Philolaus Crater

Exploring ***Candidate*** Lava Tube Skylights Near the Lunar North Pole

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Background: What We Need To Do...

My Humble Recommendations for an Effective Lunar Exploration Strategy

To Explore Moon In-Depth and Explore Wide-Ranging Science with Humans on Moon...

1. Fixed Surface Infrastructure

   Long-Term Programmatic Robustness (Antarctica Stations, HMP, Cities!)

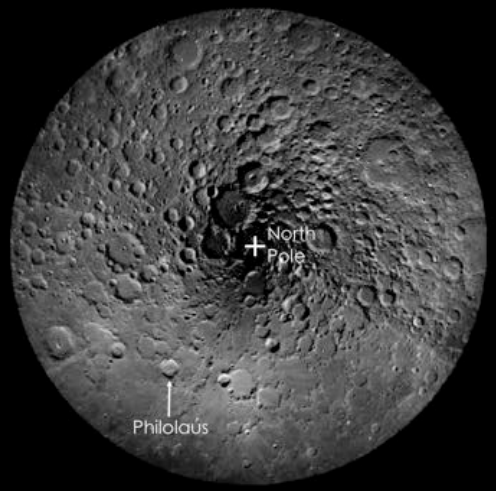
2. Infrastructure = Base + Mobility System

   Arctic, Antarctica, “Art Of War”, etc.

3. If/Where H_2O True “Resource” = Base Site

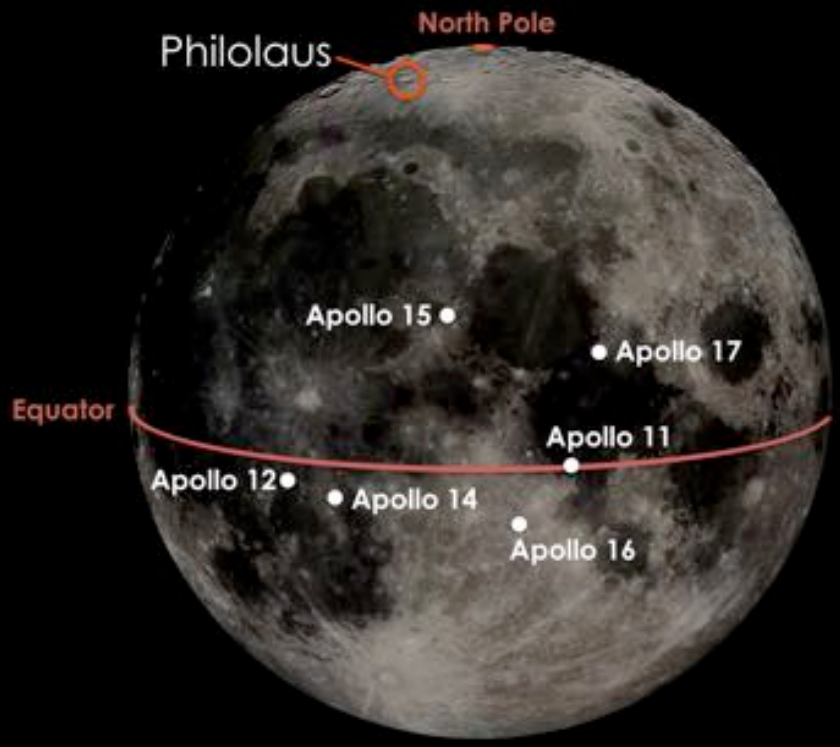
   Need to assess ASAP whether/where H_2O will be a true/optimal resource.

Philolaus: Location



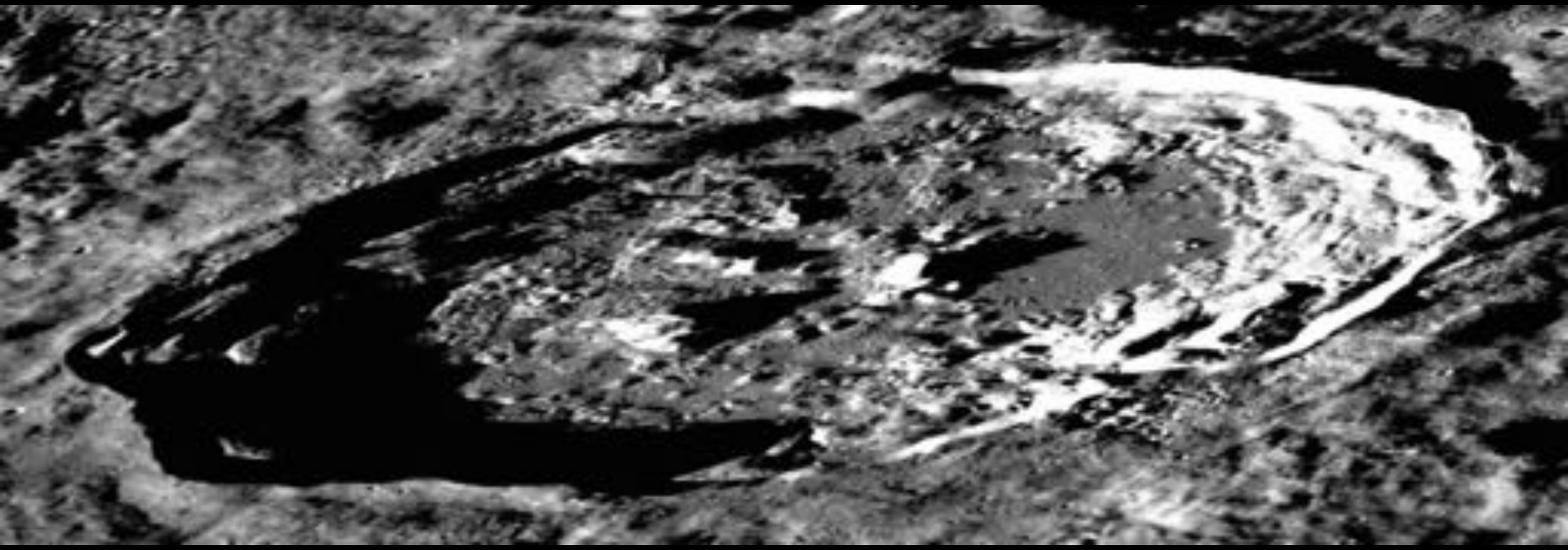
Coordinates: 72.1°N, 32.4°W

550 km from North Pole



Philolaus Crater

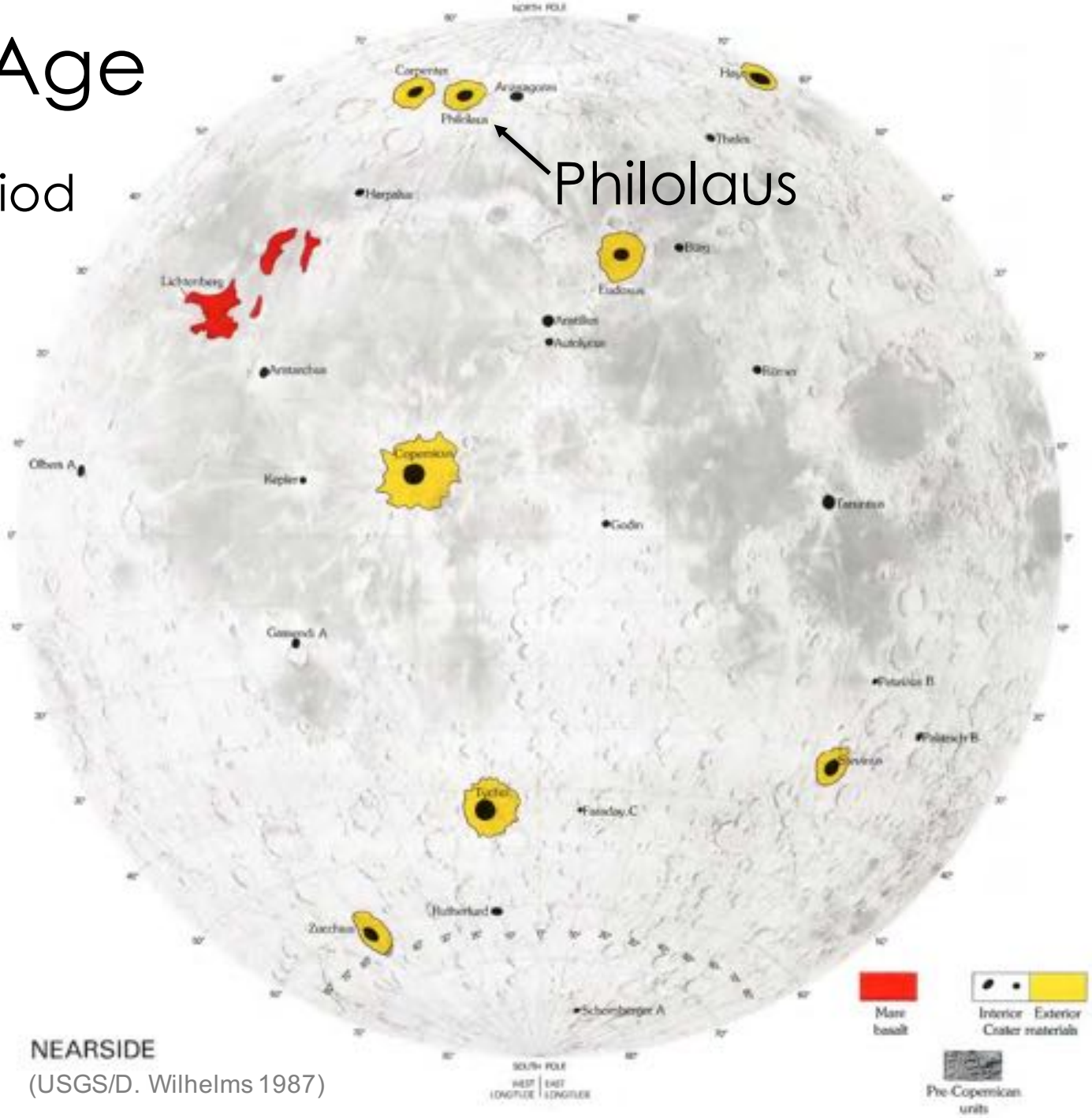
Diameter: 70 km
Depth: 3.4 km
Twin Peak Complex



