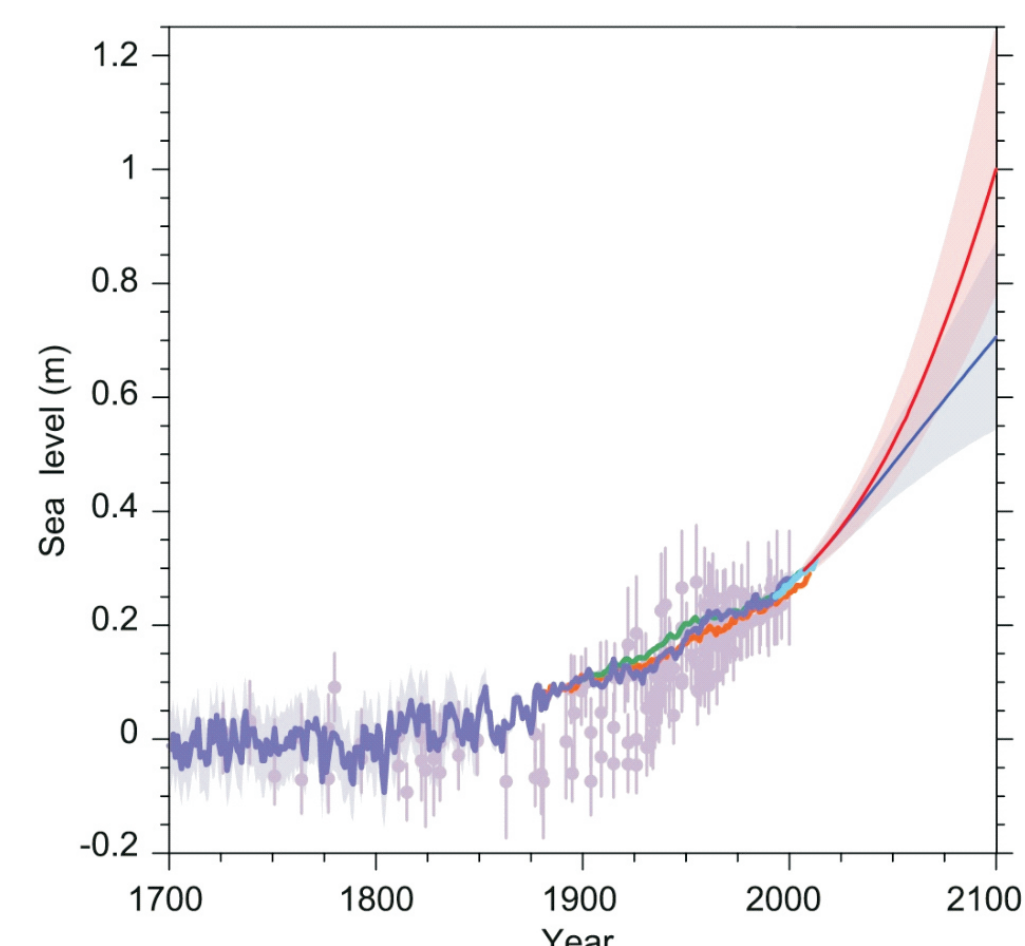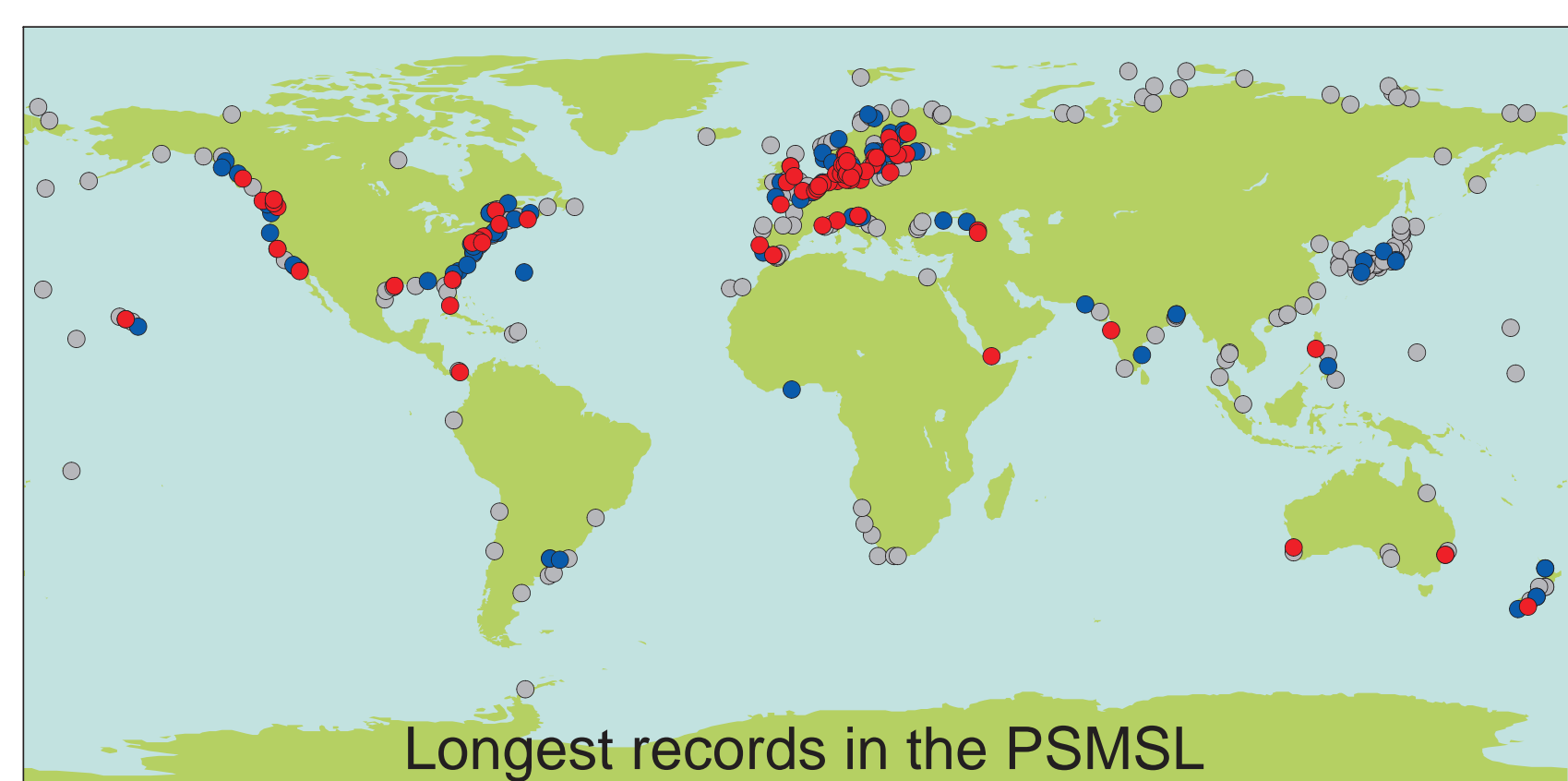# The Global Sea Level Observing System Data Rescue plan

