

## 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 October 2015. 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	1.17	21-Jan-2015 08:40	-1.19	22-Jan-2015 16:40
February	1.24	20-Feb-2015 09:20	-1.22	20-Feb-2015 16:30
March	1.11	21-Mar-2015 09:10	-1.32	22-Mar-2015 16:50
April	0.99	19-Apr-2015 21:10	-1.24	18-Apr-2015 15:10
May	1.10	05-May-2015 09:20	-0.94	20-May-2015 04:40
June	0.97	01-Jun-2015 19:40	-0.90	17-Jun-2015 03:40
July	1.04	03-Jul-2015 21:10	-0.97	05-Jul-2015 05:30
August	1.27	30-Aug-2015 20:40	-1.08	31-Aug-2015 04:00
September	1.17	01-Sep-2015 22:30	-1.38	29-Sep-2015 03:40
October	1.38	29-Oct-2015 09:40	-1.12	01-Oct-2015 05:20
November	1.19	28-Nov-2015 09:50	-1.00	26-Nov-2015 15:30
December	1.23	25-Dec-2015 08:10	-0.73	27-Dec-2015 16:50

Month	Surge maxima		Surge minima	
	Value (m)	Date/Time	Value (m)	Date/Time
January	0.62	15-Jan-2015 02:50	-0.45	10-Jan-2015 16:30
February	0.42	23-Feb-2015 18:10	-0.65	07-Feb-2015 01:10
March	0.40	29-Mar-2015 12:00	-0.52	05-Mar-2015 11:20
April	0.27	16-Apr-2015 03:40	-0.35	07-Apr-2015 12:40
May	0.46	05-May-2015 05:40	-0.32	21-May-2015 13:30
June	0.27	01-Jun-2015 21:00	-0.40	10-Jun-2015 09:00
July	0.35	26-Jul-2015 12:20	-0.16	02-Jul-2015 14:30
August	0.44	26-Aug-2015 09:40	-0.12	12-Aug-2015 15:10
September	0.45	16-Sep-2015 06:40	-0.27	30-Sep-2015 00:20
October	0.50	05-Oct-2015 02:40	-0.18	02-Oct-2015 03:30
November	0.58	17-Nov-2015 02:20	-0.23	26-Nov-2015 11:00
December	0.44	30-Dec-2015 06:50	-0.33	04-Dec-2015 08:20

Month	Mean Level	
	No. of days	Elevation (OD)
January	31	0.274
February	28	0.163
March	31	0.141
April	30	0.160
May	31	0.244
June	30	0.191
July	31	0.280
August	31	0.308
September	30	0.306
October	31	0.337
November	30	0.369
December	31	0.385

Highest values in 2015			
Extreme		Surge	
Elevation (OD) (Surge component)	Date/Time	Value (m)	Date/Time
1.38 (0.38)	29-Oct-2015 09:40	0.62	15-Jan-2015 02:50
1.34 (0.37)	27-Oct-2015 20:00	0.61	13-Jan-2015 04:20
1.34 (0.31)	28-Oct-2015 21:00	0.58	17-Nov-2015 02:20
1.28 (0.29)	28-Oct-2015 08:40	0.52	19-Nov-2015 17:10
1.27 (0.16)	31-Aug-2015 21:40	0.50	05-Oct-2015 02:40
1.27 (0.21)	30-Aug-2015 20:40	0.46	05-May-2015 05:40
1.26 (0.35)	27-Oct-2015 08:00	0.45	16-Jan-2015 20:50
1.24 (0.17)	02-Aug-2015 22:10	0.45	16-Sep-2015 18:30
1.24 (0.34)	30-Oct-2015 10:30	0.45	16-Sep-2015 06:40
1.24 (0.12)	20-Feb-2015 09:20	0.44	30-Dec-2015 06:50

Year	Annual extreme maxima		Annual surge maxima		Z <sub>0</sub> (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%
2015	1.38 (0.38)	29-Oct-2015 09:40	0.62	15-Jan-2015 02:50	-	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 Z<sub>0</sub> 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.

