

Celebrating 80 years of the Permanent Service for Mean Sea Level (PSMSL)



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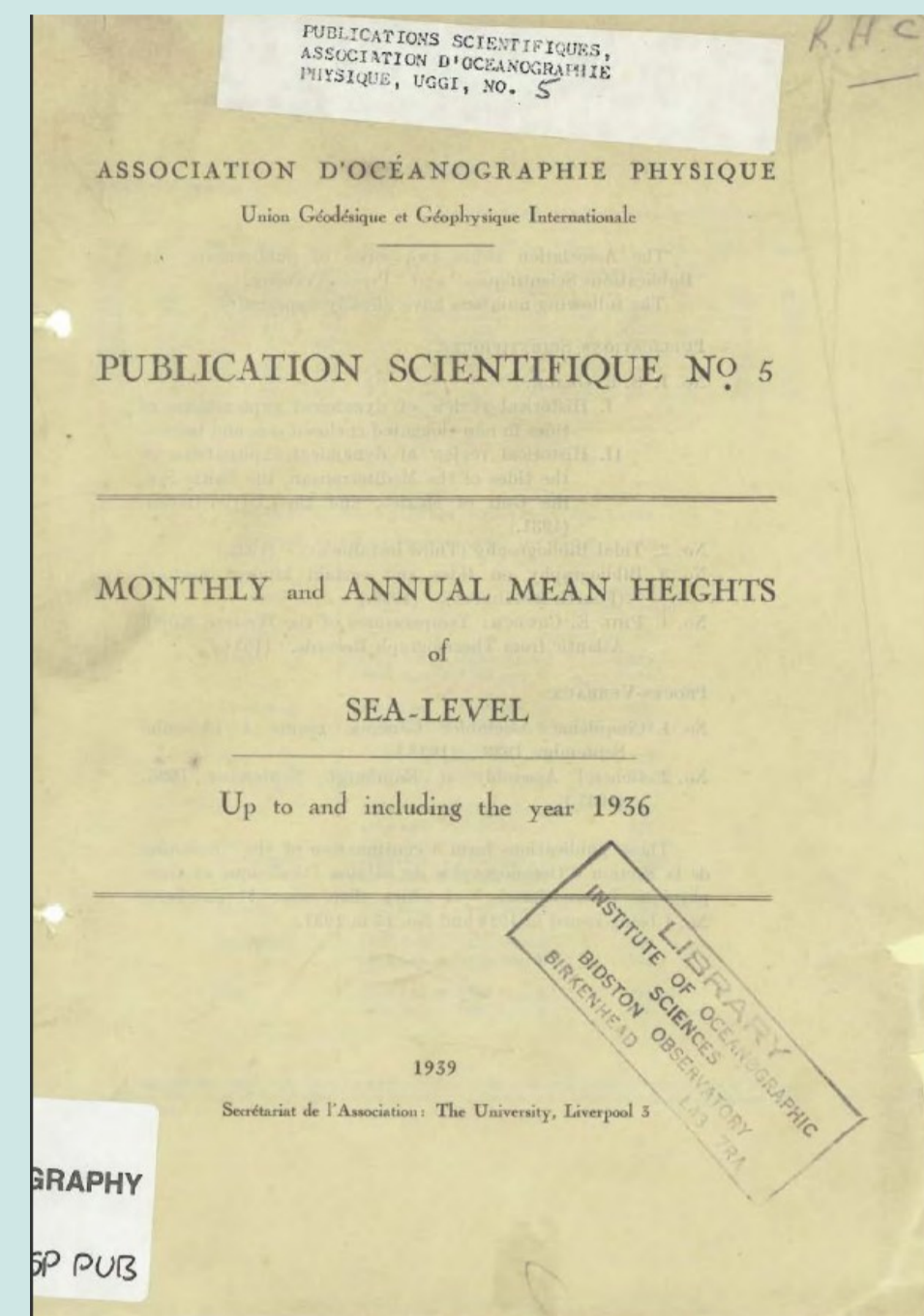


The PSMSL is the internationally recognised data bank for global mean sea level data and is one of the main data centres for IAPSO. This year we celebrate 80 years of the collection of sea level data. Here, we present the background of the PSMSL, the data it provides, and the challenges it faces in the future.

