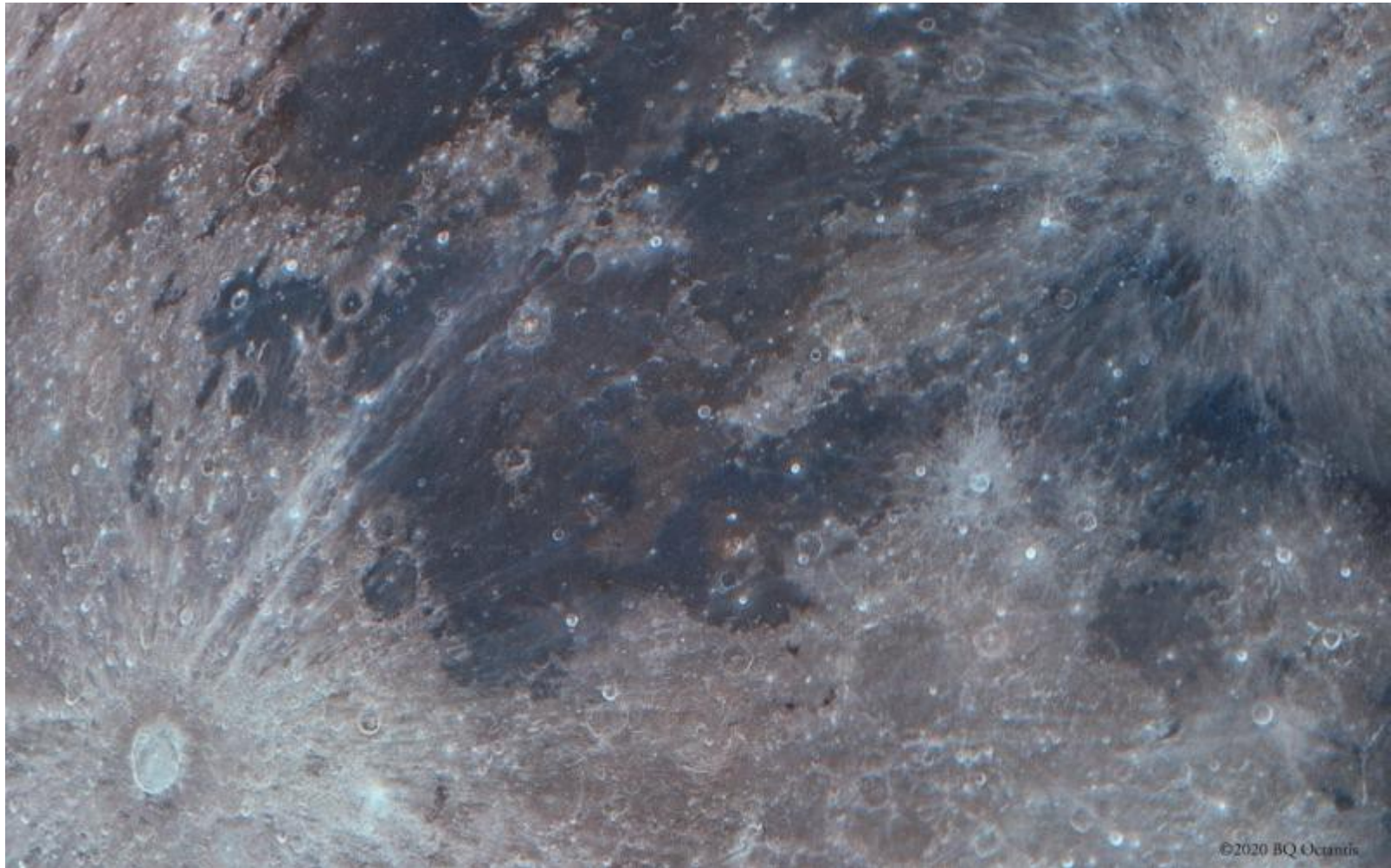


MARE NUBIUM

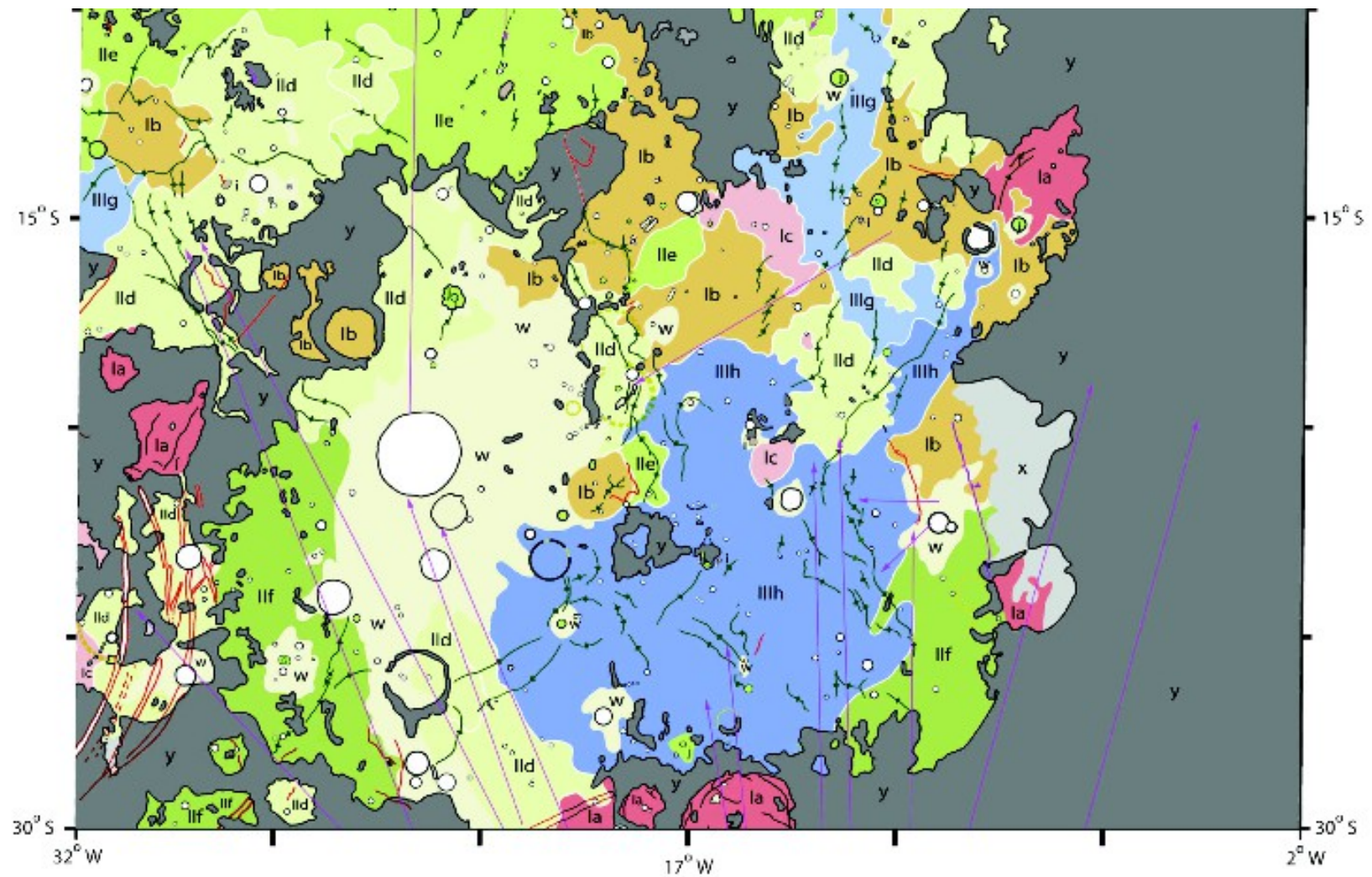


- Irregular mare, somewhat rectangular, centered at 21.3 deg S and 16.6 deg W, approx 690 km dia, visible from day 8+ through day 24
- Two scarps, the famous Rupes Recta or Straight Wall as well as Rupes Mercator
- Classic Eratosthenian crater, Bullialdus
- Hesiodus sunrise ray and Rima Hesiodus
- Double ring crater Hesiodus A (challenge!)
- Volcanic dome, Kies pi with summit pit crater

- Pre-Nectarian in age, 8th oldest basin per Fassett et al, 2012, little remaining evidence of original structure
