



# International Observe the Moon Night

October 4, 2017



**Brooks Mitchell**, Education Coordinator for SSI/NCIL



**Brian Day**, Lead for Lunar and Planetary Mapping and Modeling at NASA's Solar System Exploration Research Virtual Institute



**Audio problems?** Click and highlight the button at the top of your screen. You can also click "Meeting" > "Audio Setup Wizard". You will not need microphone capabilities.







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# **Professional Development Resources**

# Upcoming Webinars Hands-on Fun with STAR Net

- November 8<sup>th</sup> at 1:00 pm MT
- Register Here

# Social Media Tips from NASA

- November 15<sup>th</sup> at 1:00 pm MT
- Registration Opening Soon!

# **Programming Opportunities for 2018**

- December 13<sup>th</sup> at 1:00 pm MT
- Registration Opening Soon!

### **Archived Webinars**

Busy? See what you missed!

Upcoming Conferences

MPLA, CALCON, MPMA, YALSA

ASTC, and more!

# New Engineering Content on Clearinghouse

Span-tastic Bridges
More Coming Soon!



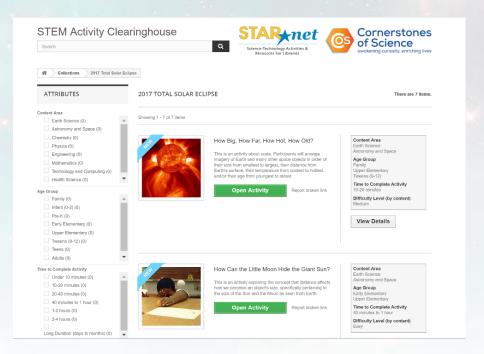






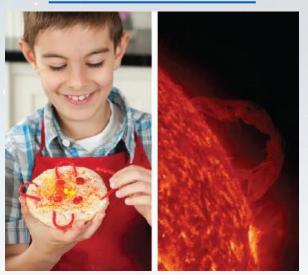






For example:

**DIY Sun Cookies** 



Like an activity and think other library staff should know how great it is? Didn't like an activity or have modifications to make it better? **Make sure to leave a review!** 









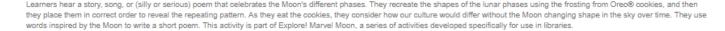




# Hands-on Activity: Loony Lunar Phases



#### MORE INFO







### **Books About the Moon**

# Songs and Poems About the Moon

#### **Faces of the Moon**

Bob Crelin, Charlesbridge, 2009, ISBN 9781570917851

The Best Book of the Moon

Ian Graham, Kingfisher, 2005, ISBN 0753459027

**How the Moon Regained Her Shape** 

Janet Heller, Sylvan Dell, 2007, ISBN 1934359025

Dot to Dot in the Sky: Stories of the Moon

Joan Marie Galat, Whitecap Books, 2004, ISBN

1552856100

The Moon

David Jefferis, Crabtree Publishing Company, 2008, ISBN 0778737314

**SkyTellers: "Moon Phases"** 

The Moon: Earth's Companion in Space

Michael D. Cole, 2001, Enslow Publishers, ISBN:

0766015106

The Earth and the Moon

Linda Elkins-Tanton, Chelsea House, 2006, ISBN 0816051941

"Moon-catchin' Net," Shel Silverstein
"Half Moonshine," Judith Viorst
"New Moon," D.H. Lawrence
"You know that Portrait in the
Moon," Emily Dickinson
"The Moon And The Yew Tree," Sylvia
Plath

"The Harvest Moon," *Ted Hughes* 

"Under the Harvest Moon," *Carl Sandburg* 

"The Crescent Moon," Amy Lowell

"Moon River," "Moonriver" by Henri Mancini

"Moonlight Sonata," *Ludwig Von Beethoven* 













# Hands-on Activity: Loony Lunar Phases

### Supplies (for Each Child):

- •6 Oreo® cookies (round cream cheese sandwich crackers can also be used instead)
- Paper towels
- A plastic spoon and/or a plastic knife
- •Cookie Moon Phases
- •Optional:
  - Phrases for Phases
  - Moon in My Own Words poetry template
  - His/her <u>Marvel Moon comic</u> book and binder clip
  - •1 pencil or pen

#### Cookie Moon Phases

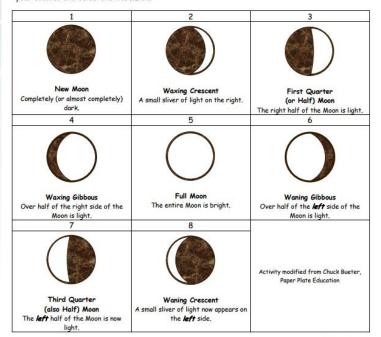
#### Materials

6 Oreo® cookies (round cream cheese sandwich crackers can also be used instead)
Paper towel

A plastic spoon and/or a plastic knife

#### Instructions

Carefully twist the Oreo® cookies open and scrape off the frosting to create each lunar phase. Place each cookie half in the correct order below to reveal the repeating pattern. Then, eat your cookies and celebrate the Moon!



Explore: Marvel Moon http://www.lpi.usra.edu/explore













# **Brian Day**

Lead for Lunar and Planetary Mapping and Modeling at NASA's Solar System Exploration Research Virtual Institute

- From 2007-2010 he served as the E/PO Lead for NASA's LCROSS lunar impactor mission, which discovered deposits of water ice at the Moon's South Pole
- Played key roles in various NASA Mars Analog Field Studies, providing technical support in the field for webcasts and robotic rover tests in extreme environments here on Earth
- In 2007, he flew on the Aurigid-MAC mission to record fragments of comet Kiess entering Earth's upper atmosphere.
- Bachelor's degree in Psychology from the University of California Los Angeles, a Bachelor's degree in Information Systems from the University of San Francisco, and a Master's degree in Astronomy from the University of Western Sydney.
- Day's hobbies include photography, wine, volcanoes (preferably erupting), and chasing total solar eclipses around the world







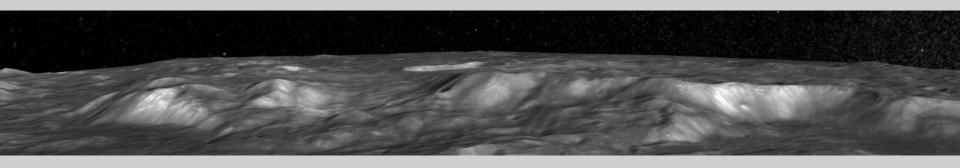


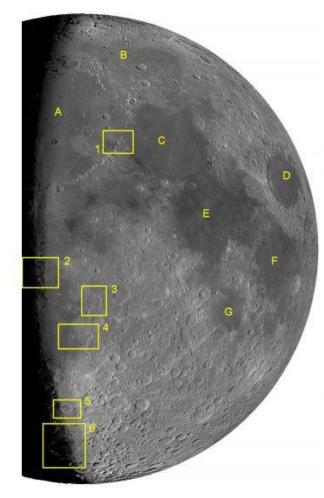




### **InOMN 2017 Highlighted Features for Observing**

Brian Day - NASA SSERVI - brian.h.day@nasa.gov







Moon Map: This map depicts the Moon as it will appear from the northern hemisphere at approximately 8:30 PM EDT and 5:30 PM PDT on International Observe the Moon Night, October 28, 2017. Many of the best views will occur along the terminator (the line between the day and night side of the Moon).

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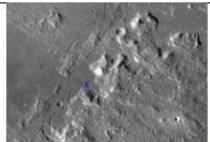
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- E. Mare Tranquillitatis
- F. Mare Fecunditatis
- Mare Nectaris

#### Selected Telescopic Objects

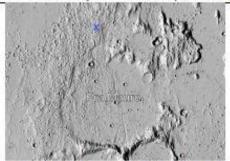
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- 2. Fra Mauro (Apollo 14)
- 5. Tycho Cater
- 3. Alphonsus Crater
- 6. Clavius Crater

#### InOMN 2017 - Selected Objects for Telescopic Viewing



 Apennine Mountains: Mountain range on the northeast rim of Mare Imbrium, 250 km long and reaching up to 2400 m high. Hadley Rille, an 80 km lava channel is near the Apollo 15 landing site (X).



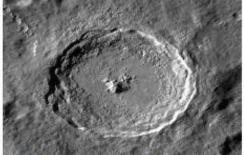
 Enjoy sunrise at the Apollo 14 landing site (blue X) north of the 95 km diameter crater Fra Mauro. (LOLA/Kaguya)



 Alphonsus: 110 km diameter crater. Rilles (fractures) with dark-haloed craters on its floor mark sites of volcanic eruptions.



 Straight Wall: The best example of a lunar fault, this linear feature, some 110 km long, marks where the lunar crust steps up by about 300 meters going west to east.



 Tycho Crater: Spectacular crater 85 km wide, 4.8 km deep, and with a 2.25 km-high central peak. Bright rays of ejected, pulverized rock radiate across much of the Moon's near side.



