

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 December 2011. 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	1.14	07-Jan-2011 10:10	-1.30	23-Jan-2011 18:00
February	1.21	19-Feb-2011 09:10	-1.21	20-Feb-2011 16:50
March	1.03	21-Mar-2011 09:30	-1.36	20-Mar-2011 15:40
April	1.06	19-Apr-2011 21:30	-1.13	18-Apr-2011 15:20
May	0.91	19-May-2011 21:50	-1.00	18-May-2011 03:40
June	1.06	17-Jun-2011 21:10	-0.82	03-Jun-2011 04:00
July	0.96	16-Jul-2011 21:00	-0.91	04-Jul-2011 05:00
August	1.16	31-Aug-2011 22:10	-1.15	31-Aug-2011 04:20
September	1.15	28-Sep-2011 20:50	-1.24	29-Sep-2011 04:10
October	1.35	27-Oct-2011 08:40	-0.99	28-Oct-2011 03:40
November	1.08	26-Nov-2011 09:00	-1.02	26-Nov-2011 16:10
December	1.18	12-Dec-2011 21:20	-1.01	28-Dec-2011 17:50

Month	Surge maxima		Surge minima	
	Value (m)	Date/Time	Value (m)	Date/Time
January	0.47	08-Jan-2011 04:40	-0.42	23-Jan-2011 13:40
February	0.37	13-Feb-2011 06:40	-0.32	28-Feb-2011 21:00
March	0.31	12-Mar-2011 16:10	-0.44	04-Mar-2011 04:50
April	0.24	02-Apr-2011 07:20	-0.27	11-Apr-2011 19:30
May	0.34	08-May-2011 07:10	-0.33	24-May-2011 06:20
June	0.38	17-Jun-2011 16:20	-0.28	01-Jun-2011 23:10
July	0.34	24-Jul-2011 06:40	-0.20	01-Jul-2011 23:00
August	0.22	26-Aug-2011 03:10	-0.22	10-Aug-2011 21:30
September	0.27	12-Sep-2011 02:30	-0.32	06-Sep-2011 19:40
October	0.30	24-Oct-2011 18:00	-0.33	08-Oct-2011 08:50
November	0.37	03-Nov-2011 11:30	-0.31	28-Nov-2011 13:10
December	0.50	12-Dec-2011 22:40	-0.50	27-Dec-2011 00:40

Month	Mean Level	
	No. of days	Elevation (OD)
January	31	0.226
February	28	0.247
March	31	0.124
April	30	0.185
May	31	0.195
June	30	0.249
July	31	0.262
August	31	0.276
September	30	0.287
October	31	0.294
November	30	0.342
December	31	0.323

Highest values in 2011			
Extreme		Surge	
Elevation (OD) (Surge component)	Date/Time	Value (m)	Date/Time
1.35 (0.21)	27-Oct-2011 08:40	0.50	12-Dec-2011 22:40
1.23 (0.15)	26-Oct-2011 20:00	0.47	16-Dec-2011 01:10
1.21 (0.10)	19-Feb-2011 09:10	0.47	08-Jan-2011 04:40
1.18 (0.46)	12-Dec-2011 21:20	0.47	16-Dec-2011 07:30
1.18 (0.02)	20-Feb-2011 10:00	0.44	04-Dec-2011 00:10
1.18 (0.08)	21-Feb-2011 10:40	0.43	02-Dec-2011 04:50
1.17 (0.03)	27-Oct-2011 21:00	0.41	09-Dec-2011 17:40
1.16 (-0.02)	31-Aug-2011 22:10	0.39	13-Dec-2011 17:40
1.15 (-0.06)	28-Sep-2011 20:50	0.39	14-Dec-2011 18:30
1.14 (-0.04)	30-Aug-2011 21:20	0.39	07-Jan-2011 14:30

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%

Tidal levels		
Observation period	January 2010 to December 2011	
Tide Level	Elevation (OD)	Elevation (CD)
HAT	1.26	2.66
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.

