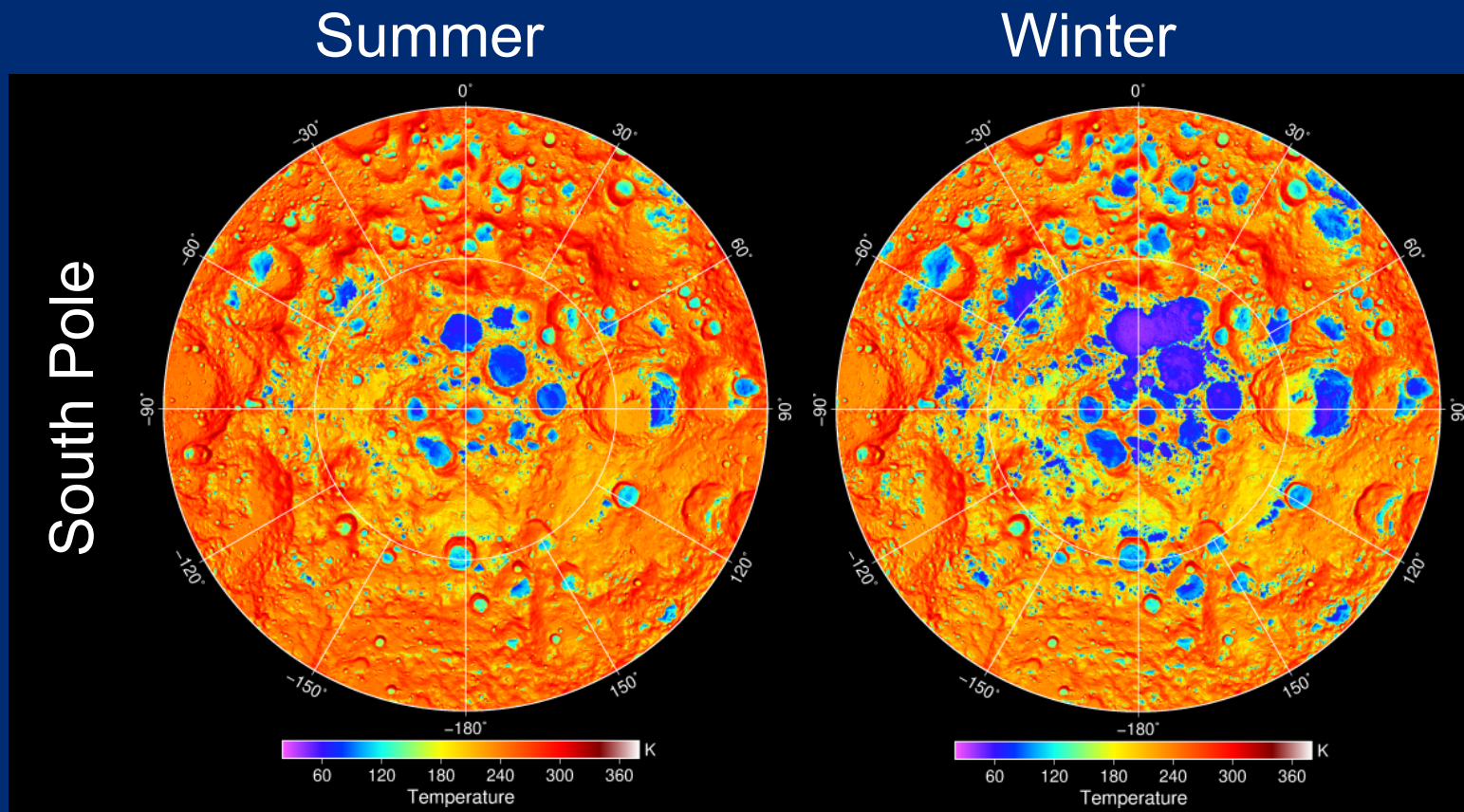


Know before you go: Lunar seasons produce dynamic thermal environment in polar regions



The lunar south pole is the destination for the first woman and next man to step foot on the Moon. As measured by Diviner, the area with maximum temperatures cold enough to trap water-ice frost increases from 1.30×10^4 km² in summer (left) to 3.73×10^4 km² in winter (right).

- The Moon experiences seasons on timescales similar to Earth.
- The Diviner Lunar Radiometer (Diviner) onboard the NASA Lunar Reconnaissance Orbiter has been measuring lunar surface temperatures for over 10 years.
- Diviner's observations have allowed researchers to investigate seasonal effects on polar temperatures, including mapping vast regions that get no direct sunlight for extended periods of time.
- While cold temperatures in these regions enhance the stability of volatiles, including water-ice, the lack of sunlight provides challenges to surface exploration and could lead to Antarctic-like seasonal exploration campaigns.

Plans for exploration in seasonally shadowed regions should consider seasonal effects on frost stability, subsurface ice stability, and trafficability.