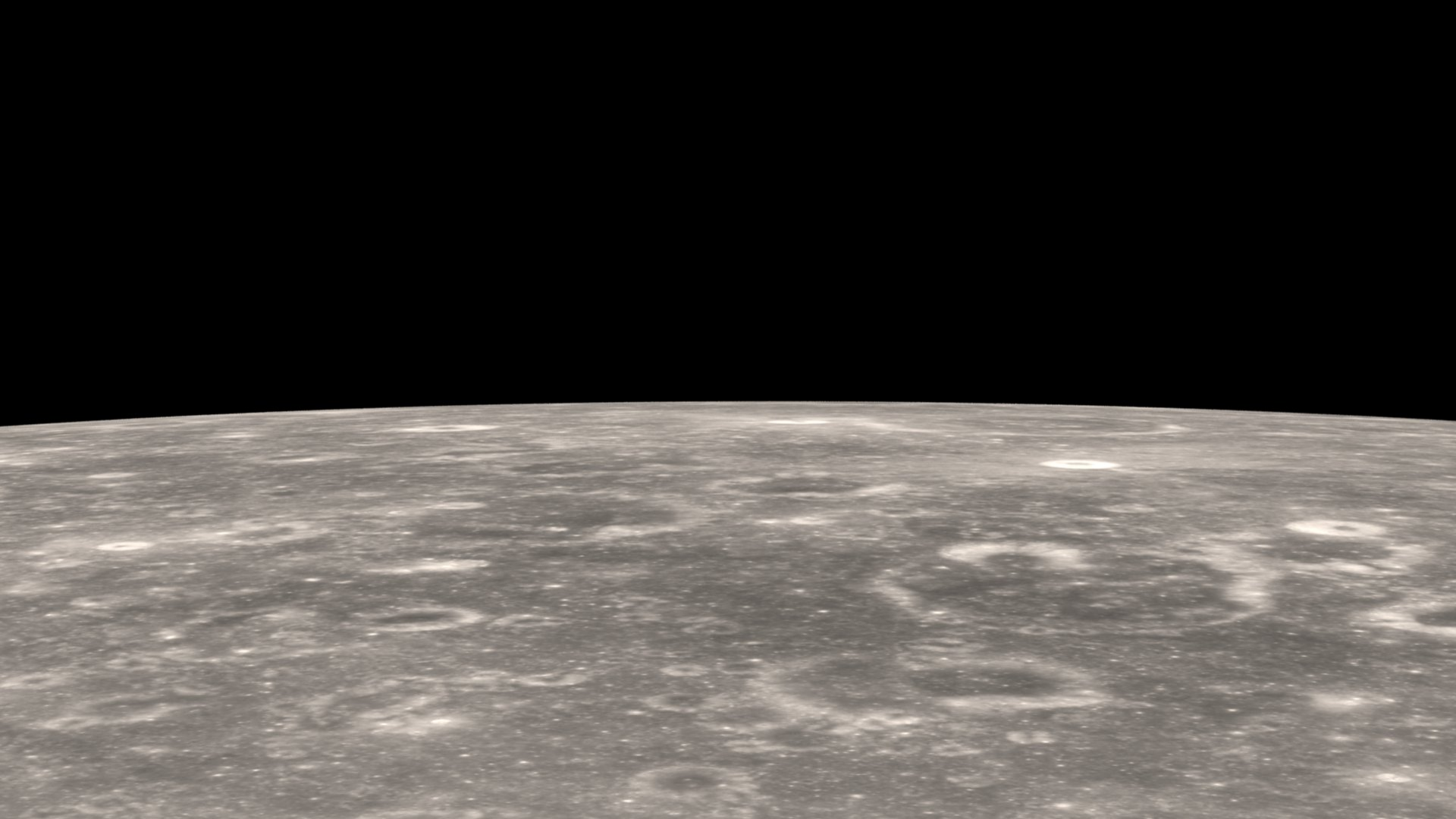
Channel Box / Layer Editor

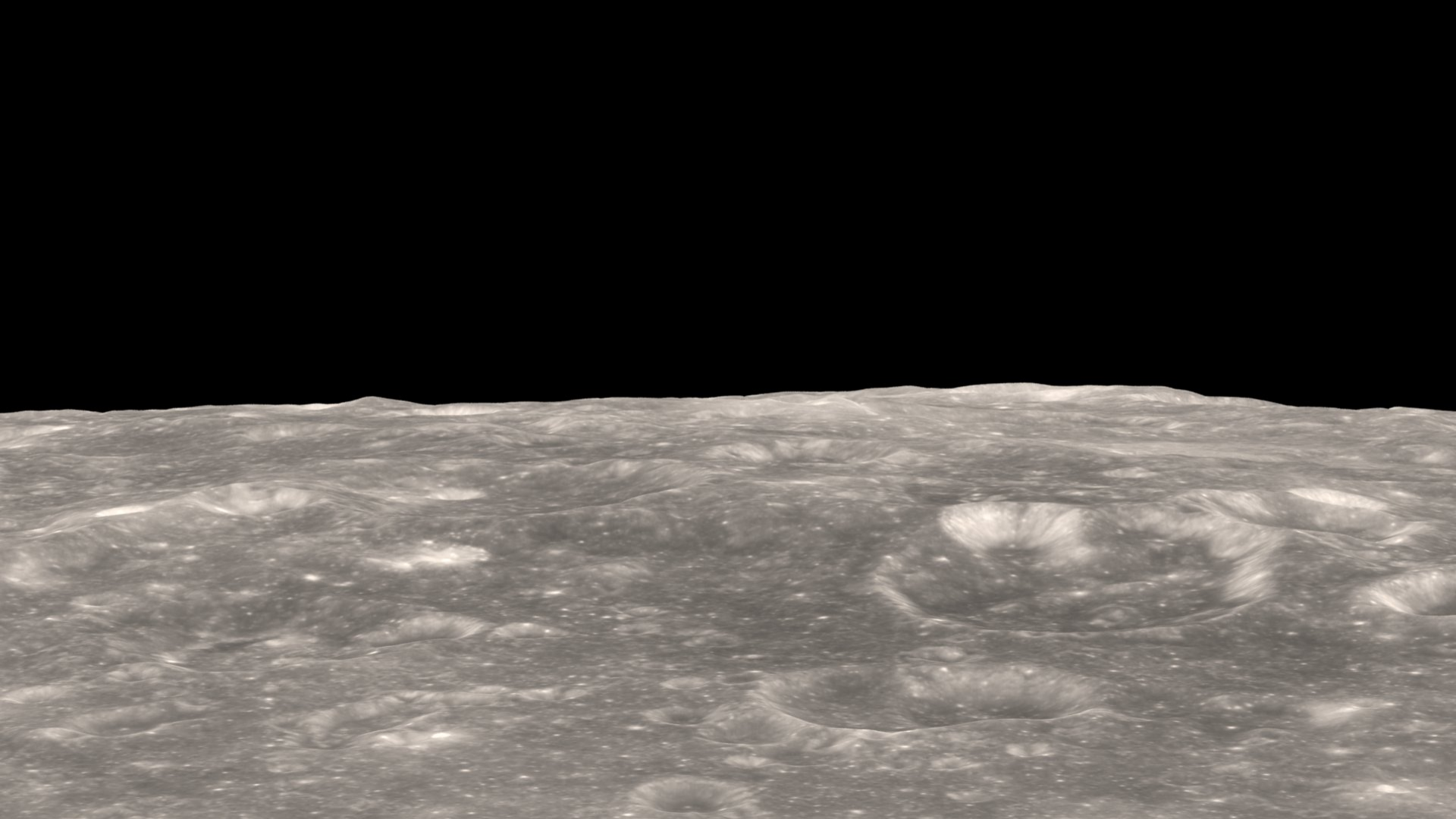
Channels Edit Object Show

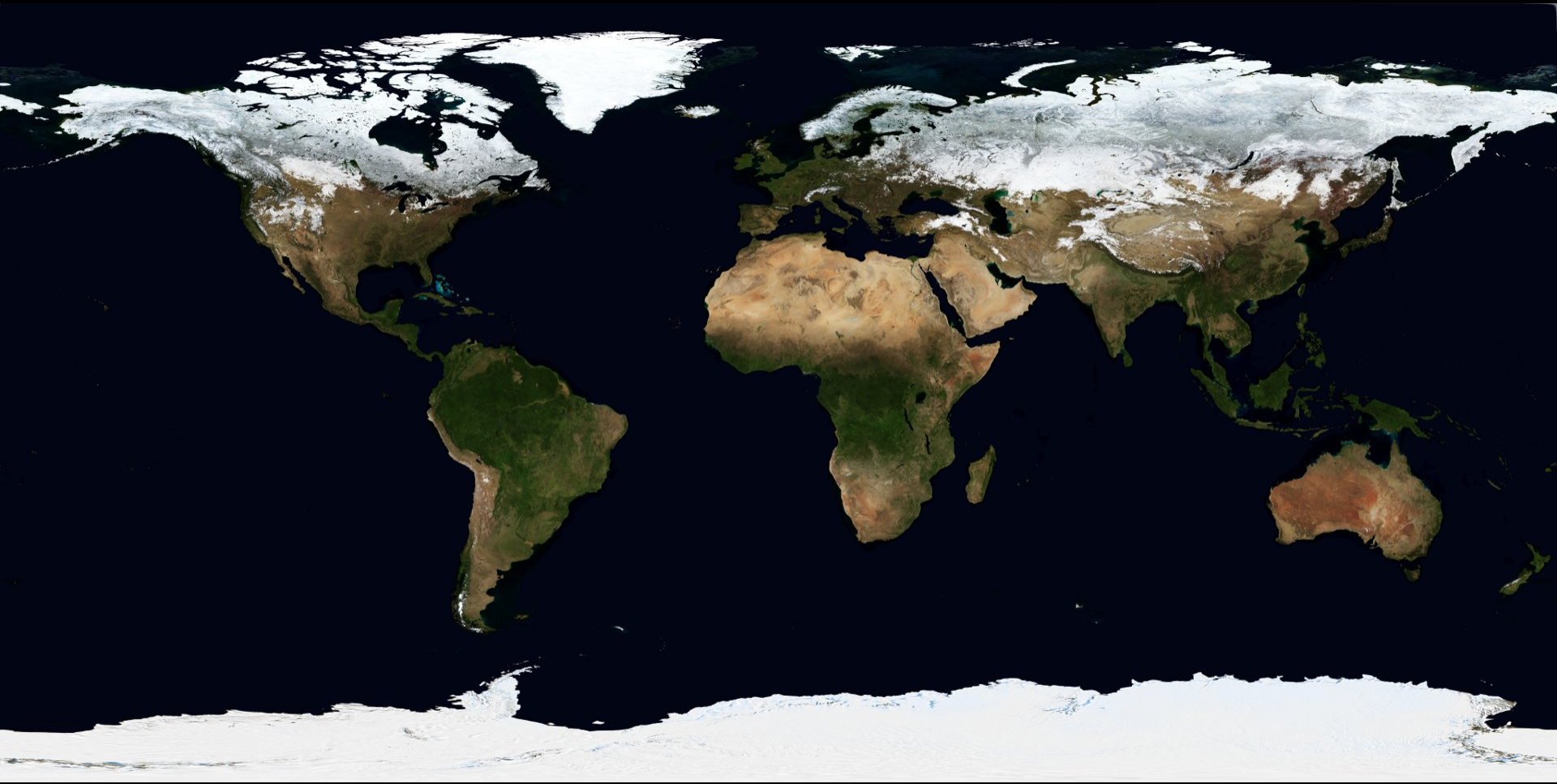
moonCentered

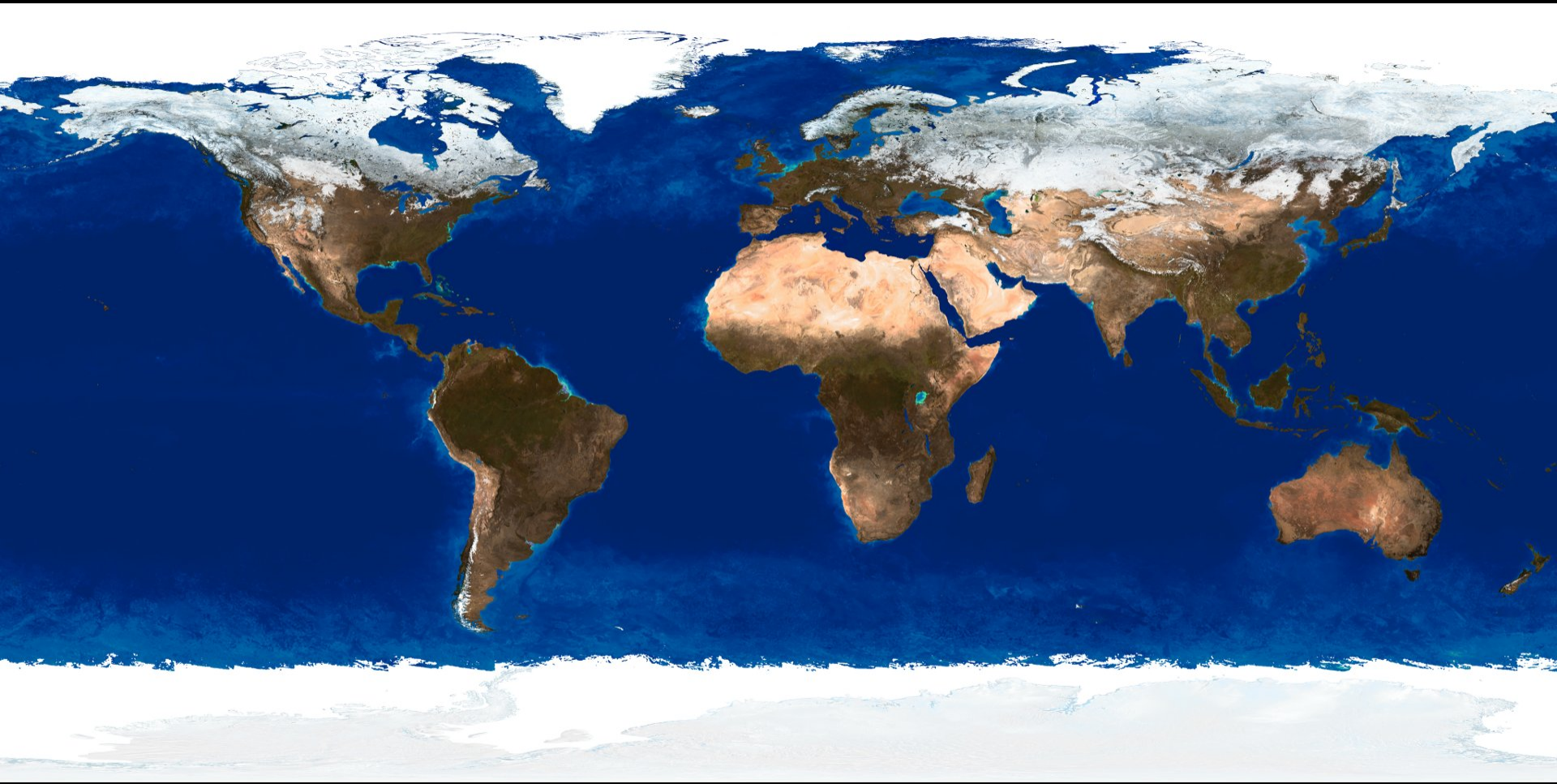
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- Translate Y 0
- Translate Z 0
- Rotate X **101.145**
- Rotate Y 0
- Rotate Z **23.808**
- Scale X 1
- Scale Y 1
- Scale Z 1
