

***Moon madness***

Paul Klauninger  
Jim Thompson





Date: 17:45 EST on December 17, 2020

Location:  $45^{\circ} 07' N$  and  $76^{\circ} 23' W$

Equipment: Canon 70D with Canon 70mm lens

Exposure: 0.25 sec at ISO3200

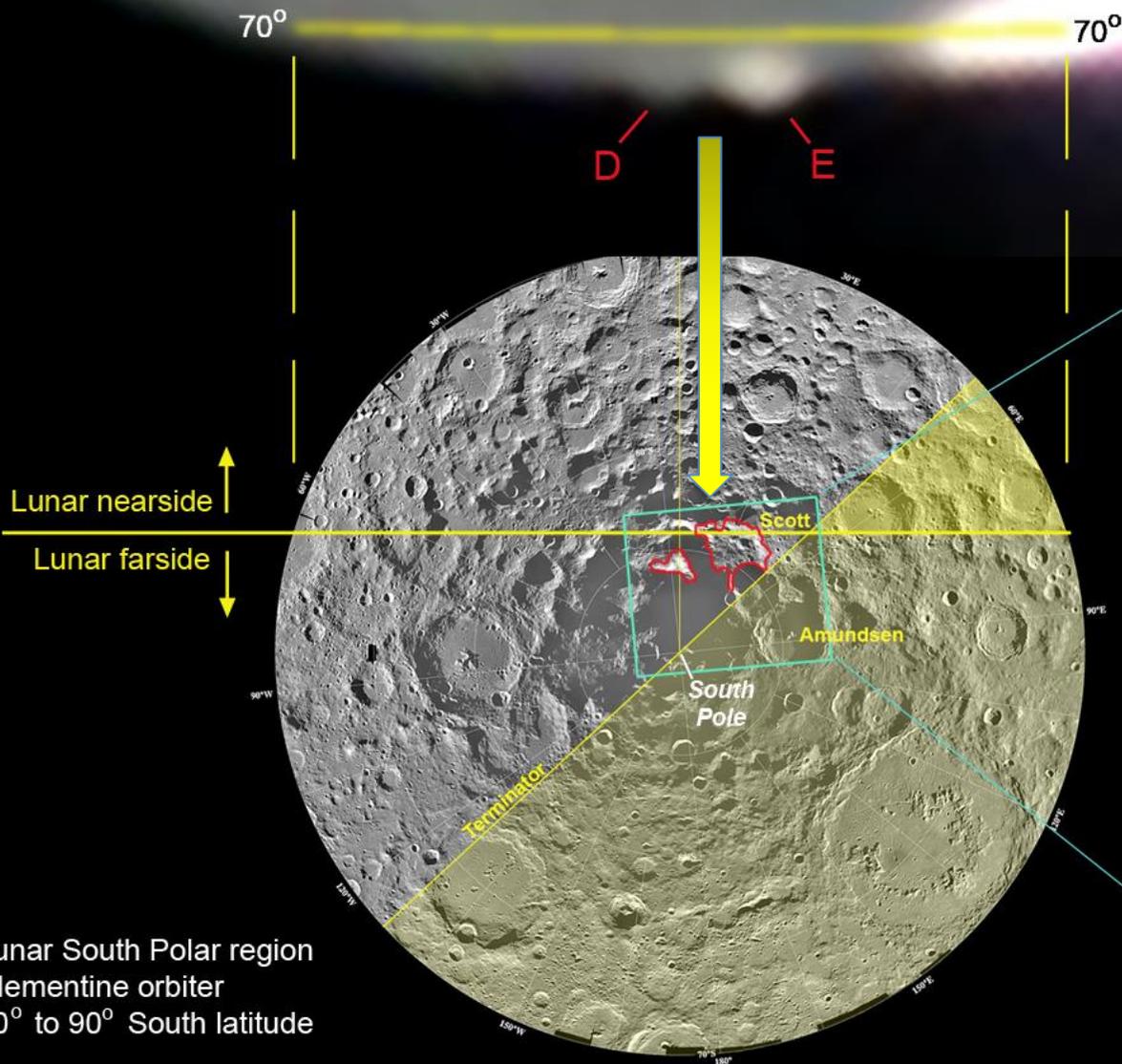
Apparent lunar diameter: 31.57 arc-min

Lunar phase: 137.1 degrees

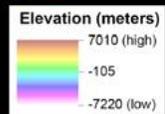
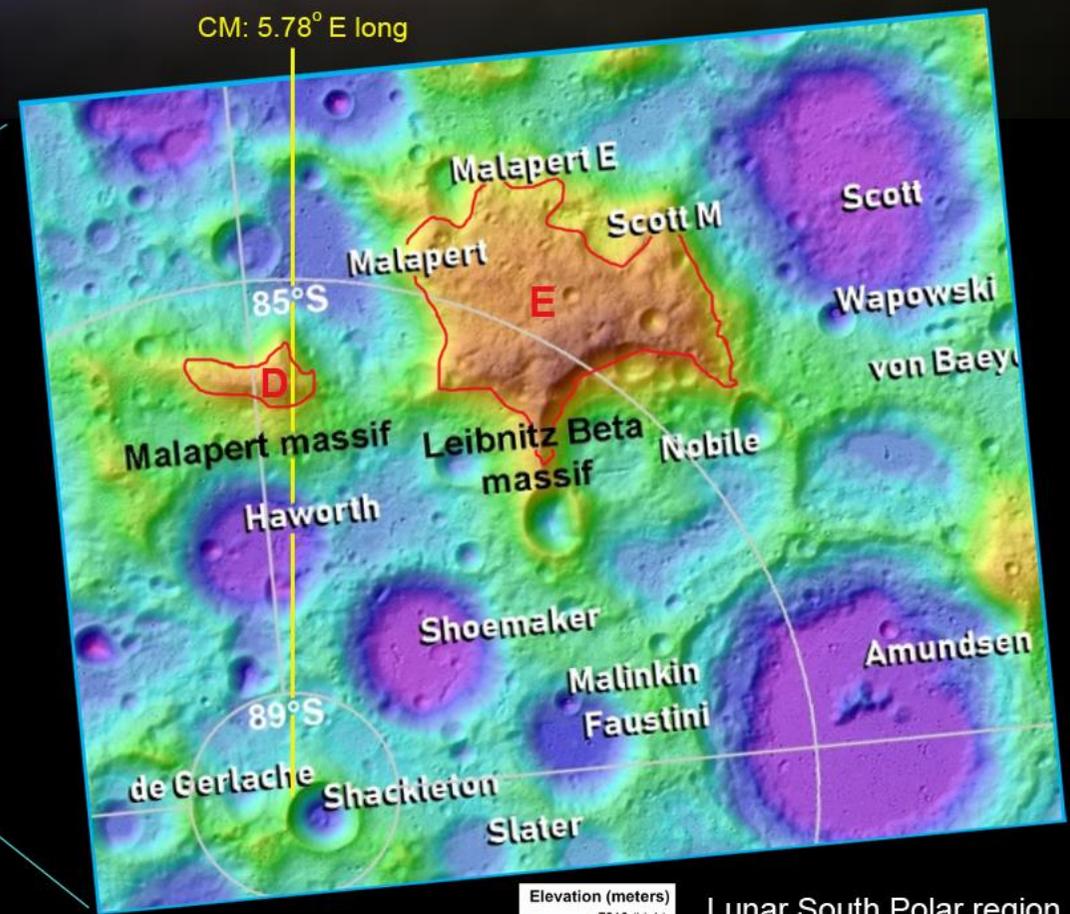
Colongitude: 306.4 degrees

