

GPS Signal Strength Measurements
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Teresa L. Rusyn and Linh Vu
Institute for Telecommunication Sciences, Boulder, CO, 80305,
<http://www.its.bldrdoc.gov>

Data measurements for high altitude propagation models are not necessarily hard, but are much more expensive than terrestrial measurements. Much of the existing data are decades old, scarce, and exists only on paper graphs. Recent data sets are scarce, often proprietary and very expensive. The method for collecting this type of data generally involves using aircraft, which is not only expensive, but requires coordination with FAA in the U.S.

The Institute for Telecommunication Sciences (ITS) has measured the signal strength of GPS satellite links at the Table Mountain Radio Quiet Zone Facility. Additionally, we have, also, collected weather and space weather data correlating to the times of the signal data collection. These measurements are for satellite link propagation and support validation of radio propagation modeling at ITS. This measurement campaign is designed to take advantage of radio frequency measurement facilities and environmental measurement facilities already existing at the Table Mountain Quiet Zone Facility north of Boulder, CO. and at the U.S. Department of Commerce lab site in Boulder, CO.

The measurement system measured signal strength while tracking one GPS satellite while it is in the field of view. The system, then, reset the tracking system and tracked another GPS satellite while taking signal strength measurements for the next satellite. This was repeated for the duration of the measurement set. Each data point was be time stamped to coordinate these data points with GPS receiver data, weather data, and space weather data.

Space link measurement data can be used for validation of high altitude radiowave propagation models. This type of measurement data can, also, be used directly for improving methods to predict spectrum sharing interference.