- Visibility on











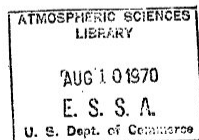
QC
879.5
.C38
1970
ESSA 3,
5,7
pt.2

Key To Meteorological Records
Documentation No. 5.320

U.S. DEPARTMENT OF COMMERCE
Environmental Science Services Administration
Environmental Data Service

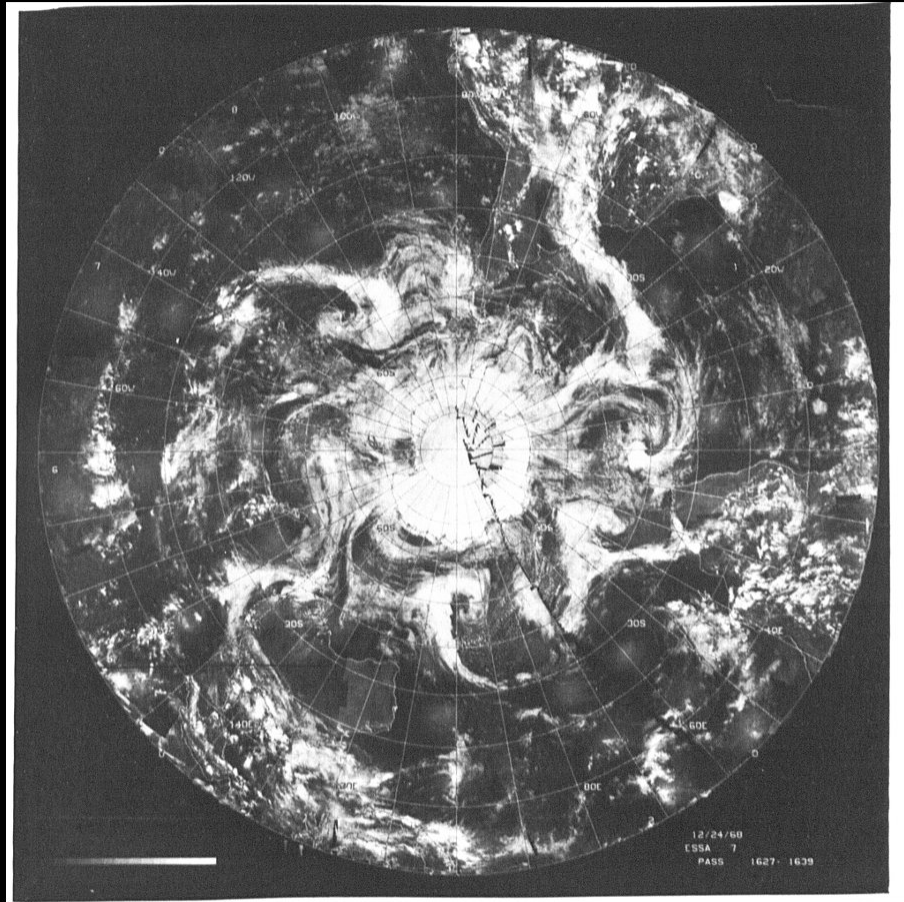
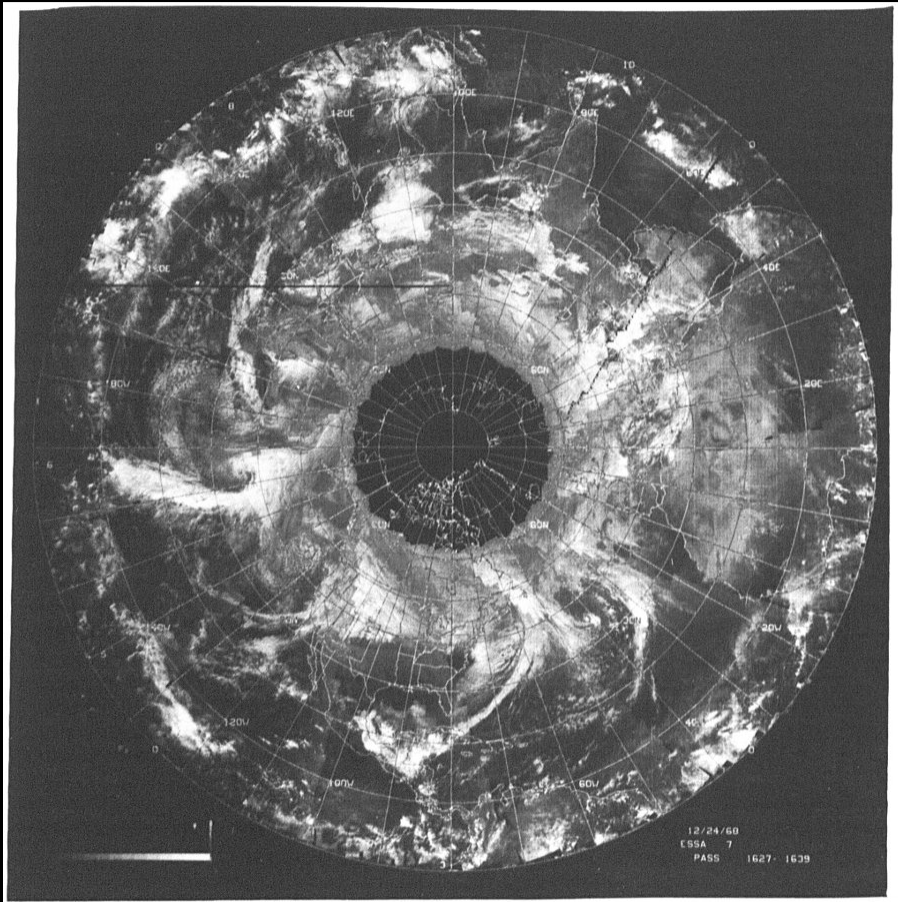
Catalog of
Meteorological Satellite Data-
ESSA 7 Television
Cloud Photography