- Dehon (1977) states that mare Nubium overlies four overlapping basins. The first one to form was in western Nubium; we see part of the original basin ring in the SW at Campanus and Mercator
- Rupes Recta occupies one of the three basins that underlie the eastern Nubium









- Bugiolacchi et al, 2005, identify nine different mare units and three eruptive phases, starting in Upper Imbrian, 3.4 Ga through Late Eratosthenian 2.7 Ga

Bugiolacchi et al Geologic Map



Geologic Map Key

DARK MATERIALS		Highland Materials	CRATER MATERIALS		
Mare Materials	Dome Materials				
			j		COPERNICAN SYSTEM
	i		w	Upper Eratosthenian period	ERATOSTHENIAN SYSTEM
h g f e d				Early Eratosthenian period	
c b a				Upper Imbrian epoch	IMBRIAN SYSTEM
x				Lower Imbrian epoch	
		y			PRE-IMBRIAN

Geomorphological Features	
	Mare Ridge
	Sinuous Rille
	Mare Rille
	Fault
	Ejecta Ray
	Buried Crater
	Crater Rim
	Volcanic Dome

The Nubium Basin

Fig. 19. A geologic map of the Mare Nubium and Mare Cognitum region.

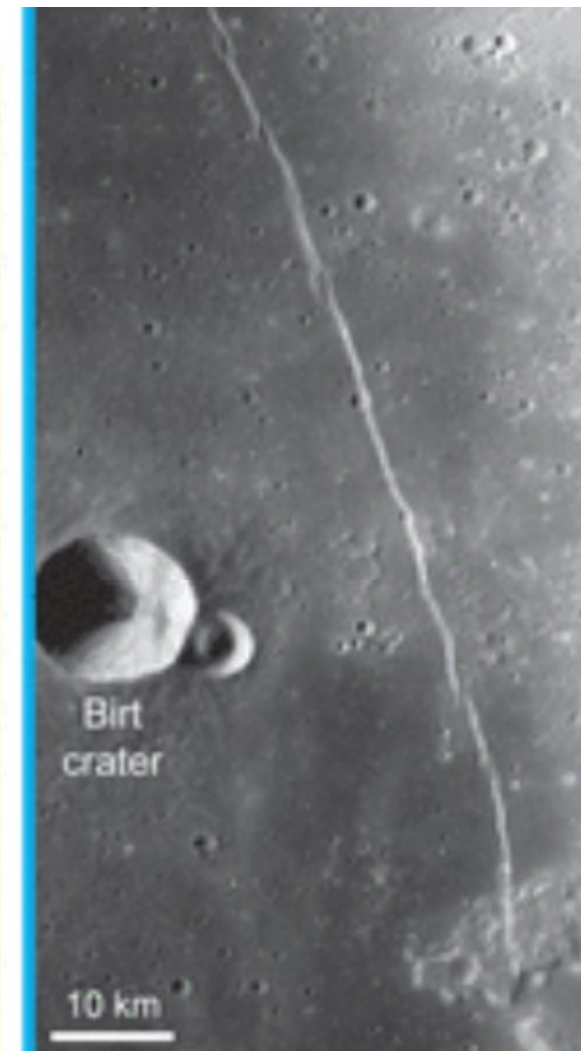
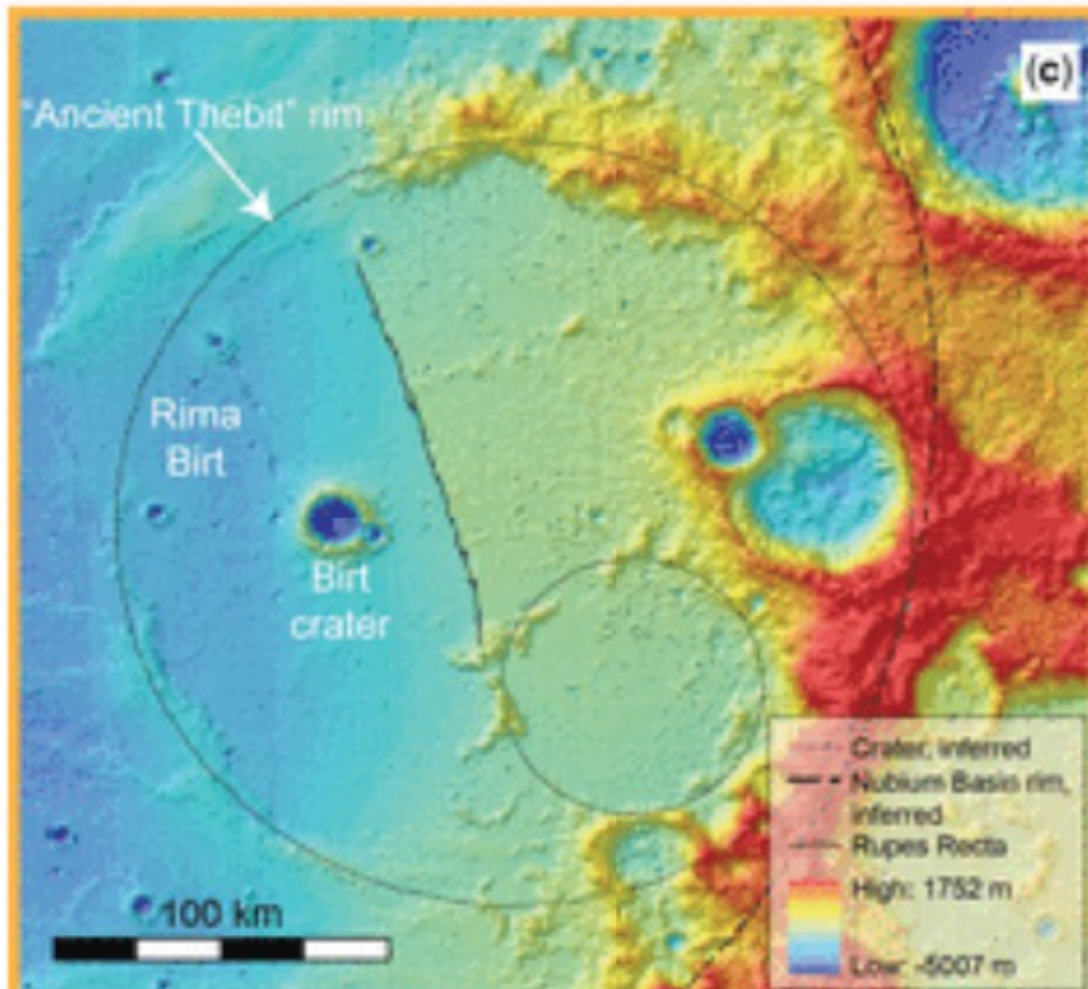
From LPSC 2020, Adarsh, Chauhan and Chauhan:
Geological investigation of Mare Nubium, Moon using multiple
datasets from recent lunar missions