Beginnings of the PSMSL

The PSMSL history begins at the 5th General Assembly of the IUGG in Lisbon, 1933, where IAPSO established a Mean Sea Level committee.

One of the Mean Sea Level committee's tasks was to gather and publish a comprehensive collection of mean sea level data from across the world.



The cover of *Publication Scientifique No. 5*, the first collection of mean sea level data, published in 1939

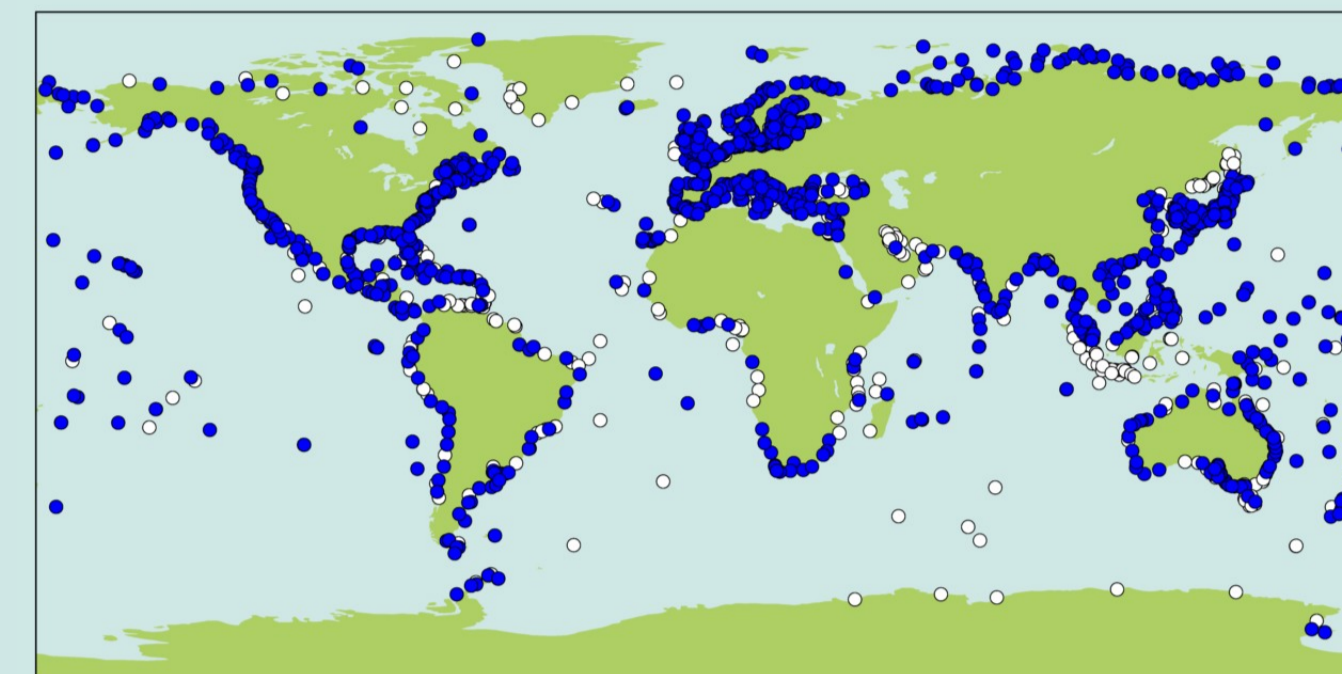
An example of the contents of *Publication Scientifique No. 5*

The first volume of sea level was published in 1939, and was updated roughly every five years.

Much of the work was done by the Secretary of the committee, Professor Proudman, of the Liverpool Tidal Institute.

