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Geodetic Monitoring of UK Tide Gauges in the Permanent Service for Mean Sea Level Revised Local Reference Data Base

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The Permanent Service for Mean Sea Level (PSMSL) holds records from 55 UK tide gauges in its Revised Local Reference (RLR) data base. Some of these are amongst the longest records in the world. Most notable are those records, including their composites, for the tide gauges at Aberdeen, Liverpool, Newlyn, North Shields and Sheerness, which cover time spans of between 89 to 171 years, reaching back to the middle of the 19th century.

It was early recognized that the value of these data for sea level studies would be improved by investigating schemes to monitor any vertical land movements at the tide gauge sites, in order to correct the tide gauge records for these effects. First efforts to use episodic GPS campaigns at UK tide gauges for this were made by the Institute of Engineering Surveying and Space Geodesy in collaboration with the Proudman Oceanographic Laboratory in 1991 and thereafter. However, real advances were only obtained after 1995 to 1997, with the first use of absolute gravity (AG) and continuous GPS (CGPS) at UK tide gauges. Since then the AG network has expanded to include measurements at the tide gauges in Newlyn, Aberdeen and Lerwick, and the CGPS network has expanded to include measurements at the tide gauges of Newlyn, Portsmouth, Dover, Sheerness, Lowestoft, Liverpool, North Shields, Aberdeen, Stornoway and Lerwick.

This poster will give information on the installation and location of the instrumentation

at the AG and CGPS sites, show results for the vertical land movements obtained to date and compare these with the PSMSL RLR data.