- “This Pre-Nectarian basin is unique in preserving volcanic units that show variability in composition and eruptive styles (basaltic to silicic). The region has undergone a prolonged volcanic evolution as indicated by presence of mare basalts and young irregular mare patches. Morphological observations and presence of various structural features suggest the role of both endogenic and exogenic geodynamic processes in evolution of the basin.”

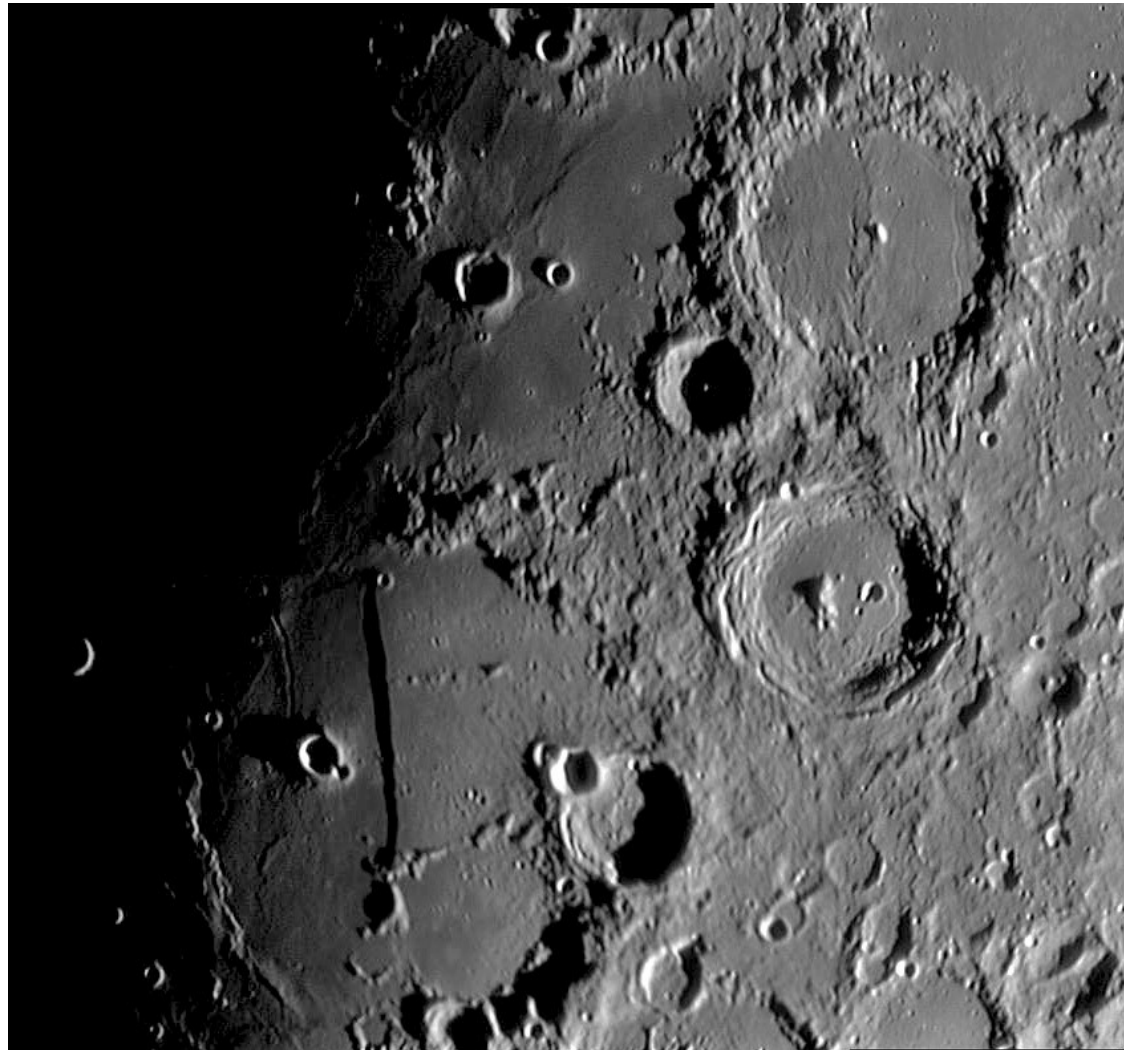
RUPES RECTA

- 110 km length, 2 to 3 km wide, 240 – 300m high
- Normal fault, age about 3.2 Ga
- Nahm & Schultz estimate 400 m vertical displacement, depth 42 km, tension implied
- Slope 30 to 40 % (Dehon), located near projected buried rim of one of the east Nubium impact basins
- Waxing Moon Feb 20, 7 pm 9.2 days SSC 17.5
- Waning Moon March 6, 7 am 23.2 days SSC 187.6

