

University of Hawaii Sea Level Center

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Project Summary

The purpose of the University of Hawaii Sea Level Center (UHSLC) project is to ensure that tide gauge data from around the world are collected, quality assessed, distributed, and archived for use in climate, oceanographic, ocean engineering, and geophysical research. While UHSLC assembles time series from a large number of tide gauge stations, our primary focus is the set of stations that constitute the Global Sea Level Observing System (GLOSS, under the auspices of the Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM) and the World Meteorological Organization (WMO)) and the Global Climate Observing System (GCOS, a joint undertaking of the WMO, UNESCO, the United Nations Environment Programme, and the International Council for Science). The GLOSS (Figure 1) and GCOS networks cover most major oceanic islands and island chains, with a subset of available continental coastal stations distributed evenly around the margins of ocean basins. Because of their importance for global and regional sea level reconstructions, vertical land motion monitoring is recommended at all GLOSS and GCOS stations, and the UHSLC maintains 11 continuous GPS receivers at these stations. The UHSLC participates actively in the operational and scientific oversight of GLOSS and GCOS through the GLOSS Group of Experts.

As a sea level data assembly center, the UHSLC is responsible for the Fast Delivery dataset, which provides preliminary, quality-assured, hourly tide gauge data within 4-6 weeks of collection, and the Research Quality dataset, which is an archive of hourly tide gauge data that have undergone a complete quality assessment generally within 1 year of collection. The Research Quality database is maintained in collaboration with the National Oceanographic Data Center (NODC) as part of the Joint Archive for Sea Level (JASL). The UHSLC acquires tide gauge data from nearly 500 tide gauge stations maintained by 65 international agencies. UHSLC technicians and data analysts collaborate directly with international partners to maintain 80 high profile stations that are important for the global sea level observing effort. UHSLC involvement ensures that research quality datasets are available from otherwise sparsely sampled areas of the global ocean, and that developing nations have access to training, technical support, and data processing services as needed.

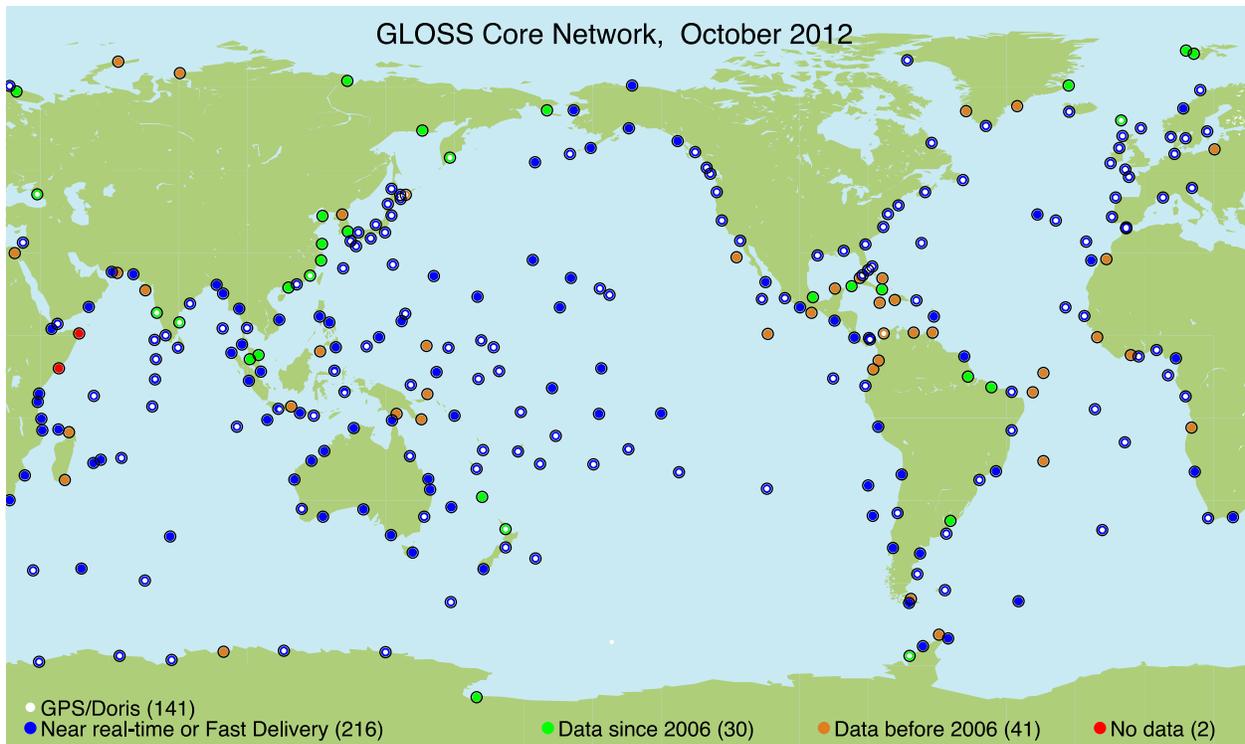


Figure 1. Status of the GLOSS Core Network of tide gauge stations.

A key benefit of having a sea level data assembly center in a university setting is that UHSLC scientists actively utilize tide gauge data for oceanographic and sea level change research. Ongoing scientific assessment helps to ensure the quality of the various UHSLC databases. UHSLC datasets are used by the research community notably for global and regional sea level reconstructions and assessments of extreme sea level changes, for the evaluation and advancement of global and regional ocean circulation models, for the calibration of satellite altimeter data which is critical for global sea level trend assessments, and for the production of oceanographic products. UHSLC station data also are made available in near-real time via the Global Telecommunications System (GTS) to the Pacific Tsunami Warning Center, the West Coast/Alaska Tsunami Warning Center, and international centers for tsunami and hazard monitoring. Over the years the UHSLC has provided tide gauge data for international scientific programs including NORPAX, TOGA, WOCE, GODAE and CLIVAR.