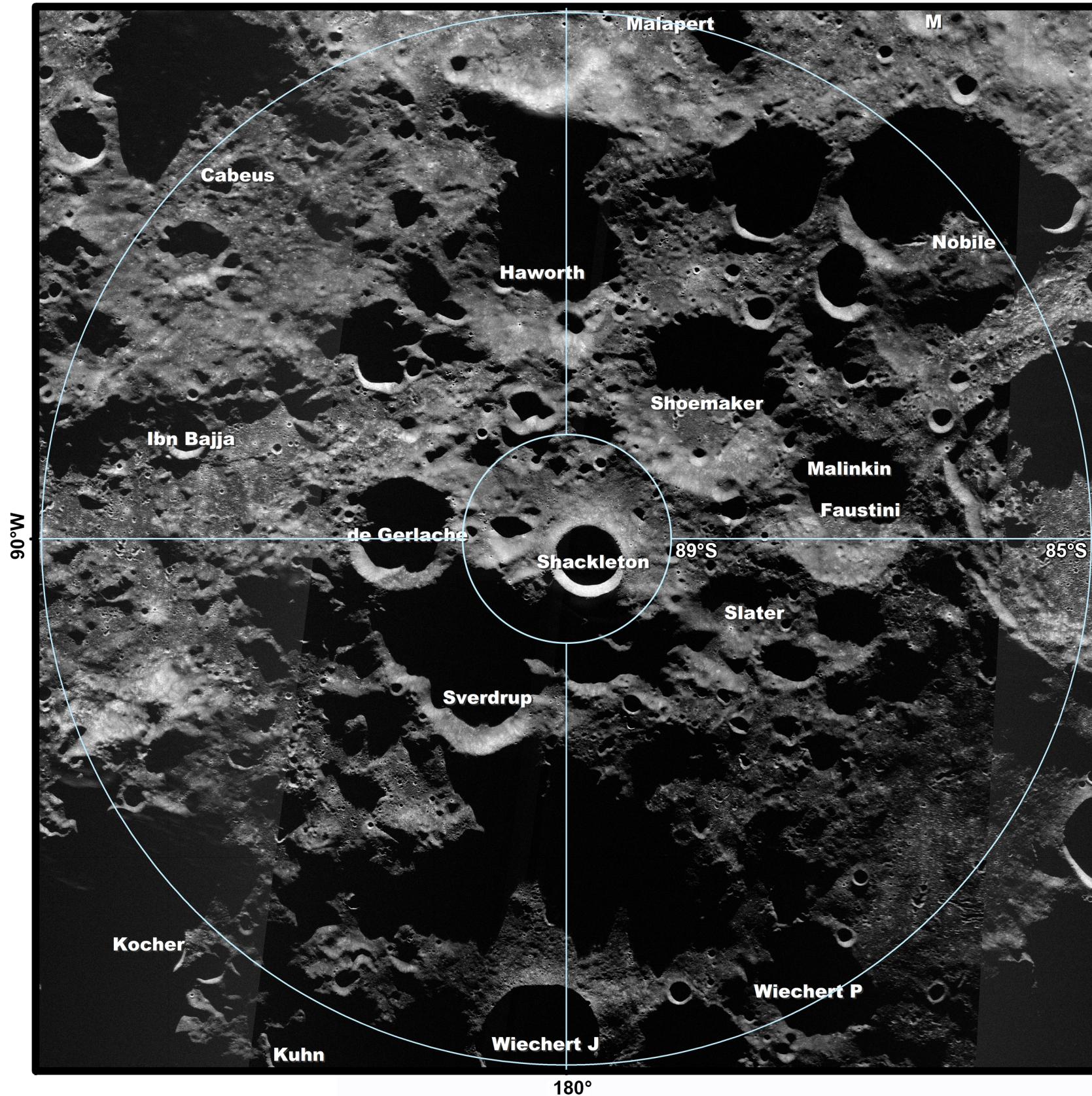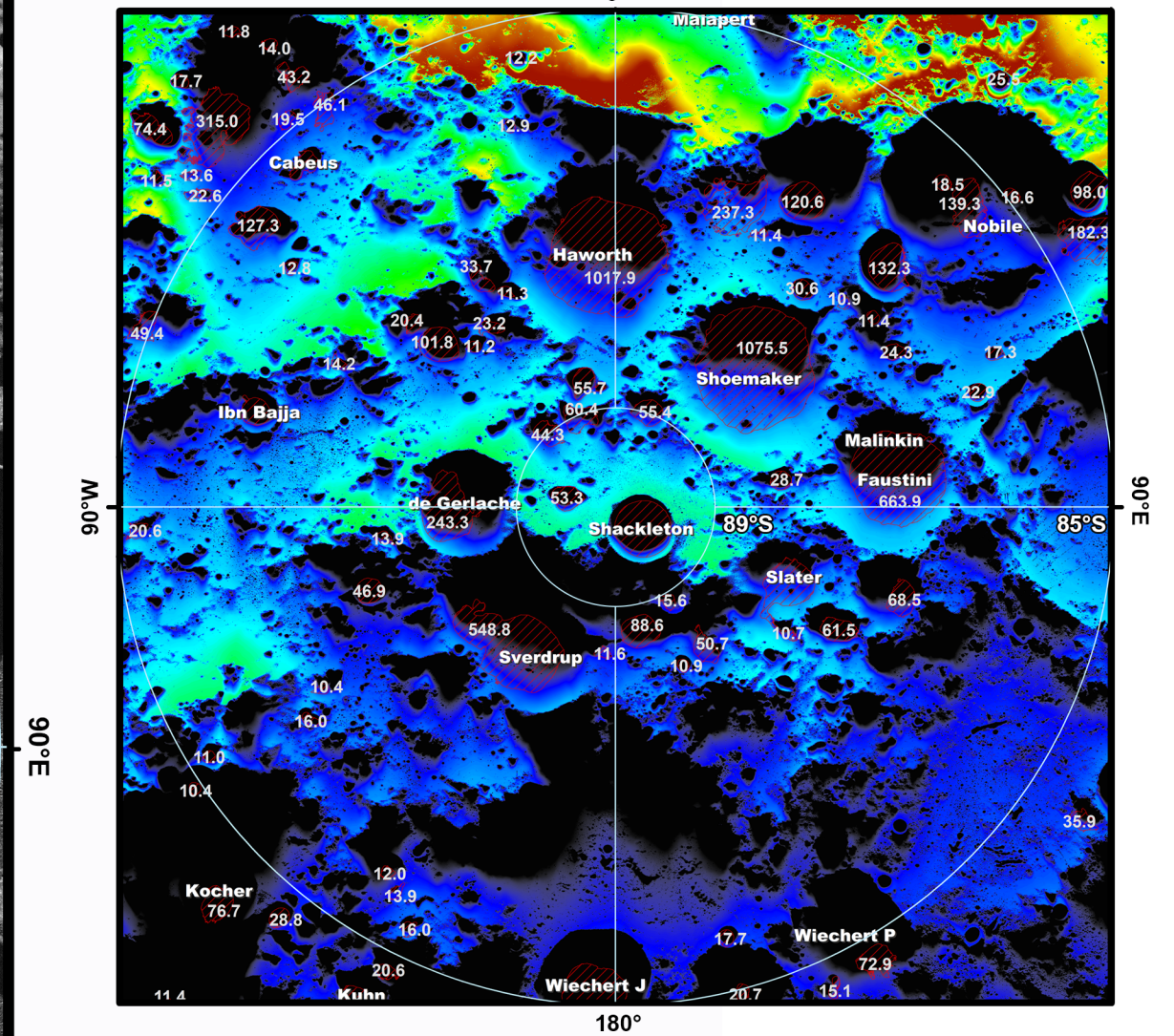# Lunar South Pole Radar Images and Earthshine Model (85°S to Pole)