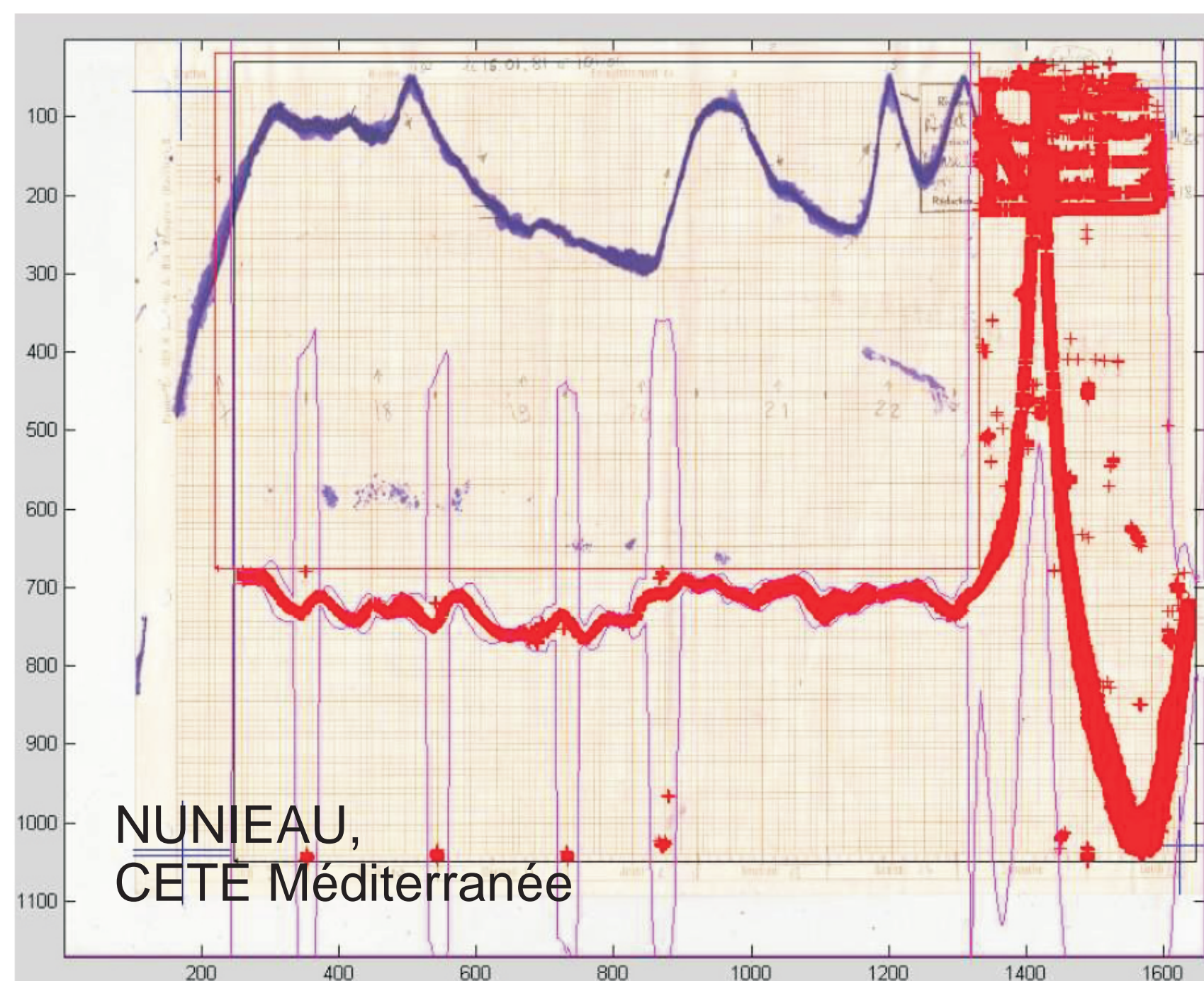Elizabeth Bradshaw[1], Lesley Rickards[1,2], Andy Matthews[2] and Svetlana Jevrejeva[2]