Libration in latitude:  $+5^{\circ} 51'$  (North)

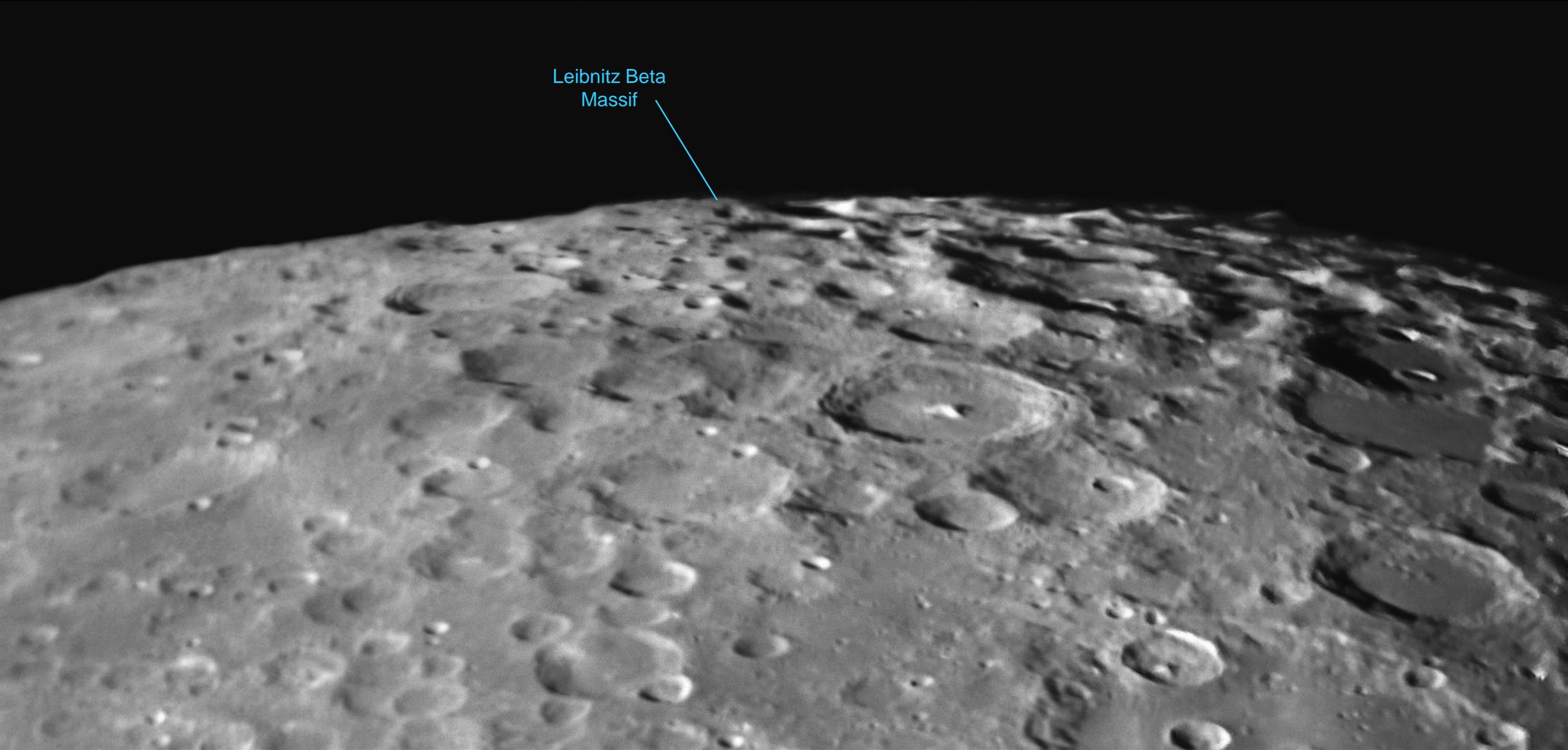
Libration in longitude:  $+5^{\circ} 47'$  (East)



Lunar South Polar region  
Clementine orbiter  
70° to 90° South latitude



Lunar South Polar region  
LRO Altimeter (LOLA)