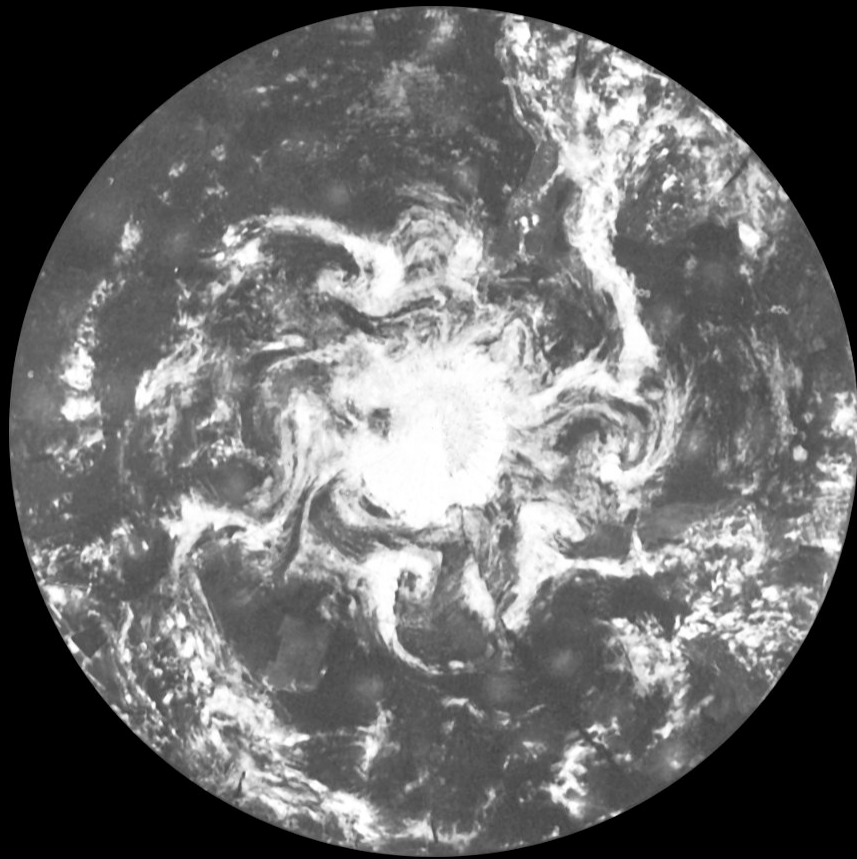
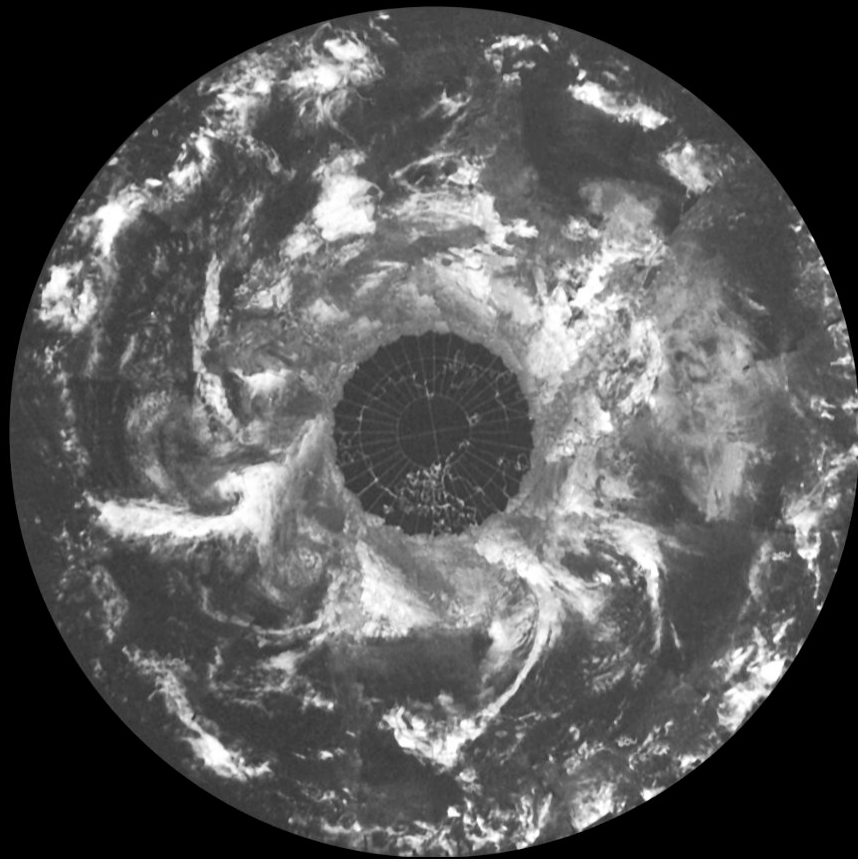
October 1-December 31, 1968

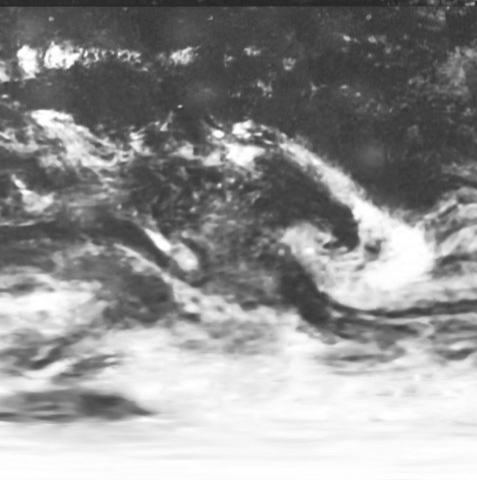
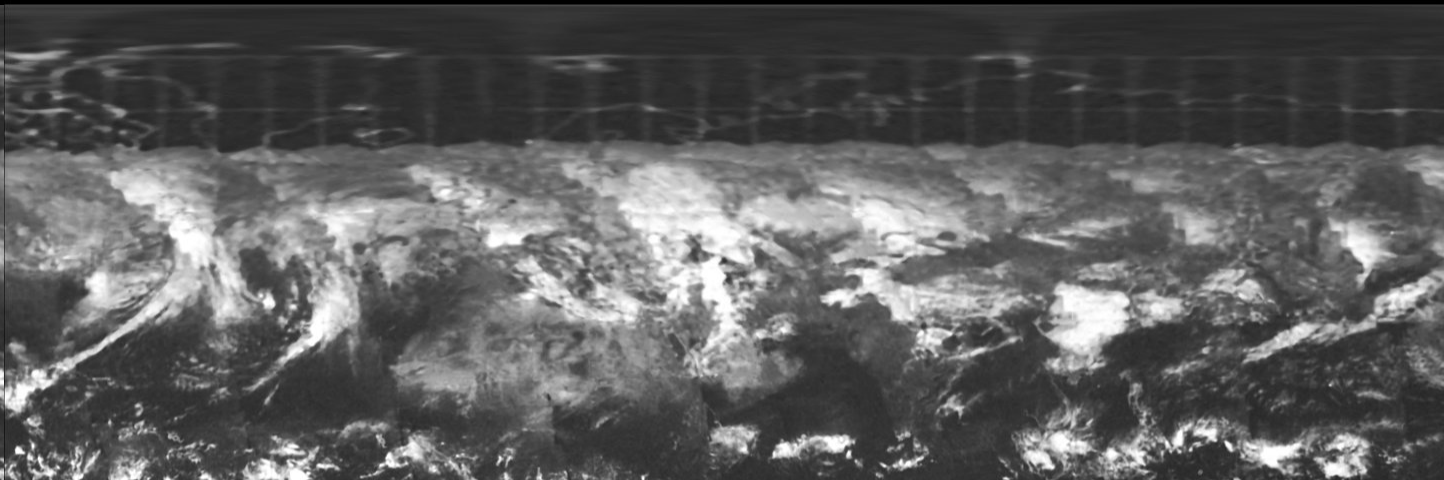
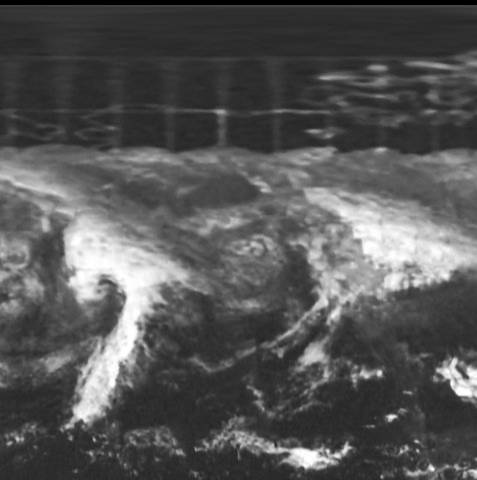