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Global Mean Sea Level reconstruction
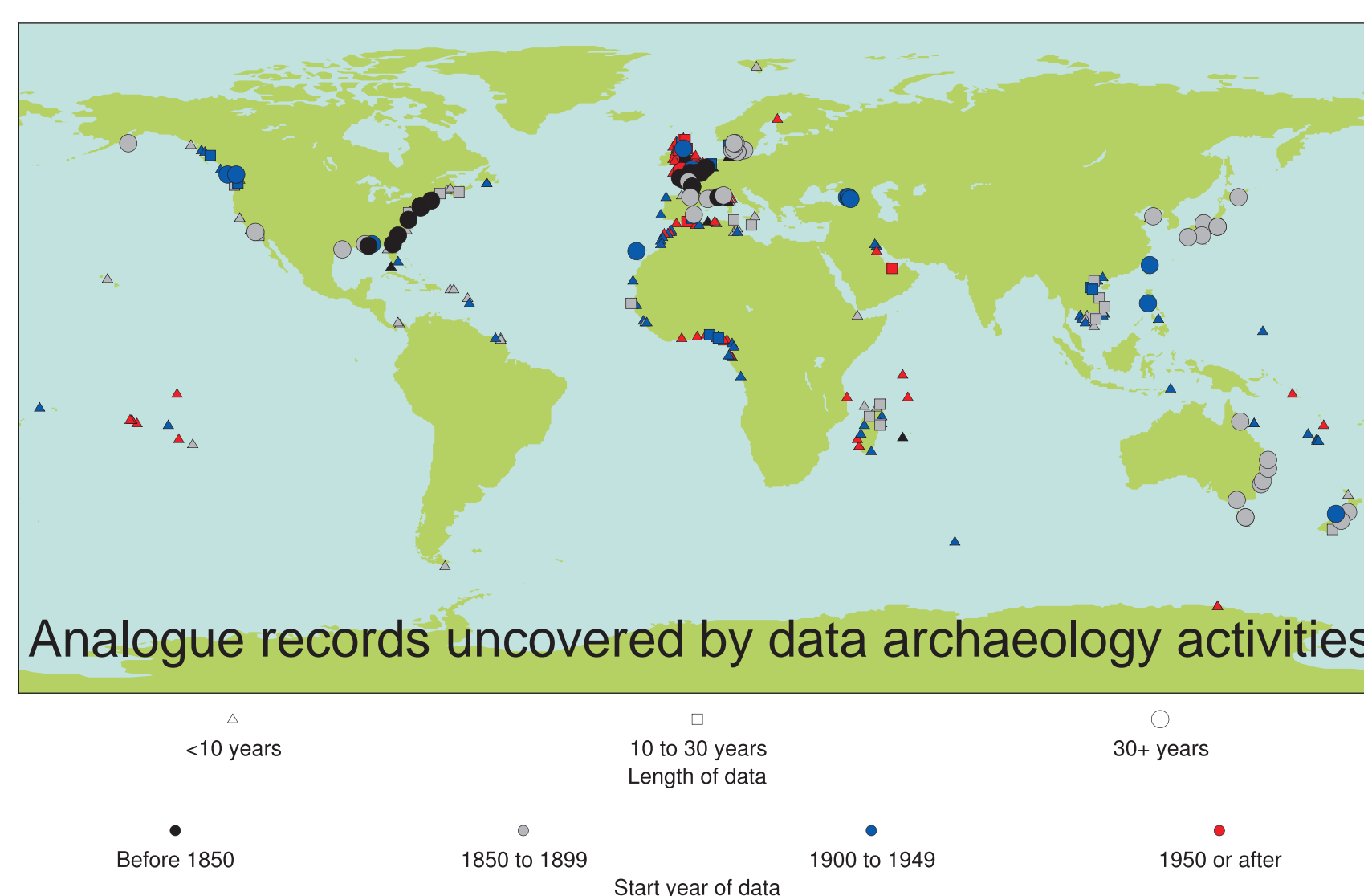(from Intergovernmental Panel on Climate Change AR5)