Philolaus: Age

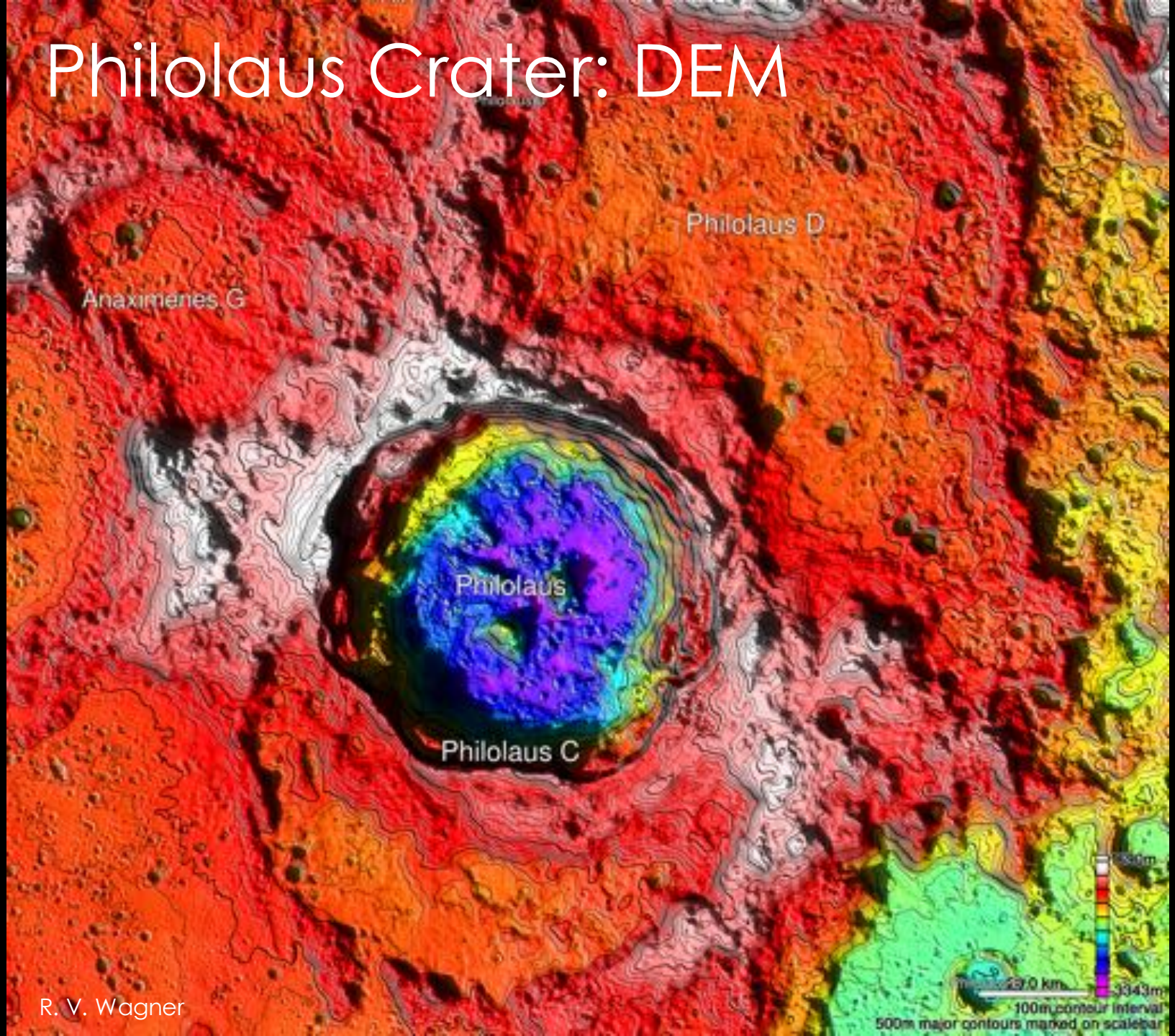
Copernican Period

≤ 1.1 Ga

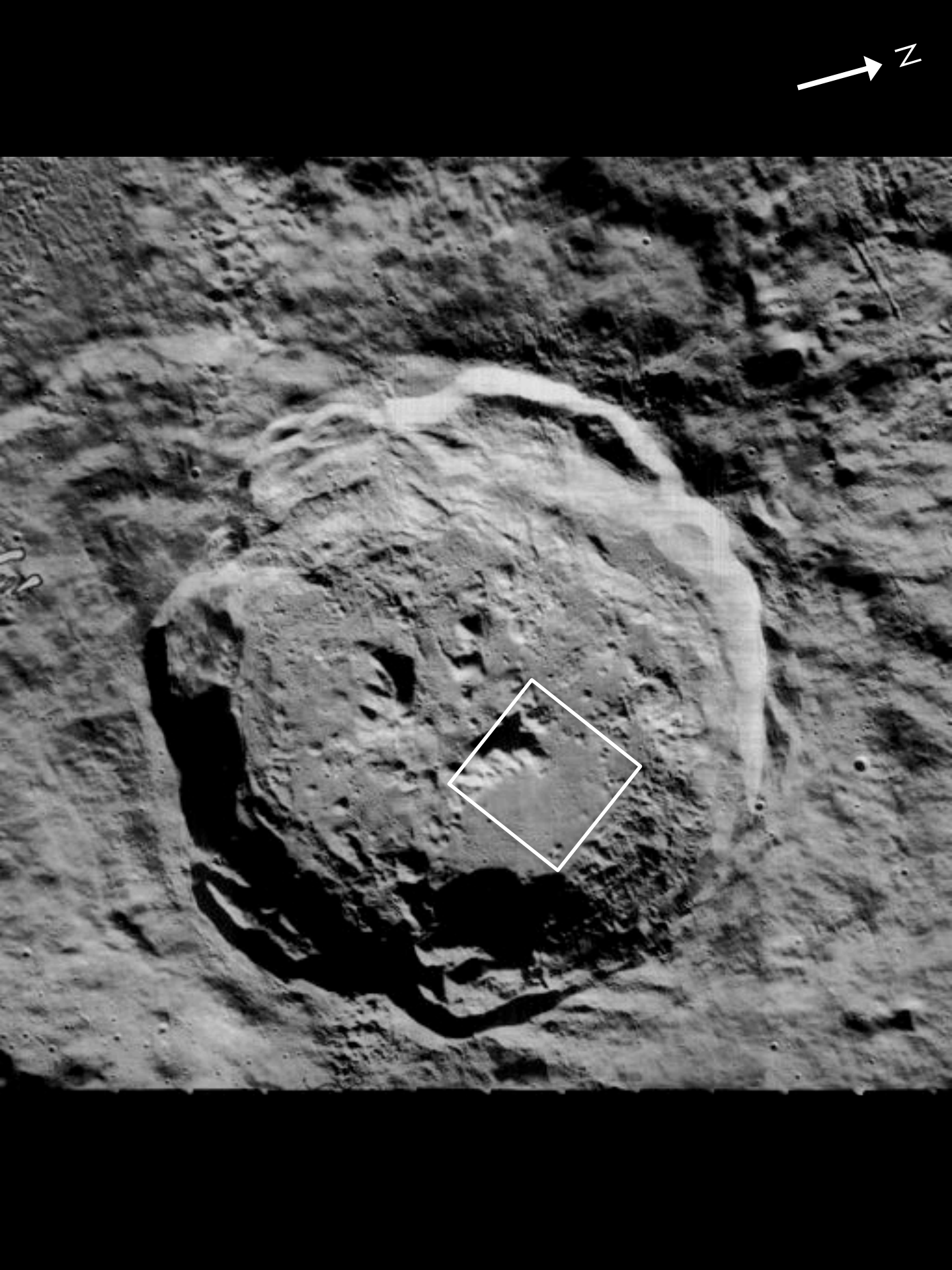


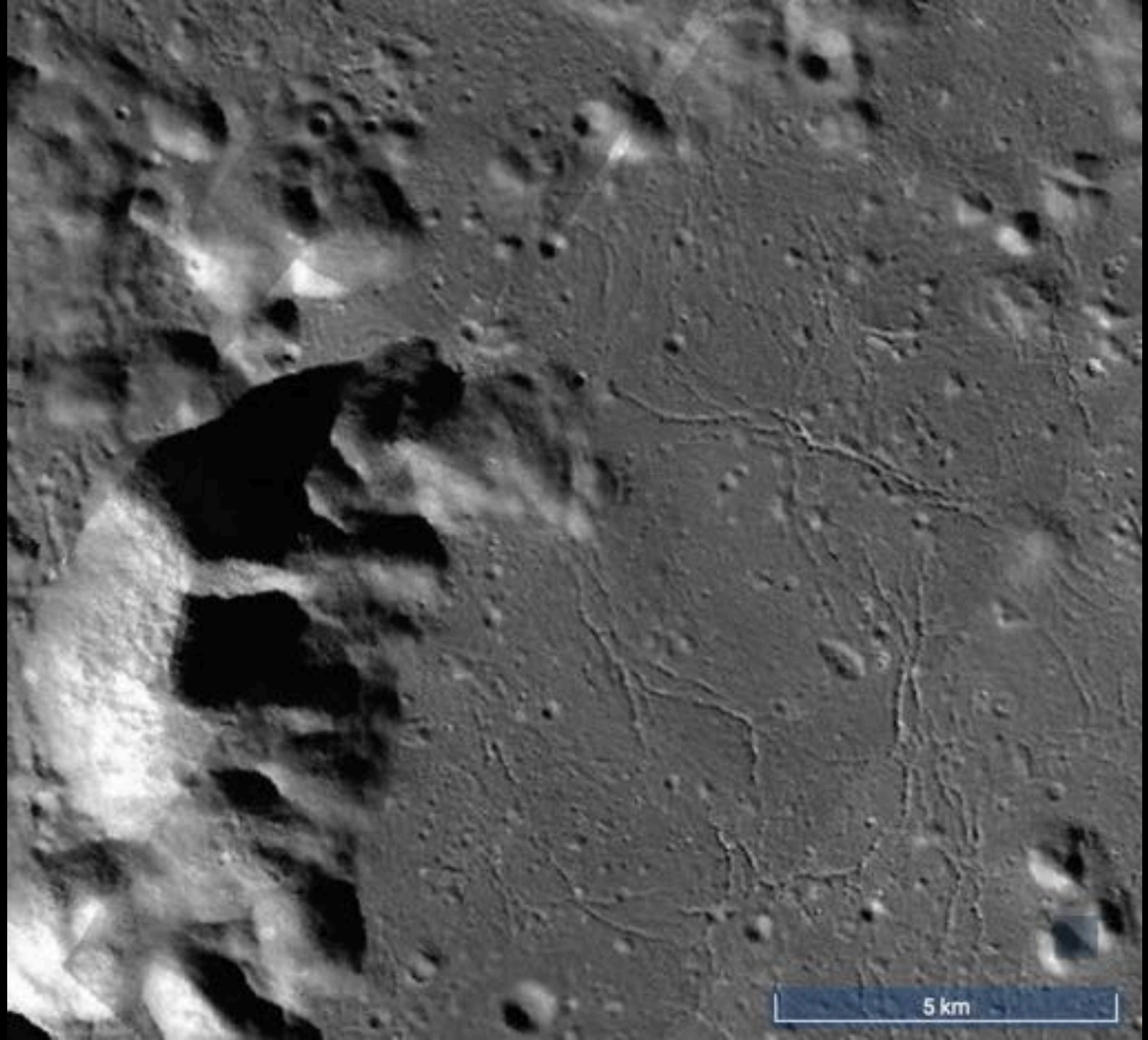
(USGS/D. Wilhelms 1987)

