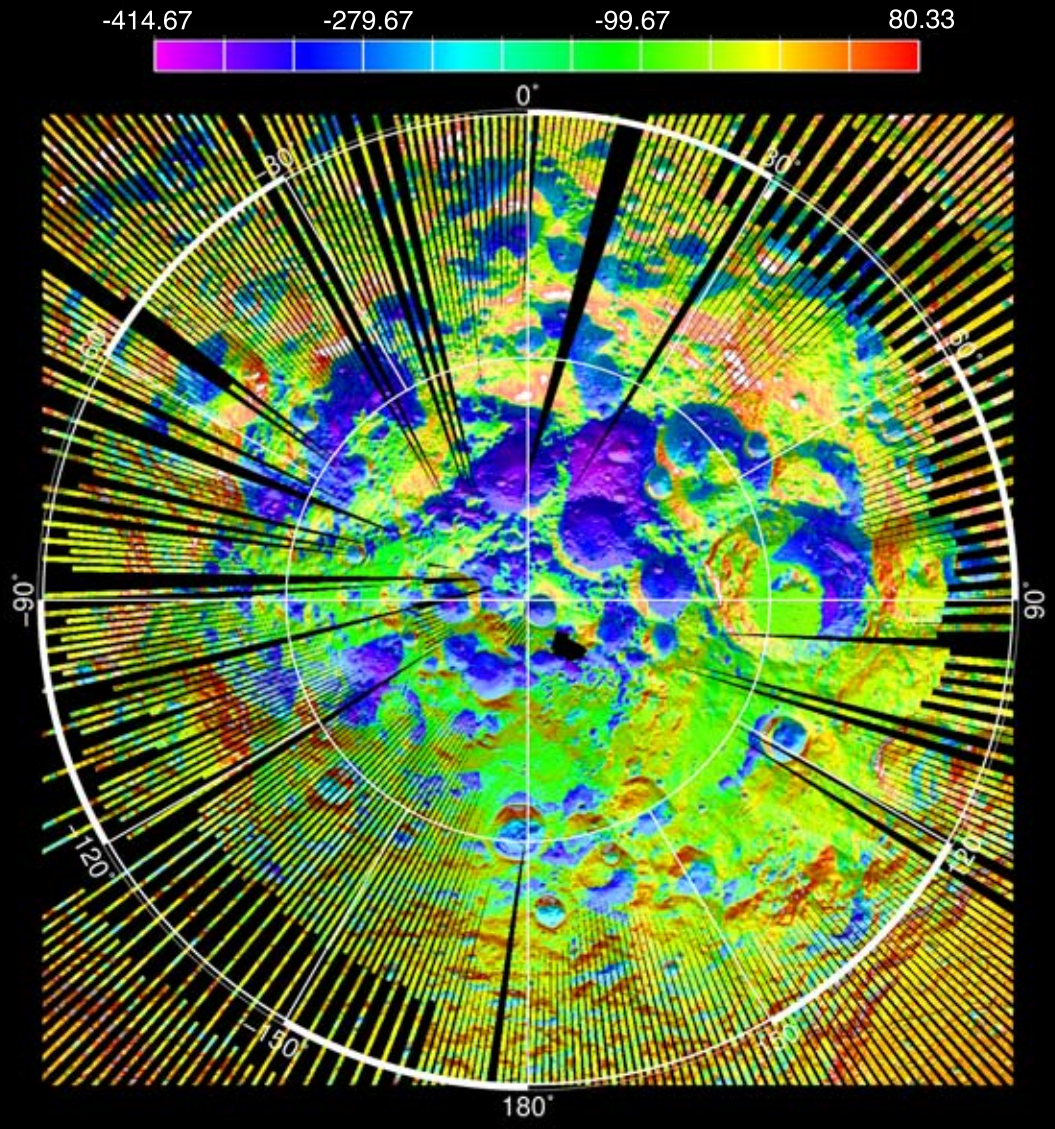
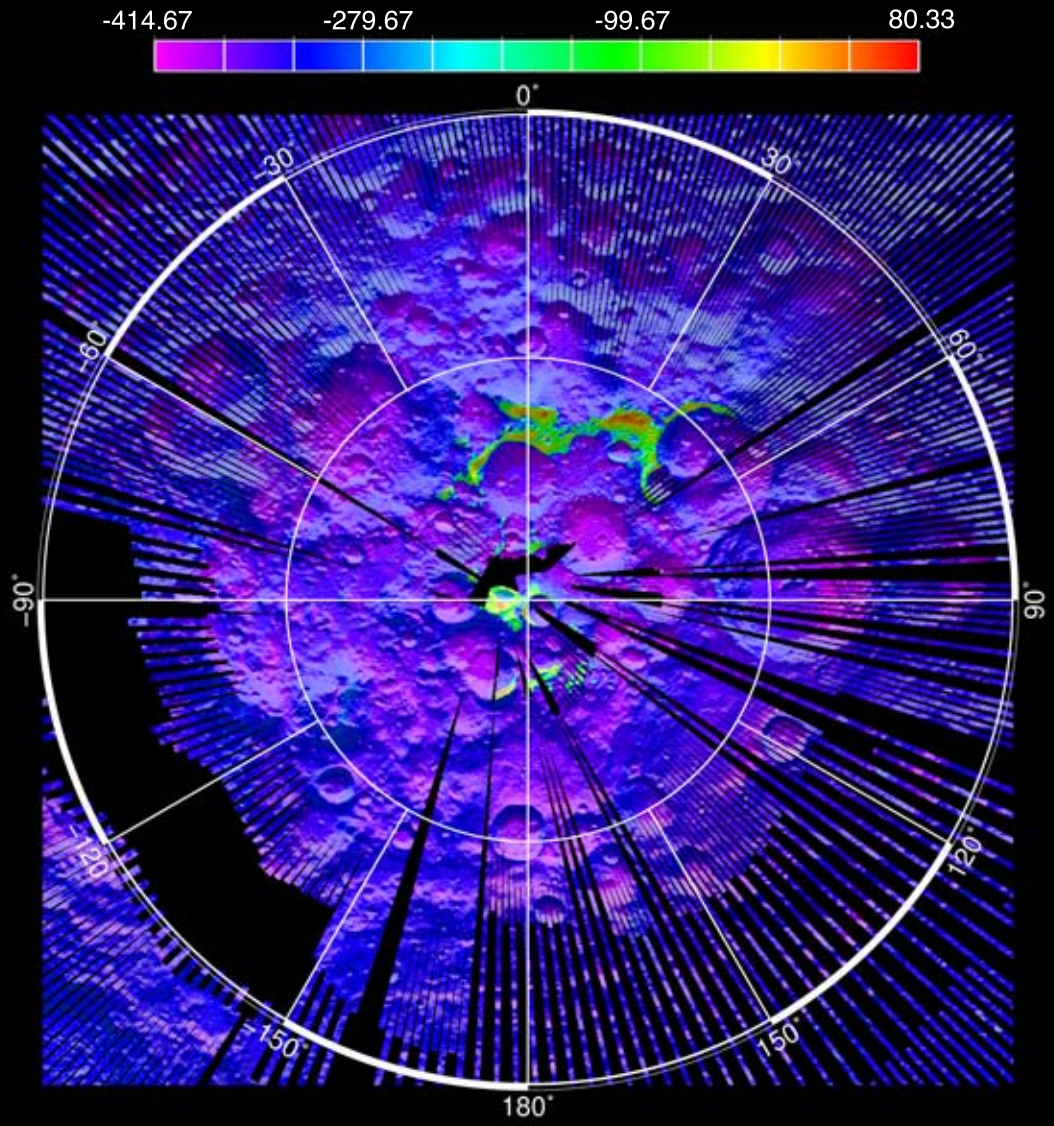
Day Temperatures of the Lunar South Pole