Acknowledgement

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

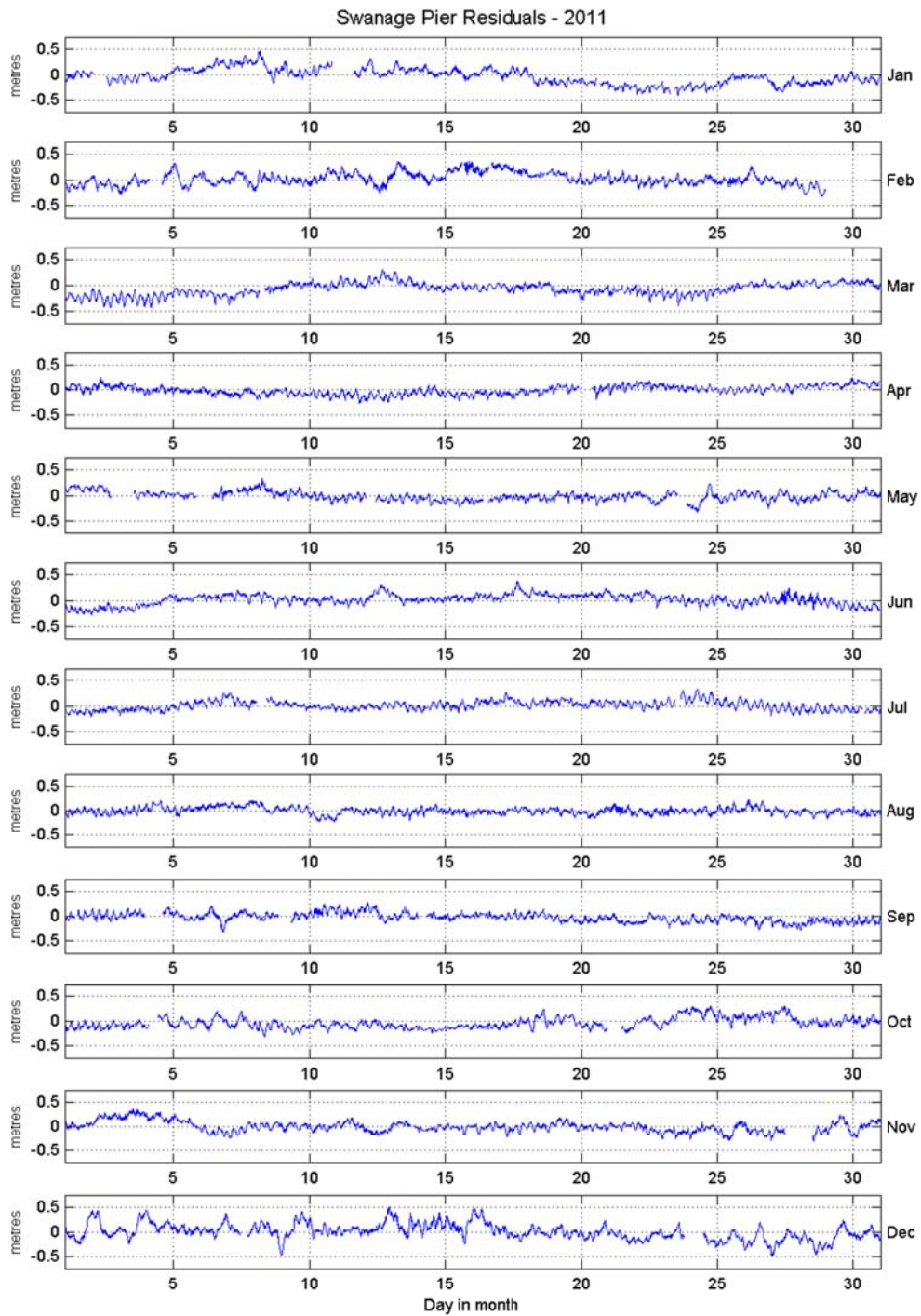