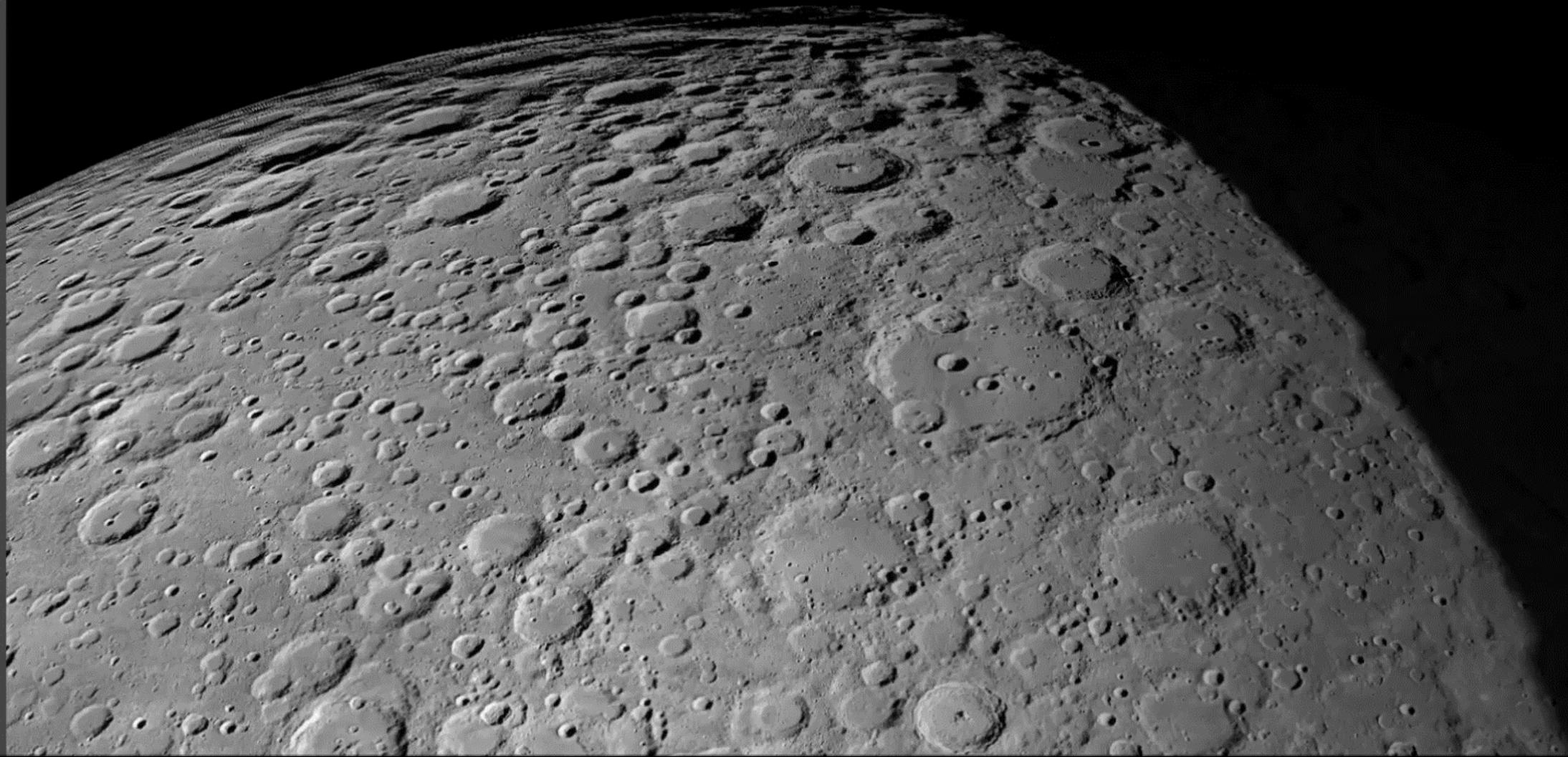


Leibnitz Beta  
Massif

January 24, 2021

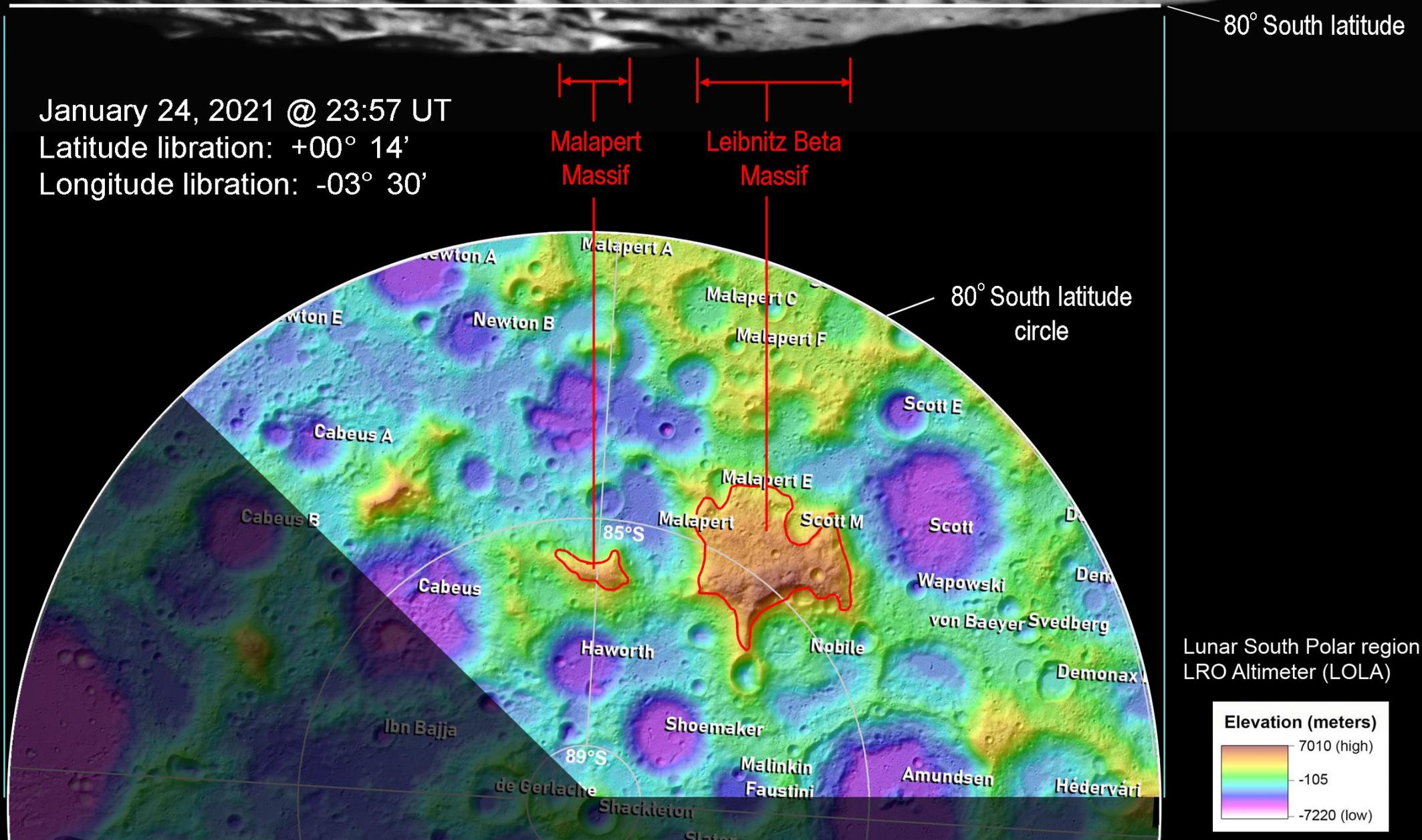
Leibnitz Beta  
Massif

February 01, 2021



January 24, 2021 @ 23:57 UT  
Latitude libration: +00° 14'  
Longitude libration: -03° 30'