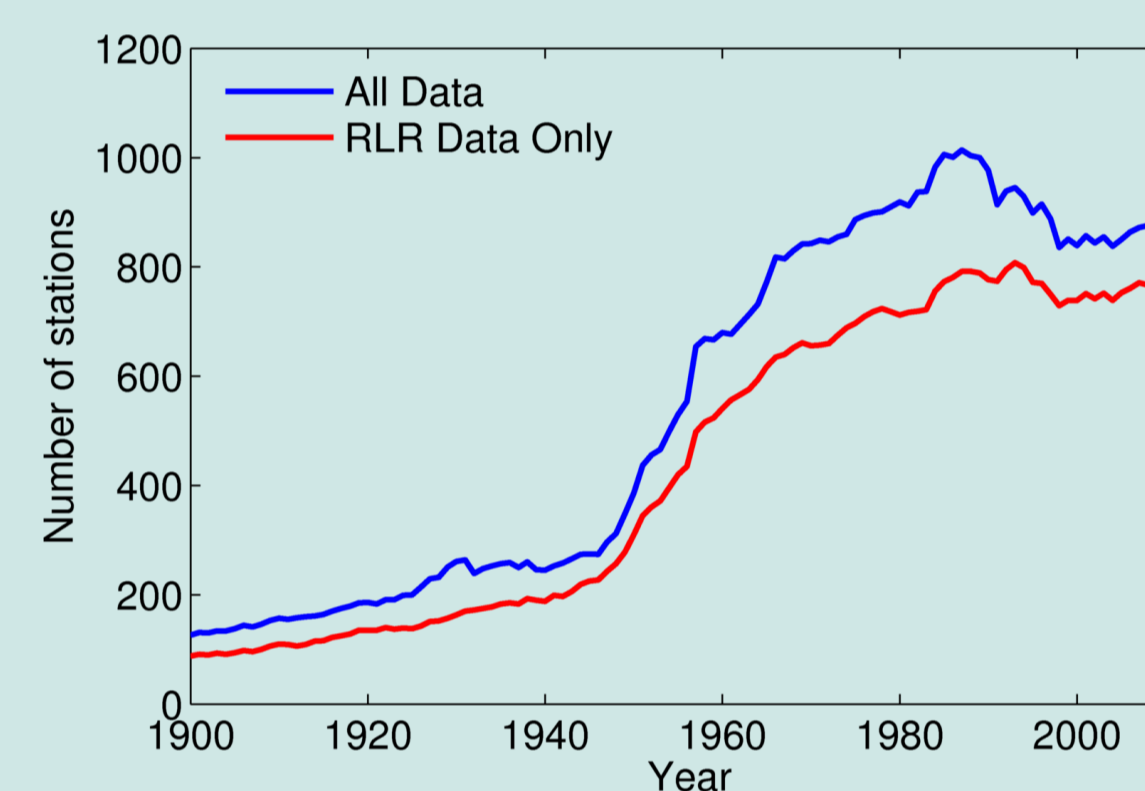
Eventually, the functions of the committee were transferred to a new permanent service of ICSU: the PSMSL. The Tidal Institute was charged with its operation.

The PSMSL Dataset



The PSMSL dataset. Blue dots represent datum controlled stations, white dots represent other stations.

