

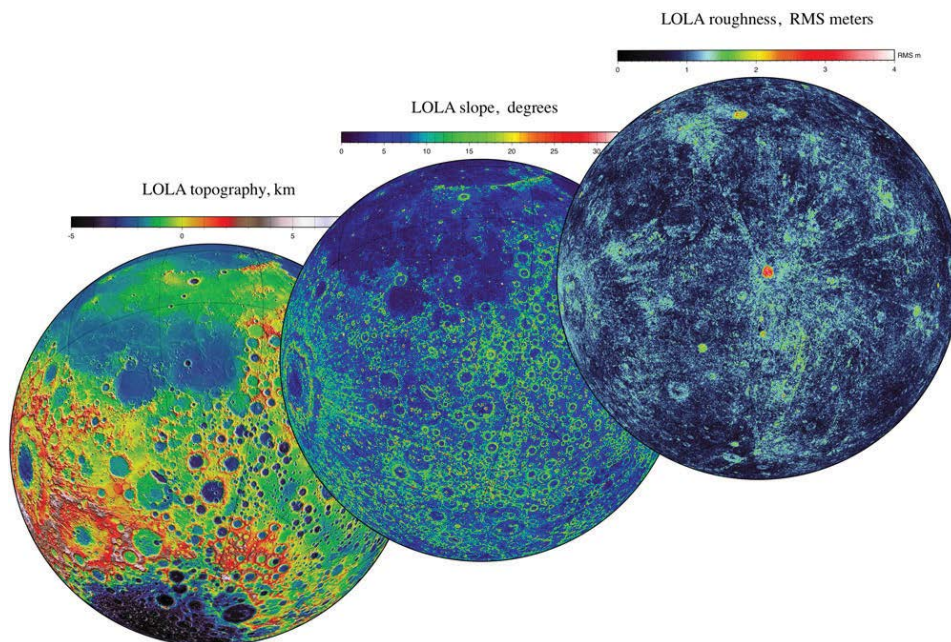
MAPPING THE MOON



NASA/GSFC/USGS

In April 2020 the new 'Unified Geologic Map of the Moon' (above) was released by the United States Geological Survey (USGS). It is a synthesis of six Apollo-era regional geologic maps, updated with data from recent satellite missions. Much of the shaded topography was derived from the lidar instrument known as LOLA – for Lunar Orbiter Laser Altimeter – on NASA’s Lunar Reconnaissance Orbiter spacecraft, which was launched in June 2009 and is still in orbit today. LOLA’s laser, fired 28 times per second, is split

into five beams by a diffractive optical element, so 140 pulses are sent to the moon’s surface per second. Apart from measuring pulse time-of-flight (range), LOLA measures pulse spreading (surface roughness) and transmit/return energy (surface reflectance). The data is used to map (below) topography, as well as surface slope values and roughness of the topography. The slope magnitude indicates the steepness of terrain, while roughness indicates the presence of large blocks.



NASA/LRO/LOLA Science Team