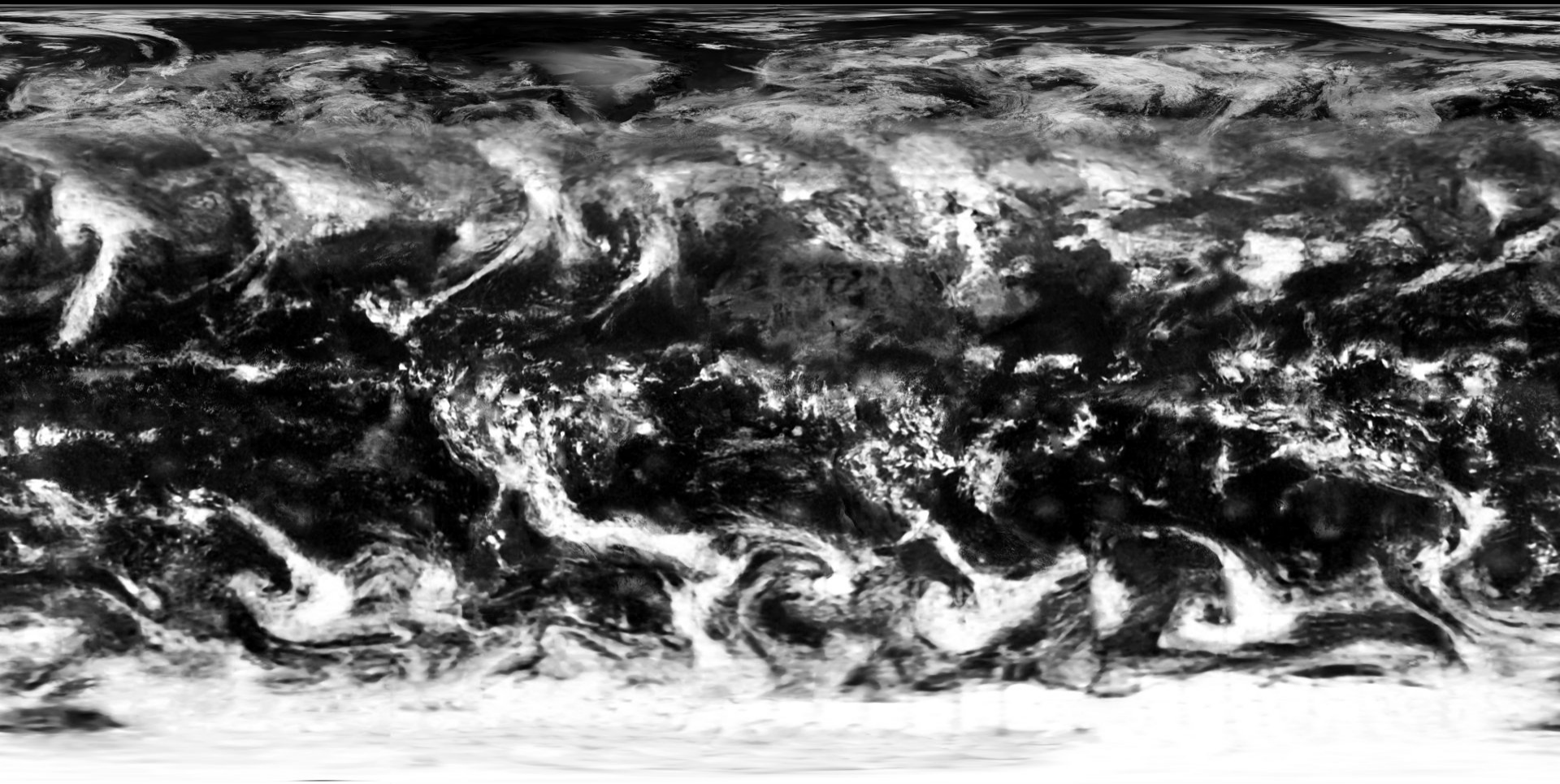
SILVER SPRING, MD.
1970

153 326







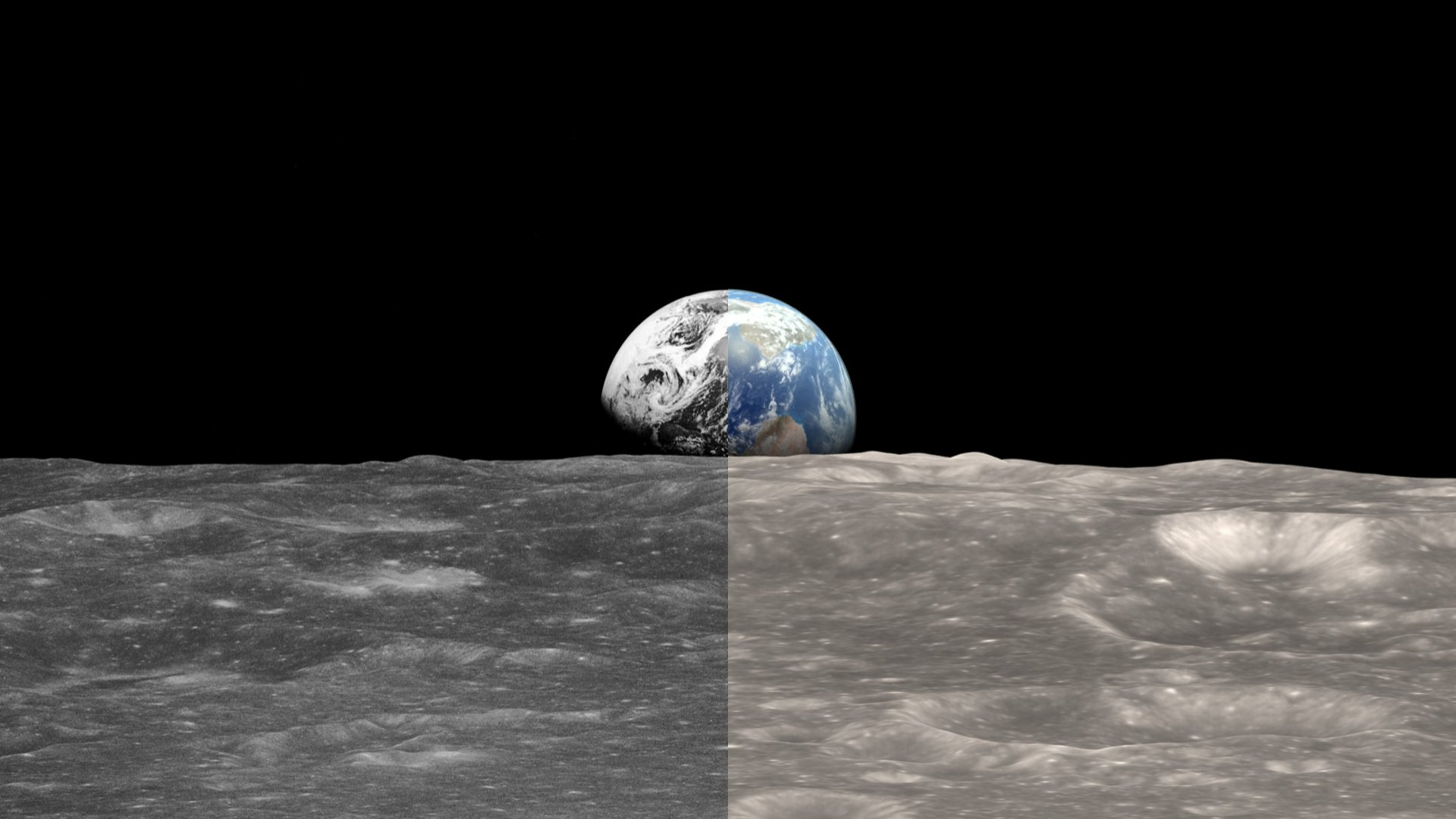


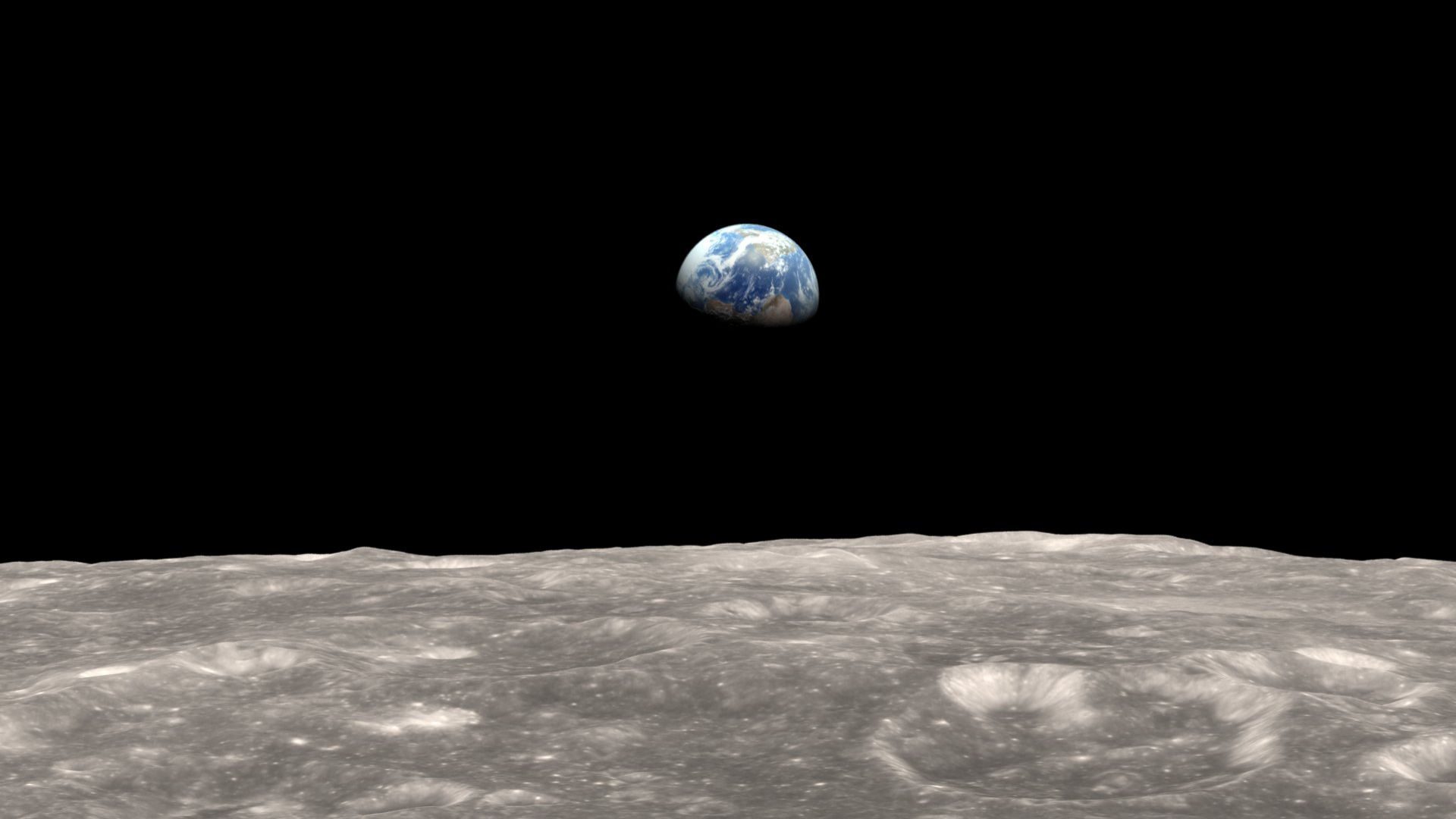


Photograph



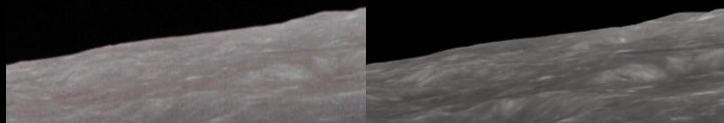
Visualization



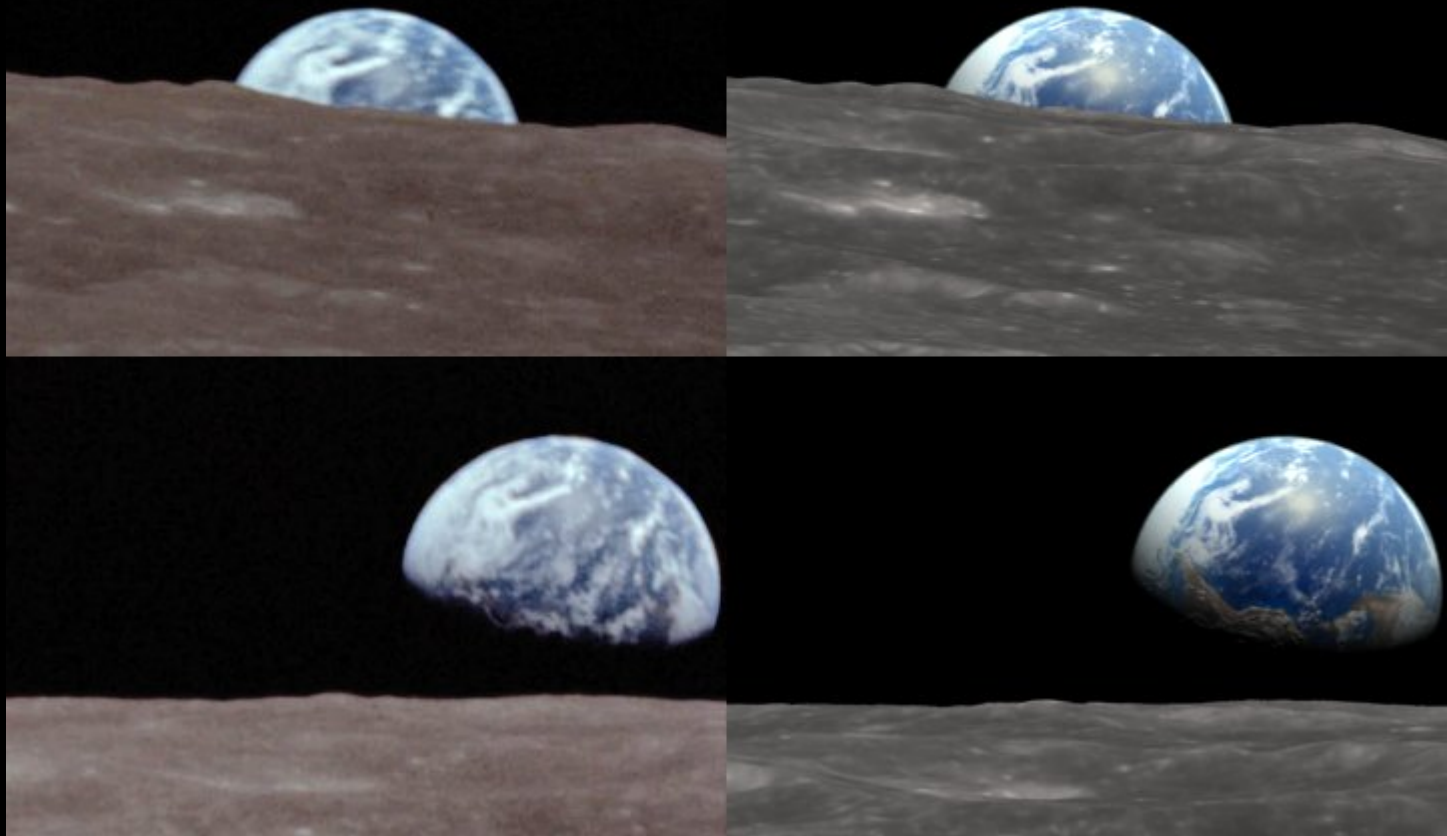