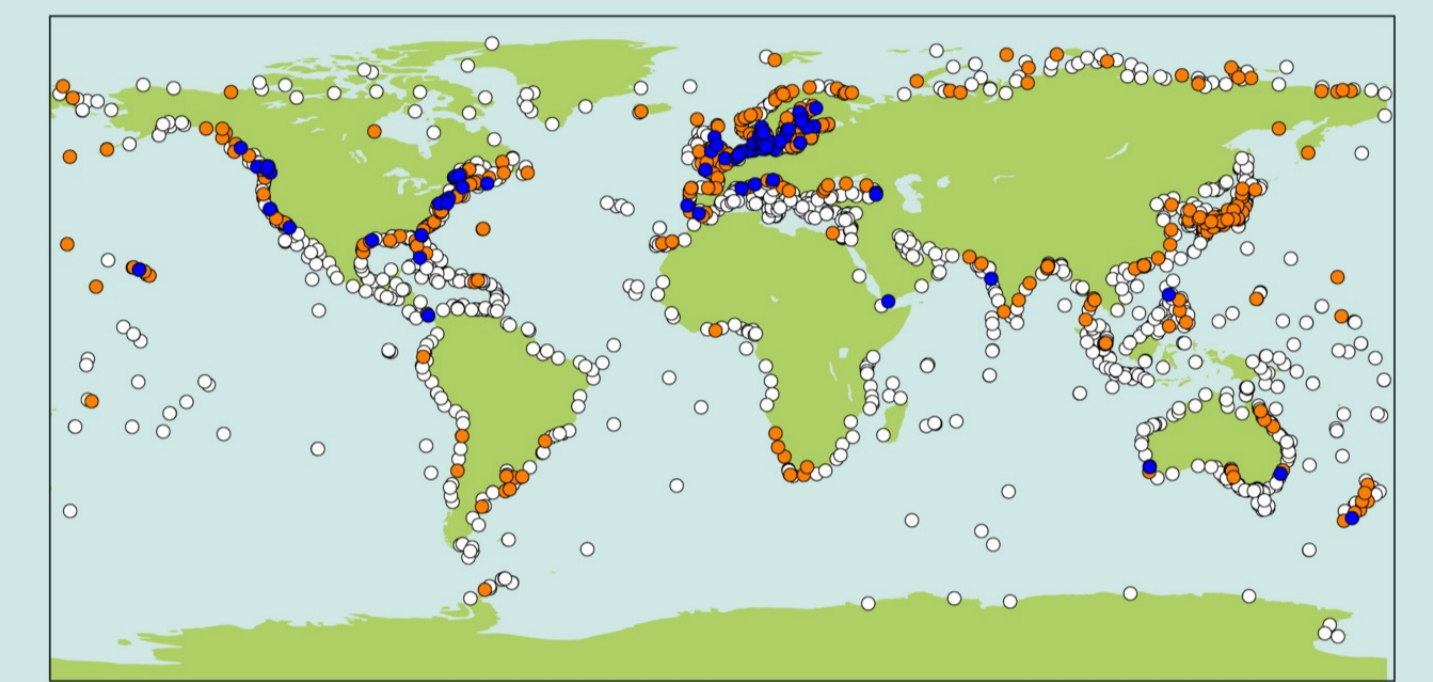
Many records are short, with only 380 datum controlled stations with records over 50 years long. However, 74 records are over 100 years in length. The longest records are almost exclusively found in Europe and North America.



Number of stations available for each year from 1900 in the PSMSL dataset.

The PSMSL holds data from over 2000 stations in more than 160 countries worldwide.

Where possible, all data for a station are related to a consistent set of locally defined benchmarks through time.

