



Department
of Energy &
Climate Change

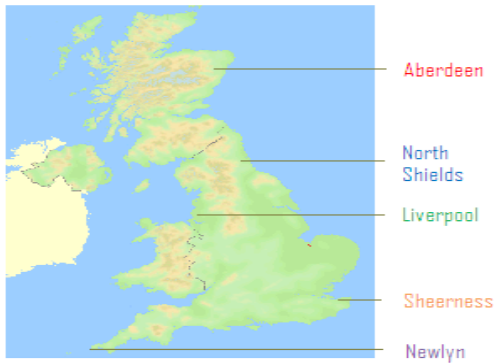
UK sea level

26 June 2013

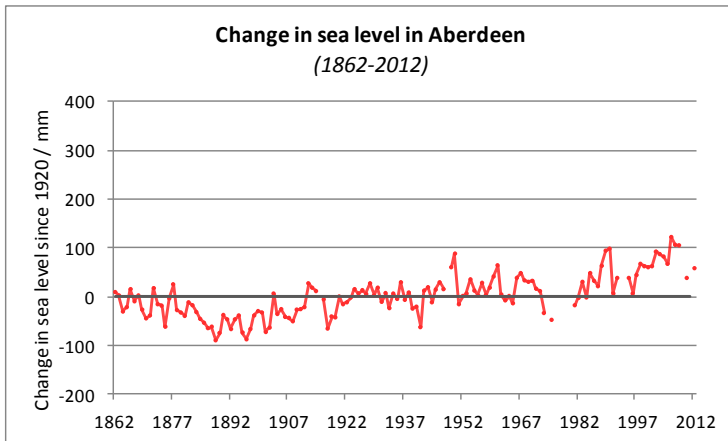
UK sea level

Data summary

This report reviews the five longest sea level records in the UK; namely those are in Aberdeen (1862-2011), Liverpool (1858-2011), North Shields (1896-2011), Sheerness (1834-2006) and Newlyn (1916-2011). Data are representative of the annual mean values of sea level at these areas.

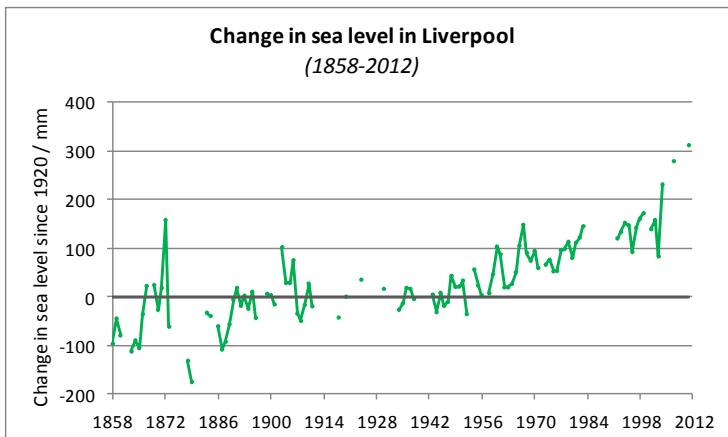


Aberdeen



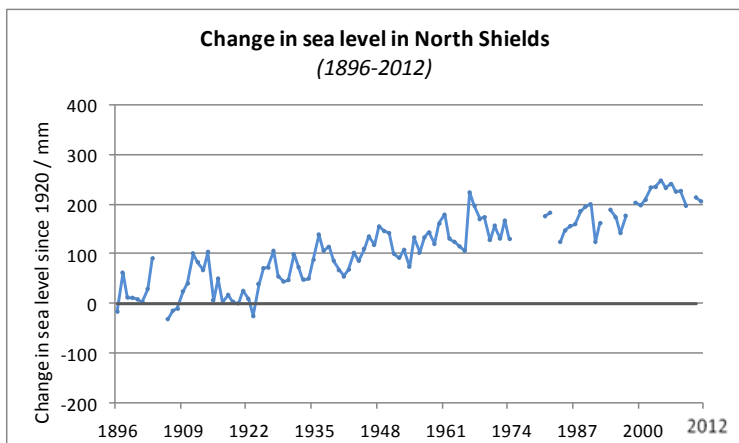
Year	Sea level / mm	Change from 1920 / mm
1920	6989	-
2000	7049	60
2001	7051	62
2002	7081	92
2003	7076	87
2004	7071	82
2005	7056	67
2006	7111	122
2007	7095	106
2008	7094	105
2010	7027	38
2012	7047	58

