GNSS-Reflectometry with NASA's Soil Moisture Active/Passive Mission

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On July 7, 2015, NASA's Soil Moisture Active/Passive Mission's (SMAP's) L-band radar transmitter failed, and, after several attempts to recover its operation, the radar was deemed not likely recoverable in late Aug. SMAP's L-band receivers, however, were still operational, and collecting data from the 6-meter conically scanning dish.

Because the receiver's tuning frequency range included the L2 band of several GNSS systems, on August 20, 2015, SMAP's receivers were tuned to 1227.75 MHz to collect GPS L2 signals reflected from the Earth's surface. The receiver's 1.25 MHz complex samples were collected over large portions of the Earth's surface and downloaded to determine if any useful science data could be extracted. This paper will discuss SMAP's hardware and data collection specific to these new GNSS-Reflectometry (GNSS-R) observations. We will also present preliminary results from analyses of these data along with prospects for future observations.