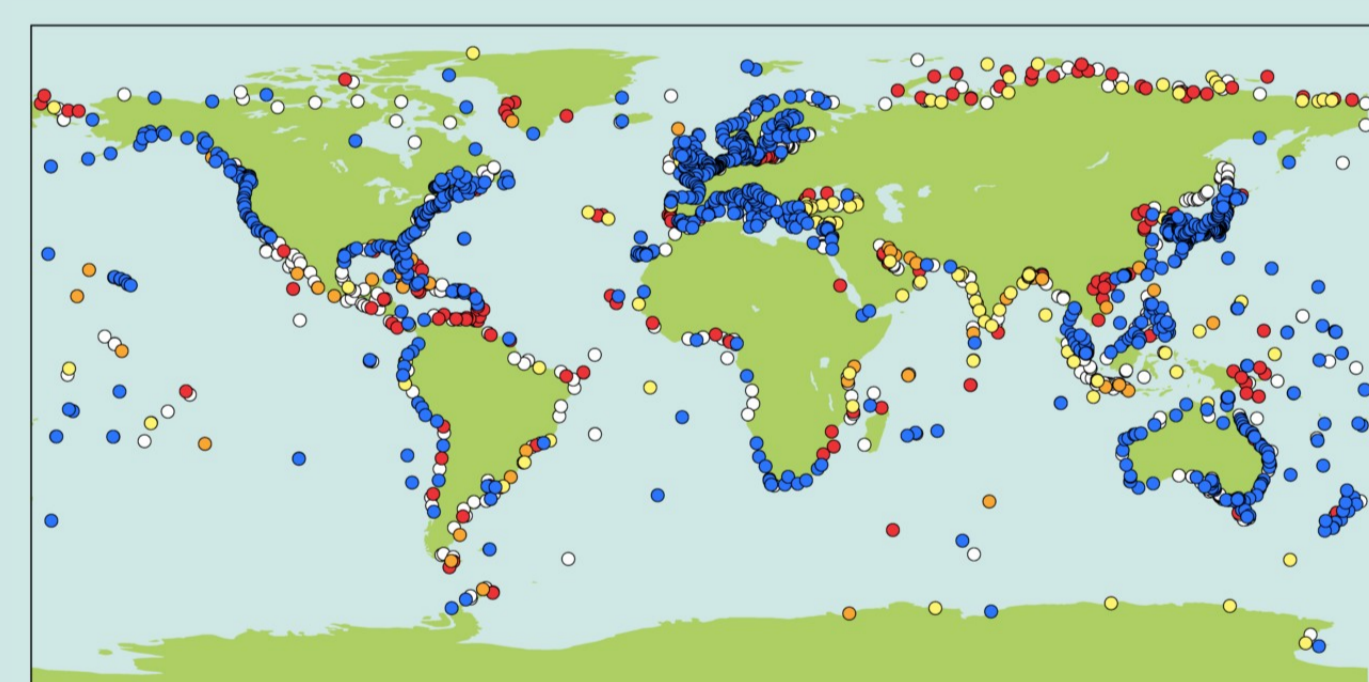


Longer records in the PSMSL dataset. Orange dots represent stations with at least 50 years of datum controlled data. Blue dots have at least 100 years of data.

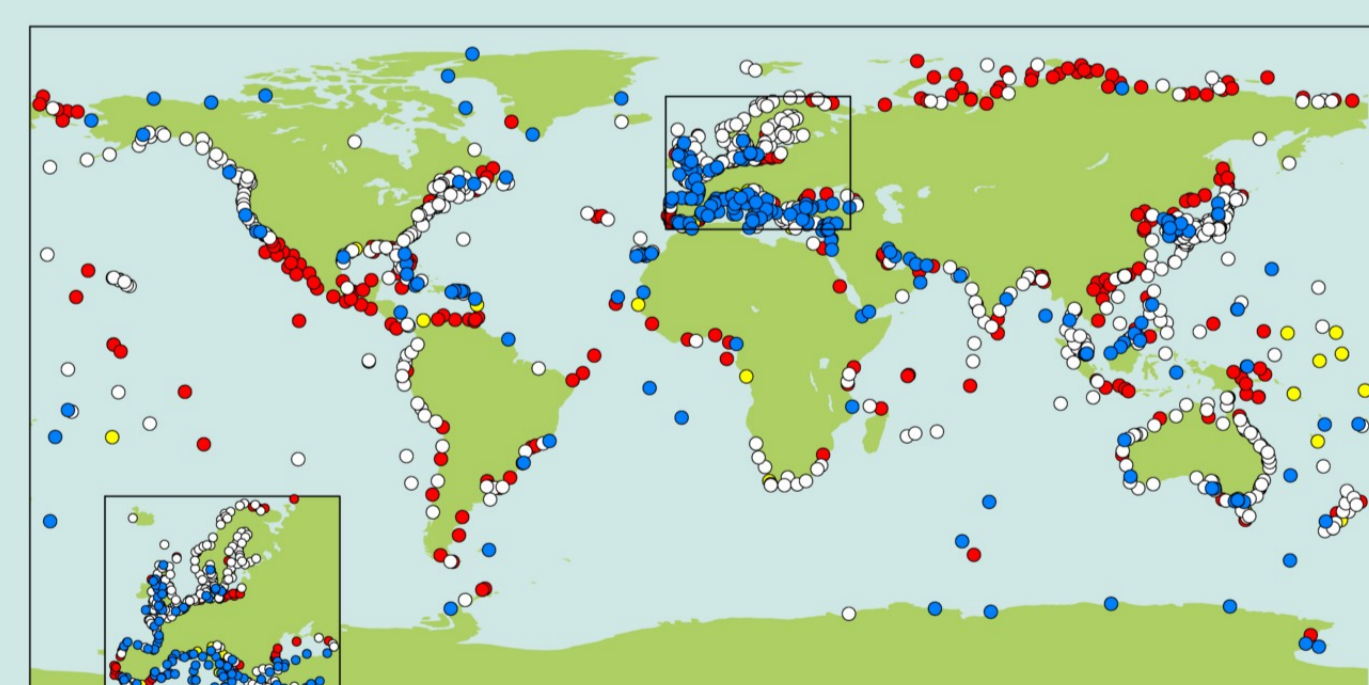
The number of stations available reached its peak in the 1980s, and has gradually declined since. This decline can be seen in both hemispheres.

