



The Use of Signal Strength Measurements for Quality Assessment and Multipath Evaluation of GPS Observations

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One of the main error sources in precise GPS positioning is the presence of multipath signals. These signals interfere with the direct signal and cause a phase shift, which degrades the observations and increase the level of processing residuals. One strong indication is a periodical variation of the received signal strength. Since most recent GPS receivers provide the additional measurement of signal-to-noise ratio this could be appropriate information to identify areas with degraded data quality due to multipath reflections. On the one hand signal-to-noise measurements may be used to derive an appropriate weighting of the observation for the processing to reduce the deteriorating multipath influence as much as possible. On the other hand they can - with some assumptions - be used to eventually correct the raw GPS carrier phase measurements.

Both procedures are explained in detail together with additional information derived from the signal propagation theory. The results of different experiments are shown and the advances for the routine processing are evaluated.