

Swanage Pier Tide Gauge

Location

OS: 403692E 78849N

WGS84: Latitude: 50° 36.5598' N Longitude: 01° 56.9510' W

Seaward end of Swanage Pier

Instrument Type

Rosemount WaveRadar REX

TGZ



Benchmarks

Benchmark

TGBM = 6.262m above Ordnance Datum Newlyn

TGZ = 6.337m above Ordnance Datum Newlyn

TGZ = 7.737m above Chart Datum

TGZ = 0.075m above TGBM

Description

Top of S/S horizontal frame

Datum

All data are to Ordnance Datum Newlyn. The height of Chart Datum relative to Ordnance Datum at Swanage is -1.40m (Admiralty Tide Tables, Supplementary Table III).

Survey information

The site was surveyed on 29 May 2008.

Site characteristics

The Pier is on open coast with no nearby estuaries, but leeward of a headland. Spring tidal range is approx. 1.1m.

Data Quality

Recovery rate (%)	Sample interval
97	10 minutes

Service history

The radar was last serviced in April 2014. No re-calibration of the instrument is required.

Measurements

Residuals and Elevations (OD and CD) for the whole year are shown in Figures 1 to 3 respectively. It should be noted that, given the small tidal range and double High Waters, tidal predictions are particularly difficult at this site, both for elevation and especially for timing. Accordingly, there may be instances of apparent tidal surge and/or periodicity in the surge which are, in reality, an artefact of the predictions.

Statistics

All times GMT

Month	Extreme maxima		Extreme minima	
	Elevation (OD)	Date/Time	Elevation (OD)	Date/Time
January	1.29	04-Jan-2014 11:20	-0.87	30-Jan-2014 14:50
February	1.29	03-Feb-2014 11:50	-1.15	02-Feb-2014 17:10
March	1.33	03-Mar-2014 10:20	-1.06	01-Mar-2014 15:20
April	1.14	02-Apr-2014 10:10	-0.93	01-Apr-2014 04:00
May	0.89	19-May-2014 23:40	-1.08	17-May-2014 04:50
June	0.97	14-Jun-2014 21:30	-1.07	16-Jun-2014 05:20
July	1.13	14-Jul-2014 22:00	-1.11	15-Jul-2014 05:10
August	1.28	12-Aug-2014 22:00	-1.13	12-Aug-2014 04:00
September	1.25	10-Sep-2014 21:30	-1.17	11-Sep-2014 04:30
October	1.39	08-Oct-2014 21:00	-0.87	10-Oct-2014 04:10
November	1.35	06-Nov-2014 20:20	-0.78	24-Nov-2014 16:20
December	1.00	24-Dec-2014 09:40	-0.99	24-Dec-2014 16:50

Month	Surge maxima		Surge minima	
	Value (m)	Date/Time	Value (m)	Date/Time
January	0.70	01-Jan-2014 16:00	-0.38	25-Jan-2014 13:20
February	0.91	14-Feb-2014 18:10	-0.36	06-Feb-2014 05:10
March	0.50	02-Mar-2014 18:30	-0.39	14-Mar-2014 22:20
April	0.45	26-Apr-2014 16:10	-0.25	14-Apr-2014 03:00
May	0.37	23-May-2014 04:40	-0.29	15-May-2014 14:00
June	0.22	27-Jun-2014 12:50	-0.26	01-Jun-2014 00:50
July	0.35	18-Jul-2014 01:50	-0.22	16-Jul-2014 14:20
August	0.48	10-Aug-2014 11:30	-0.12	30-Aug-2014 04:20
September	0.34	19-Sep-2014 01:40	-0.15	30-Sep-2014 05:10
October	0.57	06-Oct-2014 06:30	-0.17	22-Oct-2014 22:30
November	0.60	03-Nov-2014 02:00	-0.14	20-Nov-2014 13:40
December	0.52	10-Dec-2014 14:50	-0.46	10-Dec-2014 04:00