For further information, see Holgate et al. (2013), *Journal of Coastal Research*, 29(3), 493–504.

Recent Developments

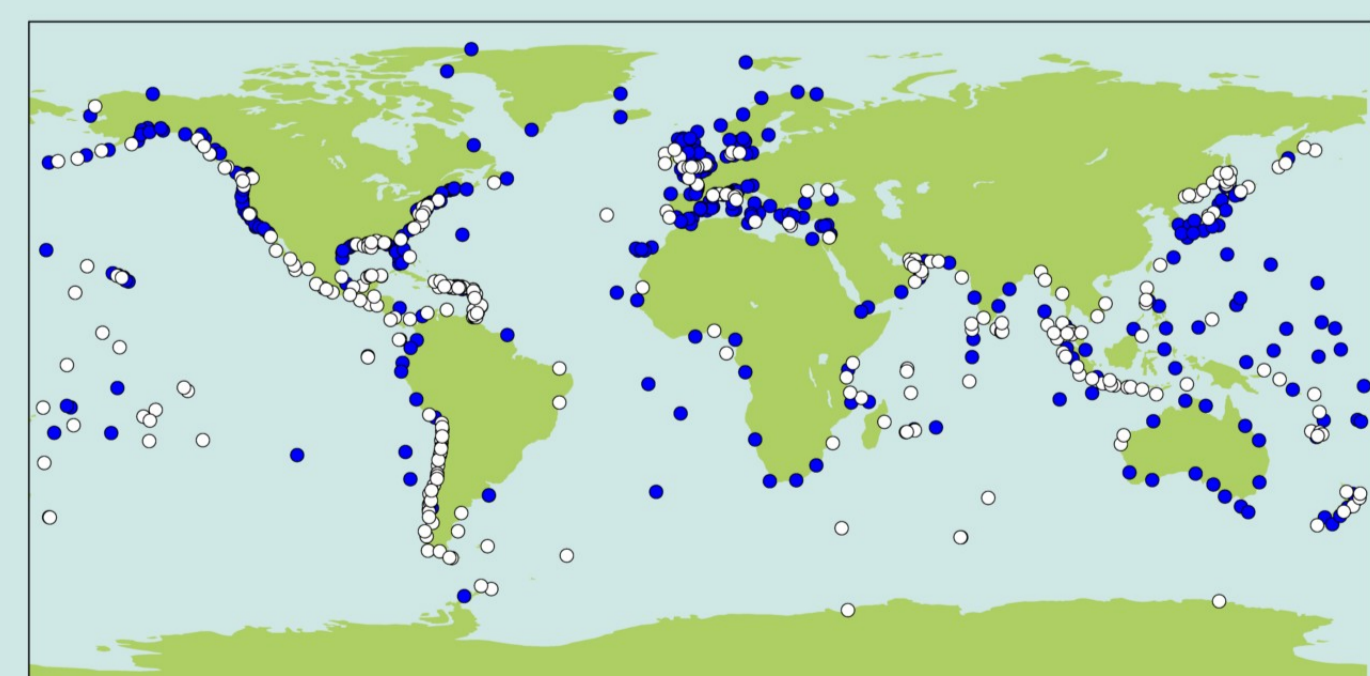


Last year of data available for each station in the PSMSL dataset



A comparison of the data supply from 2006-2009 with the peak period of 1986-1989.

Unfortunately, a significant proportion of these stations have yet to provide data to PSMSL or other sea level data banks.



Real time stations available from the IOC. Blue dots are available as monthly means from the PSMSL.

The figures on the left illustrate some of the gaps in recent PSMSL receipts.

Large gaps still remain in areas of Africa, South America and Asia. There has also been a decline in the number of stations available in the Arctic.