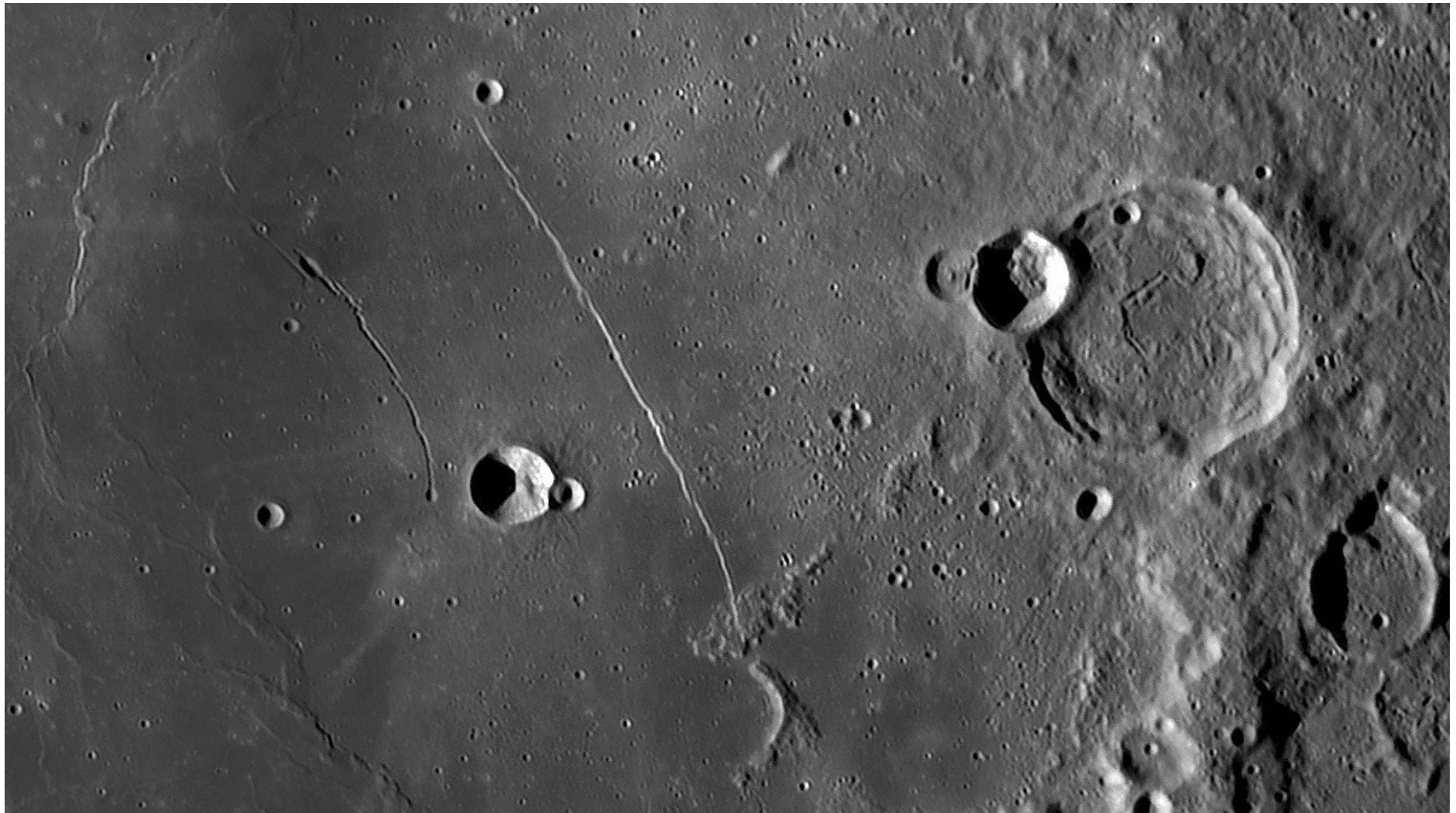
From Nahm & Schulz, 2013, Rupes Recta and the Geological History of the Mare Nubium....



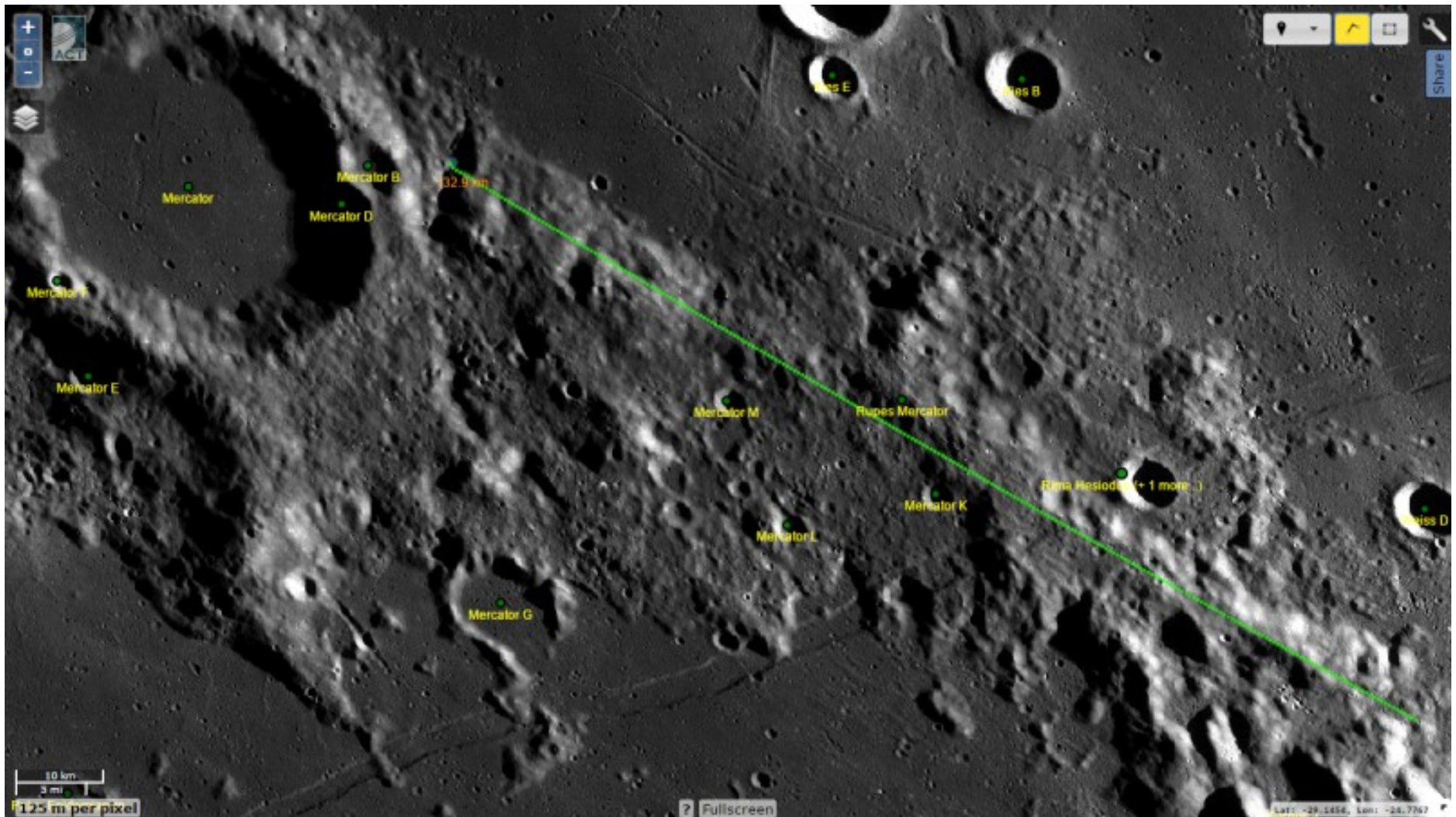
LPOD Jan 27, 2007, WAXING ILLUMINATION, image credit, Hill