 Clavius: Watch sunrise advance across this 225 km diameter crater. The peaks of the western rim will catch the sunlight earlier than much of the floor.

Detailed images are LRO WAC mosaics (and an LRO LOLA/Kaguya TC blend). Find more high-resolution images of the Moon at Iroc.sese.asu.edu and moontrek.jpl.nasa.gov.















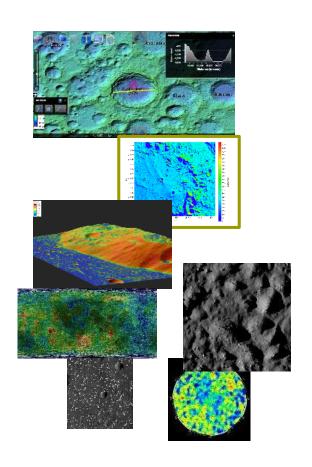






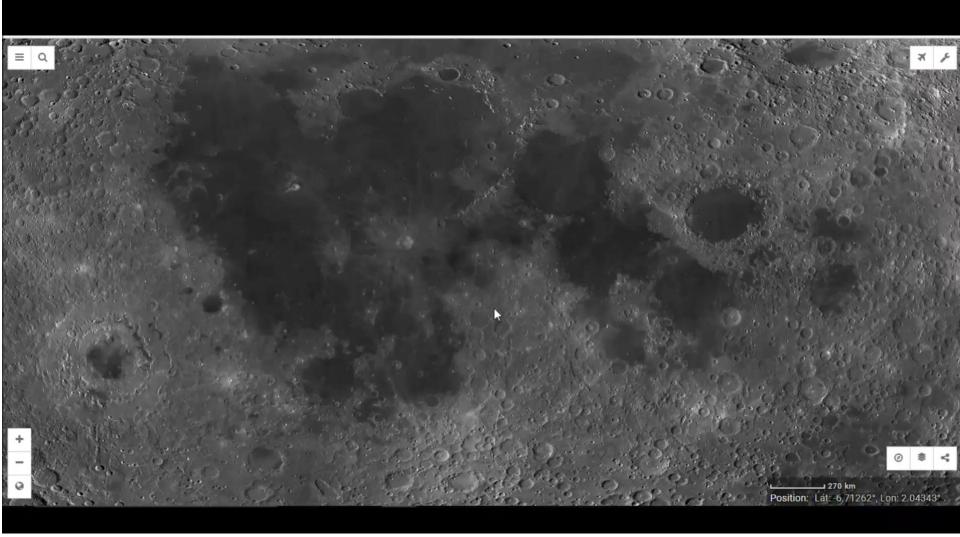
## Moon Trek

- Analysis tools
  - Lighting, Slope, Hazard, Profile, Sun angle
- Browse, search and download of data products
- Visualization (with overlays)
- Collaboration (bookmark)
- 3D print and terrain view
- Data
  - LRO, Apollo, LP, GRAIL, Clementine, Chandrayaan-1, Kaguya
  - Gravity models, Imagery, DEMs, Hazards, Resources
- Users
  - Missions, Lunar scientists, EPO





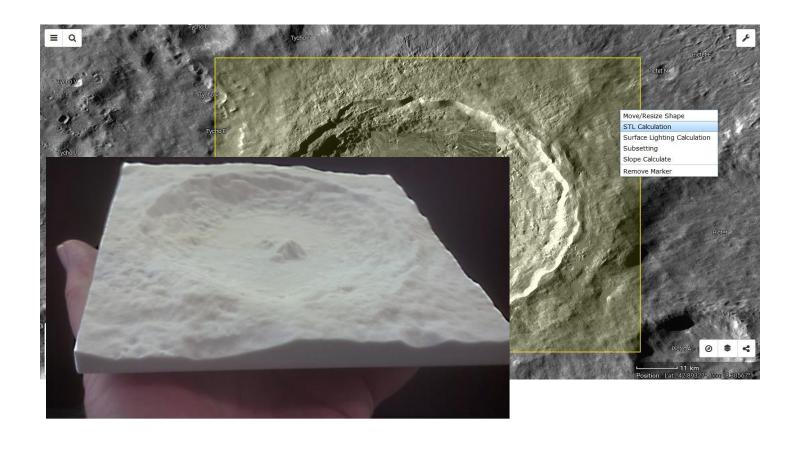






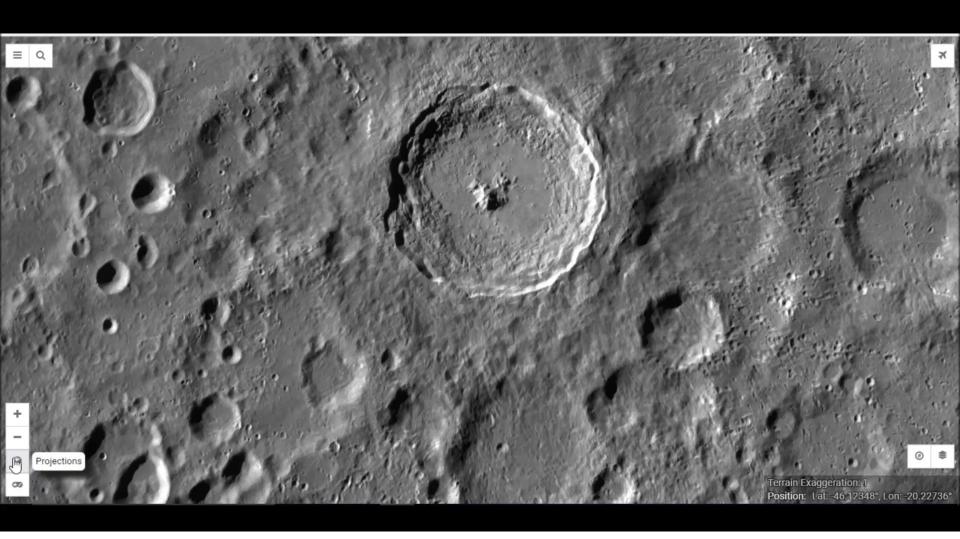
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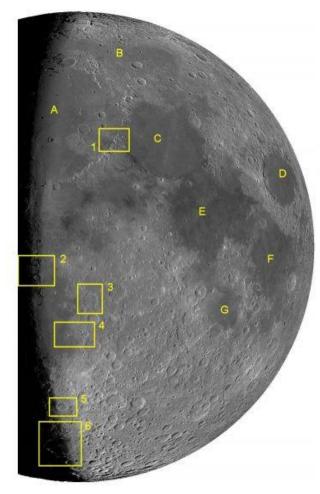