Orbit 5



Orbit 7



Orbit 4



16:38:42 UT



16:39:40 UT

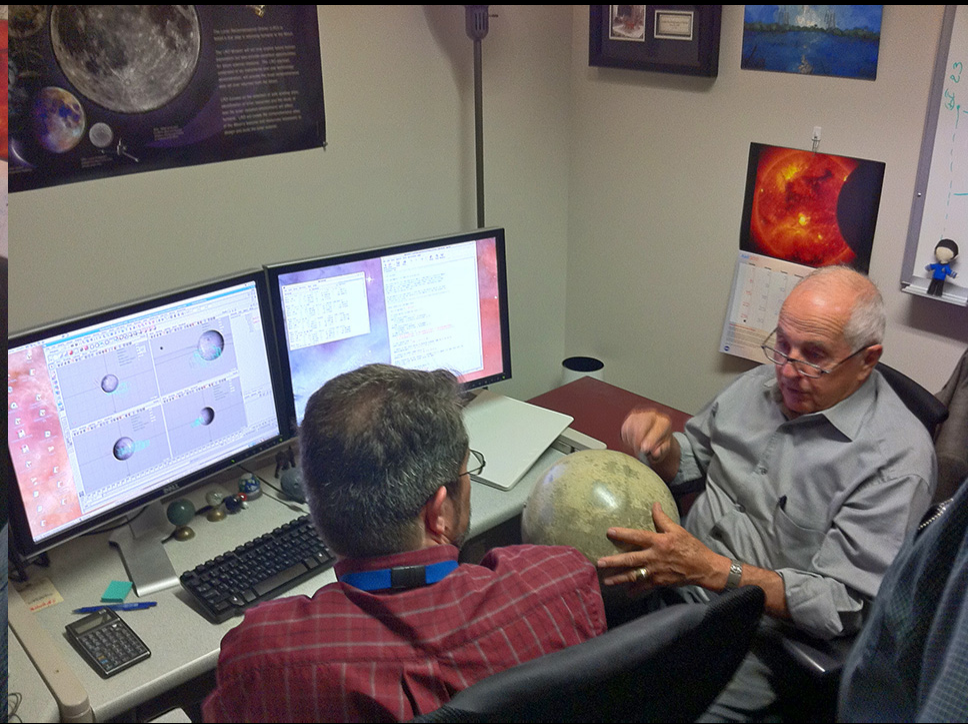
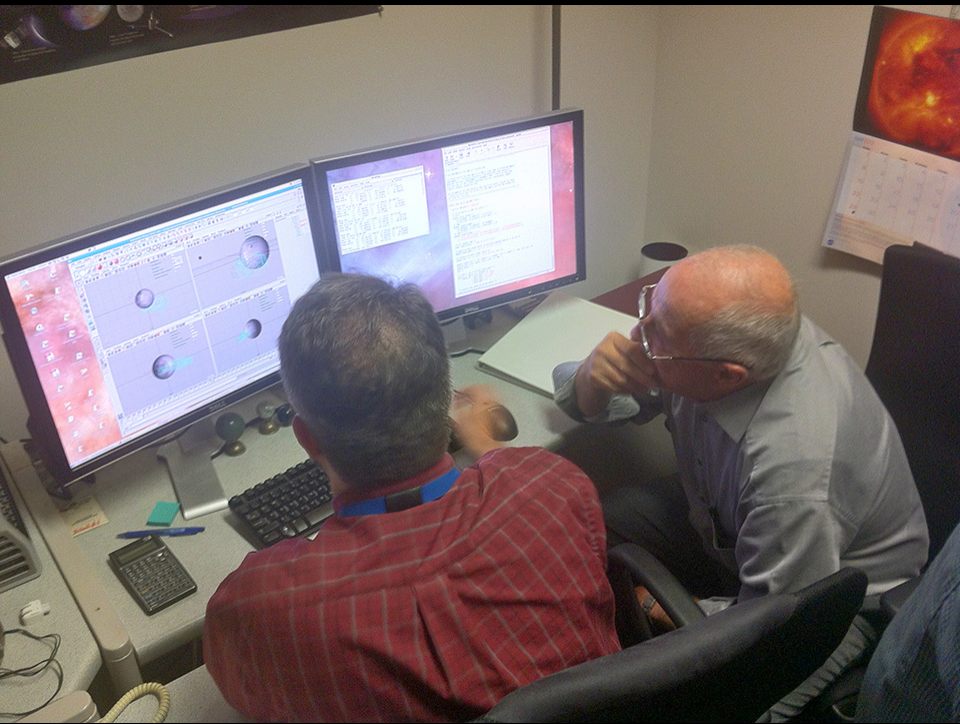


16:40:04 UT



Bill Anders:

- No timers on the cameras
- No telemetry from the far side of the Moon
- No audible shutter clicks