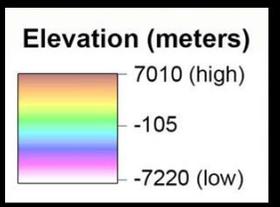
Malapert Massif  
Leibnitz Beta Massif



80° South latitude

80° South latitude circle

Lunar South Polar region  
LRO Altimeter (LOLA)





Date: 20:14 EST on February 14, 2021

Location:  $45^{\circ} 07' N$  and  $76^{\circ} 23' W$

Equipment: Canon 70D with 300x2 mm lens

Exposure: 2 sec at ISO3200

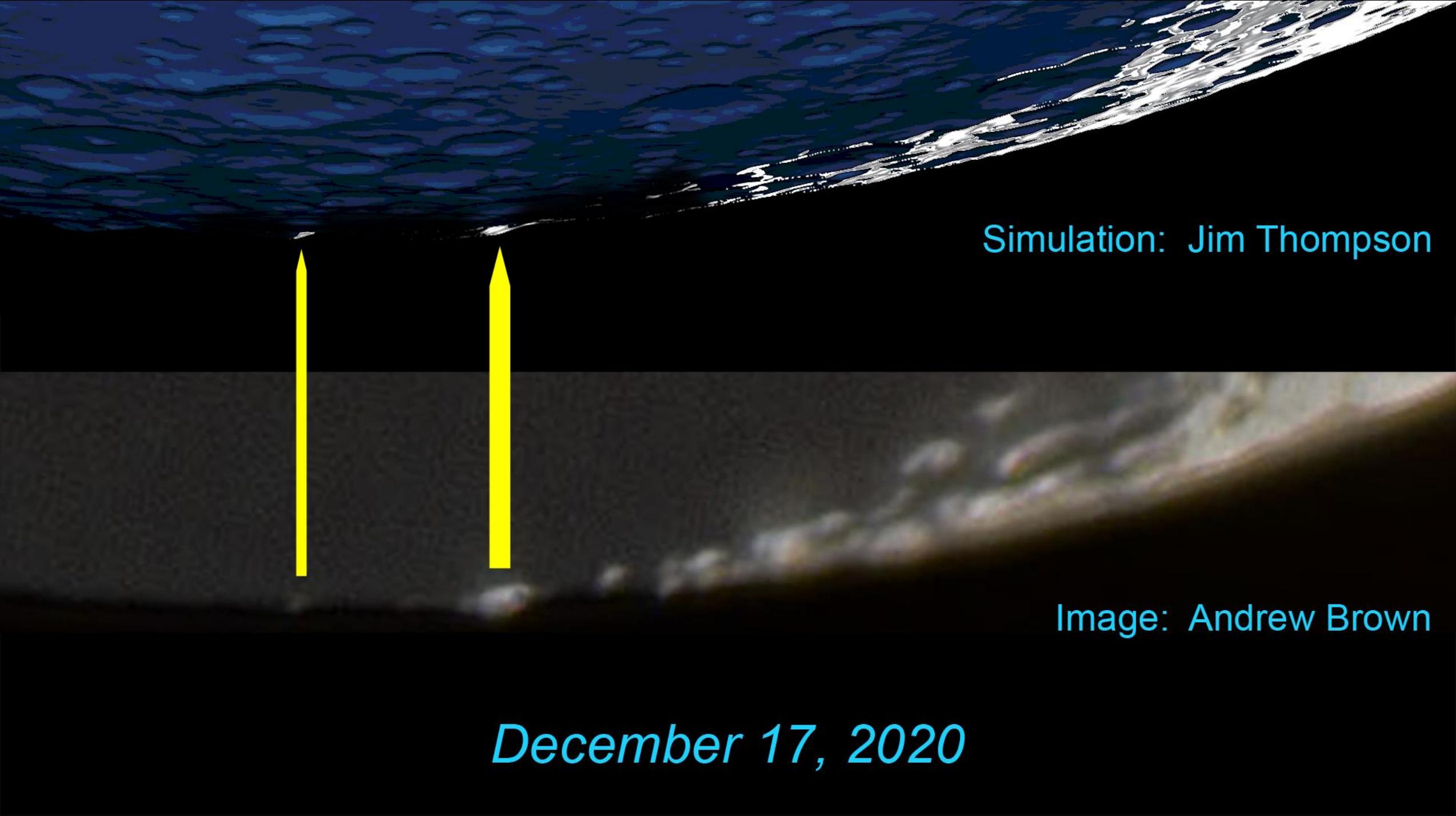
Apparent lunar diameter: 30.05 arc-min

Lunar phase: 141.7 degrees

Colongitude: 305.0 degrees

Libration in latitude:  $+6^{\circ} 37'$  (North)

Libration in longitude:  $+2^{\circ} 31'$  (East)



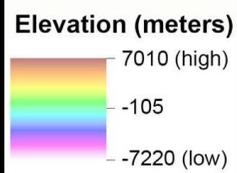
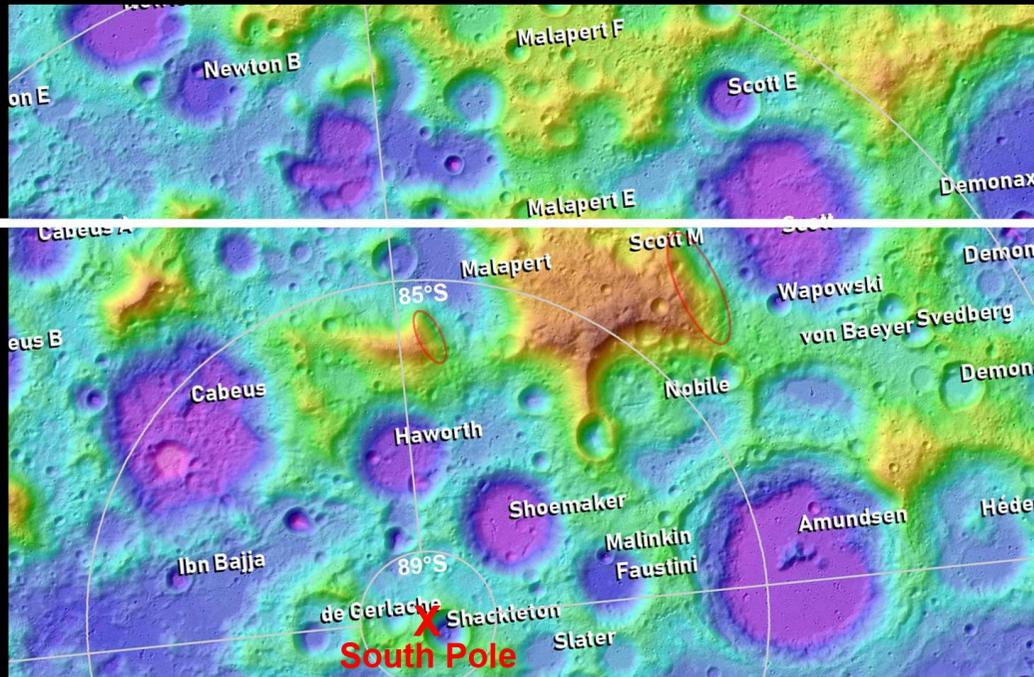
Simulation: Jim Thompson