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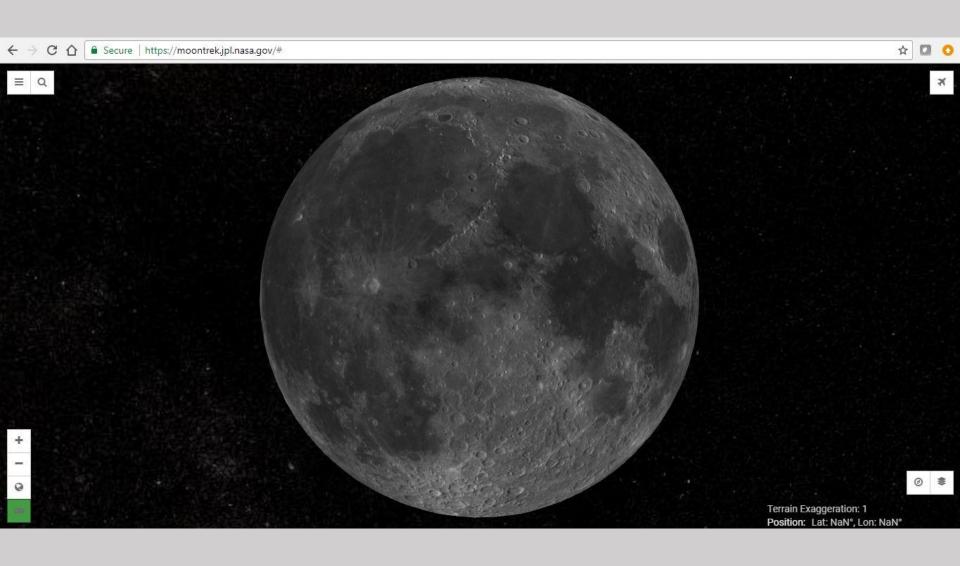
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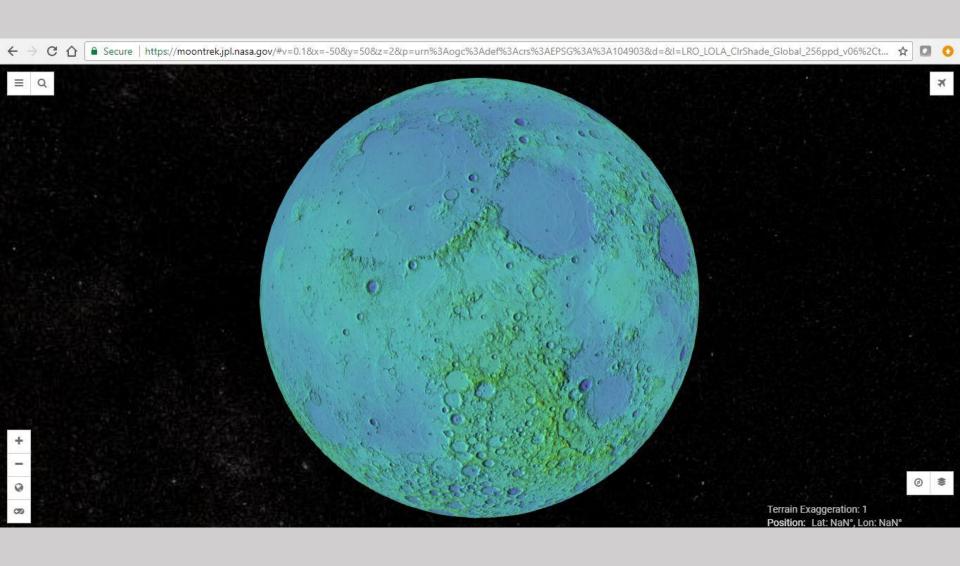
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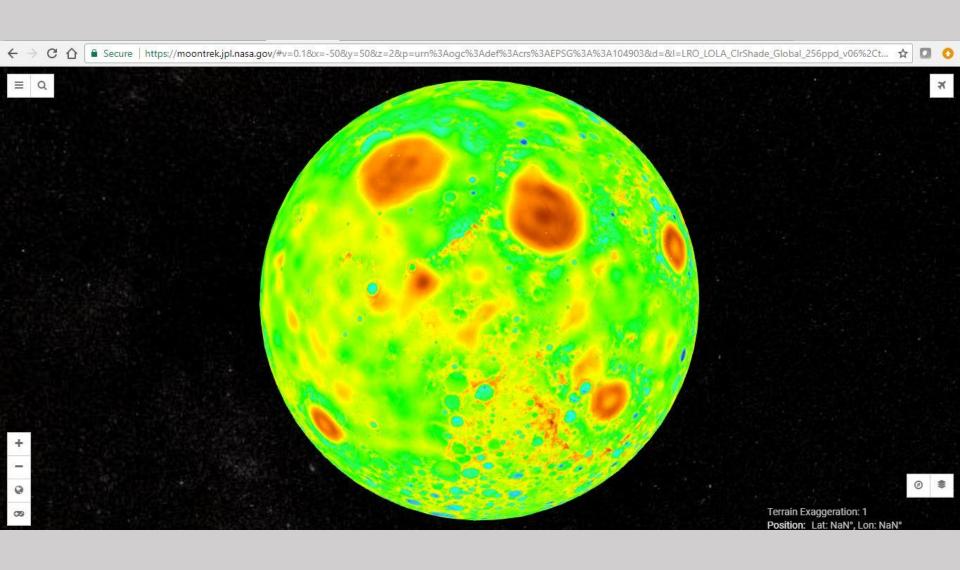
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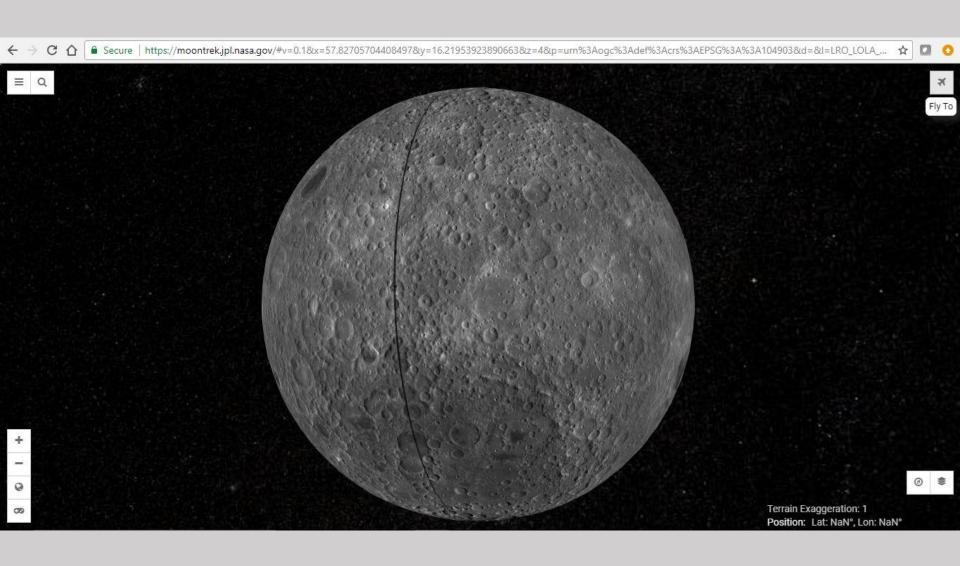
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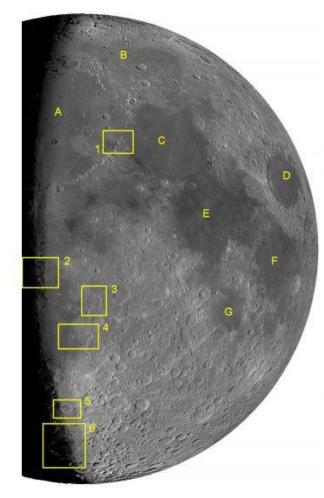
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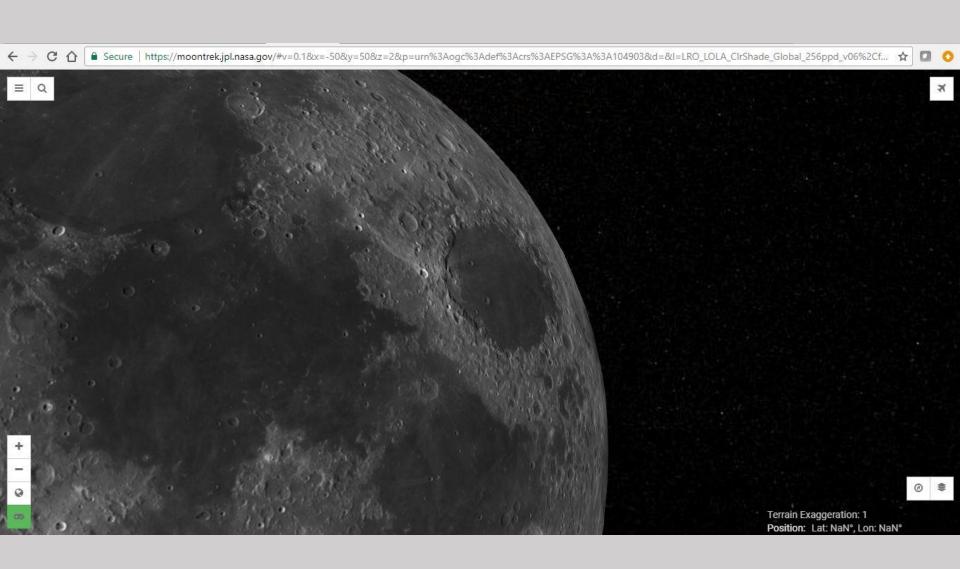
