The Soil Moisture Active and Passive (SMAP) mission is a NASA directed mission to map globally the surface soil moisture and freeze-thaw state. SMAP science objectives include increased understanding of how changes in terrestrial water, energy and carbon cycles, ecosystem weather and climate forecast skill, and improved estimation of net carbon flux in boreal landscapes.

SMAP will make measurements from a 6.1×6.1 km2 sun-synchronous polar orbit, at an altitude of 670 km, with a global revisit time of 3 days or less. The key SMAP soil moisture product is provided at 10 km resolution. It combines both radar and radiometer measurements, utilizing the strengths of both instruments. The freezethaw product is based primarily on the radar measurements and is provided at 3 km resolution. The full list of SMAP data products is shown at right.

SMAP utilizes a conically scanning 6 m reflector antenna, the 6-m diameter deployable mesh antenna, and a radiometer, and will provide data at a rate of 3 days or less. The key SMAP soil moisture product is provided at 10 km resolution. It combines both radar and radiometer measurements, utilizing the strengths of both instruments. The freezethaw product is based primarily on the radar measurements and is provided at 3 km resolution. The full list of SMAP data products is shown at right.

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