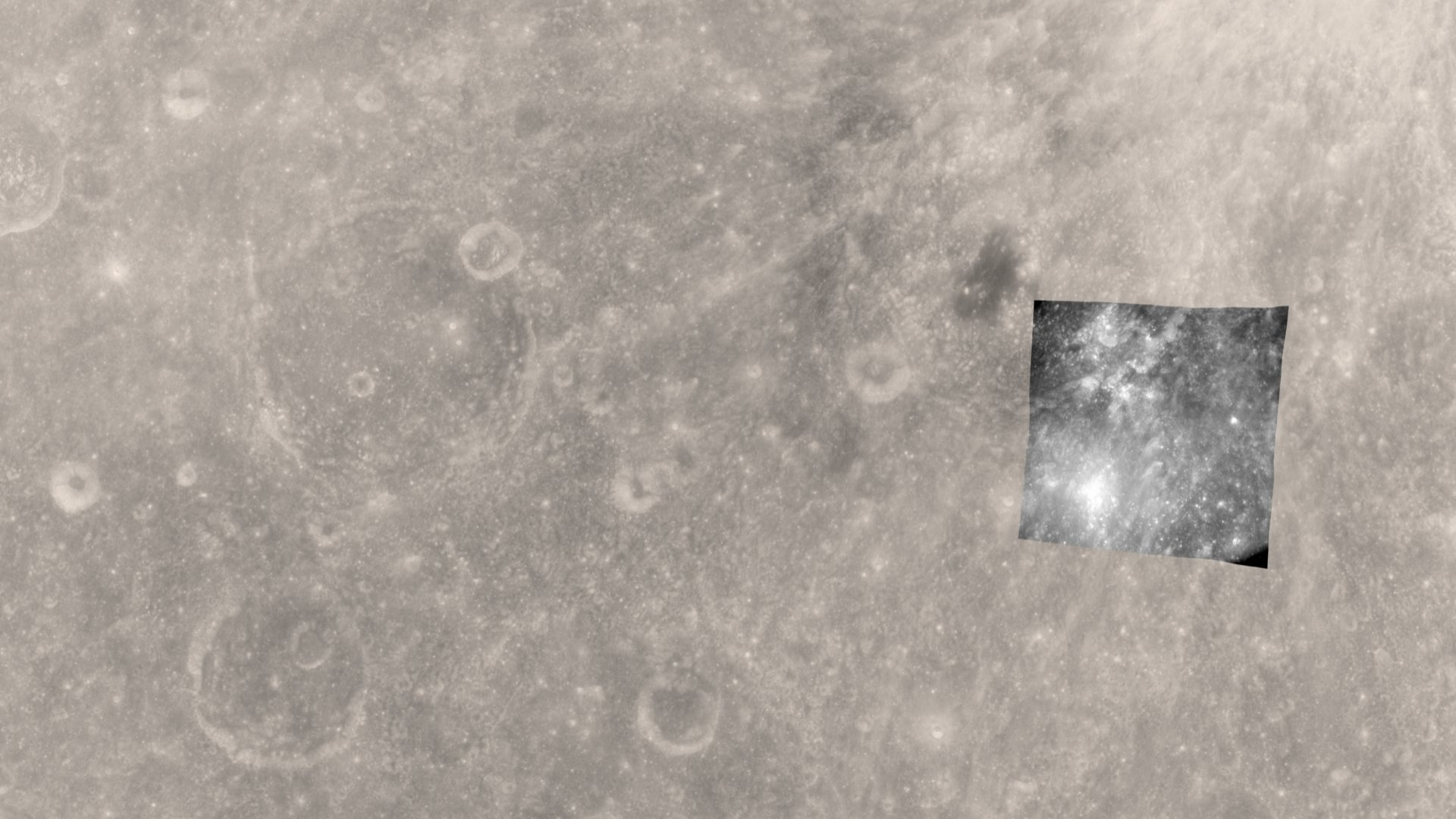


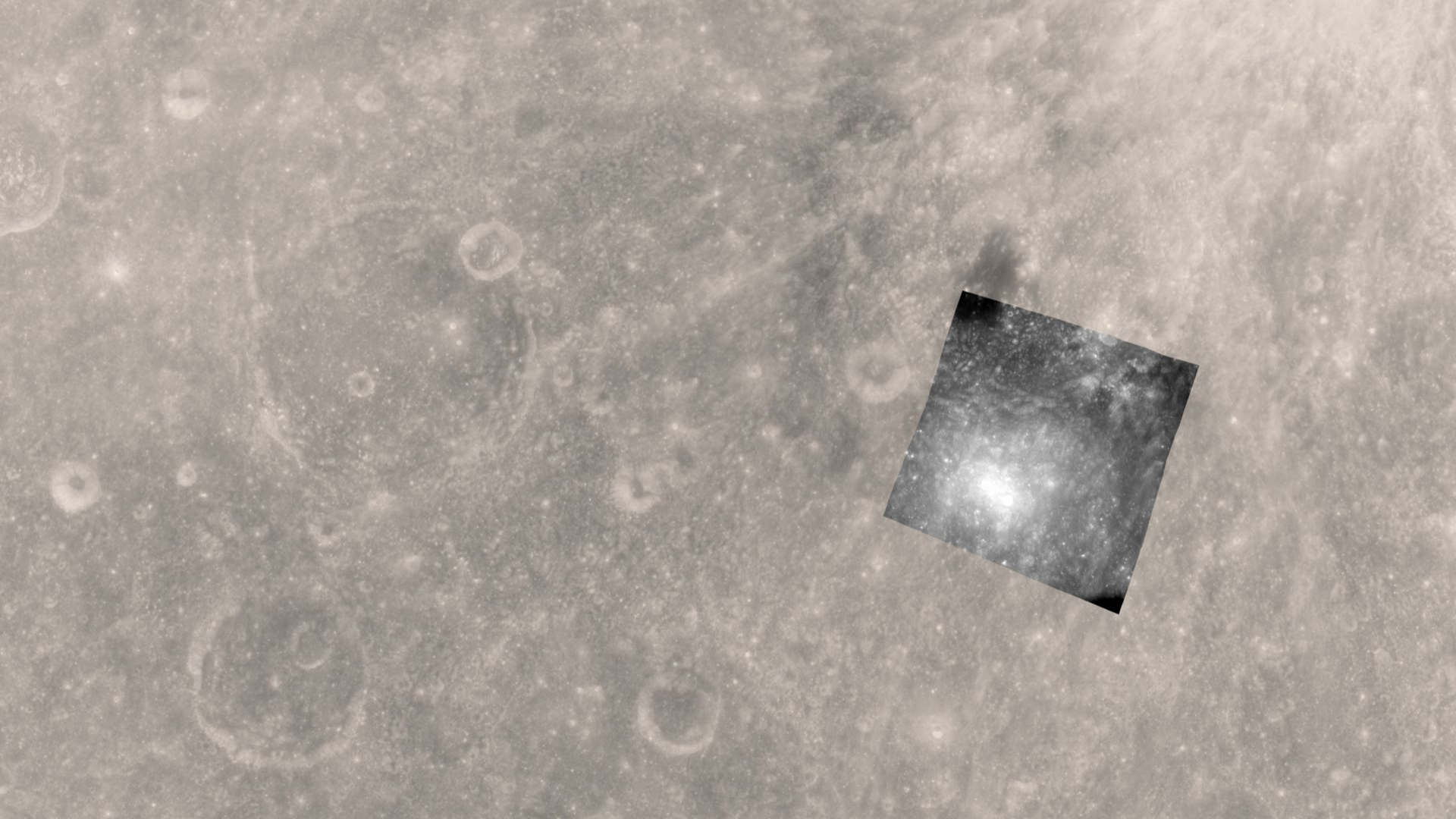
Andy Chaikin:

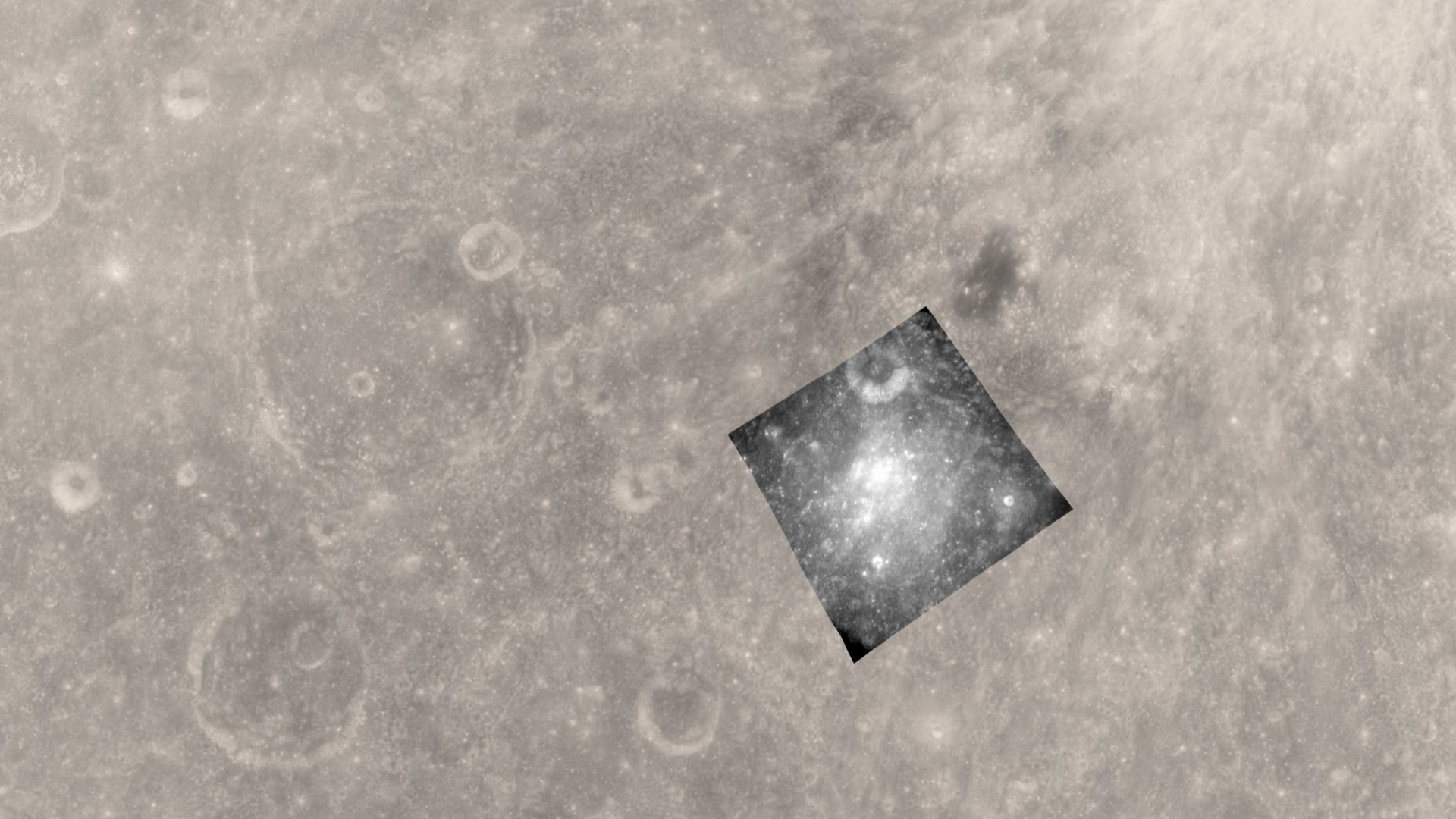
- Who took the pictures?