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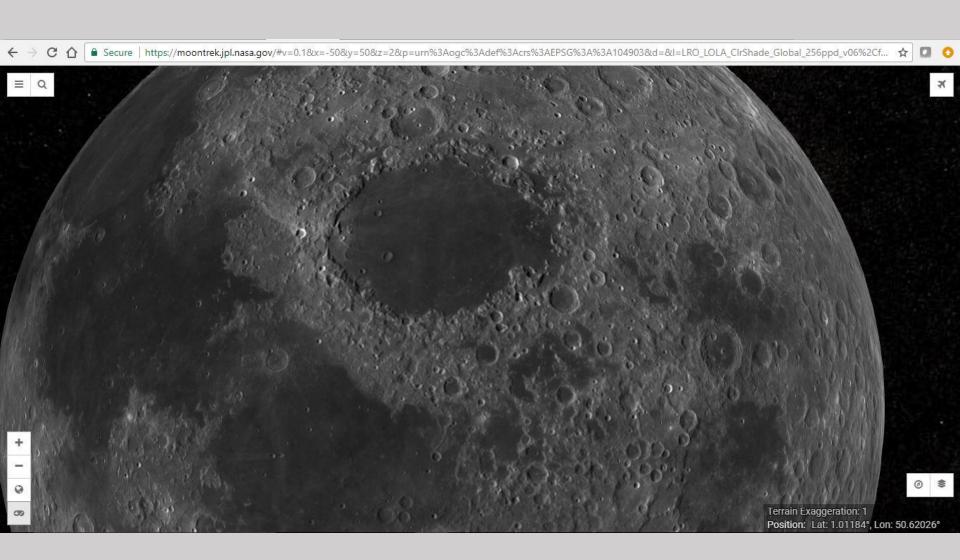
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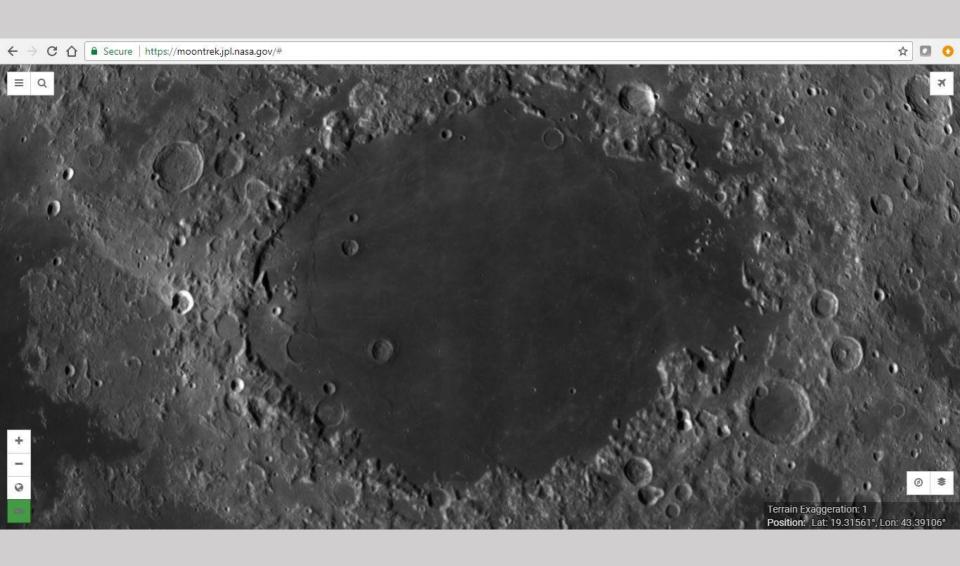
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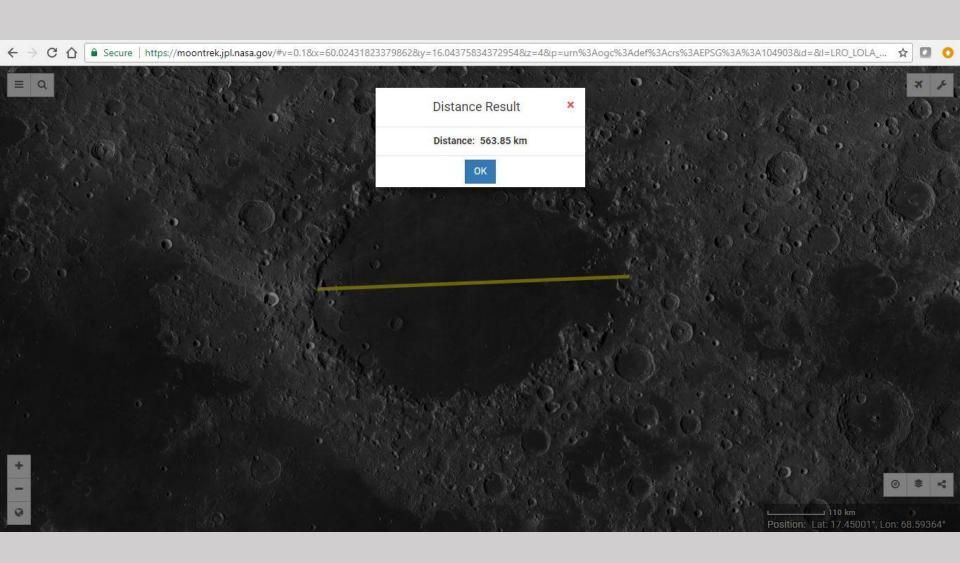
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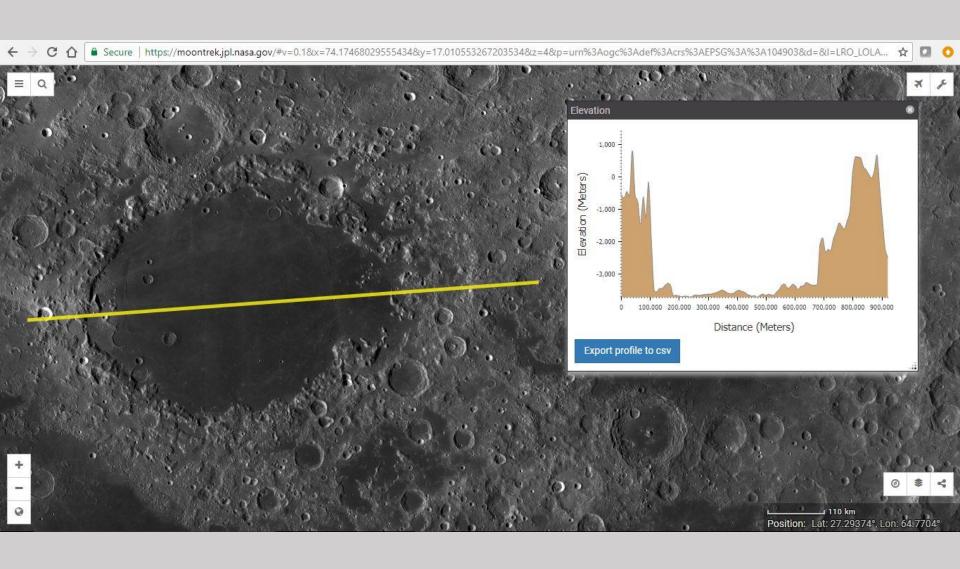
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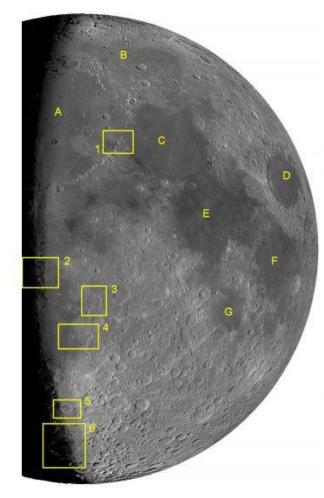














