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## A new service providing sea level height data using GNSS sensors from around the globe

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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. 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.

While tide gauge sensors themselves are not very expensive, the costs in operating them over a long period of time can be considerable. Sensors based in the water are prone to biofouling, and can require divers to access. Meanwhile, land-based sensors are exposed to damage from accidents, storms, and vandalism.

The emerging field of GNSS (Global Navigation Satellite Systems, such as GPS, GLONASS, Galileo and BeiDou) interferometric reflectometry (GNSS-IR) provides an alternative way to measure sea level. Permanent GNSS receivers are routinely installed near the coast to monitor land movements, and we can infer sea level by comparing the direct signal to a GNSS with those reflected off the surface of the water. GNSS-IR does not yet match the accuracy of traditional tide gauges, but has the potential to be part of an affordable, effective monitoring system of water levels.

Here we present a new data portal of sea level measured using GNSS-IR, developed as part of the EuroSea project. So far, we have extracted sea level data from over 250 GNSS receivers worldwide. At each site we provide a file of calculated sea levels, along with metadata about the site, some diagnostic plots, and links to the source of the original GNSS data. We have also created an interactive map to help investigate the footprint of a GNSS installed at any location.

At present the portal is in a beta stage of development, and we hope to continue to make

improvements, including hosting the data on a server with an API (ERDDAP) to allow interoperable access to data and metadata in a wide range of formats. We have carried out proof-of-concept tests that demonstrate that data can be provided in near real time, and aim to secure funding to allow us to add this in the future.