Month	Mean Level	
	No. of days	Elevation (OD)
January	31	0.414
February	28	0.412
March	31	0.220
April	30	0.276
May	31	0.247
June	30	0.249
July	31	0.289
August	31	0.321
September	30	0.307
October	31	0.393
November	30	0.466
December	31	0.262

Highest values in 2014			
Extreme		Surge	
Elevation (OD) (Surge component)	Date/Time	Value (m)	Date/Time
1.39 (0.48)	08-Oct-2014 21:00	0.91	14-Feb-2014 18:10
1.39 (0.48)	09-Oct-2014 09:10	0.83	14-Feb-2014 15:50
1.35 (0.52)	06-Nov-2014 20:20	0.80	05-Feb-2014 09:10
1.33 (0.33)	03-Mar-2014 10:20	0.79	05-Feb-2014 01:40
1.32 (0.31)	02-Mar-2014 09:40	0.75	12-Feb-2014 14:00
1.30 (0.40)	02-Mar-2014 21:40	0.70	01-Jan-2014 16:00
1.29 (0.91)	14-Feb-2014 18:30	0.67	03-Jan-2014 17:00
1.29 (0.50)	03-Feb-2014 11:50	0.66	08-Feb-2014 16:20
1.29 (0.70)	05-Feb-2014 11:40	0.62	06-Jan-2014 19:20
1.29 (0.36)	04-Jan-2014 11:20	0.62	26-Jan-2014 07:00

Year	Annual extreme maxima		Annual surge maxima		Z ₀ (OD)	Annual recovery rate
	Elevation (OD) (Surge)	Date/Time	Value (m)	Date/Time		
2008	1.66 (0.64)	10-Mar-2008 10:10	0.91	10-Mar-2008 05:40	-	94%
2009	1.33 (0.53)	09-Feb-2009 20:50	0.80	19-Jan-2009 05:20	0.242	90%
2010	1.34 (0.43)	30-Mar-2010 08:20	0.65	12-Nov-2010 16:00	0.263	96%
2011	1.14 (-0.04)	30-Aug-2011 21:20	0.39	07-Jan-2011 14:30		97%
2012	1.53 (0.39)	14-Dec-2012 09:00	0.64	25-Apr-2012 16:40	-	96%
2013	1.32 (0.26)	04-Nov-2013 08:30	0.67	27-Oct-2013 23:40	-	98%
2014	1.39 (0.48)	08-Oct-2014 21:00	0.91	14-Feb-2014 18:10	-	97%

Tidal levels		
Observation period	January 2008 to December 2012	
Tide Level	Elevation (OD)	Elevation (CD)
HAT	1.22	2.62
MHWS	0.81	2.21
MHWN	0.44	1.84
MSL	0.26	1.66
MLWN	0.08	1.48
MLWS	-0.29	1.11
LAT	-1.34	0.06

General

The time series of 10 minute tidal elevations for one year is quality-checked in accordance with ESEAS guidelines, flagged and archived. The archived time series is continuous and monotonic, with missing data given as 9999. The missing data shown are days where the entire 24 hours of data are missing.

Monthly **extreme maxima/minima** are the maximum and minimum water levels from all measured data for that month. Monthly **surge maxima/minima** (residuals) are calculated in a similar manner from the time series of residuals. Residuals are derived as the measured tidal elevation minus the predicted tidal elevation.

The monthly Mean Level is calculated as the average of all readings for the given month. The annual Z₀ is the value of Mean Sea Level derived by the harmonic analysis of the year's data. These values should not be used for any purpose without consideration of the recovery rate.

Acknowledgements

Tidal predictions and levels were produced by Fugro EMU Limited. The REX is installed on Swanage Pier by kind permission of Swanage Pier Trust.