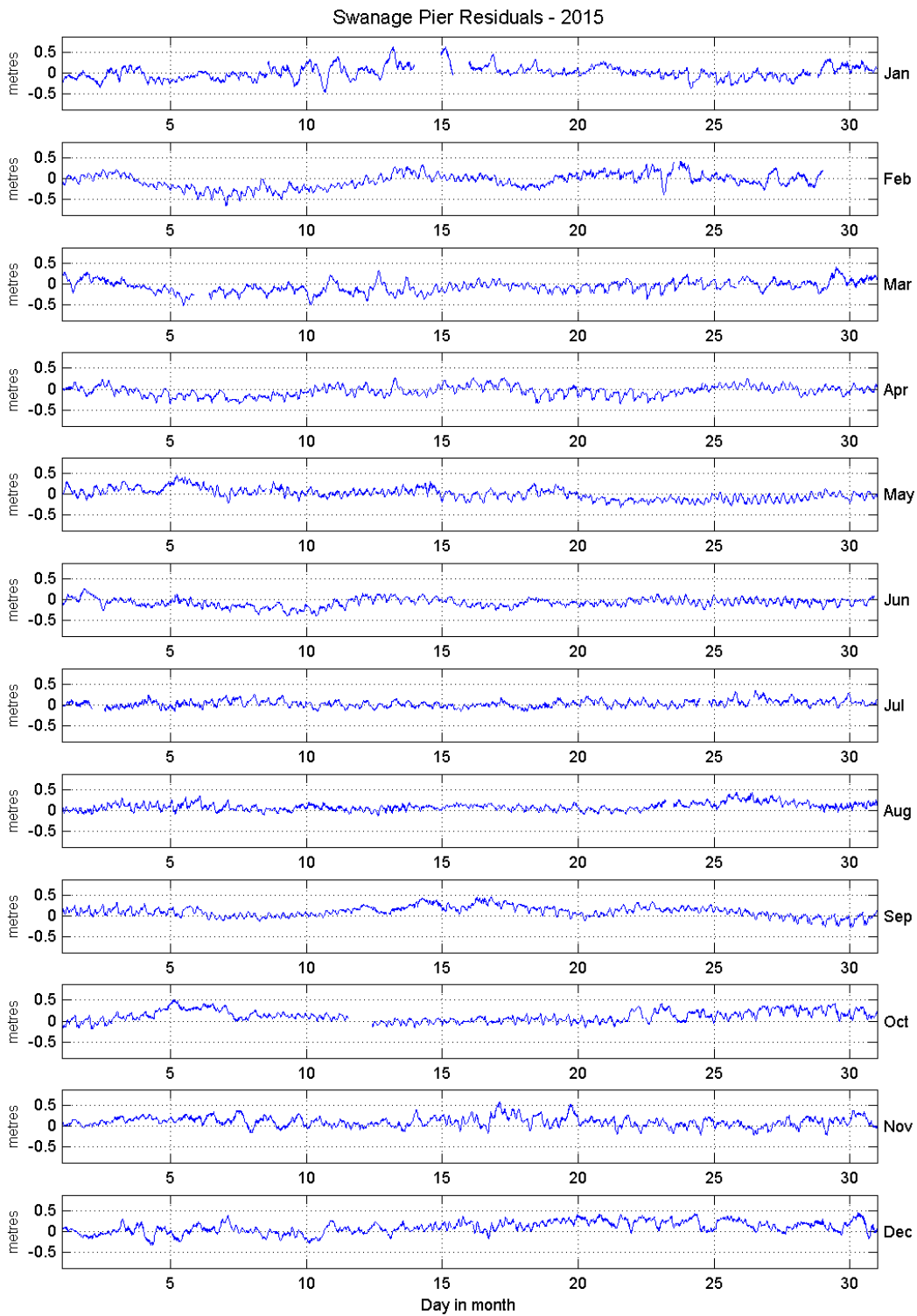


Figure 1: Swanage Pier residuals for 2015

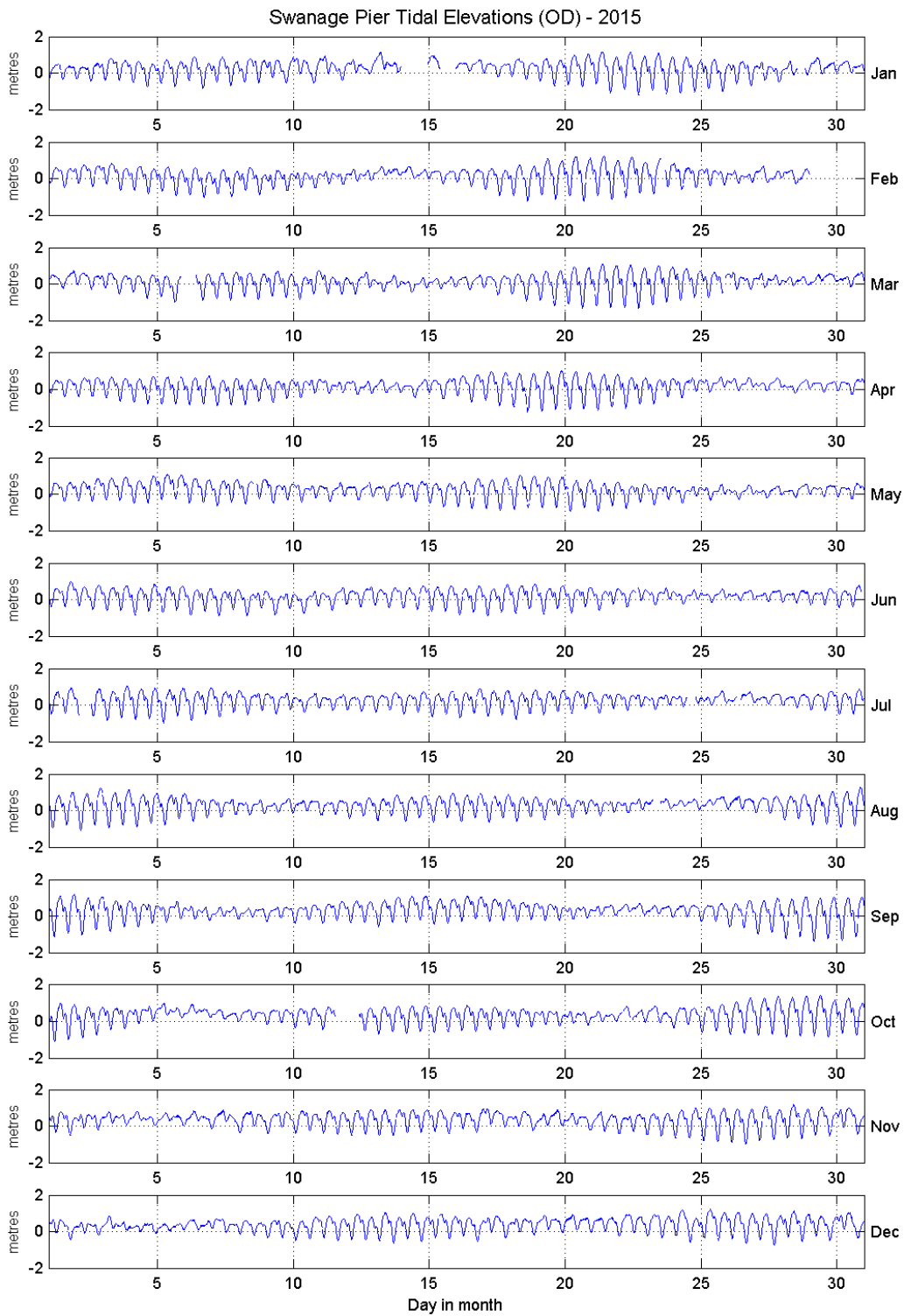