Polarstereographic Projection (Scale 1:1,250,000)

S-band Earth-based Radar Backscatter Mosaic

0°

Malapert

M

Cabeus

Nobile

Haworth

Shoemaker

Ibn Bajja

Malinkin

Faustini

de Gerlache

Shackleton

89°S

85°E

90°W

90°E

Slater

Sverdrup

Kocher

Wiechert P

Kuhn

Wiechert J

180°

Model of Earthshine

0°

11.8 14.0

17.7 43.2

74.4 315.0 46.1

19.5 12.2 25

Cabeus 12.9

11.5 13.6

22.6

127.3 237.3 120.6 18.5 16.6 98.0

139.3

Haworth 11.4 Nobile 182.3

12.8 1017.9 132.3

33.7 30.6 10.9

11.3 Shoemaker 11.4

20.4 23.2 1075.5 24.3 17.3

101.8 11.2

49.4 14.2 55.7 2.9

60.4 55.4 Malinkin

44.3 Faustini

20.6 de Gerlache 53.3 Shackleton 28.7 663.9

13.9 243.3 89°S 85°S

46.9 15.6 Slater 68.5

548.8 88.6 50.7 10.7 61.5

Sverdrup 11.6

10.4 10.9

16.0

11.0

10.4 35.9

Kocher 12.0

76.7 13.9

28.8 16.0

20.6 17.7 Wiechert P

Kuhn Wiechert J 72.9

11.4 20.7 15.1

90°W

90°E

180°

Data sources:

Left: A view of the Moon's south pole in the high-resolution (20-meter) S-band radar image mosaic obtained with the Arecibo Observatory and Green Bank Telescope (*Campbell et al. 2006*) [Cornell University/Smithsonian Institution]. Earth-facing side of the Moon is centered around 0° longitude (top of image).

Above: Modeled average earthshine calculated from the Lunar Reconnaissance Orbiter Laser Altimeter (LOLA) 60-m elevation data (*Mazarico et al. 2011*) [NASA Goddard Space Flight Center (GSFC)]. Red pixels indicate a relative abundance of timesteps where that pixel is illuminated; black pixels are not illuminated by the Earth. Red hatching demarks large areas of permanent shadow as calculated using solar illumination models at the poles [NASA GSFC/Arizona State University]. Numbers indicate approximate areas in km² of the permanently shaded regions (PSRs). Some solar PSRs receive partial illumination indirectly from the Earth over the course of a year, but with much lower flux in mW/m² (*Mazarico et al. 2018*).

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