Image: Andrew Brown

*December 17, 2020*

80° South latitude

Nearside ↑  
Rim ← →  
Farside ↓



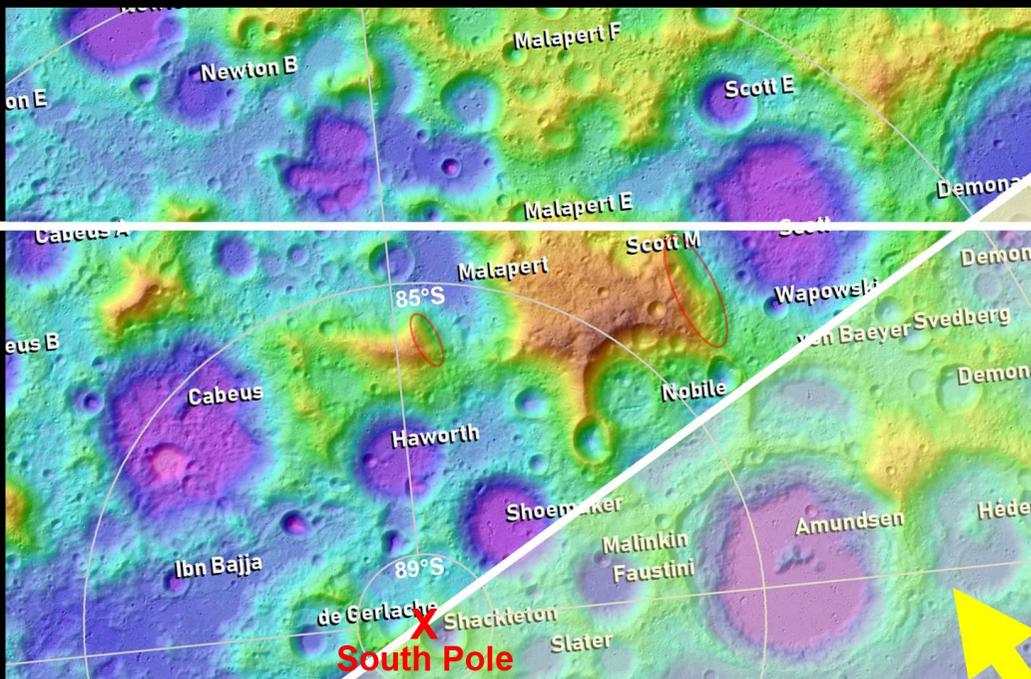
*LRO polar topographic view*

**December 17, 2020**

Latitudinal libration:  $+5.85^\circ$  N  
Longitudinal libration:  $+5.78^\circ$  E  
Colongitude:  $306.4^\circ$   
Phase:  $137.1^\circ$

80° South latitude

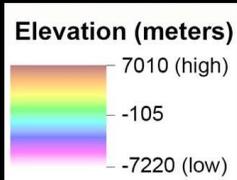
Nearside ↑  
Rim ← →  
Farside ↓



Terminator

**December 17, 2020**

Latitudinal libration:  $+5.85^\circ$  N  
Longitudinal libration:  $+5.78^\circ$  E  
Colongitude:  $306.4^\circ$   
Phase:  $137.1^\circ$