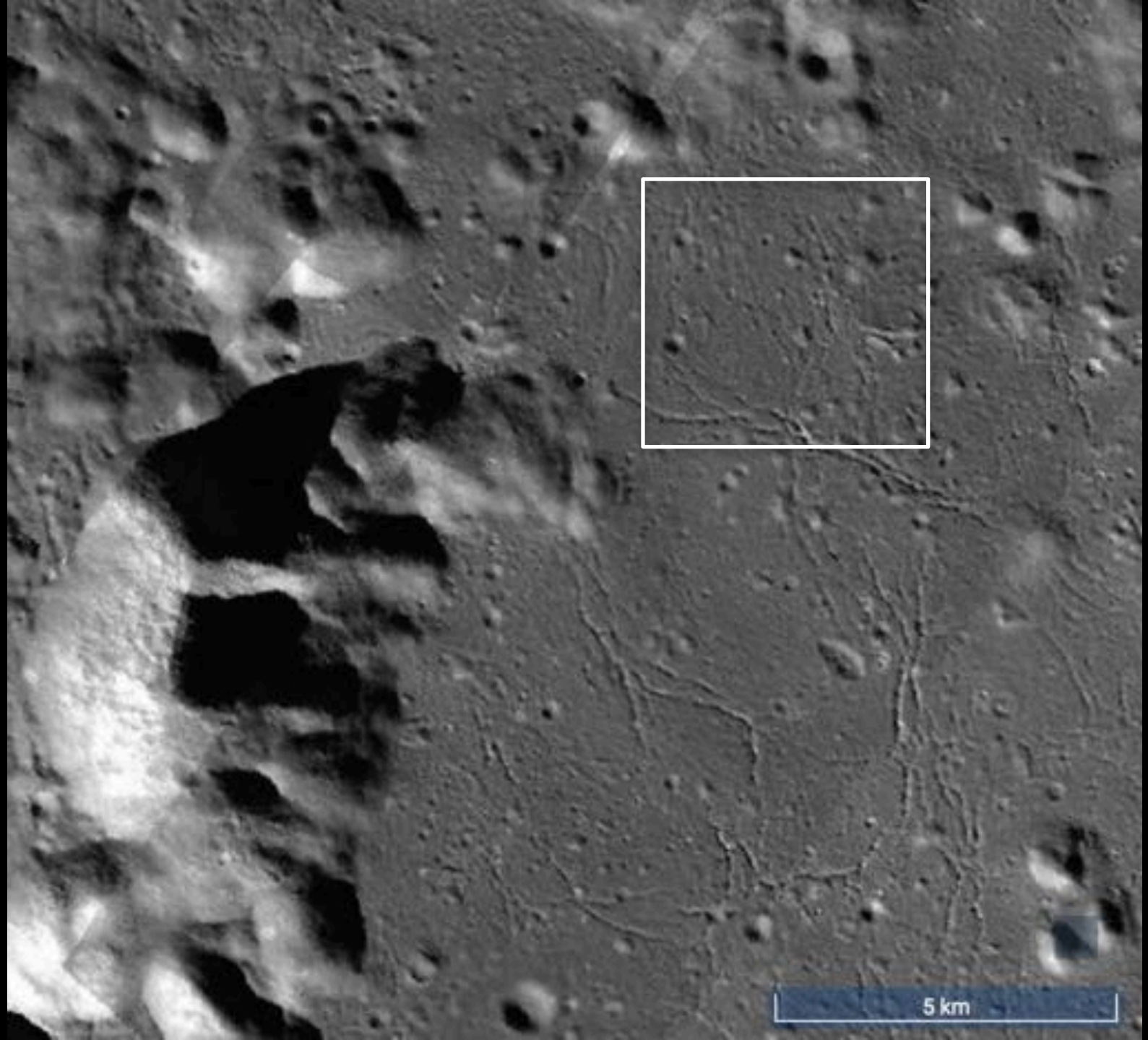
Philolaus Crater: DEM

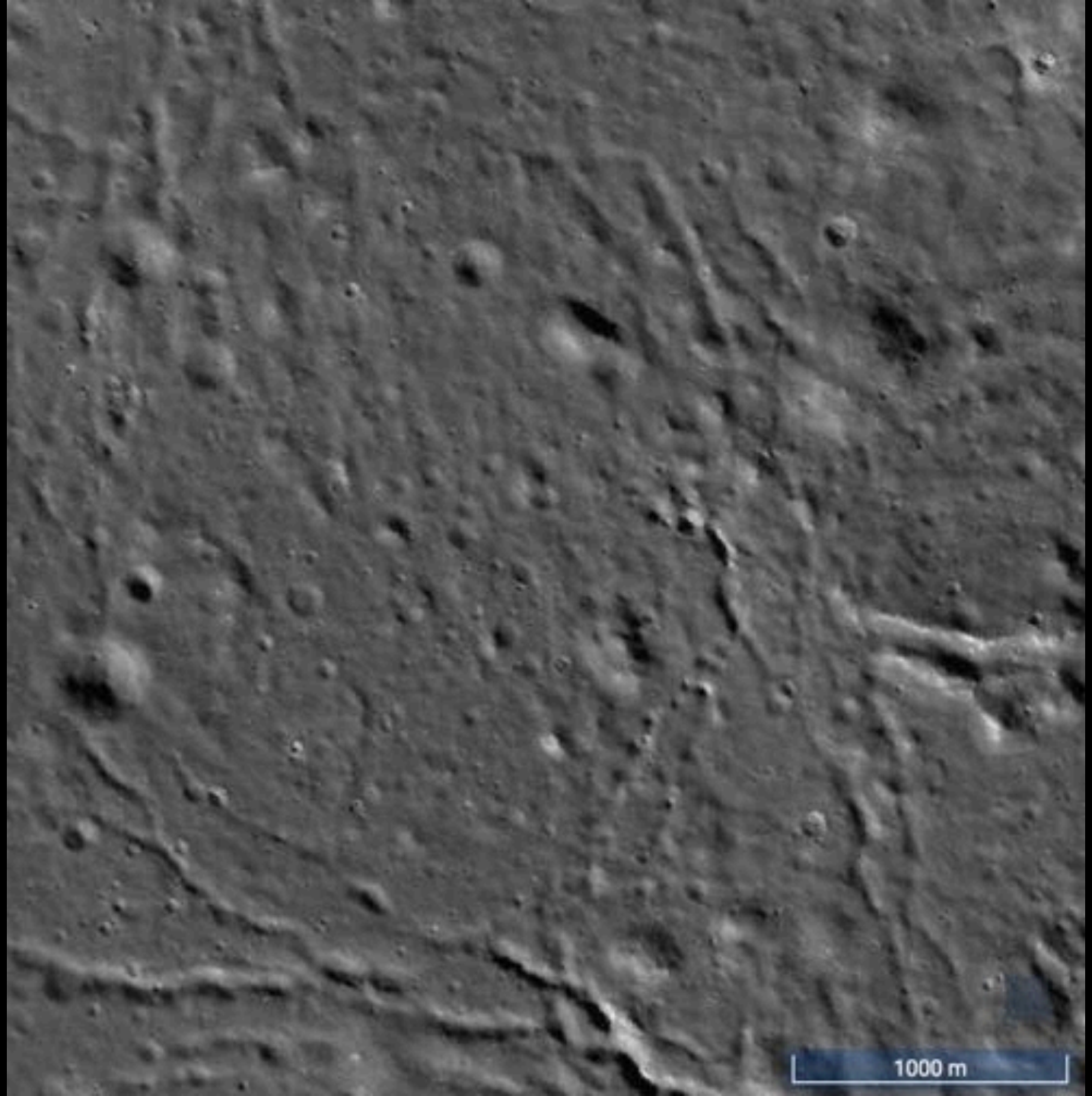


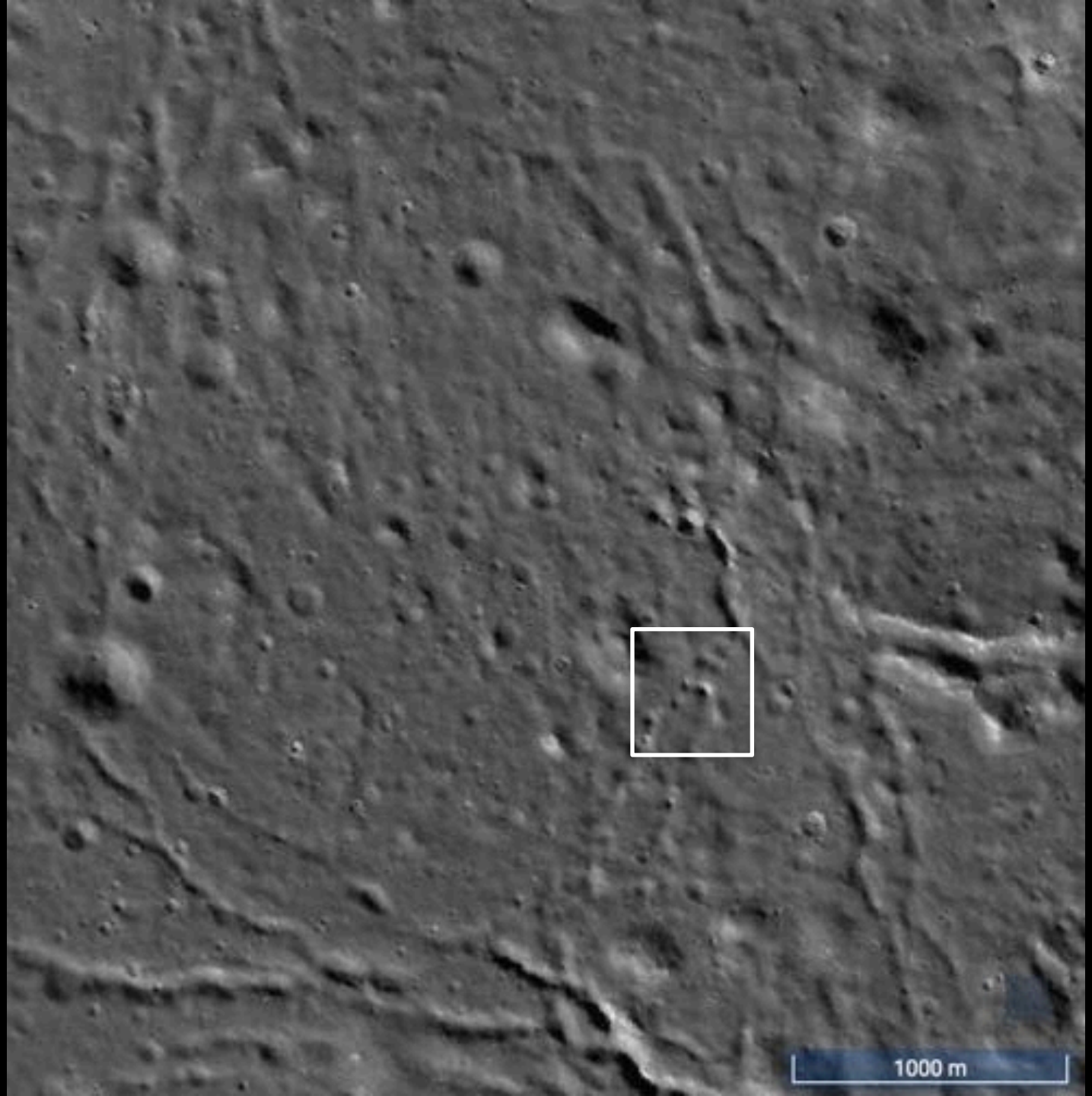
R. V. Wagner