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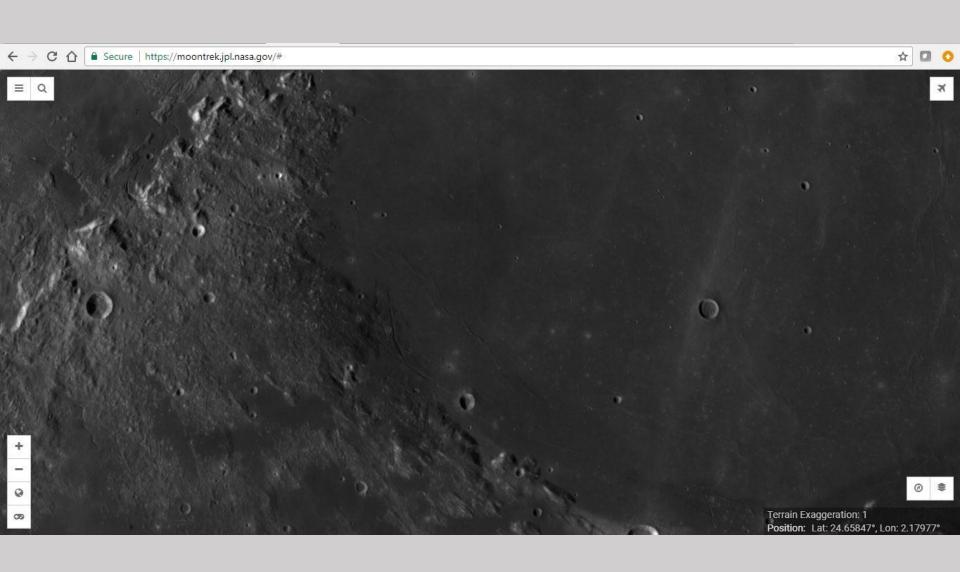
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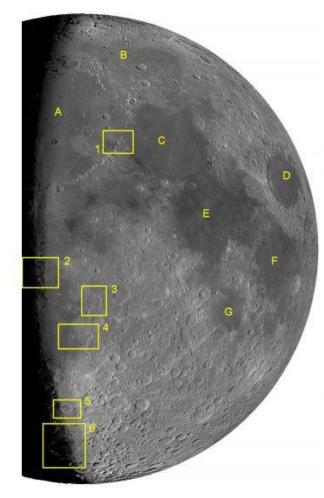
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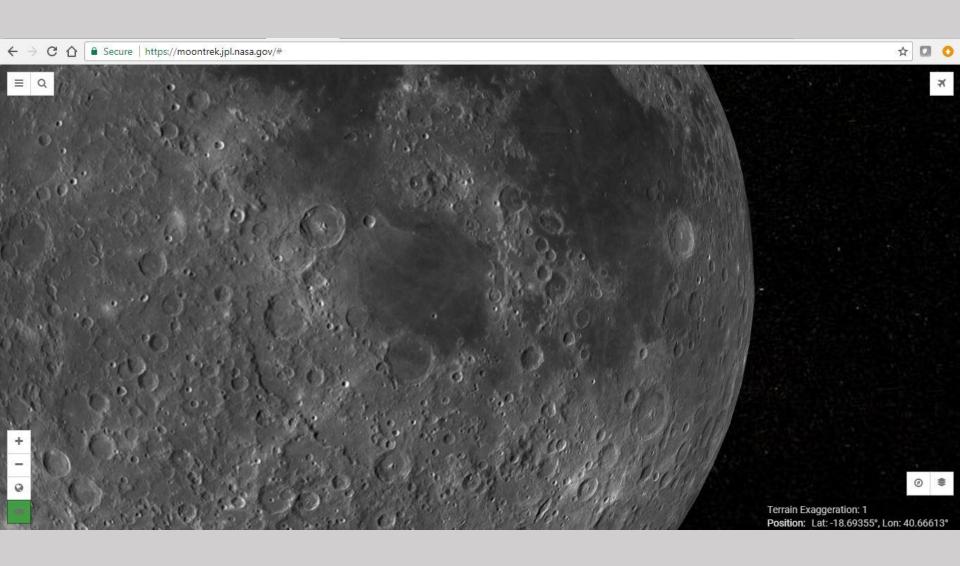
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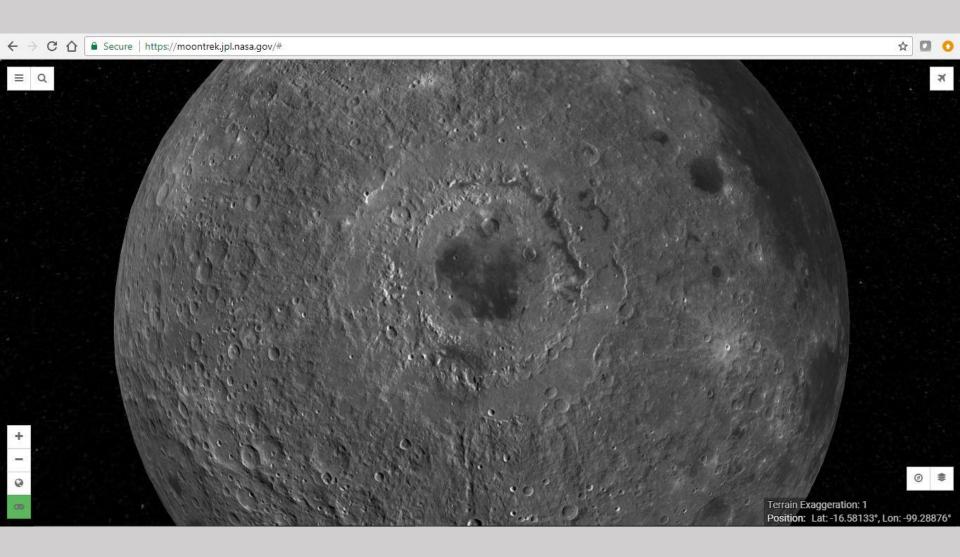
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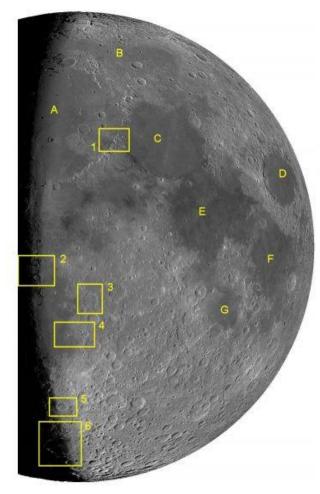
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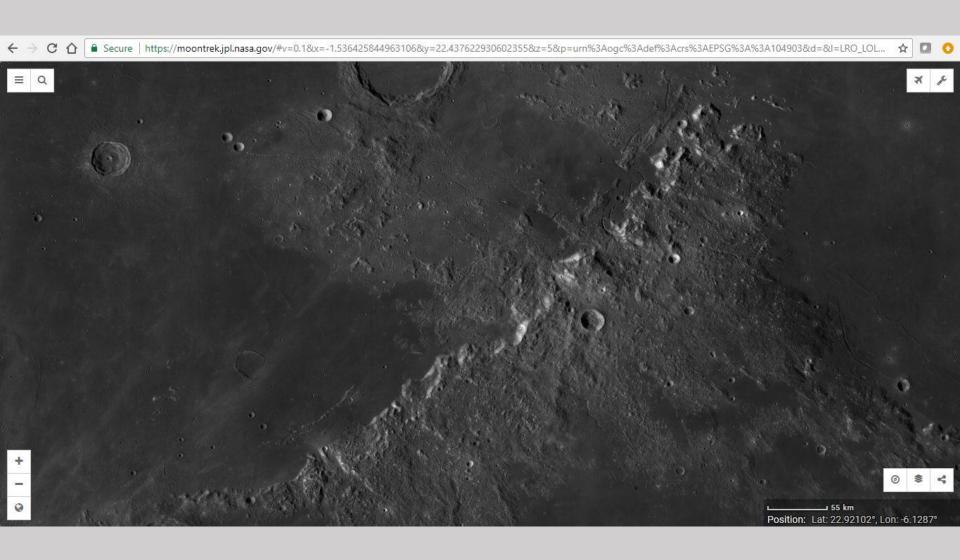
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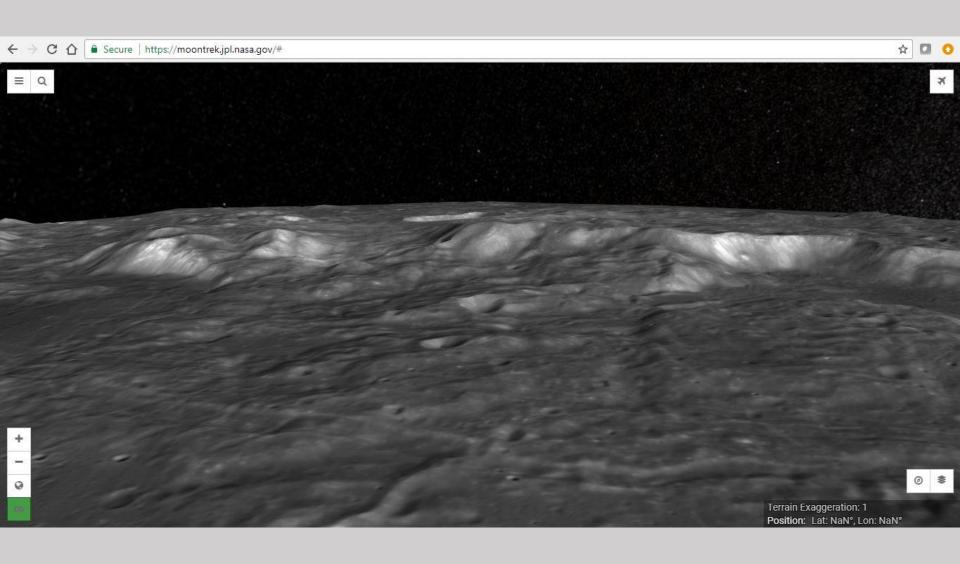