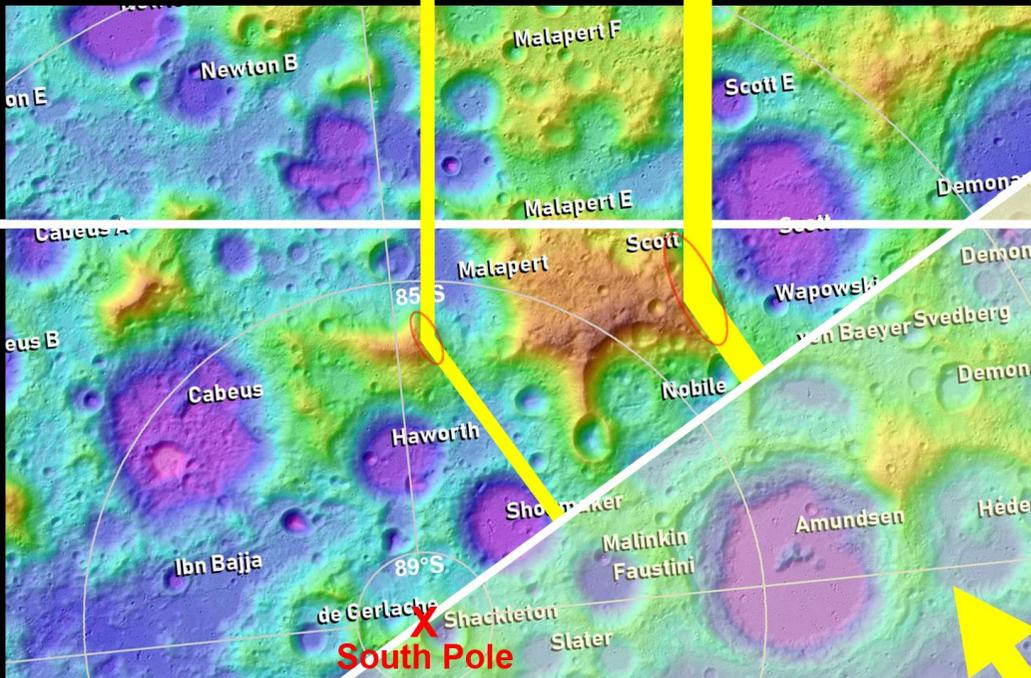


*LRO polar topographic view*

**Sunlight**

80° South latitude

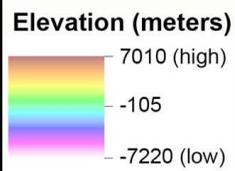
Nearside ↑  
Rim ←→  
Farside ↓



Terminator

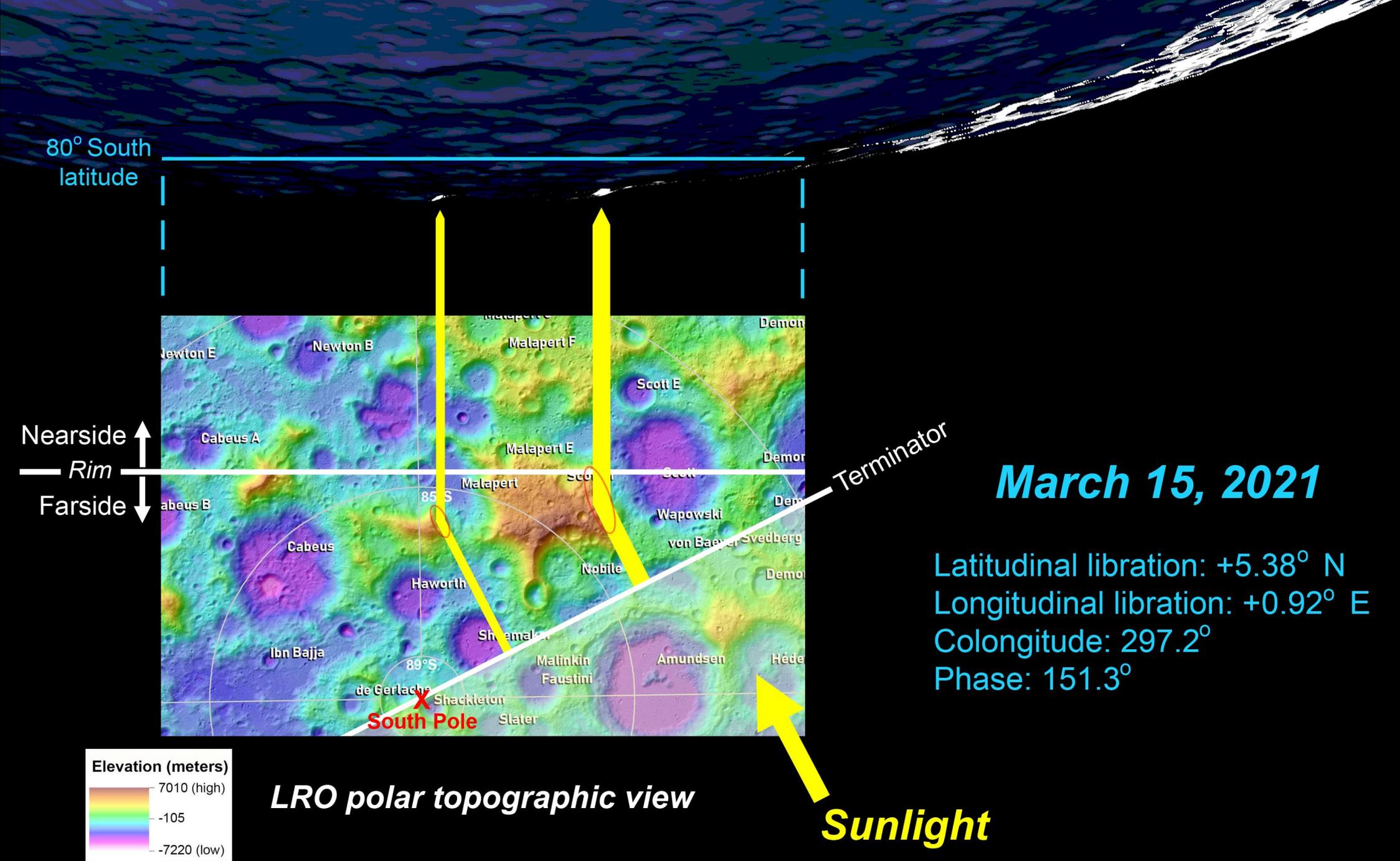
**December 17, 2020**

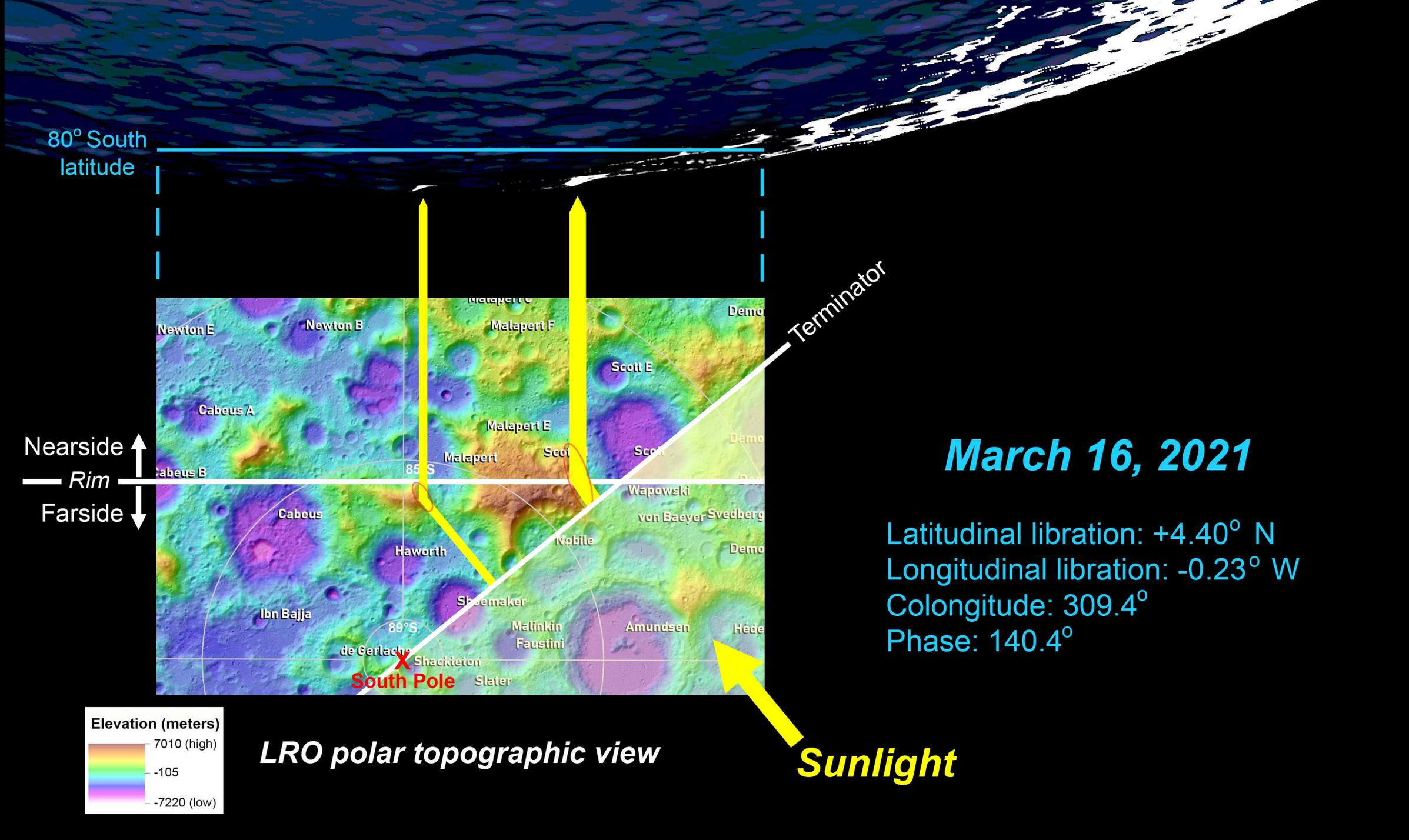
Latitudinal libration:  $+5.85^\circ$  N  
Longitudinal libration:  $+5.78^\circ$  E  
