# Analysis of Land and Sea Reflected GPS Signal

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**ABSTRACT**

A reflected GPS signal contains information about the reflecting object since the characteristics of the reflected signal varies a lot depending upon the reflecting object. Though, this information may not be useful for accurate position computation, it may help us to identify the reflecting object itself, which is a type of remote sensing. Besides, by measuring the time delay of the reflected signal, it is possible to estimate the extra path length the reflected signal has to travel. Hence, in general, the analysis of reflected signal can be used for two broad categories of altimetry and remote sensing. The difference of reflection coefficient of dry and wet objects (for example soil) is about 10 times at L-band and hence the data from these two objects may vary significantly.

We have logged data from Cessna aircraft using zenith looking RHCP and nadir looking LHCP GPS antenna. The LHCP antenna logs reflected GPS signal. The data logged are GPS IF signal at 16MHz sampling rate with 4-bit resolution. We will present the results of processing of these data to show the difference between the land reflected GPS signal and sea reflected GPS signal. These results will provide guidelines for developing algorithms for Bi-static remote sensing using GPS signals.