Figure 2: Swanage Pier tidal elevations for 2015 relative to Ordnance Datum

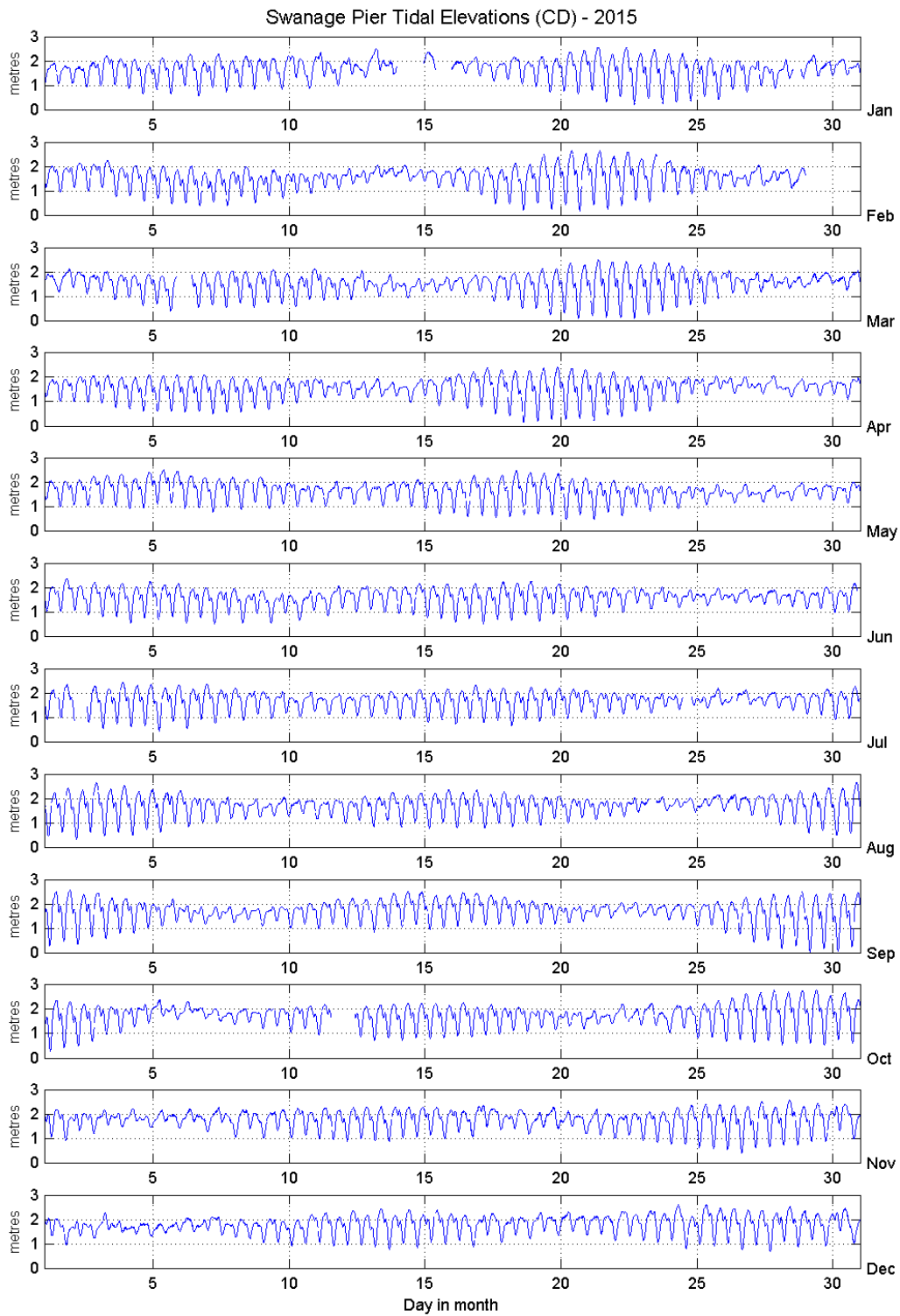


Figure 3: Swanage Pier tidal elevations for 2015 relative to Chart Datum