T(Fahrenheit)



Night Temperatures of the Lunar South Pole

T(Fahrenheit)



Lunar Daytime and Nighttime Temperatures as Measured by Diviner

The Moon is a place of extremes. Unlike the Earth, the Moon does not have an atmosphere - the protective blanket that circulates energy and regulates temperatures on Earth. Also, the Moon rotates slowly, with a daytime/nighttime cycle lasting one month, or nearly 28 days. These two factors result in very warm days and very cold nights on the lunar surface. Additionally, the Moon's orbital axis tilts only 1.5 degrees (compared with 23.5 degrees for Earth) with respect to the Sun. This unique orientation means that there are places within craters near the Moon's poles that never see sunlight. Alternatively, there are places near the Moon's poles that nearly always see sunlight.

These extreme temperatures are measured by the Diviner Lunar Radiometer Experiment (Diviner) aboard the Lunar Reconnaissance Orbiter (LRO). Diviner uses infrared measurements to obtain temperatures of the lunar surface. In the daytime image, areas where sunlight does not reach appear cold (blue and purple). In the nighttime image, areas that see sunlight appear warm (orange and red). Scientists study these temperature extremes to search for places where volatiles, such as water ice, may exist. Data used to make each image were gathered over the course of a single lunar day. Each geographical point on the image is the equivalent temperature recorded at local noon (day) and local midnight (night). The lunar poles are colder than any other place in the inner solar system.