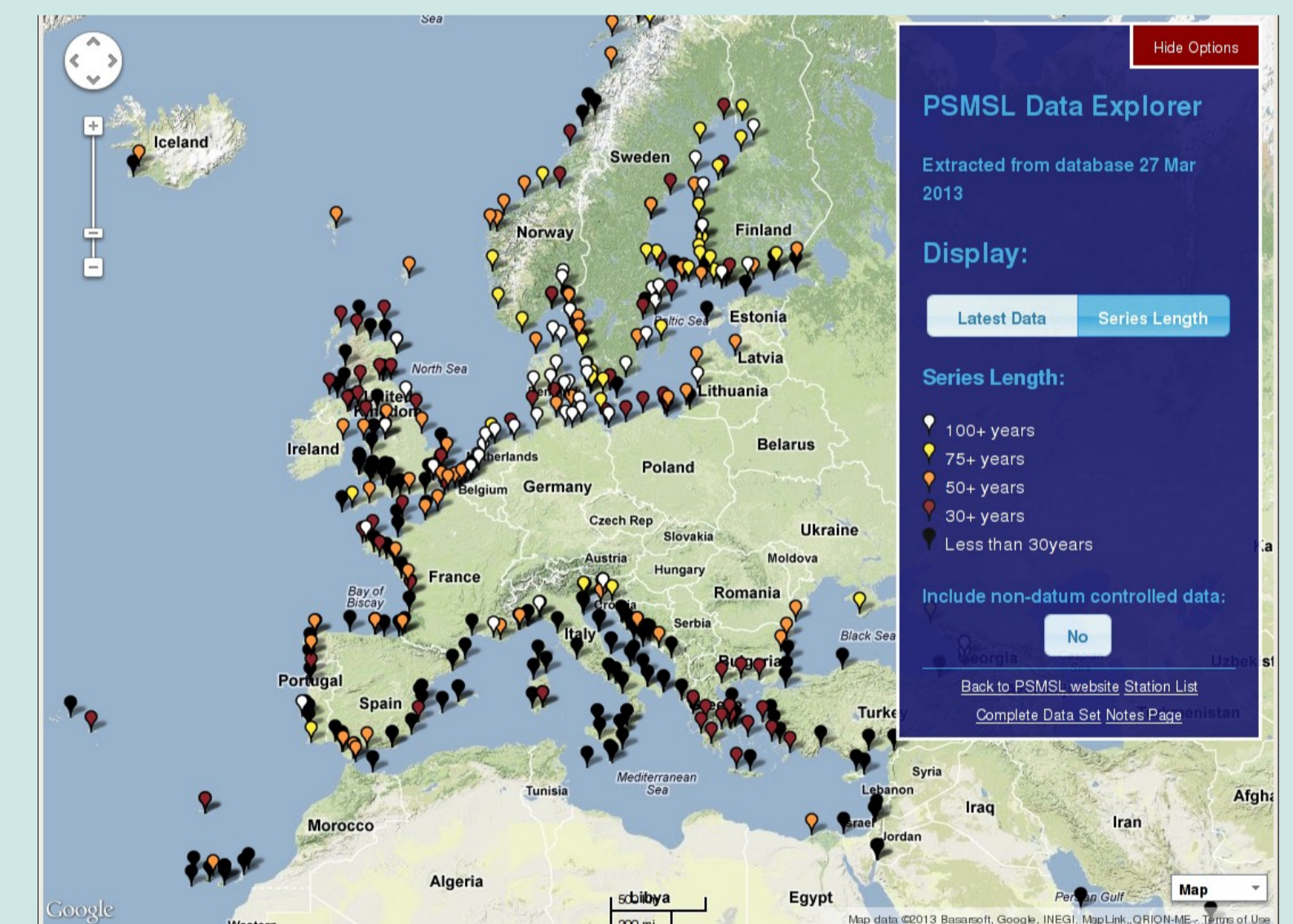
Coverage in Europe, North America, East Asia, Australia and the West Pacific remain good.

Recent developments in technology and tsunami monitoring programmes have led to the creation of many new tide gauge stations.