Liverpool



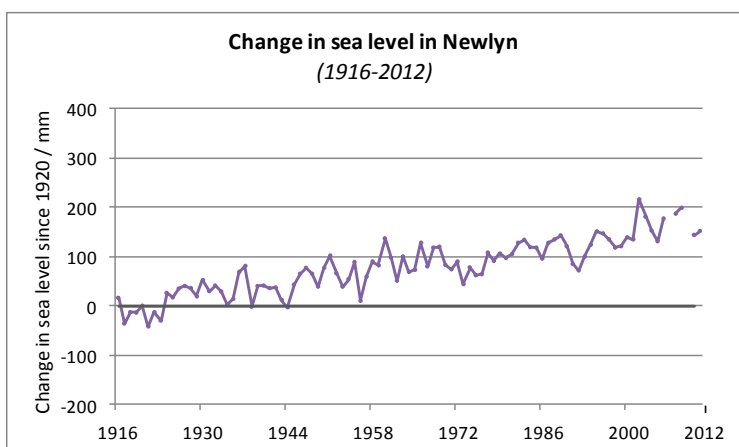
Year	Sea level / mm	Change from 1920 / mm
1920	4574	-
2001	4713	139
2002	4732	158
2003	4657	83
2004	4805	231
2007	4853	279
2011	4886	312

North Shields



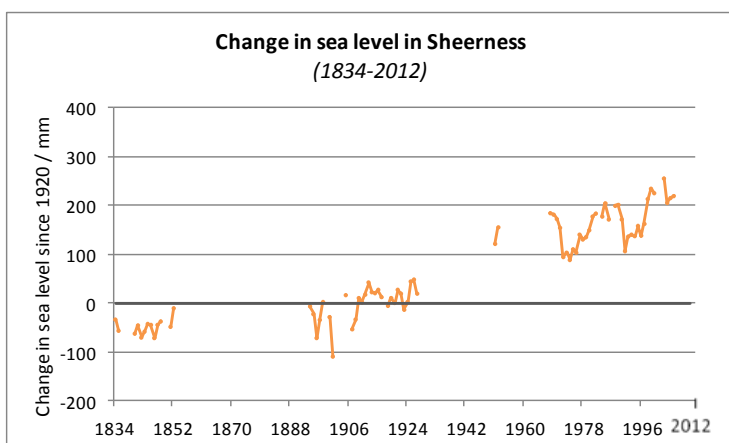
Year	Sea level / mm	Change from 1920 / mm
1920	6810	-
2000	7008	198
2001	7019	209
2003	7045	235
2005	7043	233
2006	7051	241
2007	7036	226
2008	7037	227
2009	7007	197
2011	7024	214
2012	7016	206

Newlyn



Year	Sea level / mm	Change from 1920 / mm
1920	6958	-
2000	7097	139
2001	7093	135
2003	7139	181
2005	7089	131
2006	7135	177
2008	7145	187
2009	7157	199
2011	7102	144
2012	7110	152