N

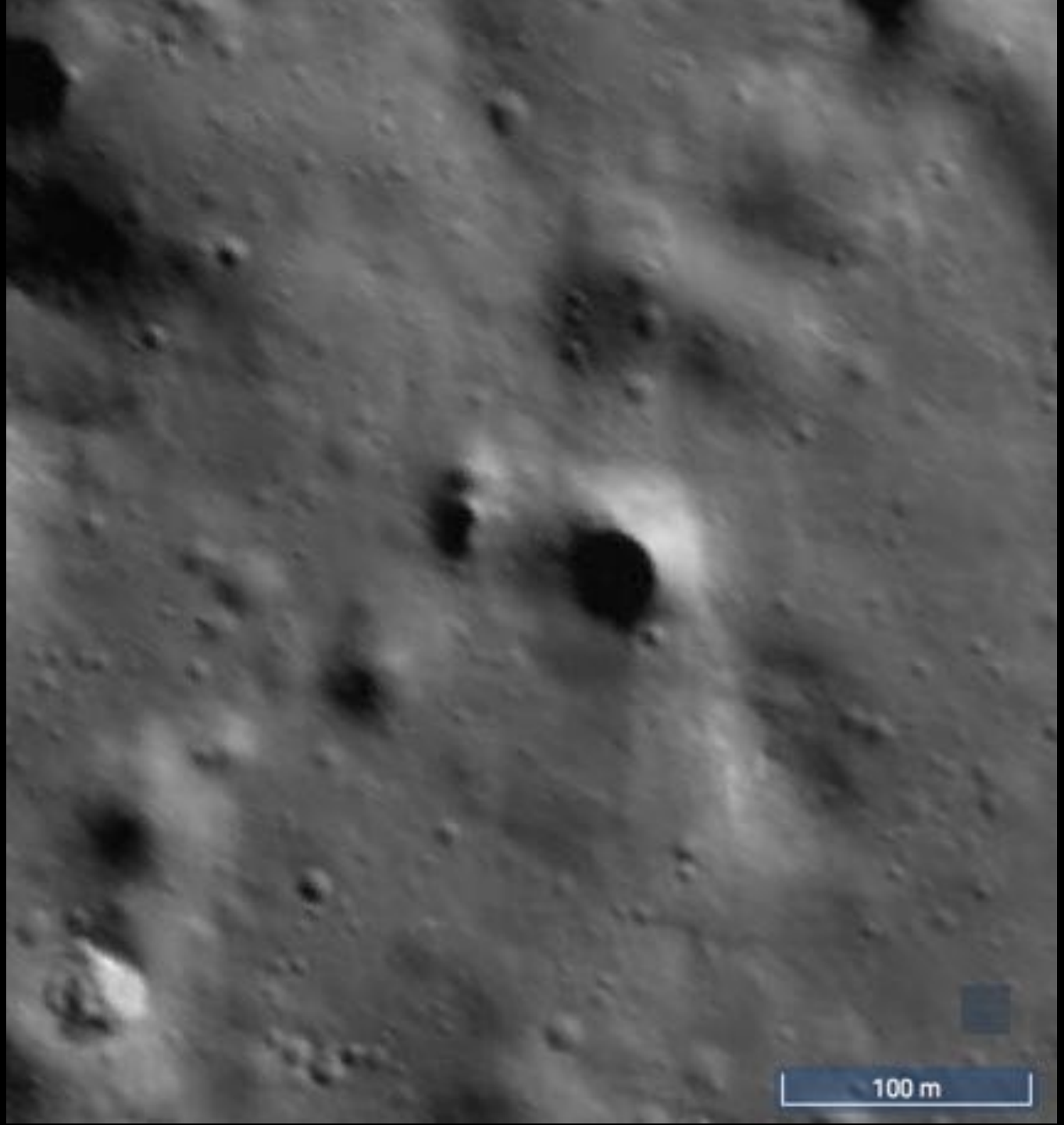

5 km

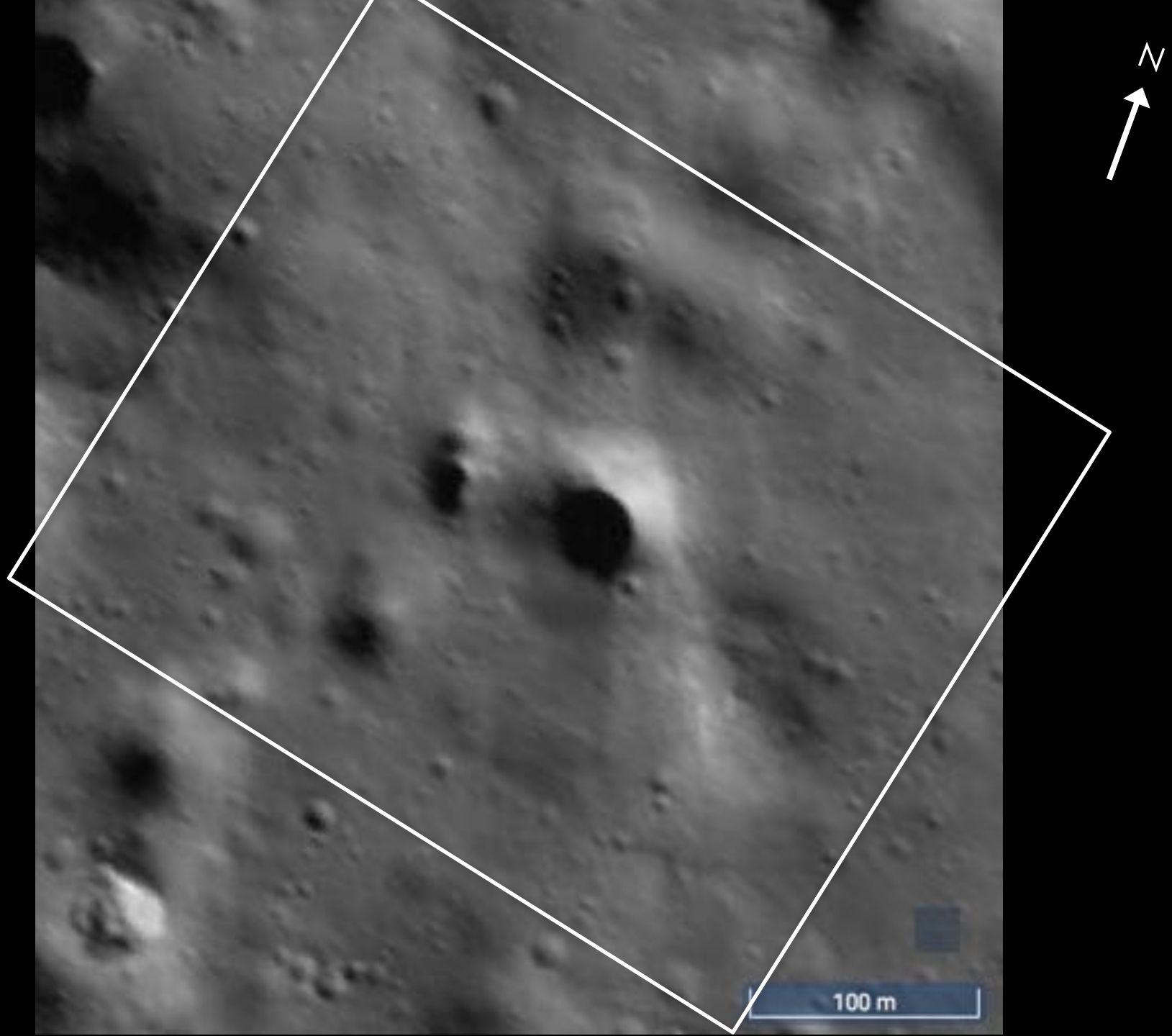

N
5 km

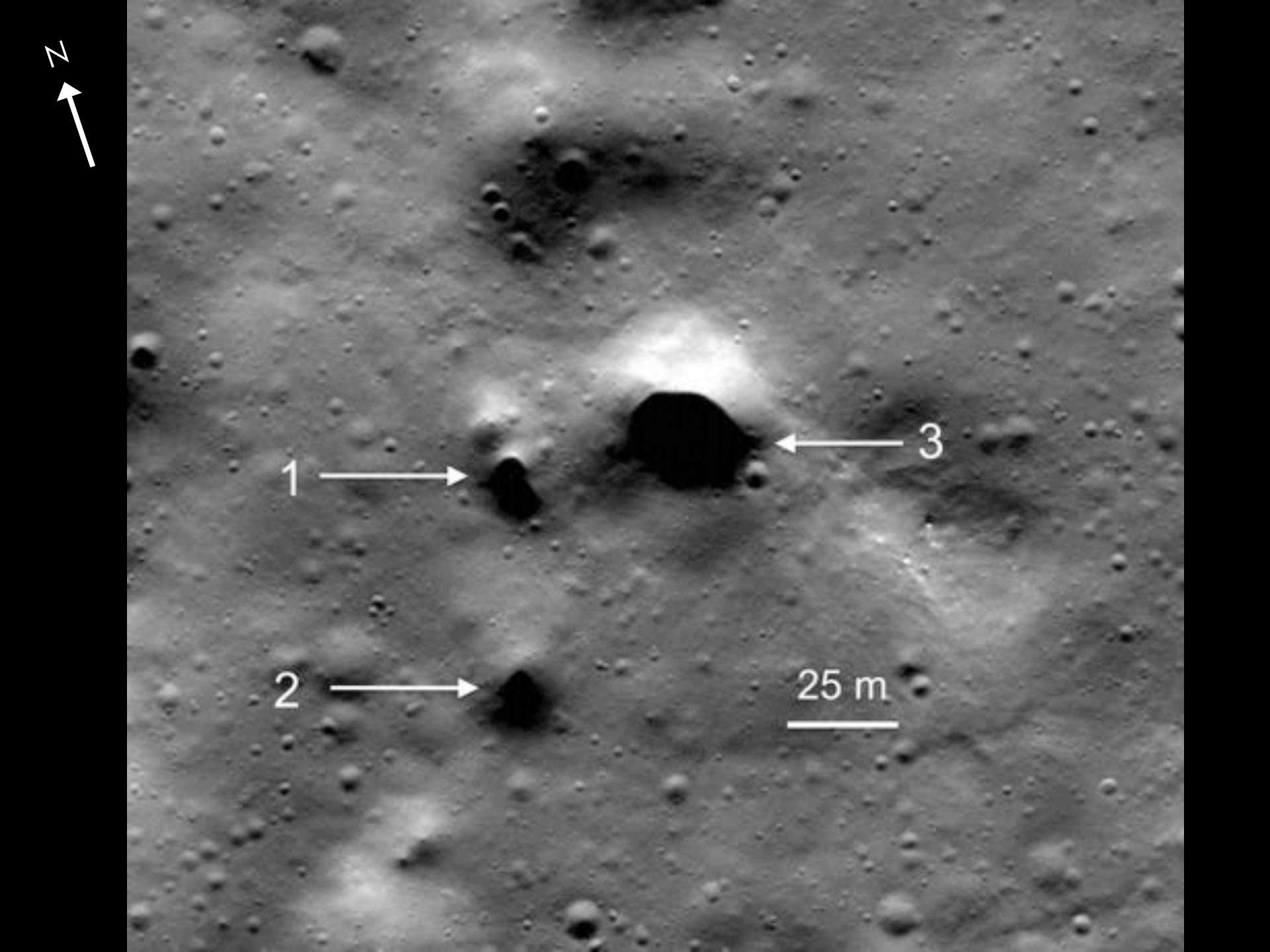

1000 m

