

# ***National Tidal and Sea Level Facility***

***Annual Report for 2007 for the  
UK National Tide Gauge Network  
and Related Sea Level Science***

***Edited by Elizabeth Bradshaw***

## National Tidal and Sea Level Facility

### Annual Report for 2007 for the UK National Tide Gauge Network and Related Sea Level Science

[Tide gauge instrument information, data processing procedures and gauge location](#)

[Report for 2007 on Data Quality and visits to sites](#)

[Report on 'Monitoring Vertical Land Movements at Tide Gauges' in 2007](#)

[Report on gauges in the South Atlantic](#)

Contributors to the Annual Report:

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Dave Smith, POL	- Maps and site information
Peter Foden, POL	- South Atlantic Network Management
Simon Holgate, POL	- South Atlantic Network Management
Steve Loch, BODC	- Calculating statistics in Edteva
Richard Bingley, Univ. Of Nottingham	- Monitoring Vertical Land Movements at Tide Gauges

Editor of the Annual report: Elizabeth Bradshaw, BODC

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Colin Bell, POL Applications	- Tide Gauge Data Products
Juan Brown, BODC	- Director BODC
David Blackman, POL	- Tide Gauge Data Products
Libby Macleod, BODC	- Tide Gauge Data Sets
Richard Downer, BODC	- Web Development and Management
Kevin Horsburgh, POL	- Operational Tide-Surge Models and Chair of NTSFL
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Philip Knight, POL	- Real-time systems development and management
Lesley Rickards, BODC	- Tide Gauge Data Sets
Dave Smith, POL	- Leader Tide Gauge Inspectorate
Simon Williams, POL	- GPS and Absolute Gravity Networks
Philip Woodworth, POL	- Director of the PSMSL (up to March 2007)

Thanks also to all those involved in the maintenance of the network, the data retrieval, processing, quality control and delivery.

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## Foreword

Global sea level is expected to rise by between 20 and 80 cm by the year 2100, resulting in changes to the frequency and severity of coastal flood events. Managing the risk and developing effective forecasting systems demands the best understanding of the science controlling sea level rise, storm surges and coastal flooding. The National Tidal and Sea Level Facility (NTSLF) is the UK centre of excellence for all scientific matters relating to tides, sea level change, and coastal forecasting. Based at the Proudman Oceanographic Laboratory, in collaboration with research partners in top universities and the Met Office, we provide unique expertise in sea level measurement and the computer modelling of tides and storm surges. Our work is of strategic importance to government, local authorities, the public and the scientific community. This report contains a summary of NTSLF activity for the period January-December 2007.

On the 9 November 2007, the east coast of the UK experienced the worst storm surge for 50 years. The operational flood warning system, designed by NTSLF scientists, provided accurate estimates of water levels throughout the event. Forecast surges were accurate to within 1cm at Lowestoft (where local minor flooding did occur) and 8 cm at Sheerness. Good predictions for Sheerness are a necessity since they determine the closure of the Thames Barrier. At the time of the storm an ensemble surge forecasting system was under evaluation. Ensemble forecasting makes use of multiple simulations to measure the inherent uncertainty in weather prediction, and the new system provided an increased level of confidence in the forecasts.

The NTSLF manages precision tide gauges at 44 sites around the UK. We are also responsible for monitoring sea level in the British Overseas Territories, and at strategic sites in the south Atlantic as part of our contribution to international climate research. Sophisticated telemetry systems make the data available in real time for operational coastal flood warning. The maintenance and development program has installed new data-logging systems at all but one of the sites in the national tide gauge network. Major projects this year included gauge relocation work at Immingham, Liverpool and Lowestoft in response to quayside engineering. A system of rapid sampling and data acquisition for tsunami warning has proven effective at three key sites. The new high frequency sampling will also improve coastal flood warning systems.

The NTSLF web pages (<http://www.pol.ac.uk/ntslf>) provide real time displays of UK sea levels, forecasts from the storm surge model, and measurements from the south Atlantic and Gibraltar. Tide gauge data are available free of charge from the British Oceanographic Data Centre (BODC). We also provide tidal predictions for over 700 coastal locations, conversions between commonly used datums, and extreme high and low water information.

The UK strategic tide gauge network and operational model developments are funded by the Environment Agency. We would also like to acknowledge the support of all those who contribute scientifically towards, and make use of, the NTSLF.

Dr Kevin Horsburgh  
Head of NTSLF