Figure 1: Swanage Pier residuals for 2011

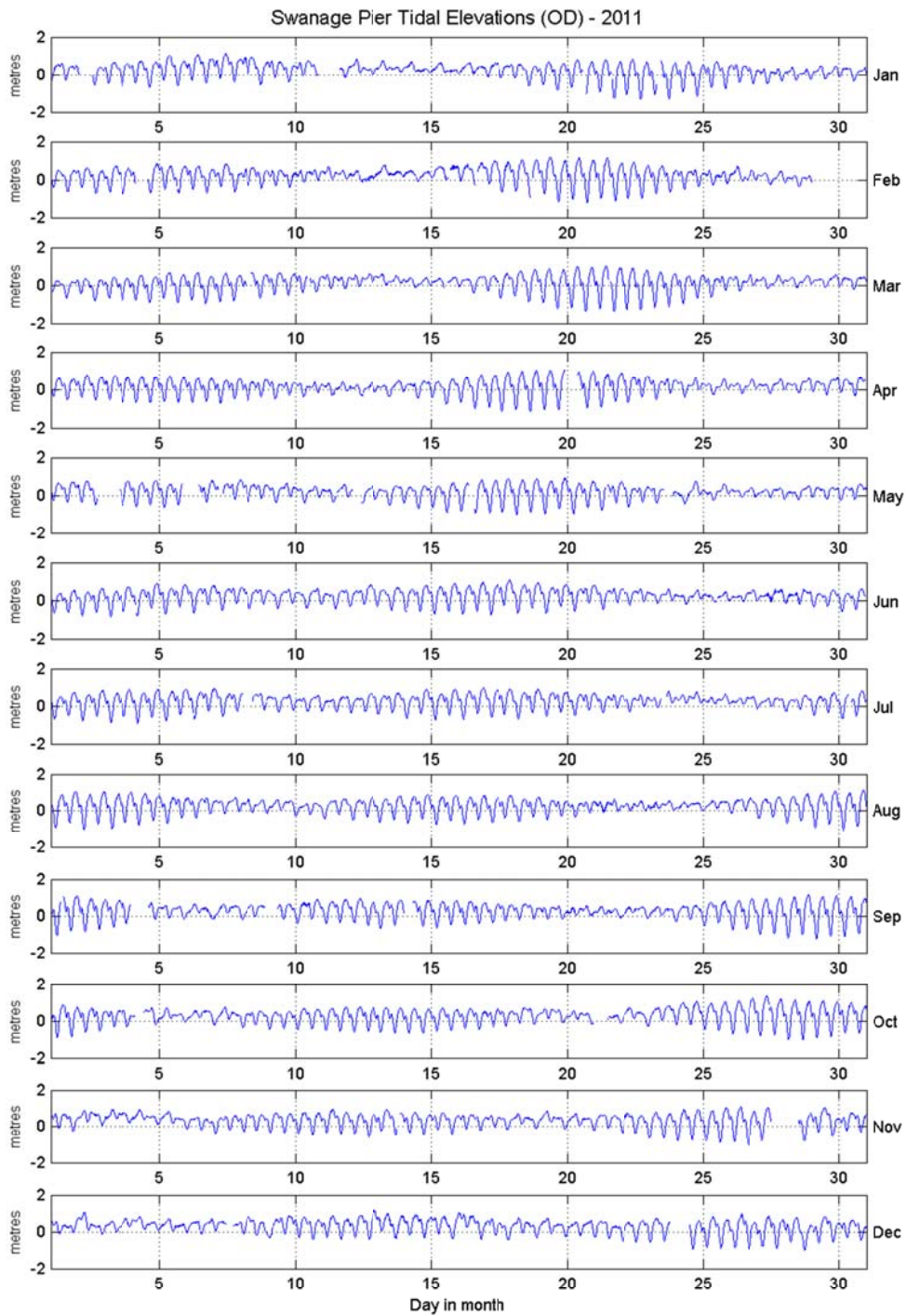


Figure 2: Swanage Pier tidal elevations for 2011 relative to Ordnance Datum