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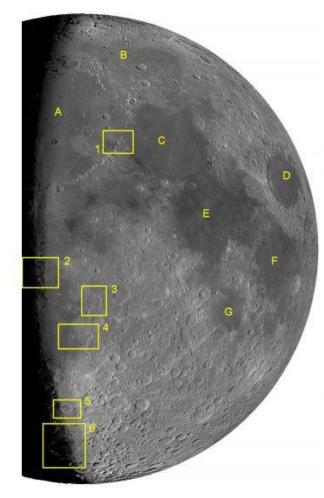
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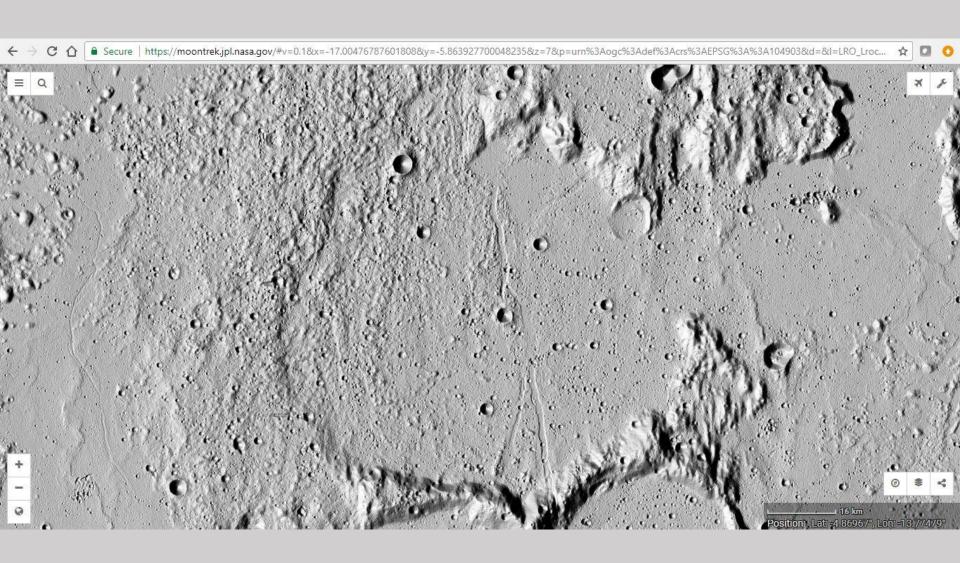
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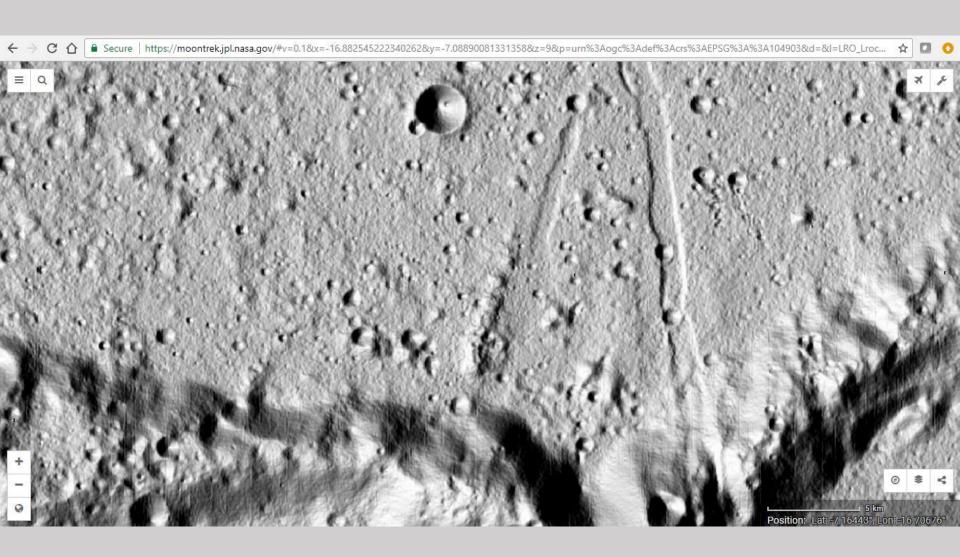
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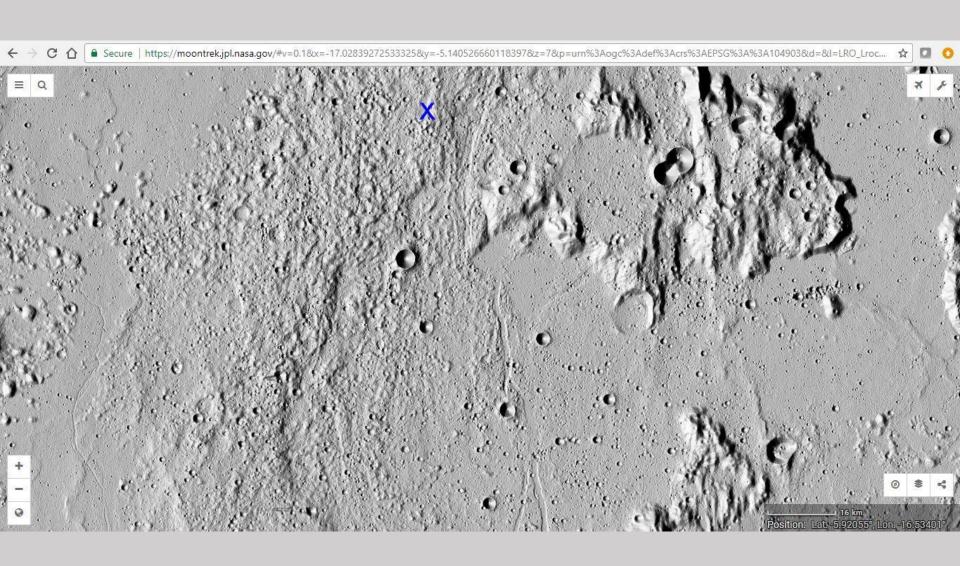
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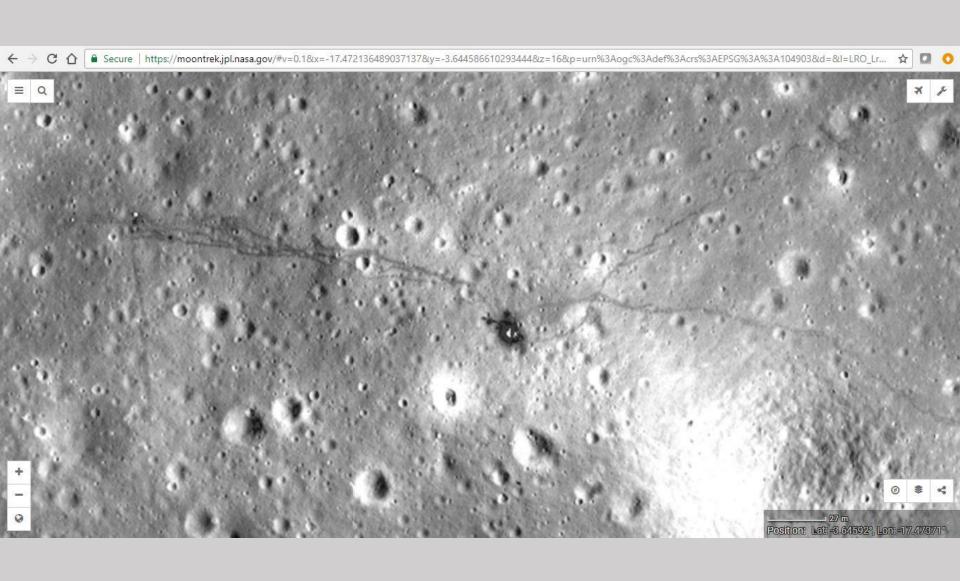
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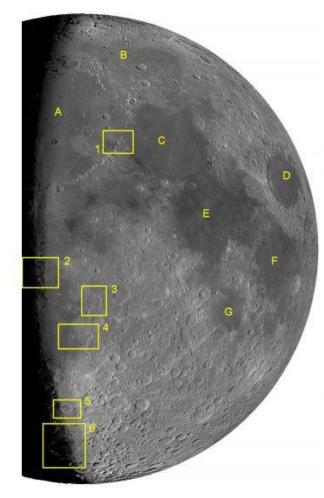