Colongitude:  $306.4^\circ$   
Phase:  $137.1^\circ$



*LRO polar topographic view*

**Sunlight**





80° South latitude

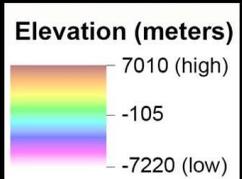
Nearside ↑  
Rim ← →  
Farside ↓

Terminator

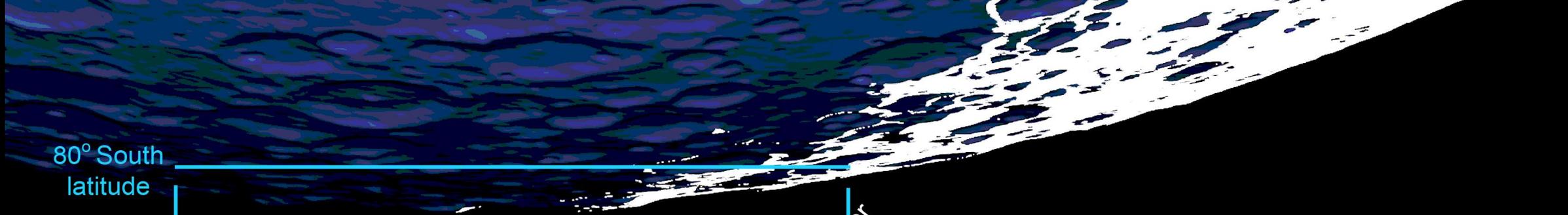
**March 16, 2021**

Latitudinal libration: +4.40° N  
 Longitudinal libration: -0.23° W  
 Colongitude: 309.4°  
 Phase: 140.4°