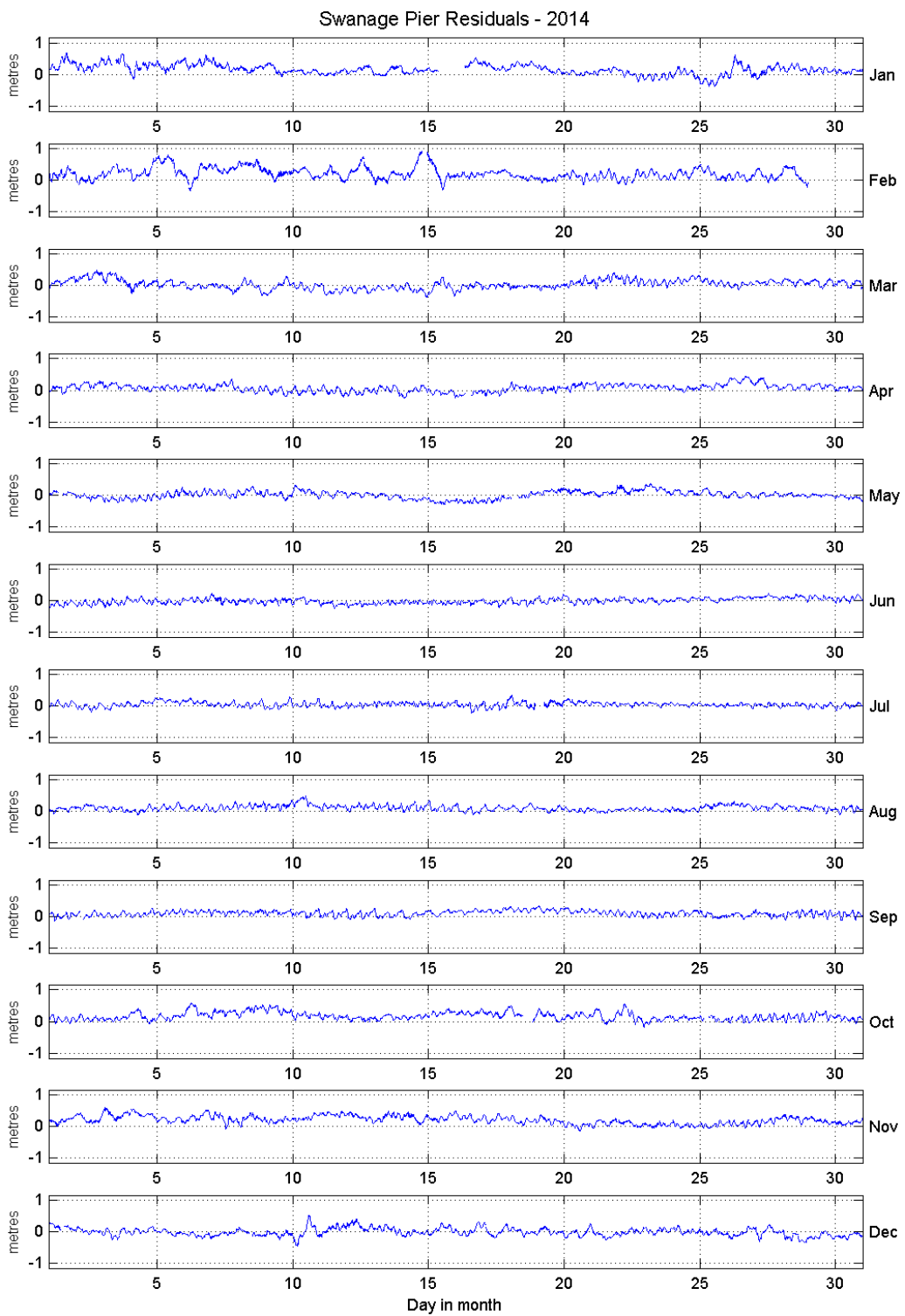


Figure 1: Swanage Pier residuals for 2014

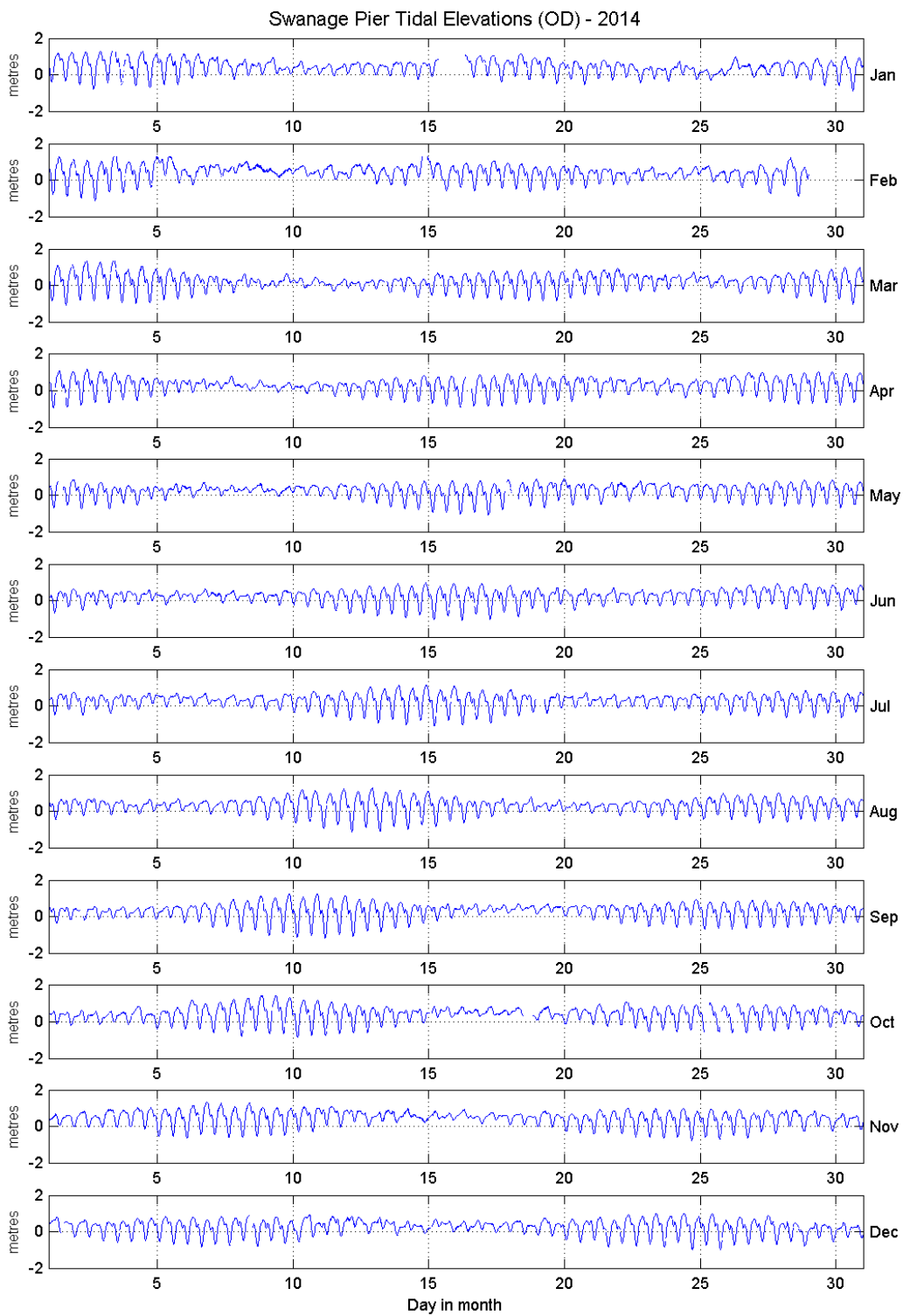