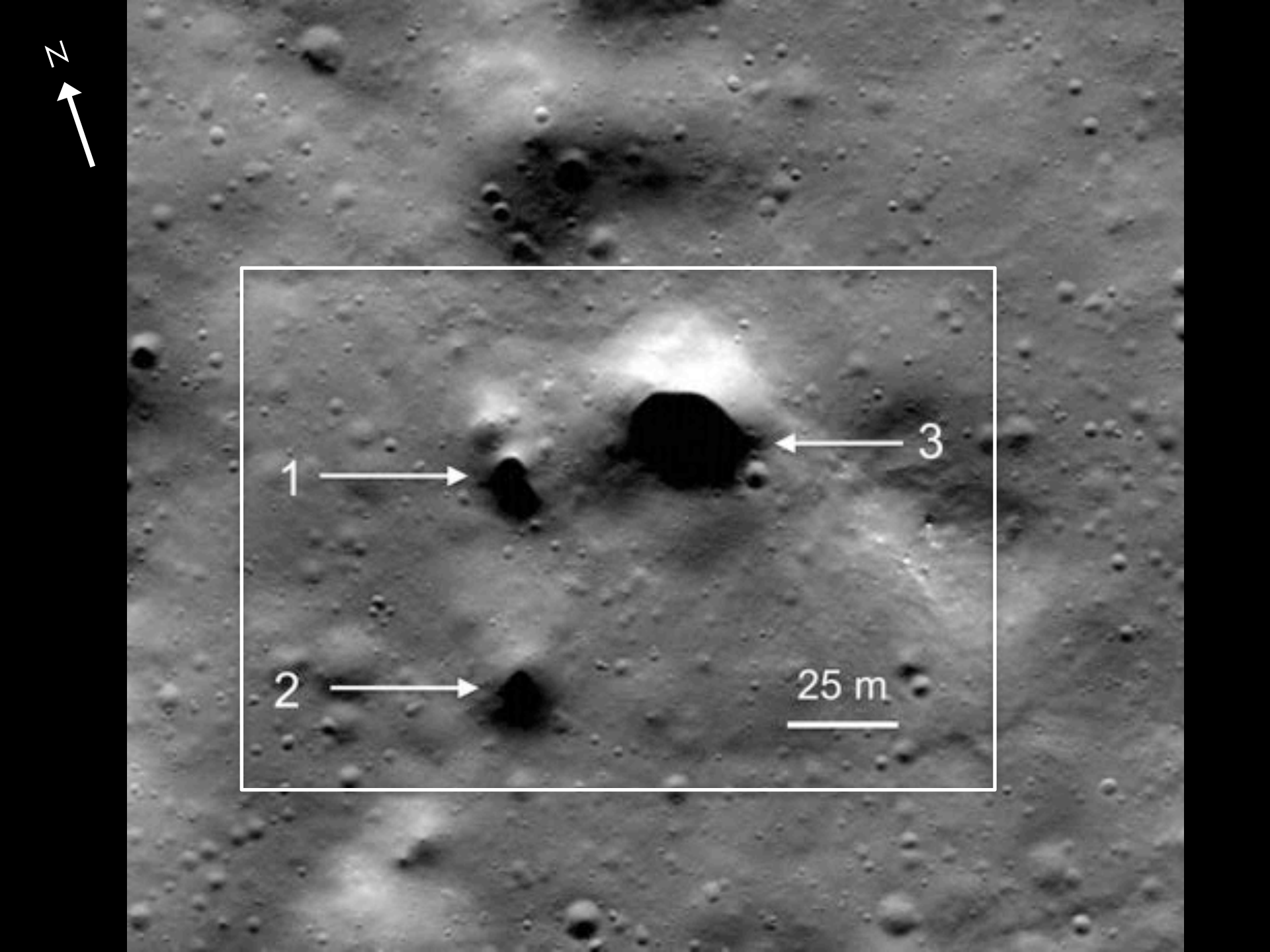


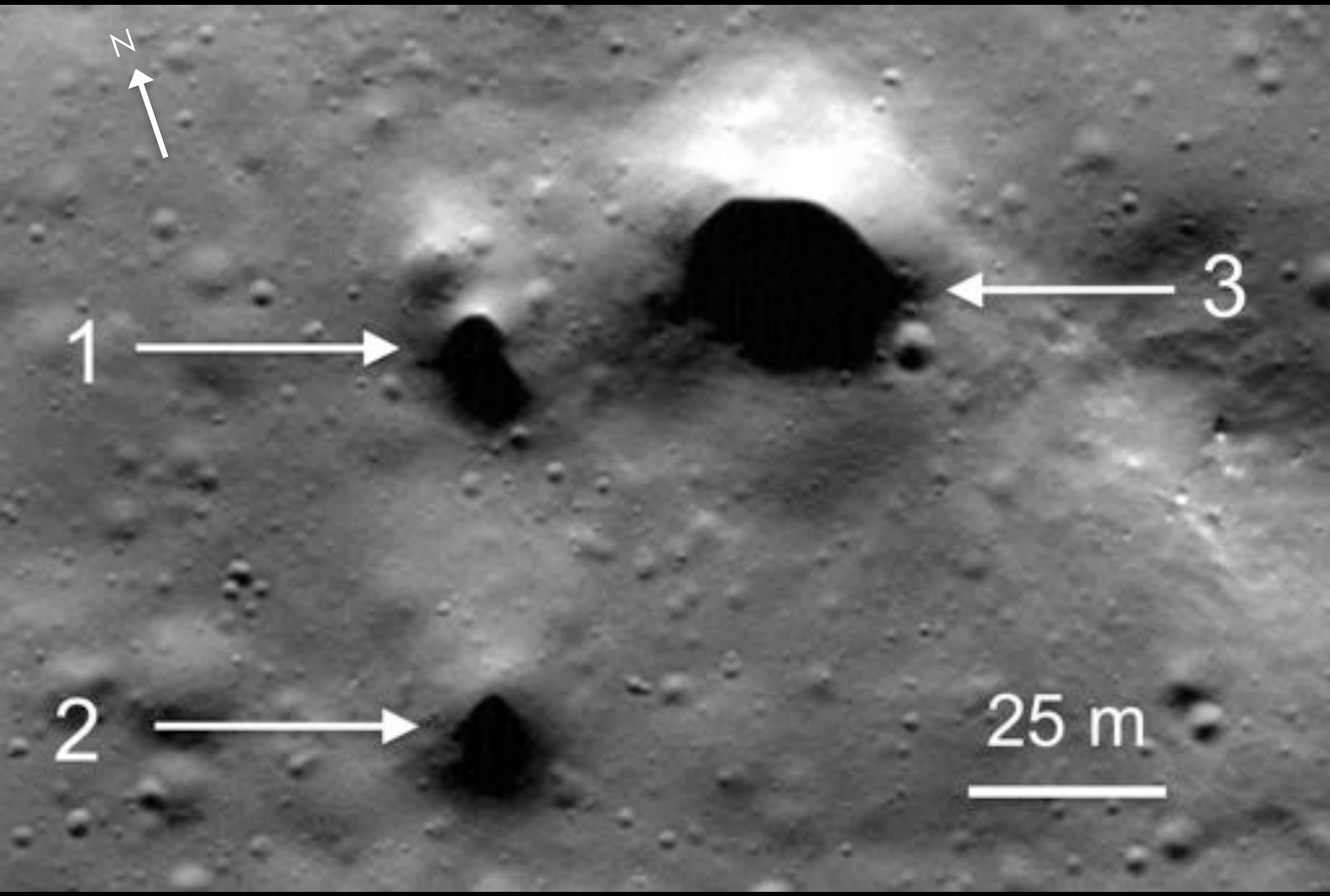
N


100 m


N
100 m

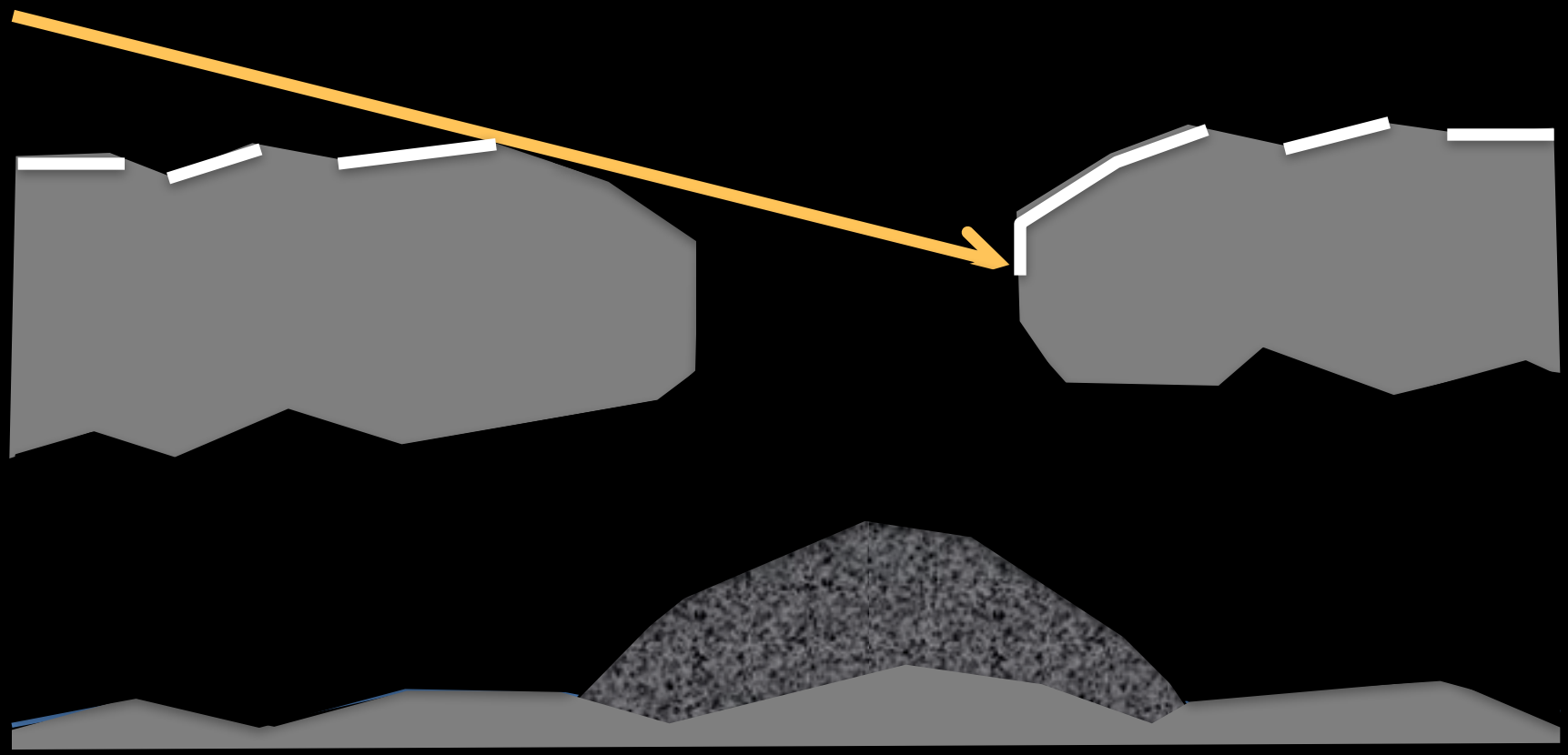

N
1
2
3
25 m


N
1
2
3
25 m


N
1
2
3
25 m

Permanently Shadowed Pits (PSP)

At Philolaus' lat (72°N), solar incidence angle is ≥66°
Skylight floor is generally never directly sunlit.



