

## Permanent Service for Mean Sea Level (PSMSL)

Director: **L. J. Rickards** (UK)

<http://www.psmsl.org>



### Development

Since 1933, the Permanent Service for Mean Sea Level (PSMSL) has been responsible for the collection, publication, analysis and interpretation of sea level data from the global network of tide gauges. It is based at the National Oceanography Centre (NOC), Liverpool, which is a component of the UK Natural Environment Research Council (NERC). It is funded by NERC. The PSMSL continues to be one of the main data centres for both the International Association for Physical Sciences of the Oceans (IAPSO) and the IAG. The PSMSL operates under the auspices of the International Council for Science (ICSU) and reports formally to IAPSO's Commission on Mean Sea Level and Tides. The PSMSL is a regular member of the World Data System of ICSU.

### Mission/Objectives

The mission of the PSMSL is to provide the community with a full Service for the acquisition, analysis and interpretation of sea level data. Aside from its central role of operation of the global sea level data bank, the PSMSL provides advice to tide gauge operators and analysts. It occupies a central management role in the development of the Global Sea Level Observing System (GLOSS) and hosts important international study groups and meetings on relevant themes. Several such meetings took place in 2013 to mark the 80th Anniversary of the PSMSL.

### Products

The database of the PSMSL contains over 66000 station-years of monthly and annual values of mean sea level

(MSL) from over 2250 tide gauge stations around the world received from approximately 200 national authorities. On average, approximately 1500 station-years of data are entered into the database each year. This database is used extensively throughout the sciences of climate change, oceanography, geodesy and geology, and is the main source of information for international study groups such as the Intergovernmental Panel on Climate Change (IPCC).

Data for all stations are included in the PSMSL METRIC (or total) data set. The METRIC monthly and annual means for any one station-year are necessarily required to be measured to a common datum, although, at this stage, datum continuity between years is not essential. The year to-year datum checks become essential, however, if the data are subsequently to be included in the PSMSL 'Revised Local Reference (RLR)' component of the data set.

The 'Revised Local Reference (RLR)' dataset of the PSMSL contains records for which time series analysis of sea level changes can be performed. Long records from this dataset have been the basis of all analyses of secular changes in global sea level during the last century. The geographical distribution of longer RLR records contains significant geographical bias towards the northern hemisphere, a situation which is being rectified by the establishment of the GLOSS global sea level network.

The PSMSL is also responsible for the Higher Frequency Delayed Mode (HF DM) data set of sea level information from the GLOSS Core Network. This consists of the original sea level measurements from each site (typically hourly values) which provide a strategic backup to the MSL information of the main PSMSL data set.

PSMSL is working to provide data from in situ ocean bottom pressure recorders from all possible sources, a remit given to PSMSL by IAPSO in 1999. The aim is to

provide consistently processed bottom pressure records with hourly and daily sampling for use in tidal, oceanographic and geophysical research.

In addition, the PSMSL provides a range of sea level products (e.g. interactive anomaly and trend maps, tables of sea level trends) for its users. These findings are input to national and international scientific study groups regularly. A range of training materials and software products are also made available via its web site which can be consulted for more information.

## **Structure/Governing Board Members**

The PSMSL reports formally to the IAPSO Commission on Mean Sea Level and Tides (President Dr. G.T. Mitchum, USA). It is also served by an Advisory Group which at present consists of Dr. R. Neilan (JPL, USA), Prof. G. T. Mitchum (University of South Florida, USA), Prof. P. L. Woodworth. (National Oceanography Centre, UK), Dr. P. Knudsen (Danish National Space Center), Dr. R. Bingley (Nottingham University, UK), Dr. G. Woppelmann (Universite de La Rochelle, France), Dr. T. Aarup (IOC, UNESCO). Suggestions for improvements in PSMSL activities may be sent directly to the PSMSL or via the IAPSO Commission or via any member of the Advisory Group.

## **Points of Contact**

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## **Staff members**

- L. J. Rickards (Director)
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- E. A. Bradshaw (GLOSS DM HF data set)