Sheerness

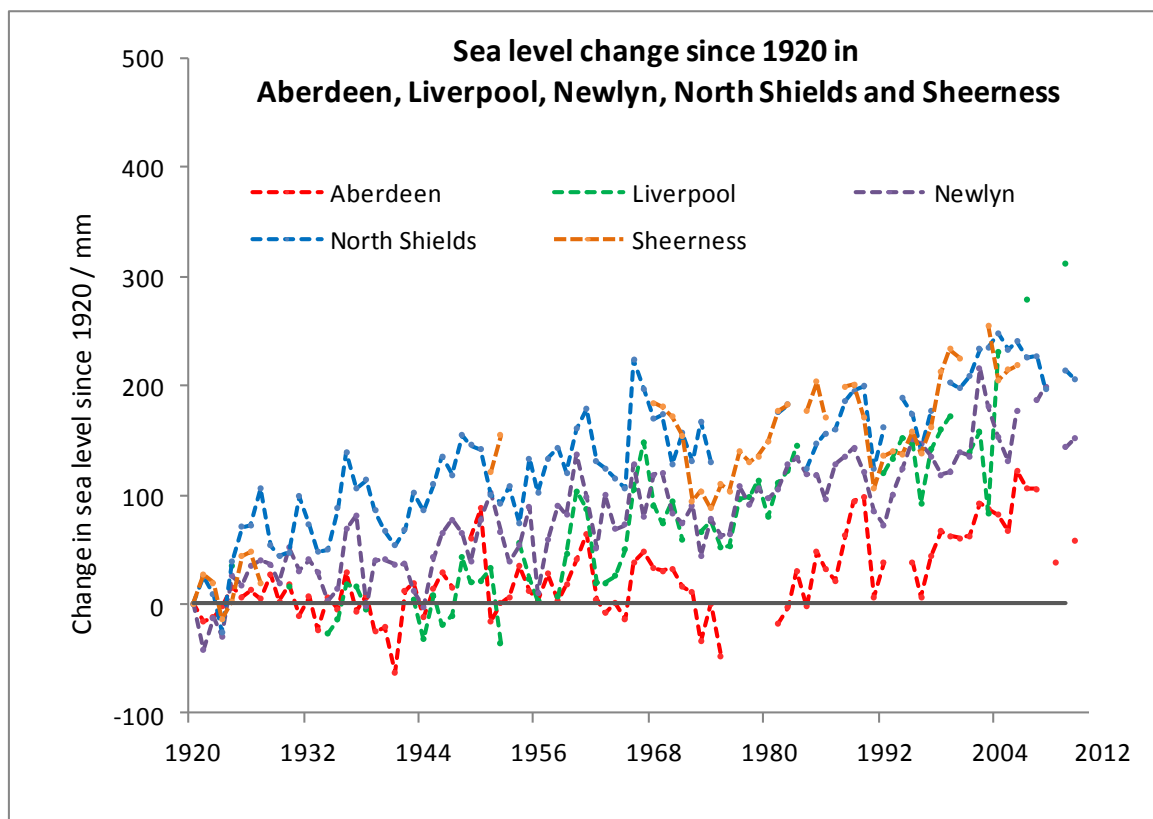


Year	Sea level / mm	Change from 1920 / mm
1920	6906	-
2000	7131	225
2003	7161	255
2004	7111	205
2005	7121	215
2006	7125	219

In the past few decades, North Shields and Sheerness have seen the largest rises in sea level, compared to the 1920 levels. Since 1998, an increase of at least 190 mm compared with 1920 was seen at both these sites.

Until the mid-1980s, sea levels in Aberdeen had remained relatively flat when compared to the 1920 level. However, for every year since 1985, sea levels have been higher than 1920. On average, in the past two decades sea levels are more than 50 mm higher than the baseline. Between 2006 and 2008 sea levels have been higher than 1920 by more than 100 mm, with a 55 mm increase from 2005 to 2006 alone.

Sea levels in Liverpool and Newlyn have also increased by a large amount in the past few decades. Since the 1980s, sea levels have regularly been more than 100 mm higher than 1920 levels at both these sites. In 2011 Liverpool observed the largest rise in sea level since 1920 of all five sites i.e. 312 mm increase from 1920 level.



Data sources

The UK sea level data come from the Permanent Service for Mean Sea Level (PSMSL) dataset.

The Permanent Service for Mean Sea Level has been responsible for the collection, publication, analysis and interpretation of sea level data from the global network of tide gauges since 1933. It is based in Liverpool at the National Oceanography Centre (NOC), which is a component of the UK Natural Environment Research Council (NERC).

PSMSL datasets are available on their dedicated website at the link below:

<http://www.psmsl.org/>

Background information on data collection and processing

The database of the Permanent Service for Mean Sea Level (PSMSL) contains monthly and annual mean values of sea level from almost 2000 tide gauge stations around the world.

The PSMSL receives monthly and annual mean values of sea level from almost 200 national authorities, distributed around the world, responsible for sea level monitoring in each country or region. Data from each station are entered directly as received from the authority into the PSMSL raw data file for that station (usually called the METRIC file in PSMSL publications). The monthly and annual means so entered for any one year are necessarily required to be measured to a common datum, although, at this stage, datum continuity between years is not essential. While the PSMSL makes every attempt to spot inconsistent or erroneous data, the responsibility for the monthly and annual means entered into the METRIC files in this way is entirely that of the supplying authority.

In the case of the UK the basic data are 15 minute average sea levels which are filtered to give hourly values and then they are filtered to give daily ones (the latter using what is called a Doodson filter). The daily values are then averaged arithmetically to provide monthly and annual mean values for the PSMSL.

In order to construct time series of sea level measurements at each station, the monthly and annual means have to be reduced to a common datum. This reduction is performed by the PSMSL making use of the tide gauge datum history provided by the supplying authority. To date, approximately two thirds of the stations in the PSMSL database have had their data adjusted in this way, forming the Revised Local Reference (RLR) dataset.

The RLR datum at each station is defined to be approximately 7000mm below mean sea level, with this arbitrary choice made many years ago in order to avoid negative numbers in the resulting RLR monthly and annual mean values.

References

- [Pugh, D.T. 1987. Tides, surges and mean sea-level: a handbook for engineers and scientists. Wiley, Chichester, 472pp.](#)
- Woodworth, P.L. 1999. High waters at Liverpool since 1768: the UK's longest sea level record. *Geophysical Research Letters*, 26 (11), 1589-1592.

Further information

Please email climatechange.statistics@decc.gsi.gov.uk if you have any questions or comments about the information on this page.