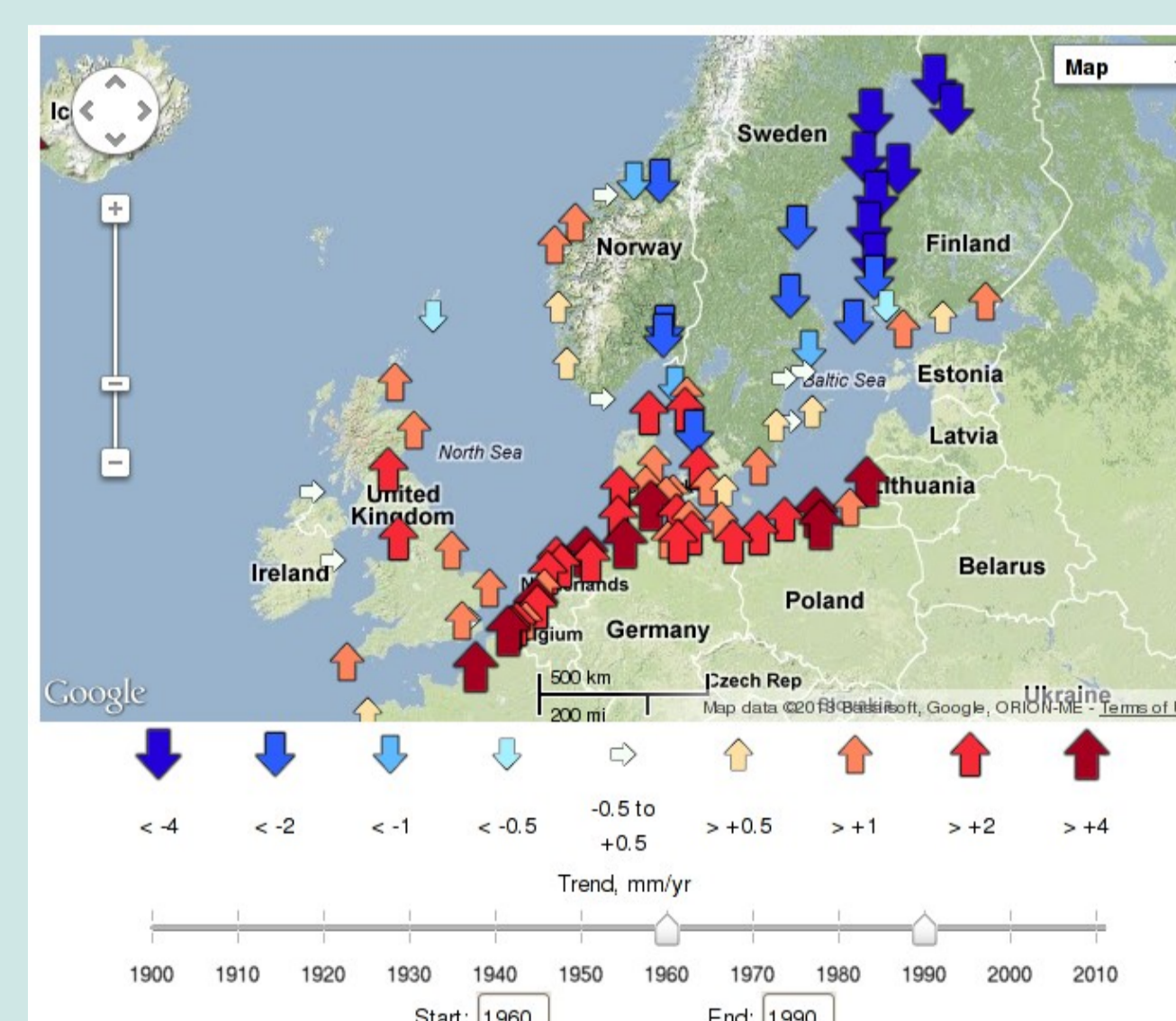
www.psmsl.org

All PSMSL data is made freely available through the PSMSL website, along with dedicated metadata for each station in our data set.

The PSMSL also provide a number of products which allow interactive exploration of sea level data.



Exploring the PSMSL dataset at www.psmsl.org/data/obtaining/map.html



The PSMSL trend explorer, which allows users to view trends in relative sea level across the globe. www.psmsl.org/products/trends

We also provide links to other sources of data near each site, such as high frequency tidal data, and GNSS stations monitoring local land movement.

The PSMSL will continue its commemoration of its 80th anniversary with a special workshop on Sea Level Science to be held in Liverpool on October 28 and 29. Visit www.psmsl.org for further details.