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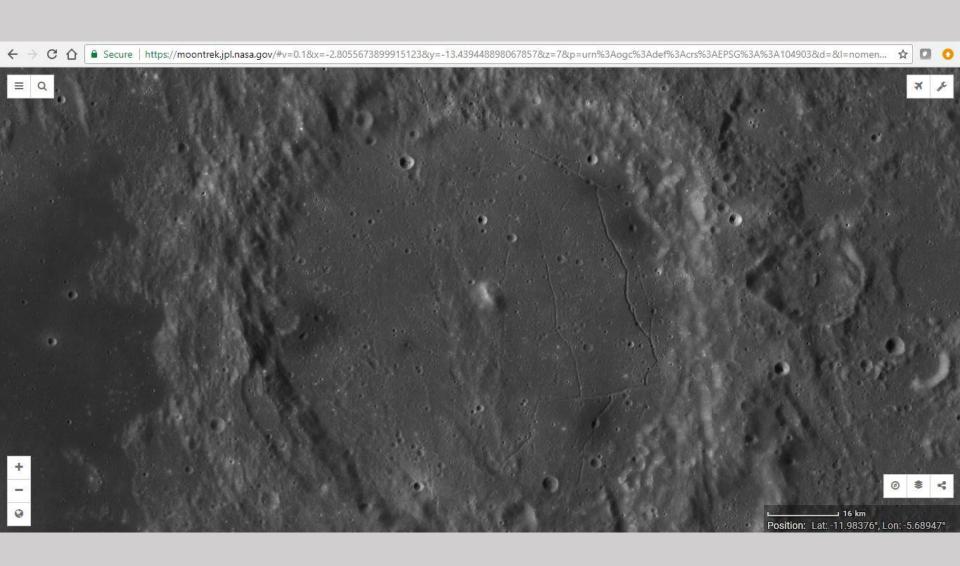
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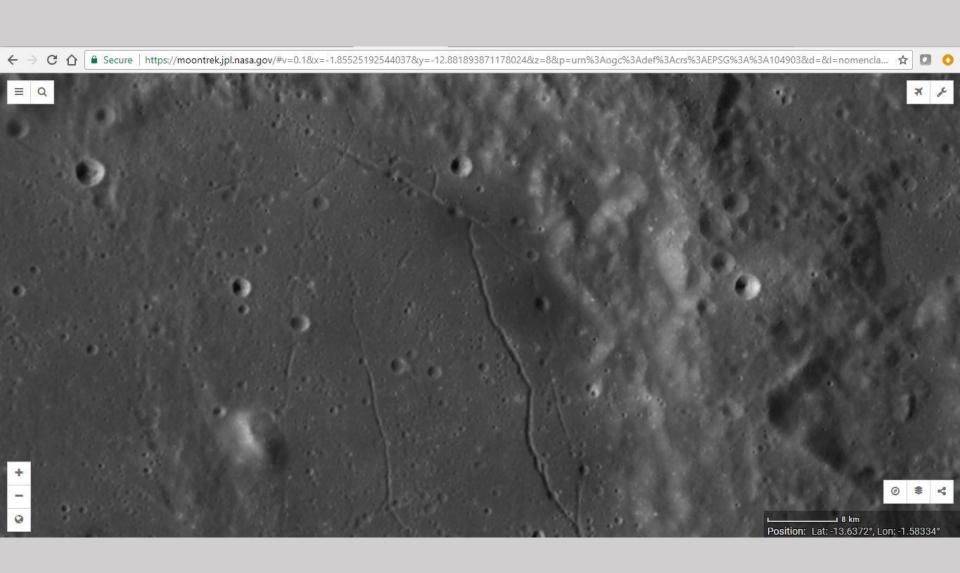
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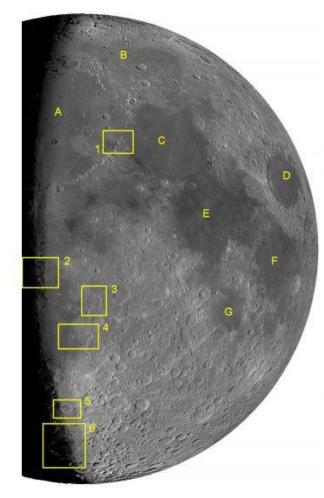
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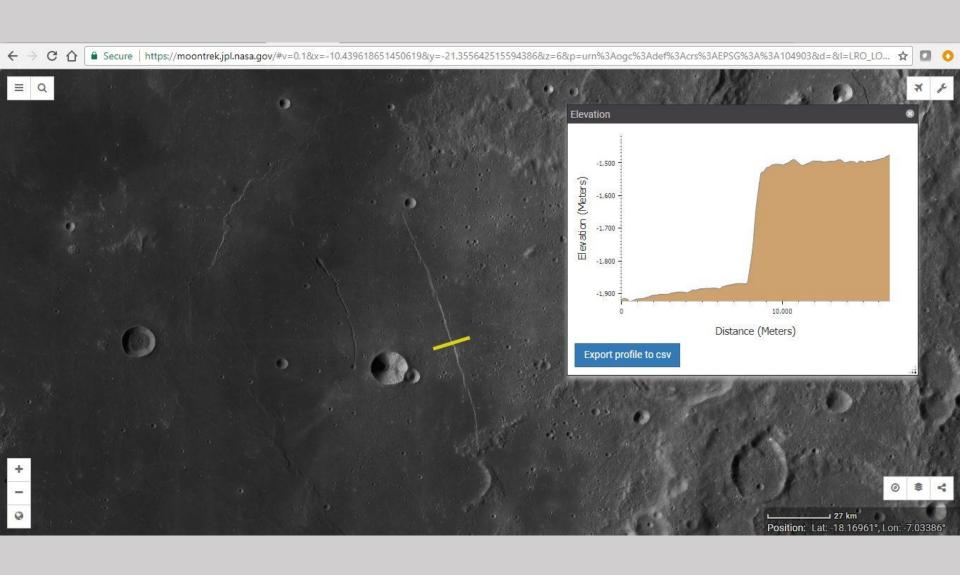
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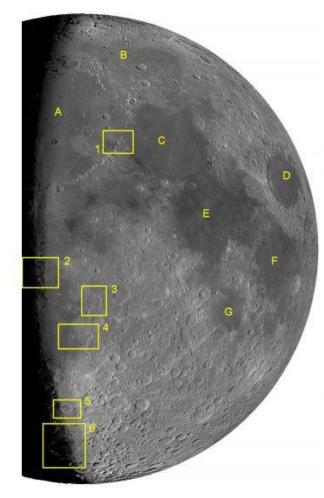
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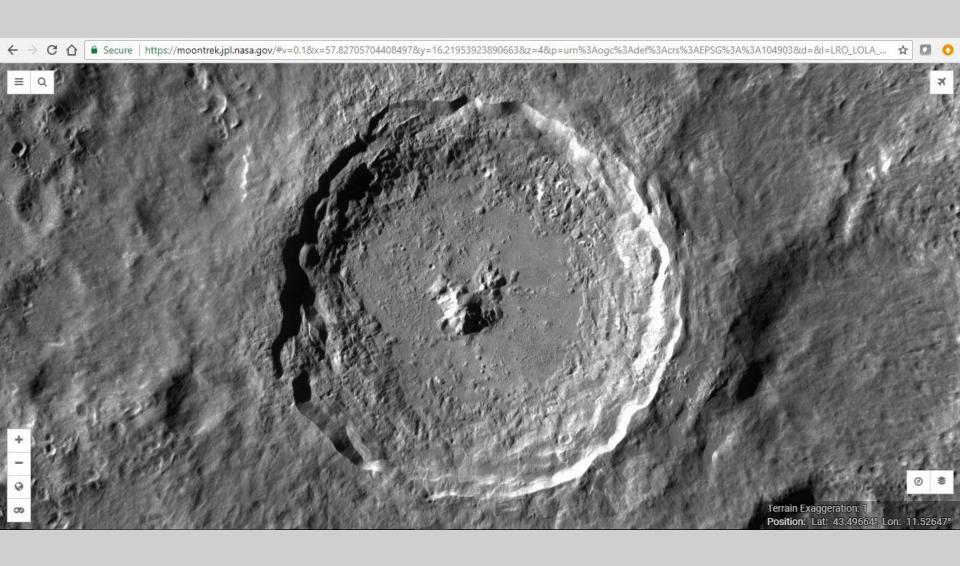
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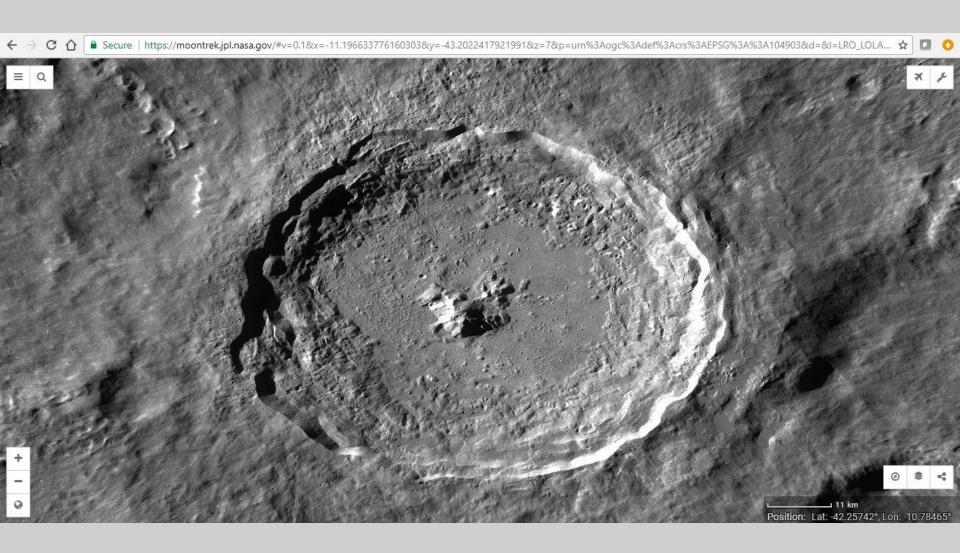
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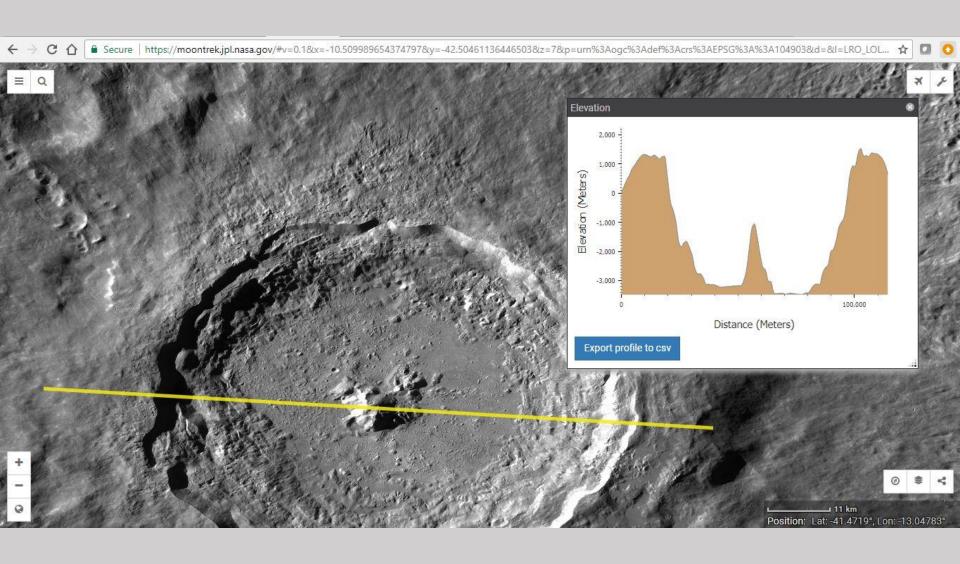
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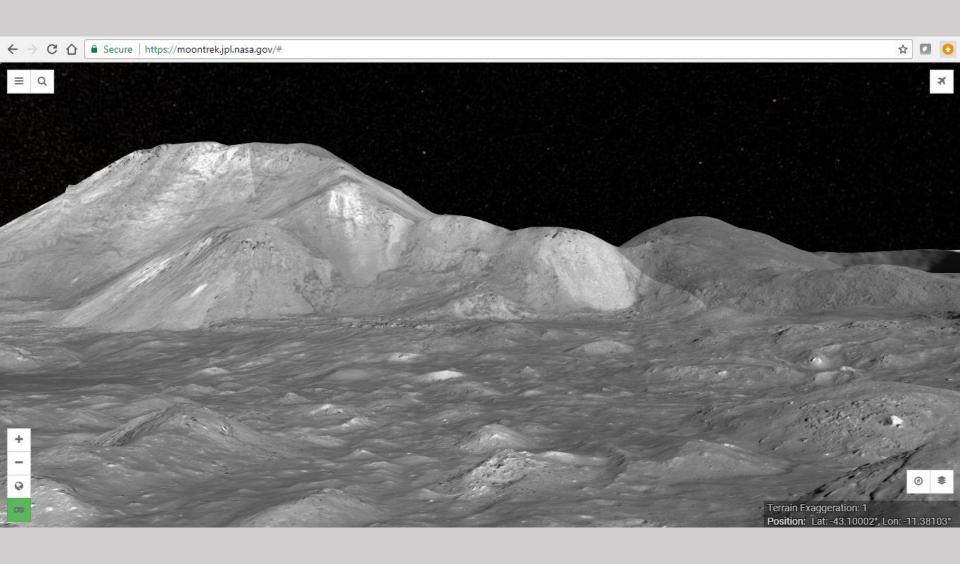
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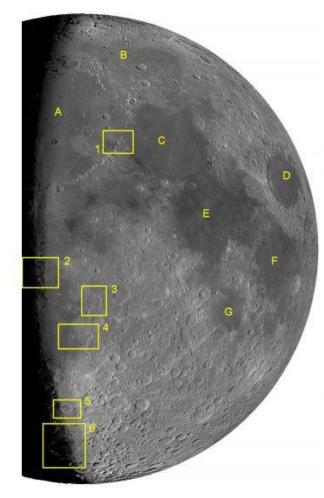
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- 2. Fra Mauro (Apollo 14)
- 5. Tycho Cater
- 3. Alphonsus Crater
- 6. Clavius Crater