Figure 2: Swanage Pier tidal elevations for 2014 relative to Ordnance Datum

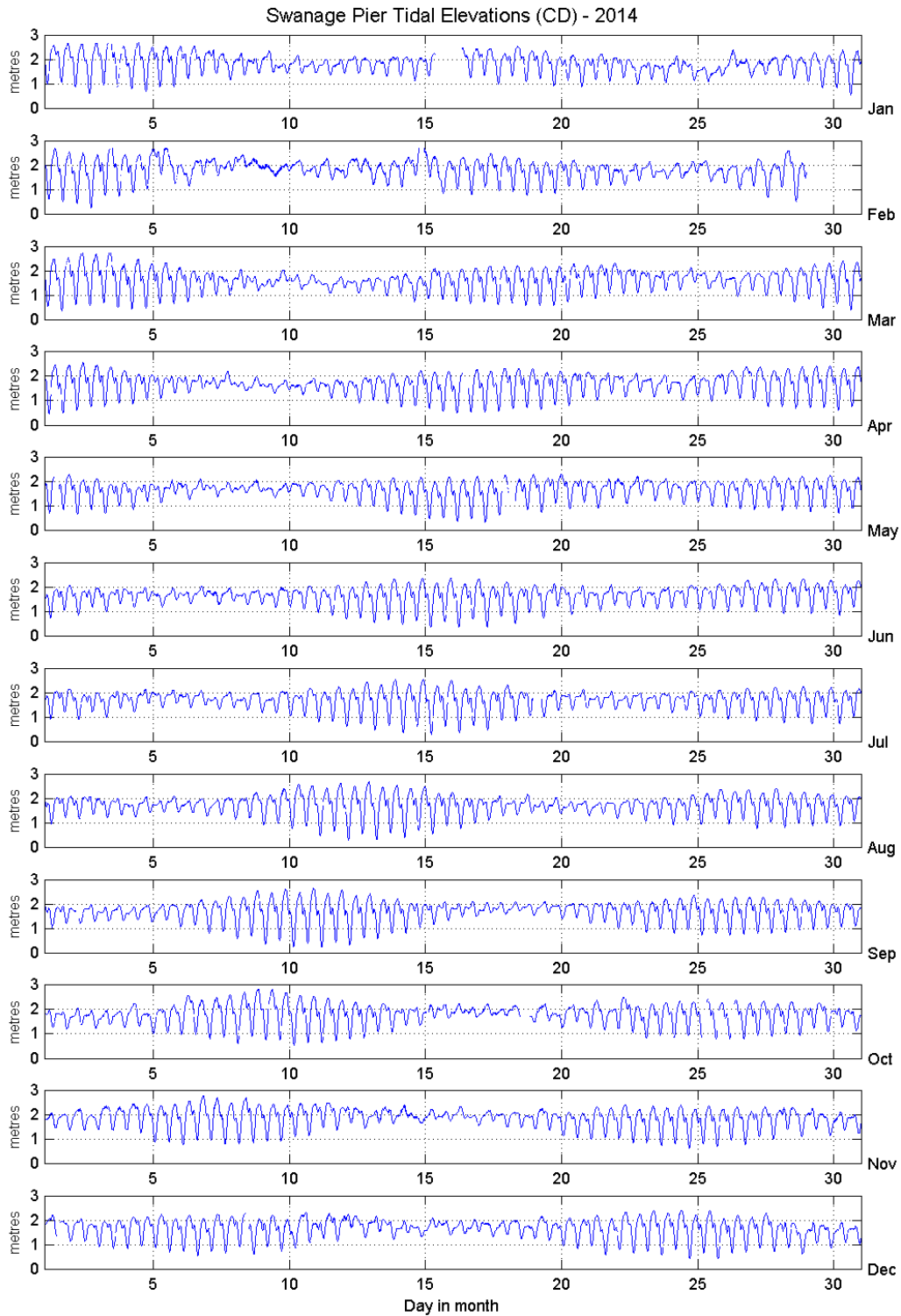


Figure 3: Swanage Pier tidal elevations for 2014 relative to Chart Datum