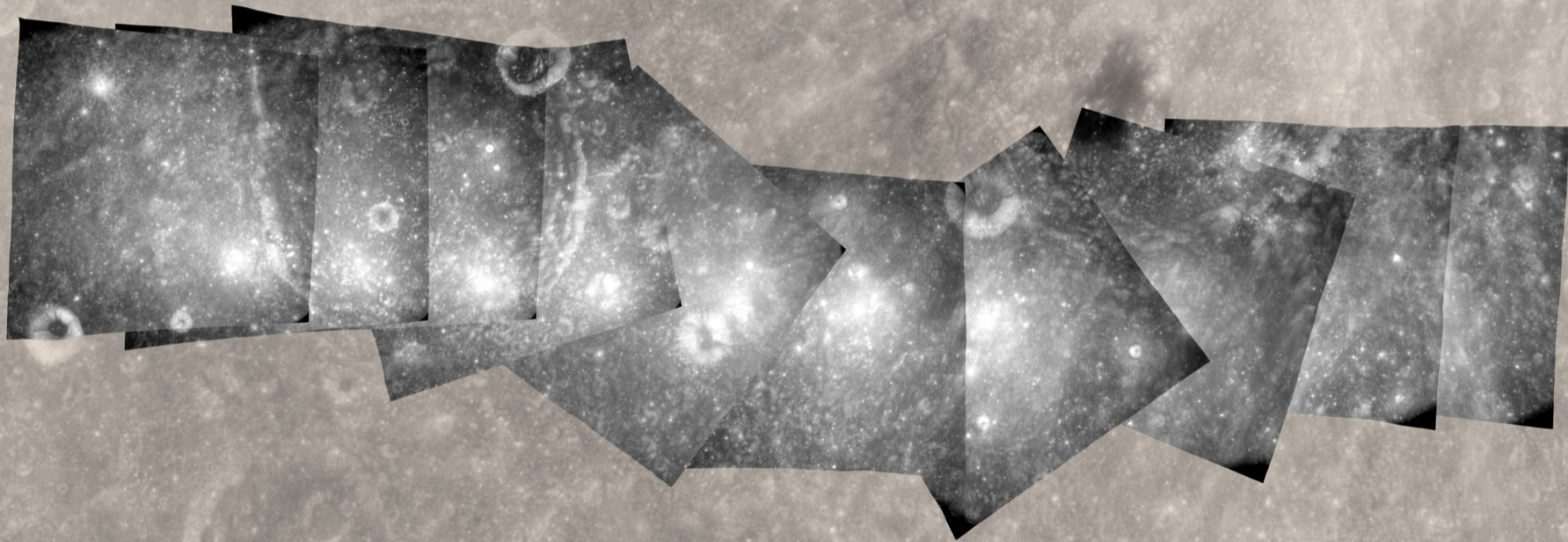


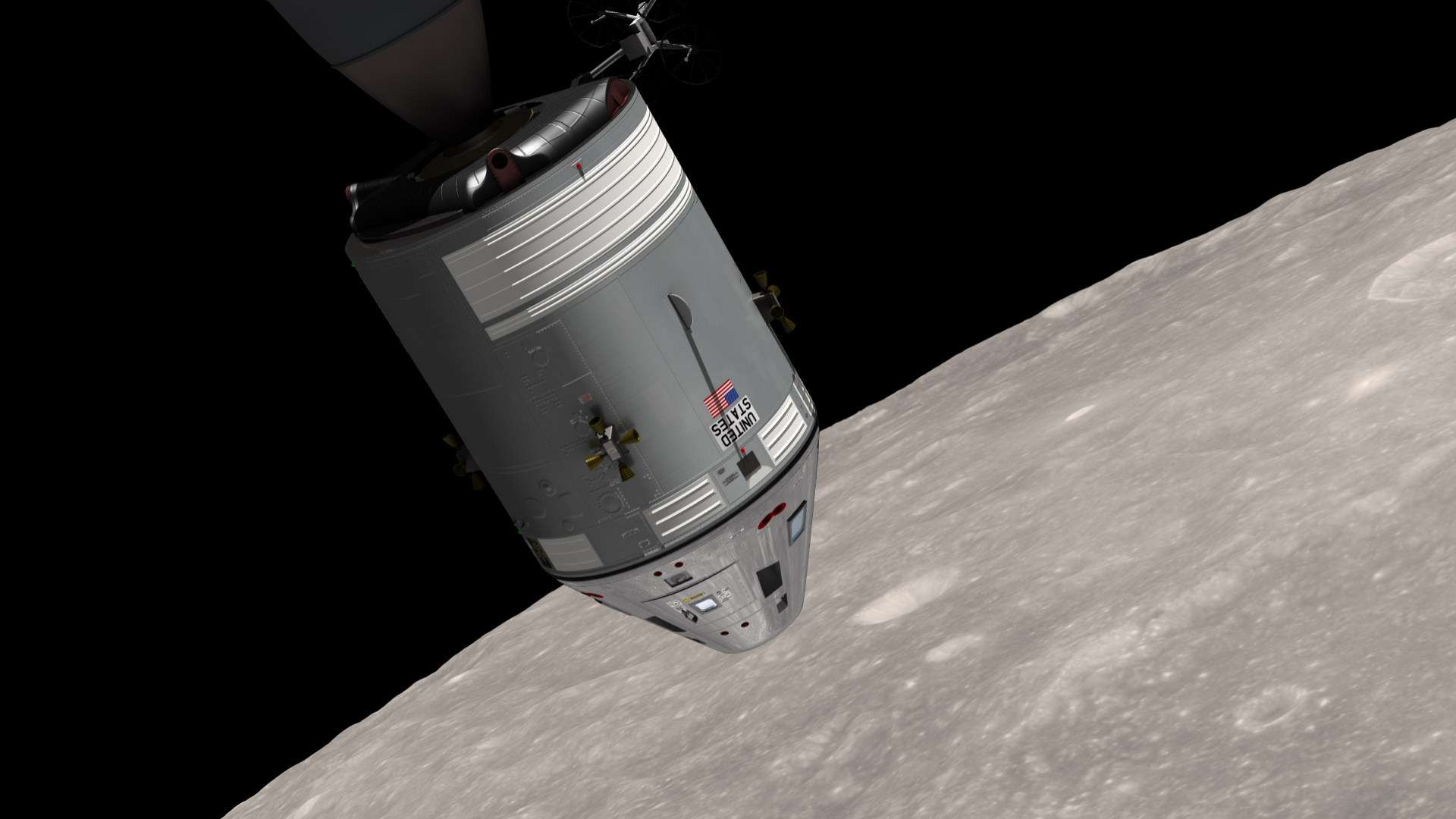


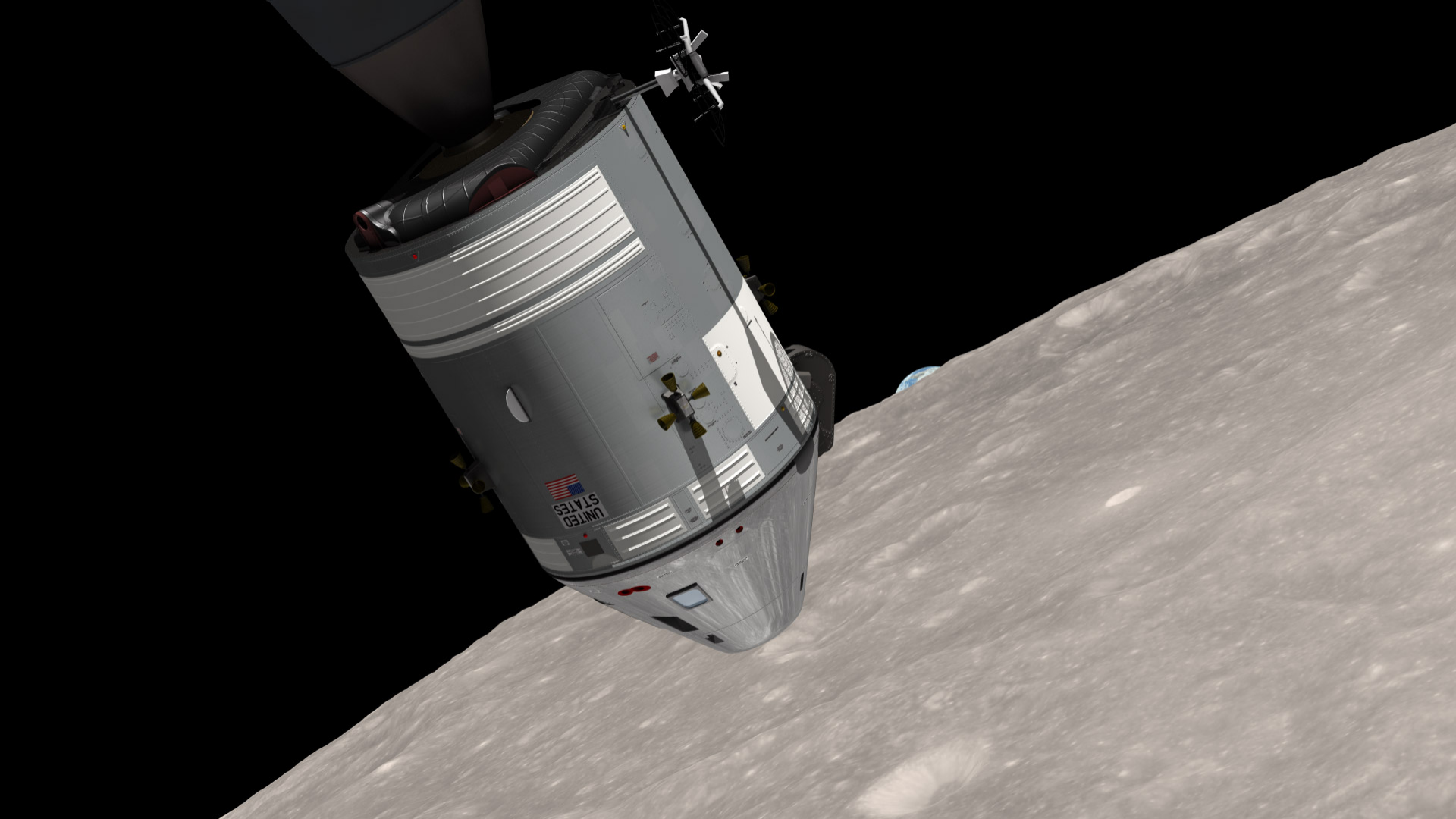


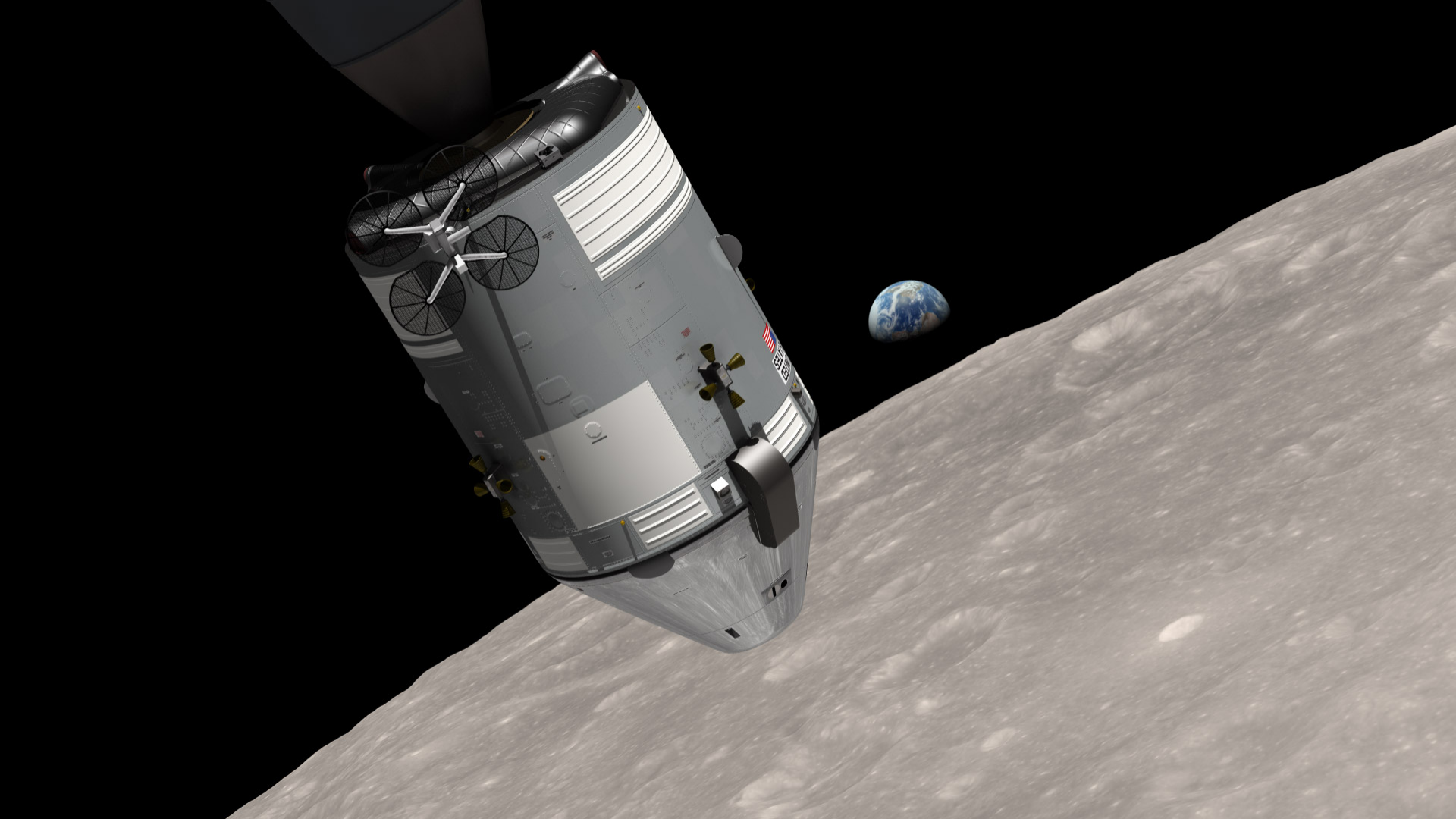


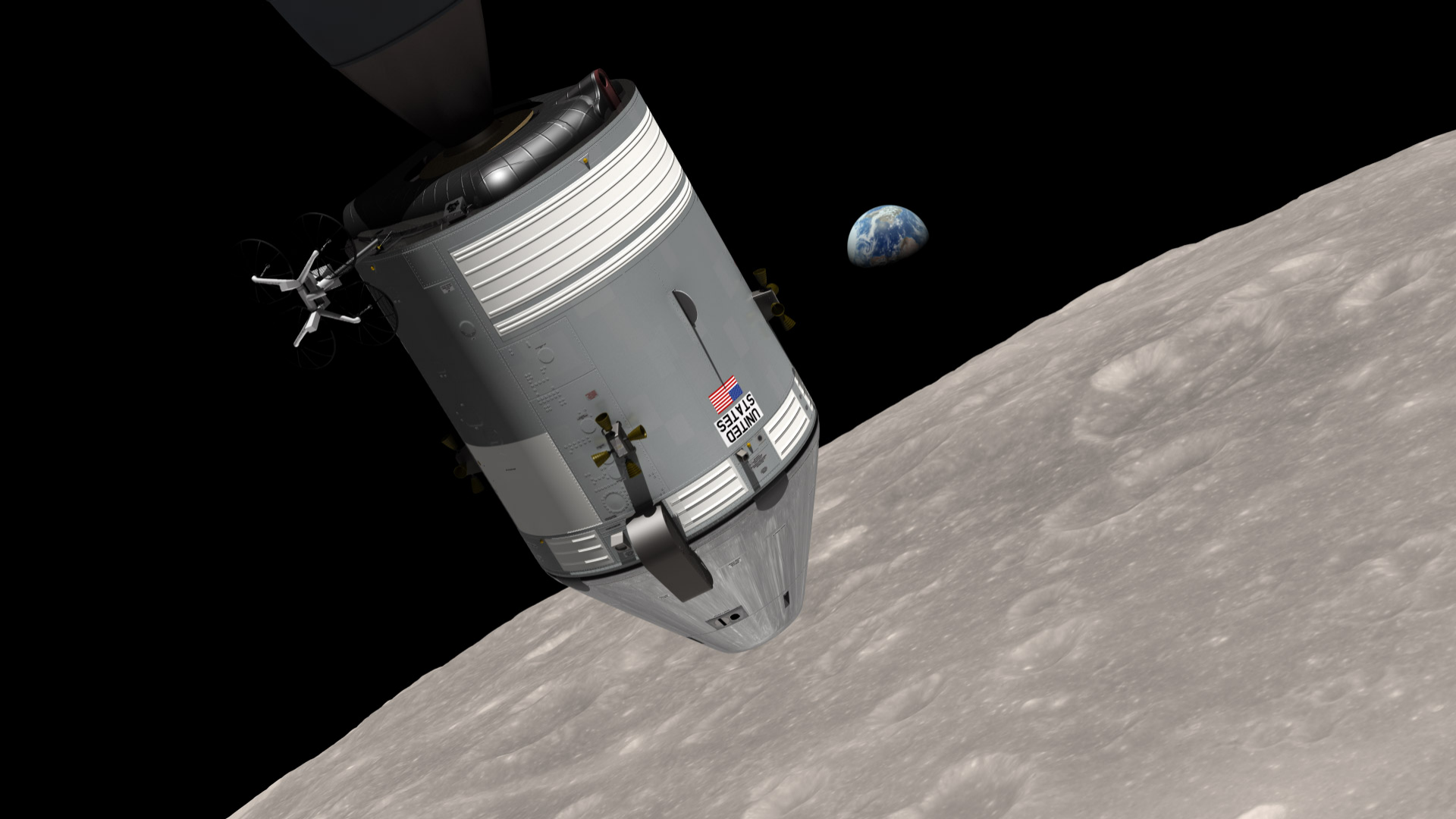


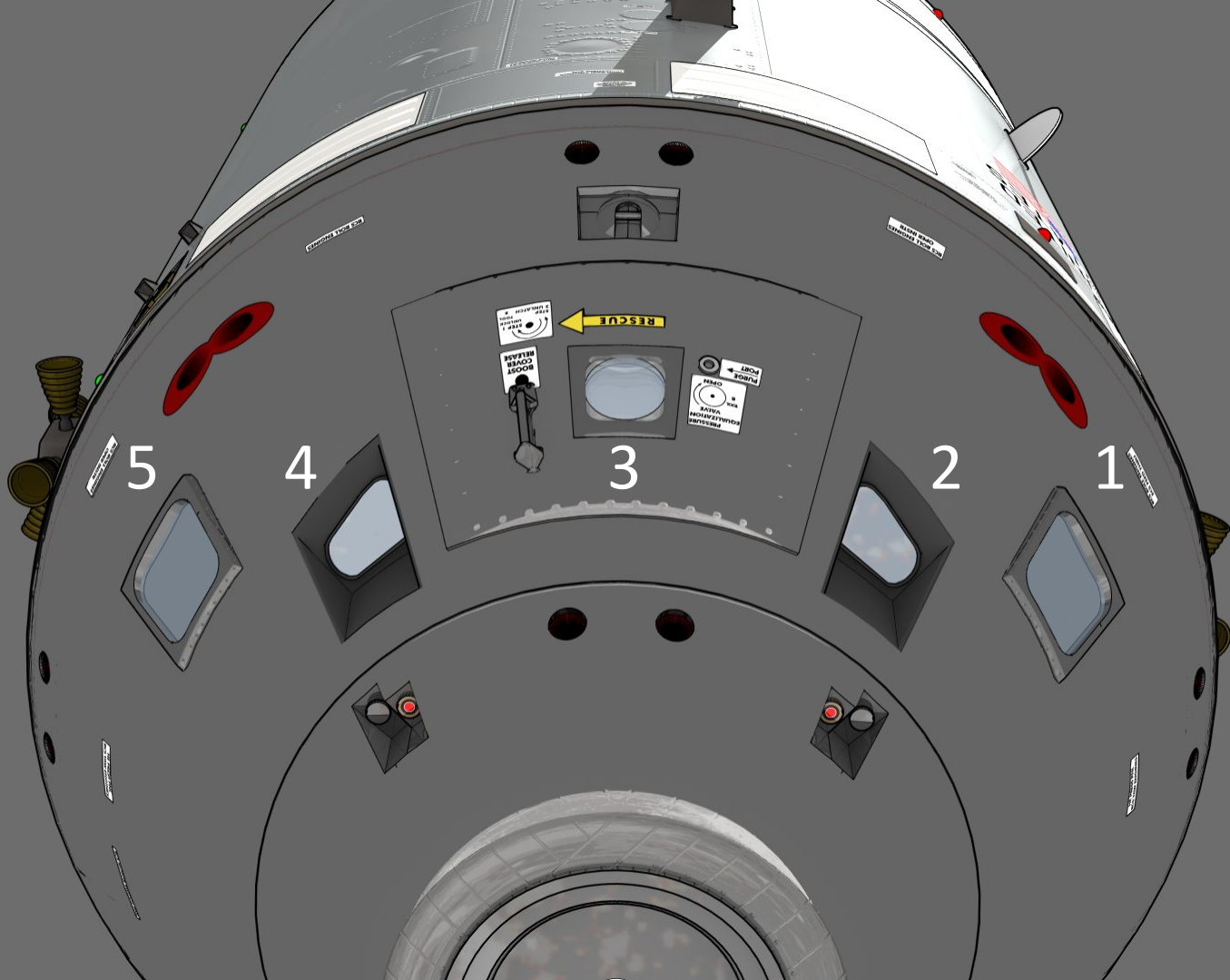












Orbit 4



16:38:42 UT
Window 5
Bill Anders



16:39:40 UT
Window 4
Bill Anders



16:40:04 UT
Window 4
Bill Anders

Scientific Visualization Studio

- svs.gsfc.nasa.gov

Lunar Reconnaissance Orbiter

- www.nasa.gov/lro

Apollo Flight Journal

- history.nasa.gov/afj