Longest records in the PSMSL

50 years of data (208)   75 years of data (87)   100 years of data (74)

NUNIEAU, CETE Méditerranée

Historical records from Glasgow

Tide calculations from Glasgow Harbour, 1844

Analogue records uncovered by data archaeology activities

Length of data: <10 years   10 to 30 years   30+ years

Start year of data: Before 1850   1850 to 1899   1900 to 1949   1950 or after

The Global Sea Level Observing System (GLOSS) is an international programme conducted under the auspices of the WMO-IOC Joint Technical Commission for Oceanography and Marine Meteorology. It was set up in 1985 to collect long-term tide gauge observations and to develop systems and standards "for ocean monitoring and flood warning purposes".

Historical sea level data are rare and unrepeatable measurements with a number of applications in climate studies, oceanography (ocean currents, tides, surges), geodesy, geophysics and geology and other disciplines. However, long-term time series are concentrated in the northern hemisphere and there are no records at the Permanent Service for Mean Sea Level (PSMSL) global data bank longer than 100 years in the Arctic, Africa, South America or Antarctica.

At the GLOSS Group of Experts (GLOSS-GE) XIV Meeting in 2015, a number of data rescue action items were agreed upon, to be developed before the next meeting in 2017.

These included:
- Exploring mareogram digitisation applications, including NUNIEAU (more information available at: http://www.mediterranee.cerema.fr/logiciel-de-numerisation-des-enregistrements-r57.html) and other recent developments in scanning/digitisation software, such as IEDRO's Weather Wizards program, to see if they could be used via a browser.

And
- Proposing "Guidelines" for rescuing sea level data.

GLOSS members have already developed software to automatically digitise charts and there are other freely available digtising software packages. GLOSS could coordinate a comparison study of the different digitising software programs by sending the same charts to participating organisations and asking everyone to digitise them using their own procedures. GLOSS will then provide recommendations to the community, create a software repository and even make software available that functions within a web browser.

The GLOSS-GE is working with other international data rescue groups such as the Research Data Alliance Data Rescue Interest Group to produce guidelines for rescuing historic data.

These action items will aid the discovery, scanning, digitising and quality control of analogue tide gauge charts and sea level ledgers and improve the quality, quantity and availability of long-term sea level data series. Data archaeology activities will help fill in the gaps in the global dataset and improve global sea level reconstruction.

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