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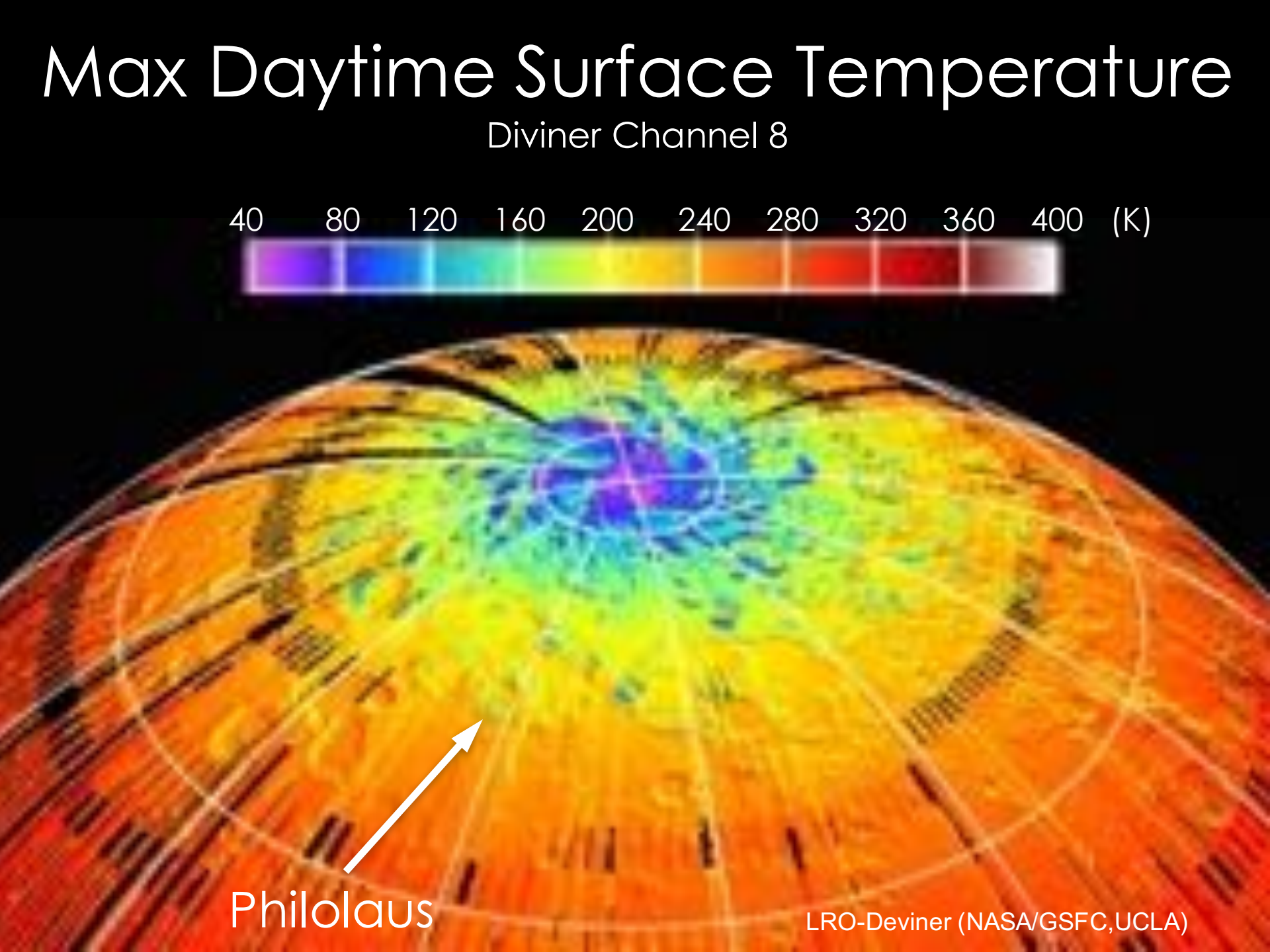
Max Daytime Surface Temperature

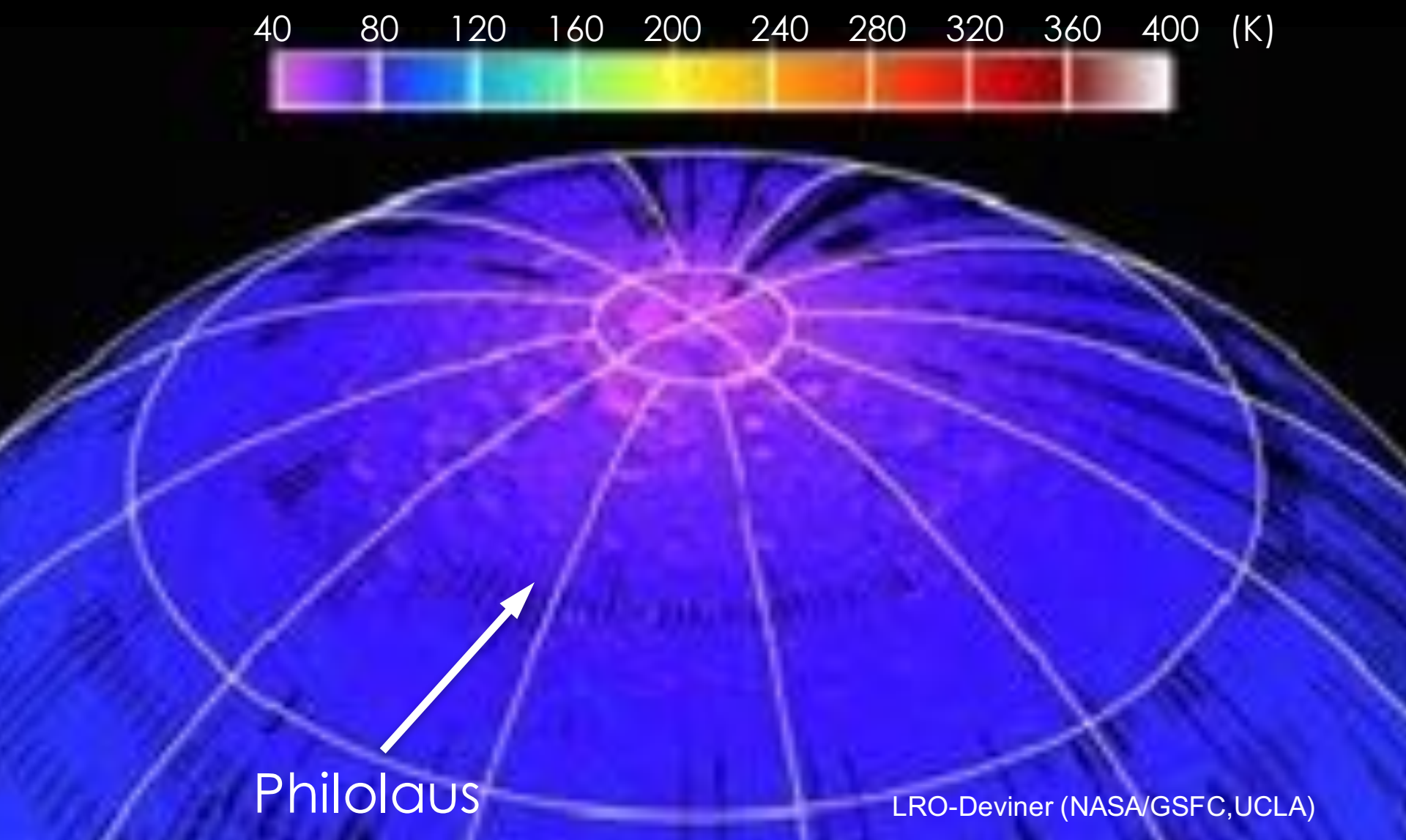
Diviner Channel 8



LRO-Deviner (NASA/GSFC,UCLA)

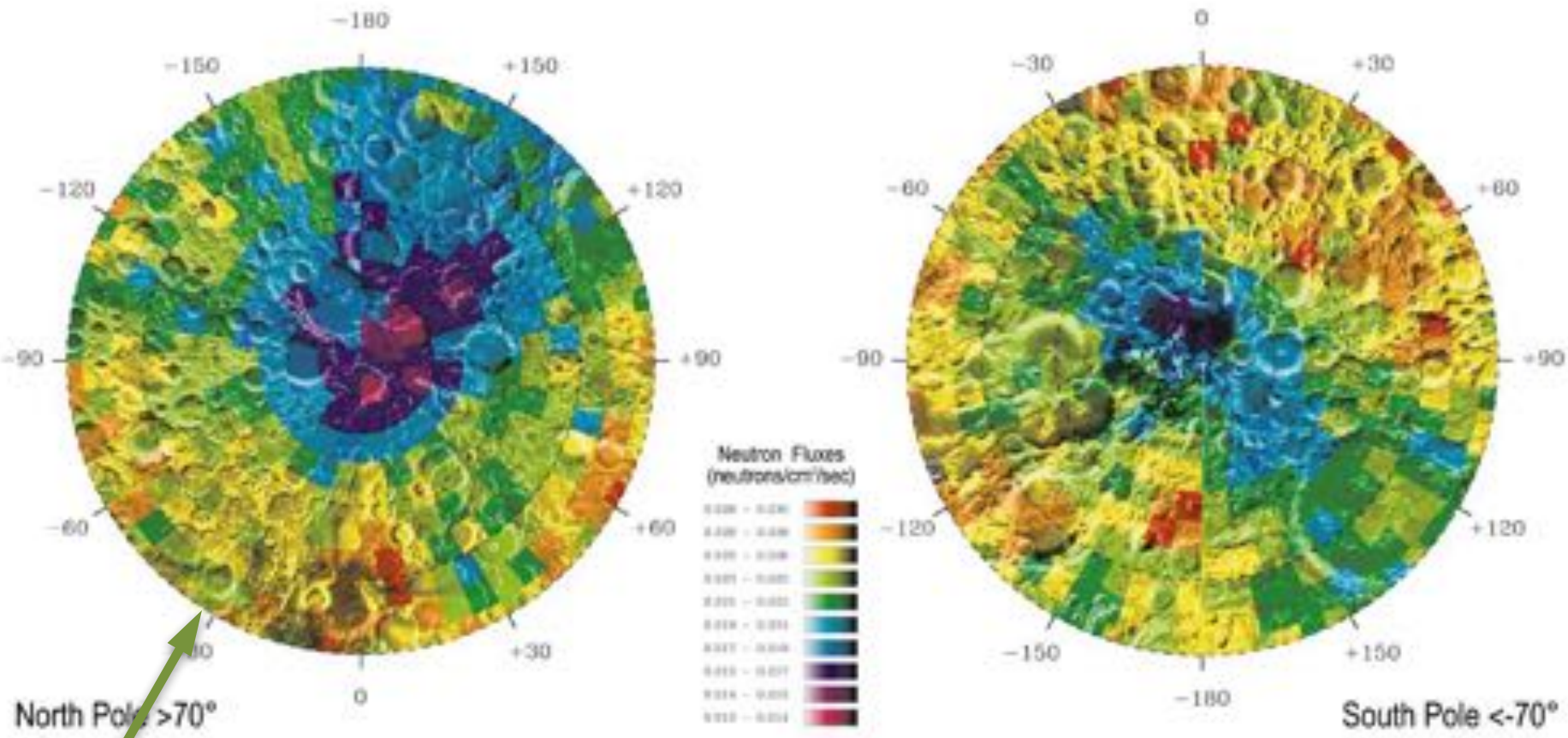
Min Nightime Surface Temperature

Diviner Channel 8



LRO-Deviner (NASA/GSFC,UCLA)