**Sunlight**



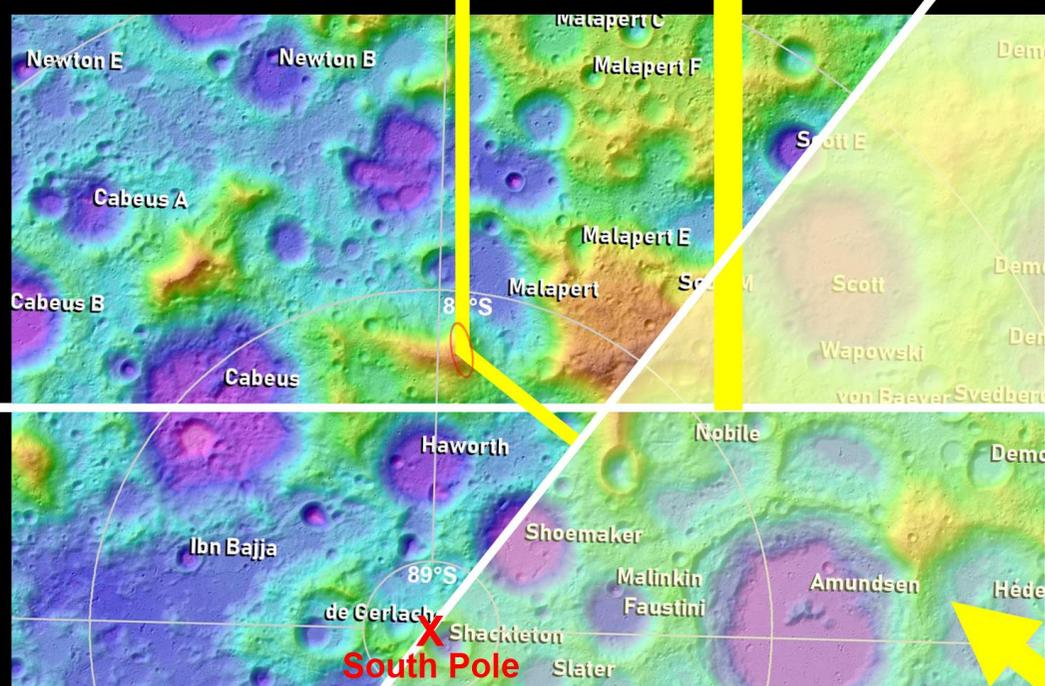
**LRO polar topographic view**



80° South latitude

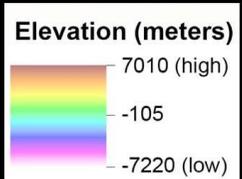
Terminator

Nearside ↑  
Rim ←  
Farside ↓



**March 17, 2021**

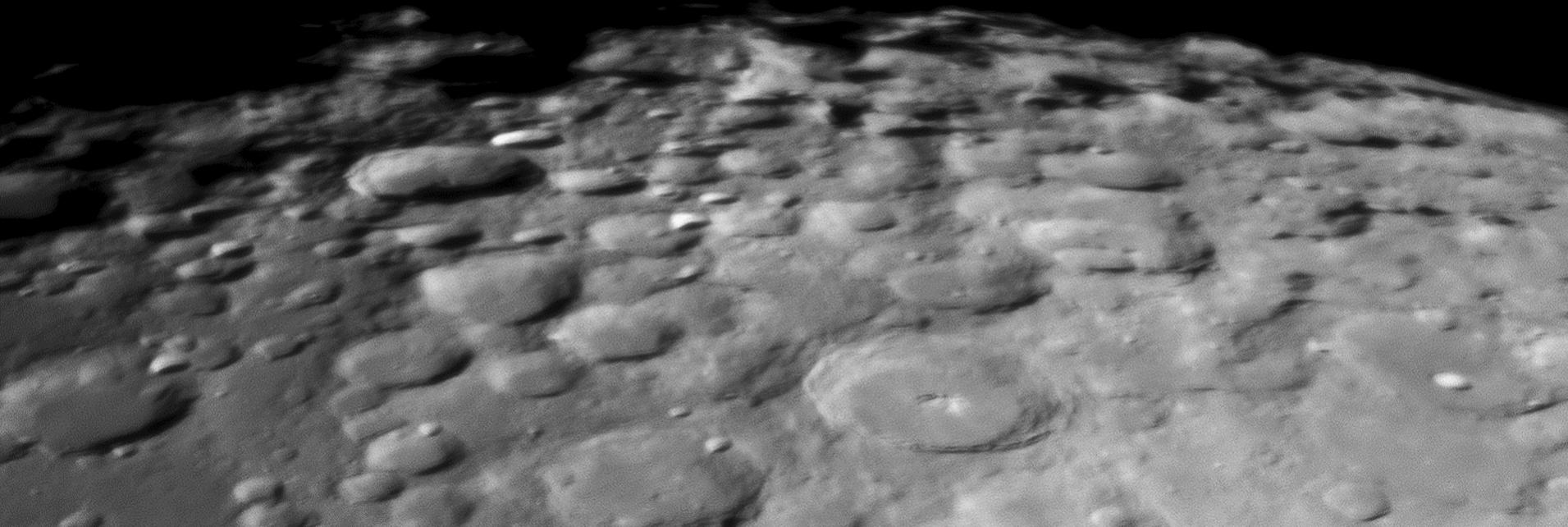
Latitudinal libration: +3.25° N  
Longitudinal libration: -1.47° W  
Colongitude: 321.6°  
Phase: 129.5°



**LRO polar topographic view**

**Sunlight**





Date: January 31, 2021 @ 05:55 UT

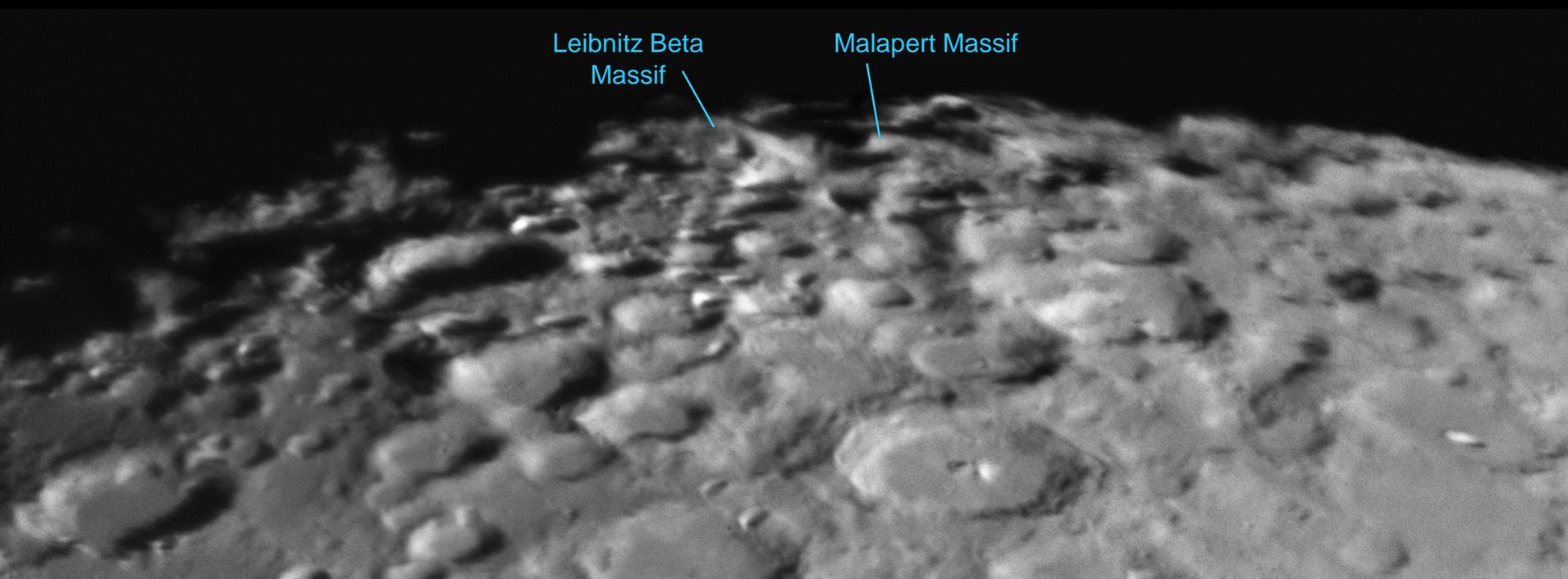
Observer: Jim Thompson

Lunar phase: 329.0 degrees

Colongitude: 124.8 degrees

Libration in latitude:  $-6^{\circ} 12'$  (South)

Libration in longitude:  $-3^{\circ} 16'$  (West)



Difference in time: 26h 45m

Date: February 01, 2021 @ 08:40 UT

Observer: Paul Klauninger

Lunar phase: 314.6 degrees

Colongitude: 138.3 degrees

Libration in latitude:  $-5^{\circ} 56'$  (South)

Libration in longitude:  $-2^{\circ} 30'$  (West)

