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An International Data Centre for GNSS Interferometric Reflectometry Data for Observing Sea Level Change

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The Permanent Service for Mean Sea Level (PSMSL) is the internationally recognised global sea level data bank for long-term sea level change information from tide gauges, responsible for the collection, publication, analysis and interpretation of sea level data. The primary aim of PSMSL is to collate, archive and distribute long-term sea level information from tide gauges. There is a need both for more records in data sparse regions such as Antarctica, the Arctic and Africa, and for a low cost method for monitoring climate change through sea level.

Recent studies have demonstrated the utility of ground-based GNSS Interferometric Reflectometry (GNSS-IR) for the observation of sea level. GNSS receivers suffer from multipath, but if the physical and geometric effects multipath has on the measured signals are understood then this knowledge can be used to measure other environmental parameters such as the sea surface reflection. The GNSS receiver can also determine vertical land motion.

PSMSL has received funding to create an international archive to preserve and deliver GNSS-IR data and to integrate these data with existing sea level observing networks. We aim to create an efficient data delivery mechanism to allow the sea level community to access these new data and incorporate them into existing records. We will develop a data format and create and/or populate controlled vocabularies with the new parameters, site identifiers and other discovery metadata required.

Currently, we have processed records from over 250 GNSS receivers across the globe: each will be made available alongside information detailing how the records were processed; which GNSS constellations, satellites and frequencies were used; and visual diagnostics of each site. In this presentation we will give a brief overview of the theory behind GNSS-IR, and present some of the content that we plan to include in the completed portal.