

Reflected GPS signals have previously been studied for soil moisture applications. These efforts focused on specially designed receivers and antennas that focused on the reflected signal. A geodetic-quality GPS receiver and antenna, on the other hand, is designed to suppress reflected signals. In this study we evaluate whether data from geodetic-quality GPS receivers and antennas are strongly correlated with surface soil moisture variation. We focus on testing the type of geodetic GPS receivers that are typically used by surveyors and geophysicists. We used time domain reflectometers buried at multiple depths to calibrate and evaluate the GPS data. We find good agreement between the time domain reflectometer measurements from a depth of 5 cm and the geodetic GPS data. Given that there are more than five thousand geodetic-quality GPS receivers worldwide with publicly available data, soil moisture variations could be measured in near real-time, with L-band signals that complement future satellite missions.