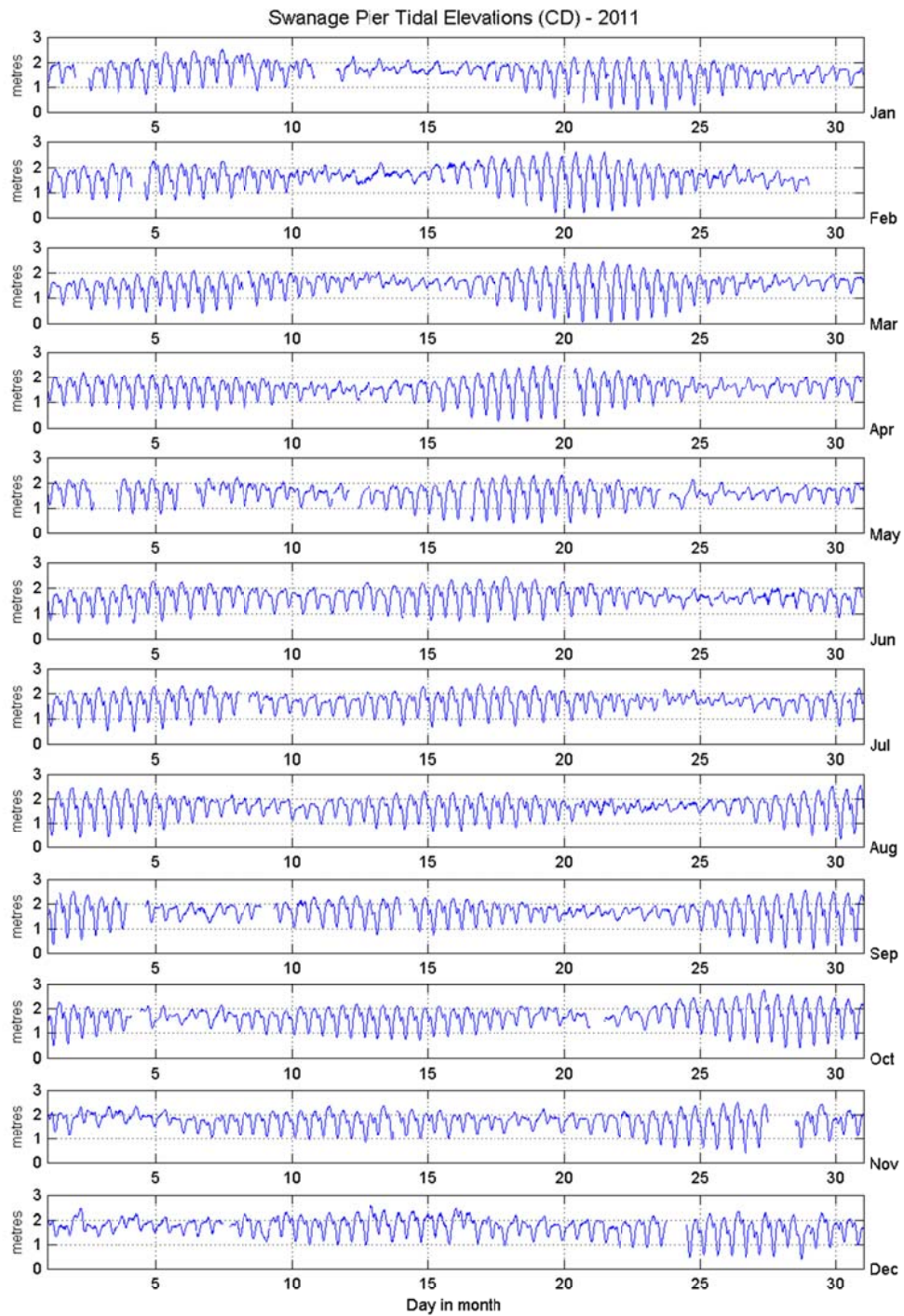


Figure 3: Swanage Pier tidal elevations for 2011 relative to Chart Datum