LPOD Aug 20, 2009, WANING ILLUMINATION, image C. Arsidi



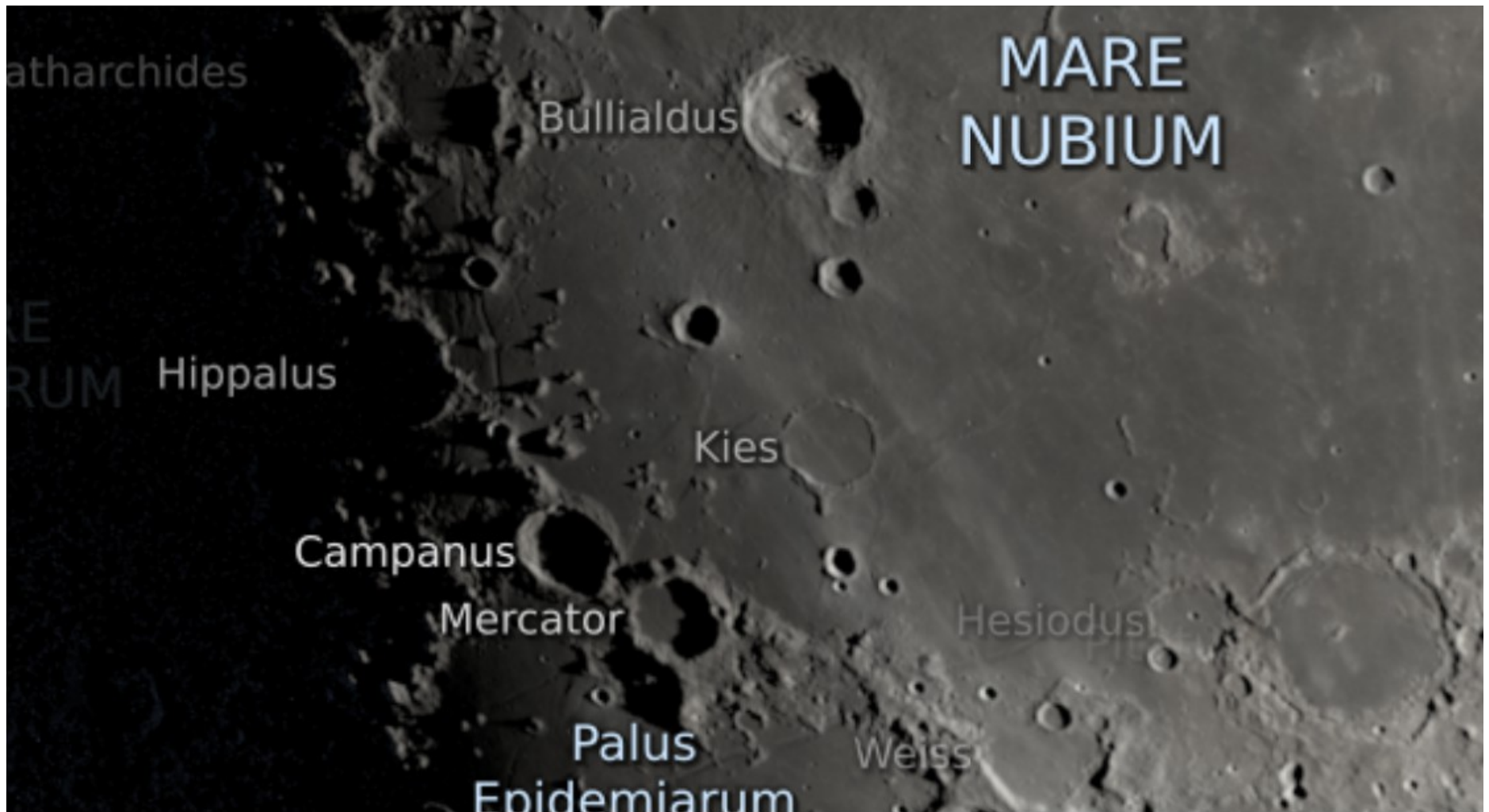
RUPES MERCATOR from moon.us/wiki



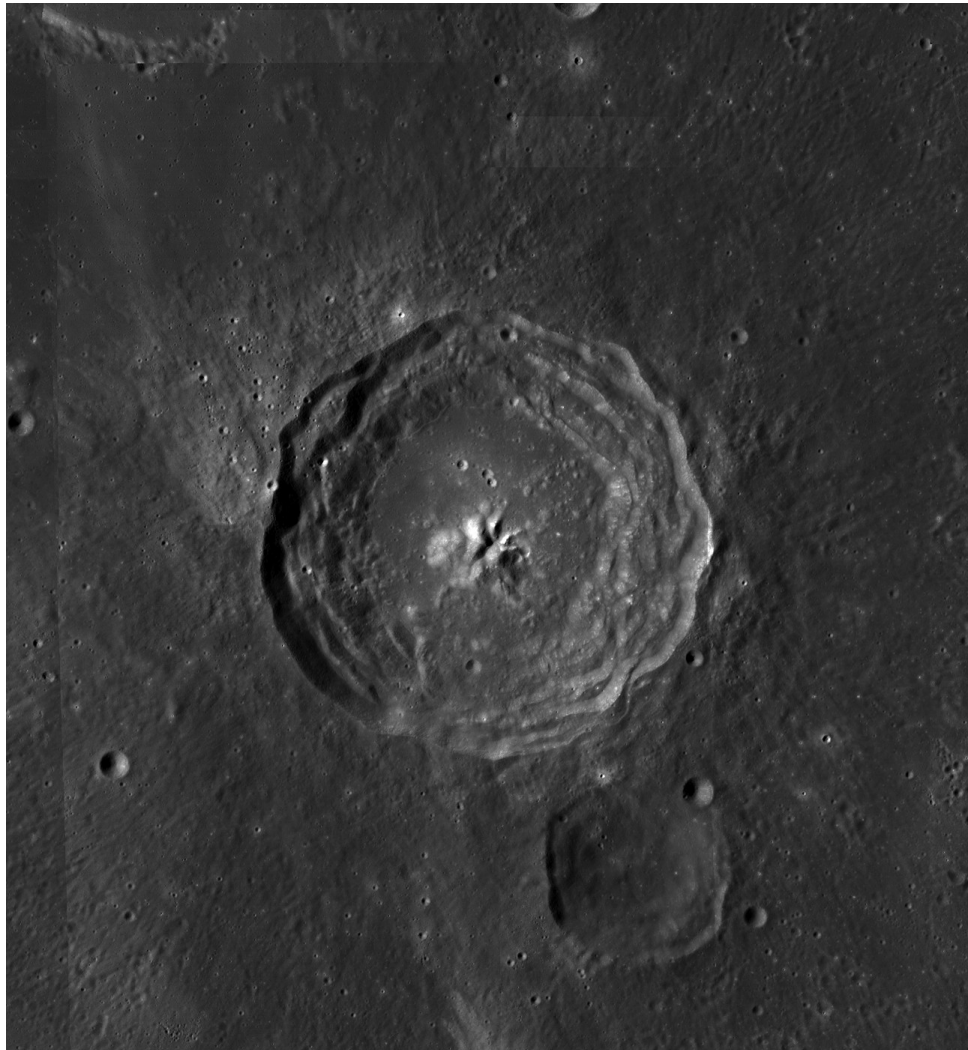
Direct quote from Wikipedia

- “This is a short ridge, one of the few remaining parts of the rim (interpreted) of the Nubium Basin. All basin rims are places where the terrain inside the rim has moved downward compared to that beyond it, but there is no evidence that this rim arc is a fault. The classic rupes or faults on the Moon have scarps, and although Rupes Mercator casts a straight shadow, it does not have a scarp face and thus labelling it a rupes is unwarranted.”