Moon Map: This map depicts the Moon as it will appear from the northern hemisphere at approximately 8:30 PM EDT and 5:30 PM PDT on International Observe the Moon Night, October 28, 2017. Many of the best views will occur along the terminator (the line between the day and night side of the Moon).

#### Lunar Maria (Seas)

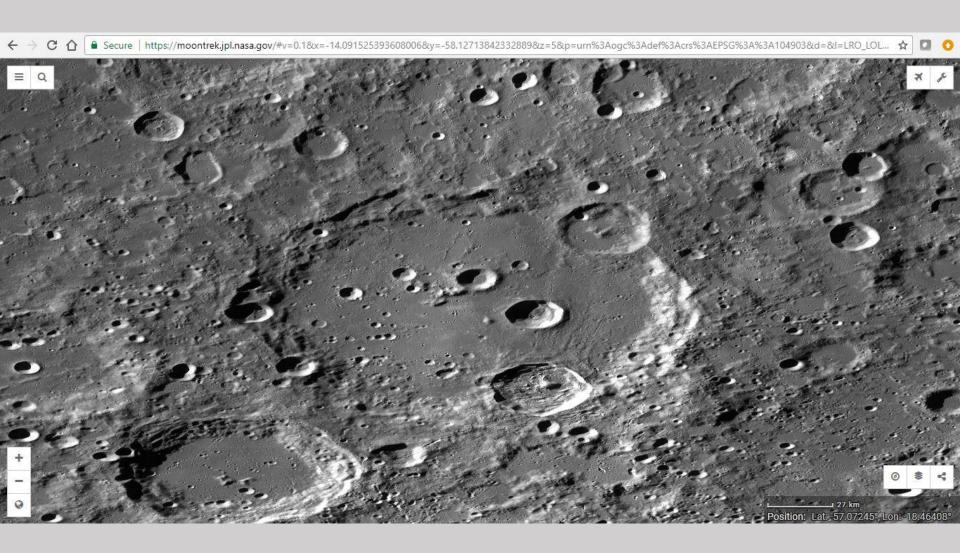
You can see a number of maria tonight. Once thought to be seas of water, these are actually large, flat plains of solidified basaltic lava. They can be viewed in binoculars or even with the unaided eye.

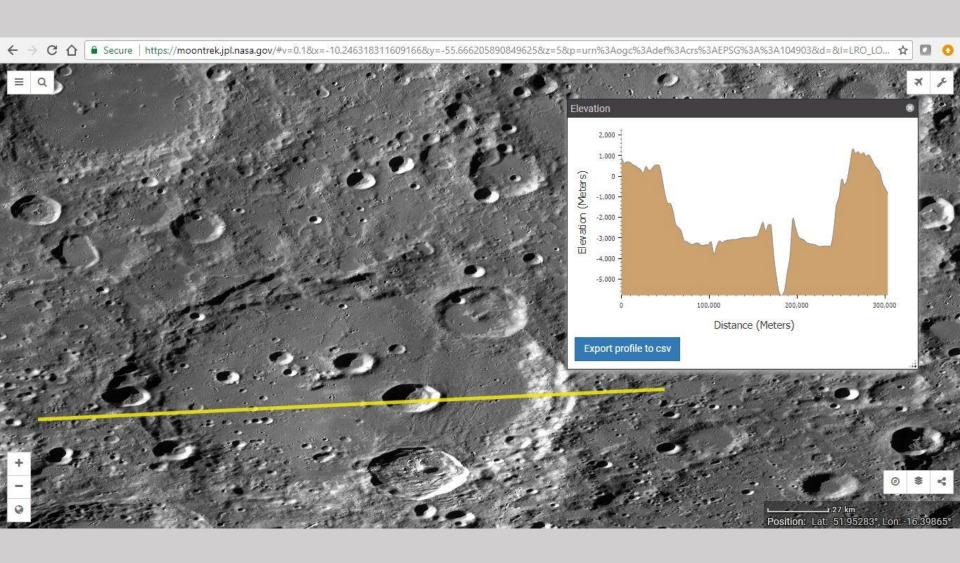
- Mare Imbrium
- Mare Frigoris Mare Serenitatis C.
- D. Mare Crisium
- E. Mare Tranquillitatis
- F. Mare Fecunditatis
- Mare Nectaris

# Selected Telescopic Objects

Some of the more interesting lunar landforms that have favorable lighting for viewing tonight are identified here. Details for each are on the reverse side of this map.

- 1. Apennine Mtns (Apollo 15) 4. Straight Wall
- 2. Fra Mauro (Apollo 14)
- 5. Tycho Cater
- 3. Alphonsus Crater
- 6. Clavius Crater



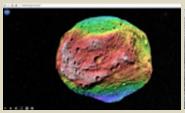


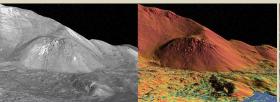


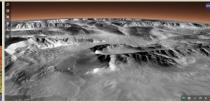
# Planetary Mapping and Modeling – Solar System TREKS



- An integral project within NASA's Solar System Exploration Research Virtual Institute (SSERVI), managed out of the SSERVI Central Office, and with software development and operations at JPL
- A set of data products, interactive tools and technology for exploration
  - Mission Planning
  - Scientific Research
  - Public Outreach
- Online, browser-based Web portal; nothing to install
- Visualization, Analysis, 3D Printing, Data Service
  - A variety of user interfaces (e.g., virtual reality goggles)
  - A variety of external platforms (e.g., Eyes on Solar System, planetariums)
  - Applicable to a wide range of target bodies









# Thank You!



https://moontrek.jpl.nasa.gov https://marstrek.jpl.nasa.gov https://vestatrek.jpl.nasa.gov

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