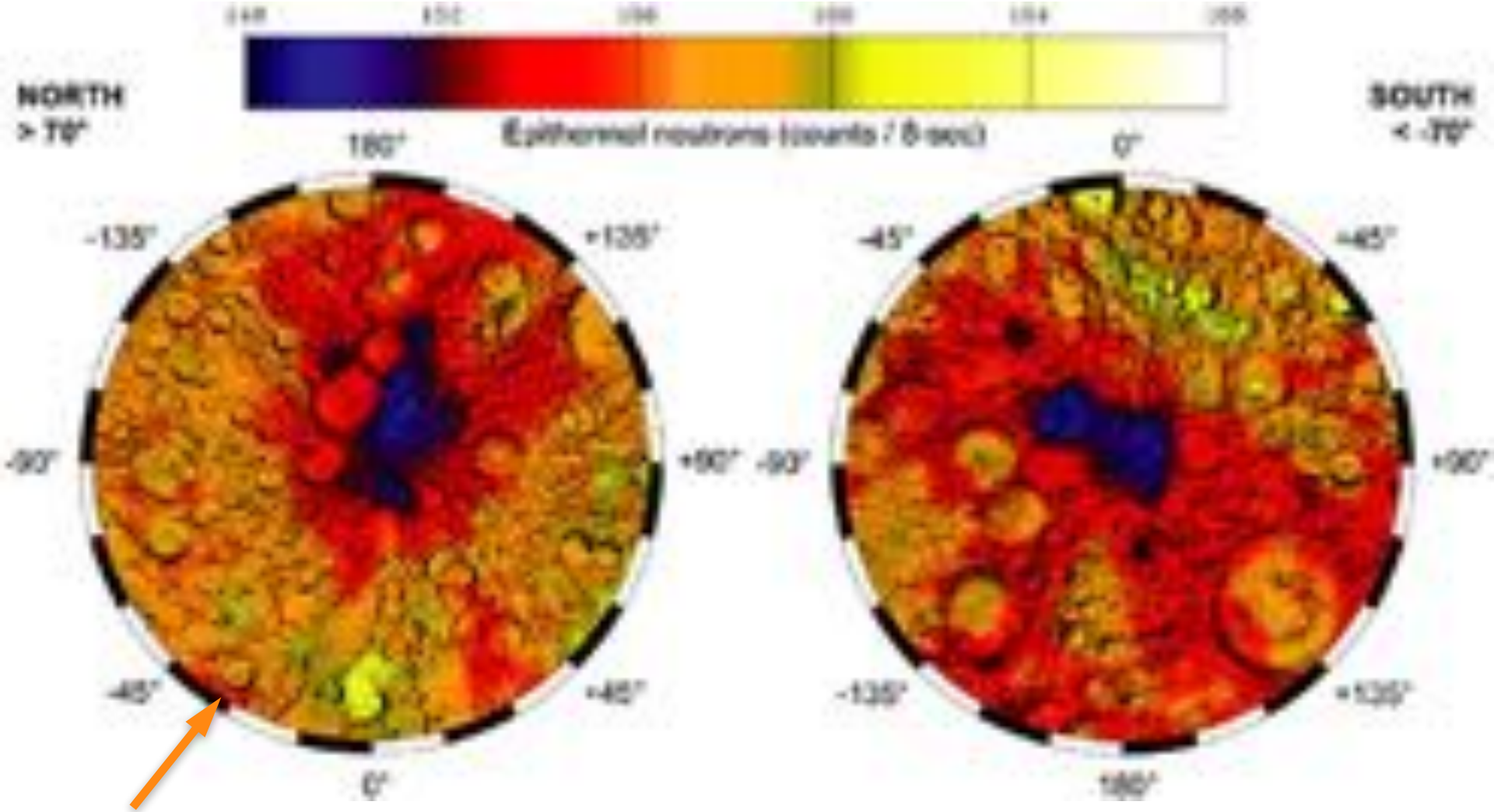
Lunar Prospector: Epithermal Neutrons



Philolaus

(Feldman et al. 1998)

Lunar Prospector: Epithermal Neutrons



Philolaus

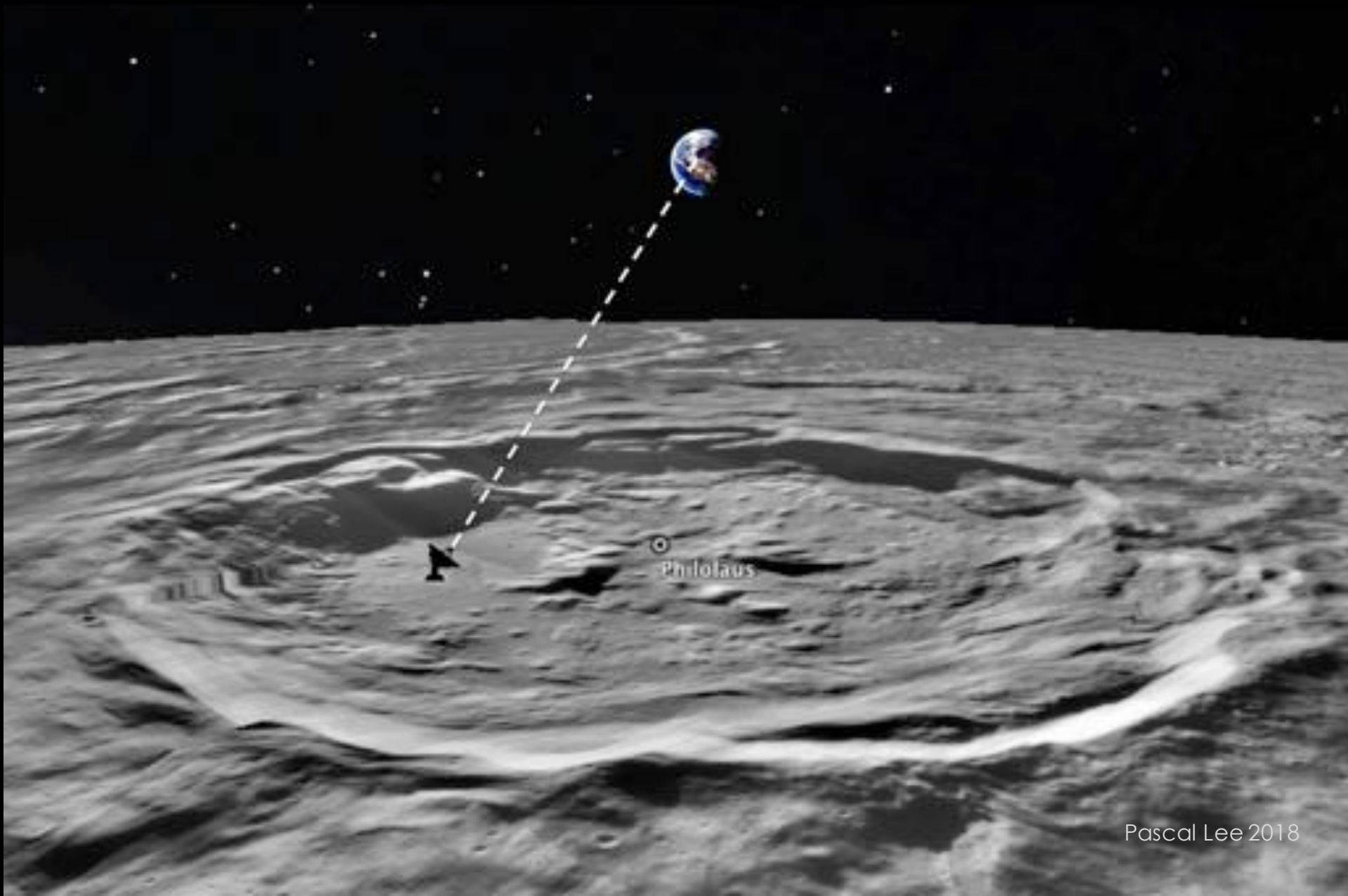
(Lucey et al. 2006)

Earth: Cold Regions Lava Tubes Ice

Lofthellir Lava Tube, Iceland

Sparkle Magic / Pascal Lee 2018

Philolaus Crater: Comms



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Philolaus Crater: Earth View

Moon: Human Exploration of Lava Tubes

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Mars: Human Exploration of Lava Tubes

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Traverse Target Opportunities

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