WAXING MOON FEB 21 7PM EST, 10 DAYS 4 HR



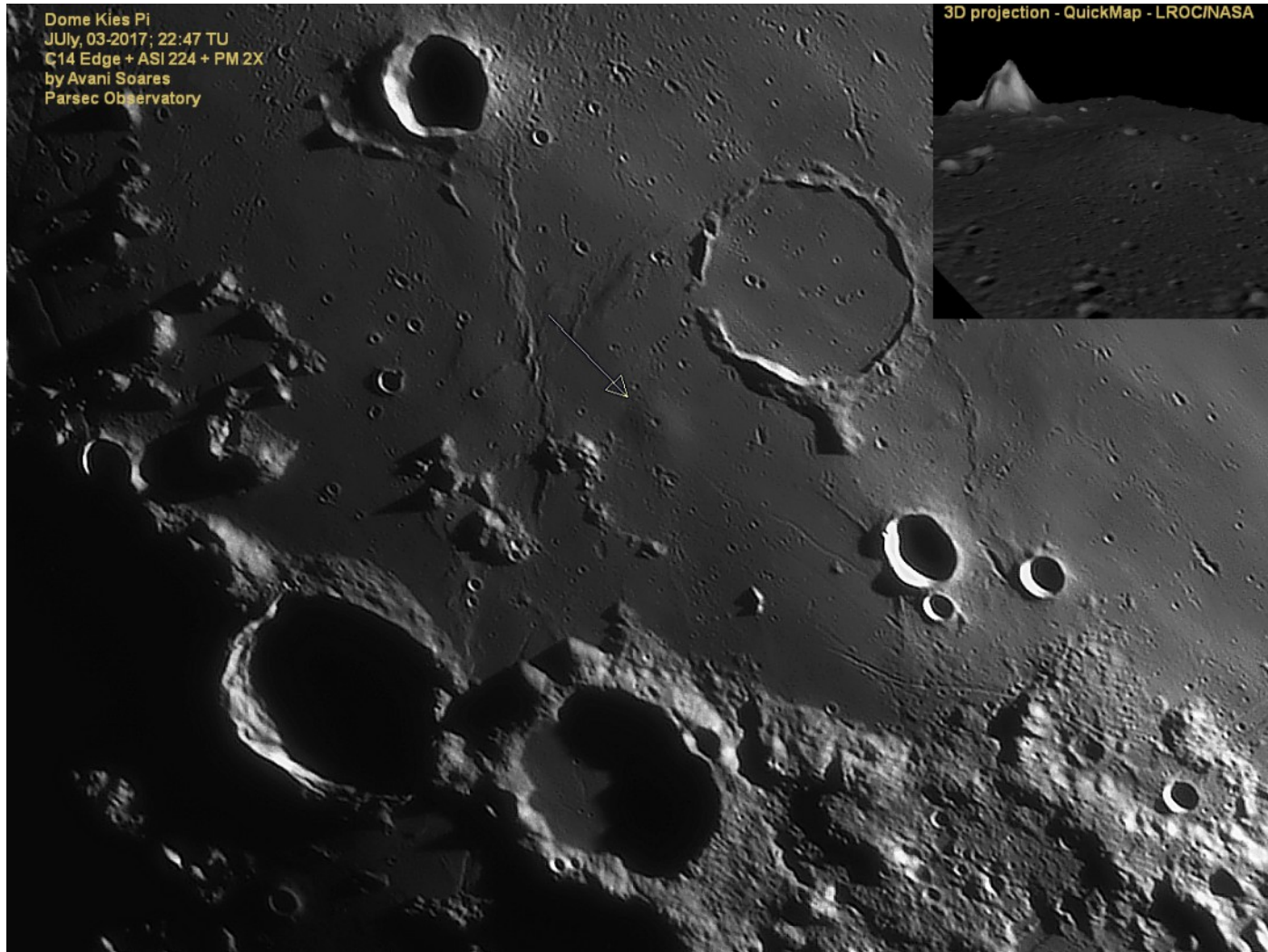
BULLIALDUS, LROC VIEW



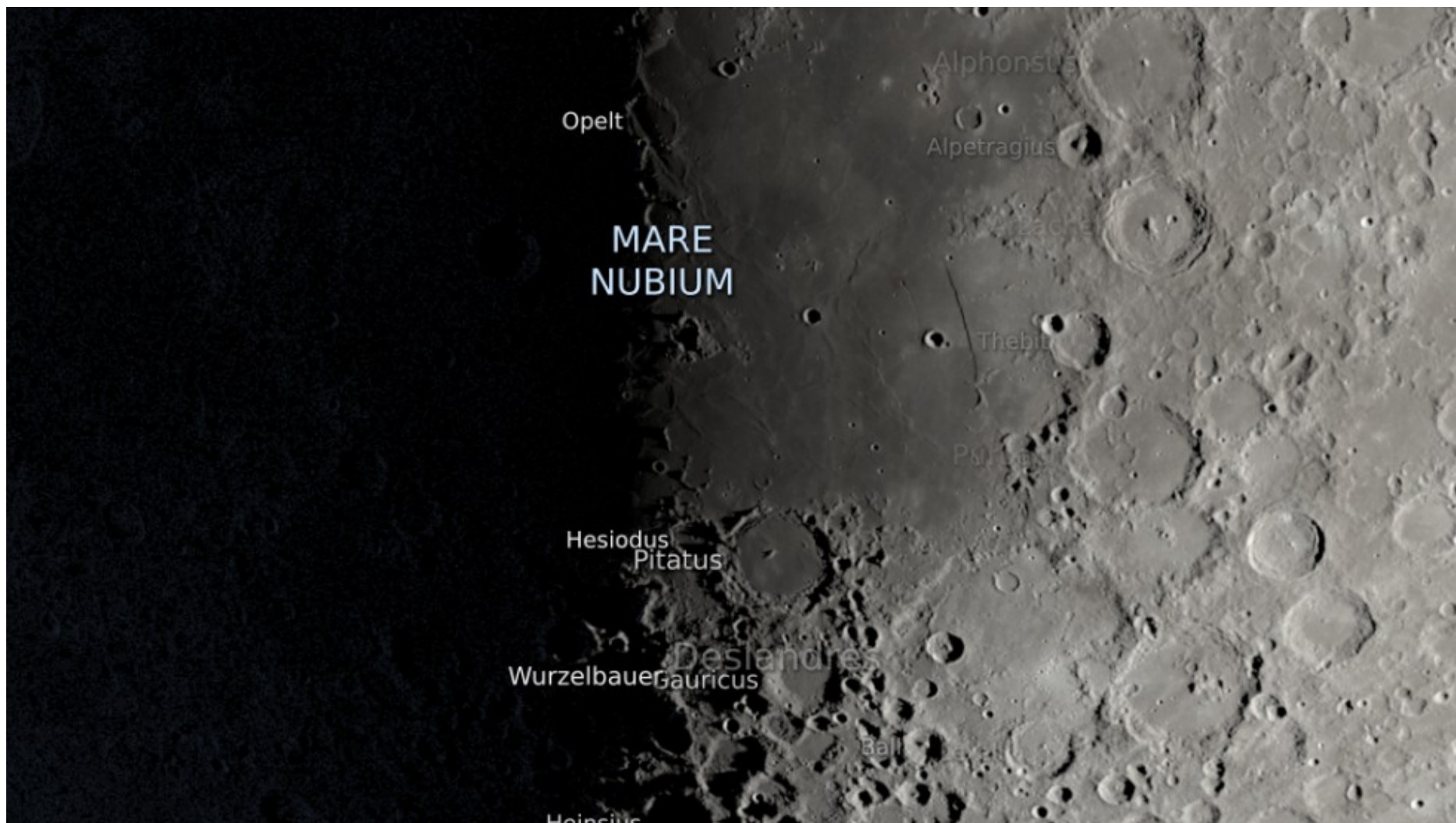
Bullialdus

- 61 km dia crater, centered at 20.7 S and 22.2 W
- Eratosthenian age (3.2 to 1.1 Ga)
- Sharp rim and terraces, multiple central peaks, nice radial ejecta pattern
- No rays of its own
- Note also Kies pi, volcanic dome, very slight swelling just west of Kies
- Crater pair, Campanus and Mercator, both 48 km dia, Mercator is older

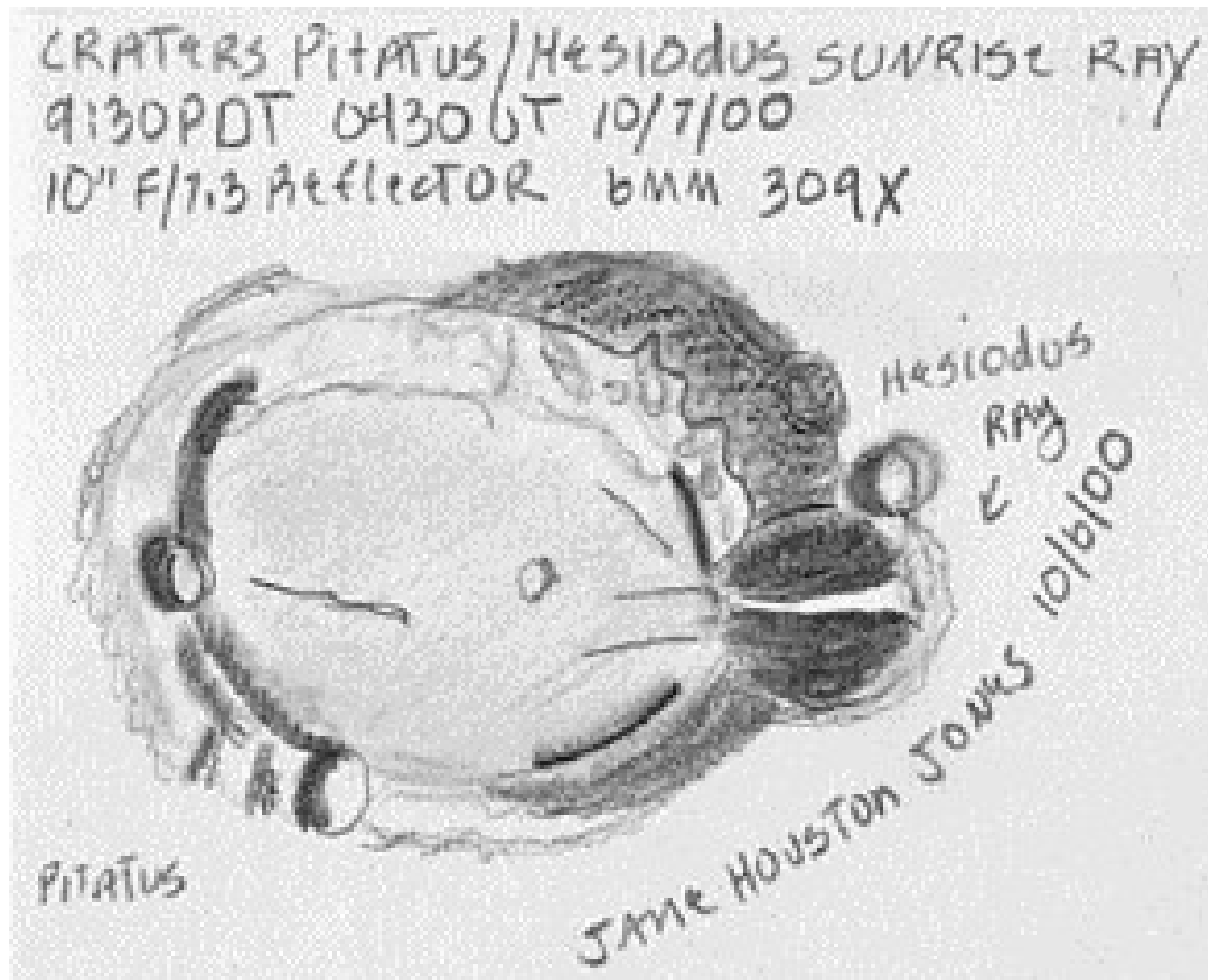
Kies pi from Brazil July 2017, Avani Soares



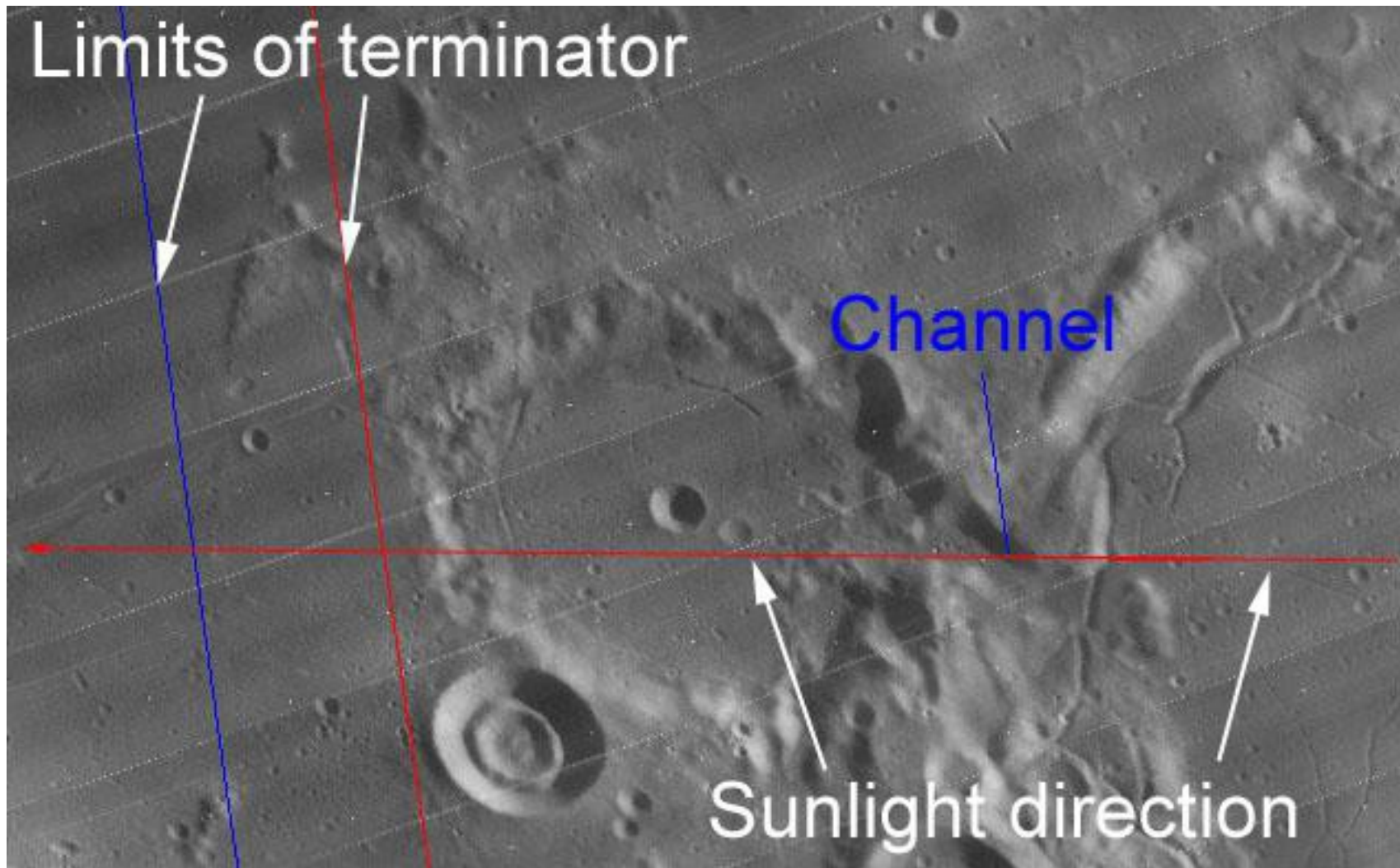
NASA SVS Feb 20 7pm SSC 17.5 deg



Jane Houston Jones from Cloudy Nights Post Oct 25, 2007



From Jim Mosher's explanations, Cloudy Night, Oct 25, 2007



RIMA HESIODUS LRO-WAC LENGTH 256 km



RASC OBSERVING

- Explore the Moon with a Telescope:
- Mare Nubium and Straight Wall Q Day 1
- Bullialdus #33 Q Day 2
- IWLOP:
- #83 Rupes Recta, Birt and Rima Birt
- #90 Pitatus
- # 100 Bullialdus
- #101 Kies, Mercator and Campanus

THANK YOU!
CLEAR SKIES AND GOOD HEALTH