

Sandown Pier Tide Gauge

Location

OS: 459964E 83835N
 WGS84 Latitude: 50° 39.0666' N Longitude: 01° 9.18960'W

Seaward end of Sandown Pier, upper level

Instrument

Rosemount WaveRadar Rex

Benchmarks

Benchmark	Description
TGBM 5.989m OD	Top of NW bolt

TGZ = 8.112m above Ordnance Datum Newlyn

TGZ = 10.552m above Admiralty Chart Datum

TGZ = 2.123m above TGBM



Datum information

All data are to Ordnance Datum Newlyn. The height of Chart Datum relative to Ordnance Datum at Sandown is -2.44m (Admiralty Tide Tables, Supplementary Table III).

Levelling information

The site was surveyed on 09 May 2006.

Site Characteristics

The Pier is on open coast, with no nearby estuaries. Spring tidal range is ~4m. Some wave damping from the outer pier arm (see photograph) and some reflection from the Pier legs can occur.

Data Quality

C1 (%)	Sample interval	Missing data
99	10 minutes	27 Jun

Residuals and Elevations

Residuals and Elevations (OD and CD) for the whole year are shown in Figures 1 to 3 respectively.

Service history

The radar became operational on 01 June 2006. No re-calibration of the instrument is required.

Measurements

The Rex is a Frequency Modulated Continuous Wave radar, sampling at 4Hz. Tidal elevations are derived, every 10 minutes, as the one minute average of the 4Hz readings. The time stamp is the start of the measuring burst.

Statistics

All times GMT

Month	Surge maxima		Surge minima	
	Value (m)	Date/Time	Value (m)	Date/Time
January	0.73	23-Jan-2009 07:50	-0.38	06-Jan-2009 03:00
February	0.50	09-Feb-2009 23:00	-0.36	01-Feb-2009 05:30
March	0.43	03-Mar-2009 20:30	-0.42	18-Mar-2009 08:10
April	0.22	27-Apr-2009 10:00	-0.32	21-Apr-2009 18:20
May	0.22	17-May-2009 16:00	-0.38	29-May-2009 08:30
June	0.25	07-Jun-2009 00:40	-0.28	01-Jun-2009 10:50
July	0.25	21-Jul-2009 11:50	-0.24	26-Jul-2009 15:10
August	0.24	25-Aug-2009 06:10	-0.26	22-Aug-2009 05:50
September	0.28	02-Sep-2009 19:30	-0.35	10-Sep-2009 10:30
October	0.44	07-Oct-2009 13:00	-0.28	16-Oct-2009 02:40
November	0.67	29-Nov-2009 02:40	-0.36	14-Nov-2009 22:50
December	0.49	06-Dec-2009 05:40	-0.34	18-Dec-2009 17:30

Month	Extreme maxima		Extreme minima	
	Elevation (OD)	Date/Time	Elevation (OD)	Date/Time
January	2.24	13-Jan-2009 00:40	-1.83	13-Jan-2009 18:00
February	2.55	09-Feb-2009 23:30	-1.95	11-Feb-2009 17:50
March	2.13	13-Mar-2009 00:30	-1.91	11-Mar-2009 16:50
April	2.09	10-Apr-2009 23:50	-1.63	08-Apr-2009 15:50
May	2.10	25-May-2009 23:50	-1.65	27-May-2009 06:10
June	2.13	26-Jun-2009 14:00	-1.70	25-Jun-2009 05:40
July	2.23	23-Jul-2009 12:10	-1.81	25-Jul-2009 06:30
August	2.24	20-Aug-2009 11:00	-1.96	22-Aug-2009 05:30
September	2.25	20-Sep-2009 12:10	-1.87	21-Sep-2009 05:40
October	2.34	07-Oct-2009 13:00	-1.70	18-Oct-2009 04:00
November	2.37	04-Nov-2009 12:10	-1.35	18-Nov-2009 17:30
December	2.33	06-Dec-2009 01:40	-1.61	18-Dec-2009 17:40

Month	Mean Level	
	No. of days	Elevation (OD)
January	31	0.316
February	28	0.251
March	31	0.231
April	30	0.261
May	31	0.229
June	29	0.299
July	31	0.343
August	31	0.305
September	30	0.264
October	31	0.358
November	30	0.498
December	31	0.432

Highest values in 2009			
Surge		Extreme	
Value (m)	Date/Time	Elevation (OD) (surge component)	Date/Time
0.73	23-Jan-2009 07:50	2.55 (0.47)	09-Feb-2009 23:30
0.67	29-Nov-2009 02:40	2.37 (0.42)	04-Nov-2009 12:10
0.66	19-Jan-2009 07:00	2.34 (0.44)	07-Oct-2009 13:00
0.64	14-Nov-2009 00:20	2.33 (0.37)	06-Dec-2009 01:40
0.63	29-Nov-2009 14:50	2.32 (0.30)	10-Feb-2009 11:30
0.63	14-Nov-2009 12:50	2.29 (0.38)	14-Nov-2009 09:20
0.62	23-Jan-2009 04:00	2.29 (0.34)	03-Nov-2009 11:10
0.54	29-Nov-2009 19:10	2.27 (0.30)	05-Dec-2009 01:00
0.50	23-Nov-2009 19:40	2.27 (0.32)	16-Nov-2009 10:30
0.50	09-Feb-2009 23:00	2.27 (0.32)	04-Oct-2009 11:20

Year	Annual surge maxima		Annual extreme maxima		Z ₀ (OD)	Annual recovery rate (C1)
	Value (m)	Date	Elevation (OD) (surge component)	Date		
2007	0.78	09-Nov-2007 05:50	2.54 (0.50)	18-Mar-2007 22:50	0.303	97%
2008	0.88	10-Mar-2008 06:30	2.53 (0.52)	10-Mar-2008 12:30	0.302	94%
2009	0.73	23-Jan-2009 07:50	2.55 (0.47)	09-Feb-2009 23:30	0.314	99%

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.

Tidal predictions were produced using TASK2000. 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 were produced using the TASK2000 software, kindly provided by the Permanent Service for Mean Sea Level (PSMSL), Proudman Oceanographic Laboratory. The Rex is mounted on Sandown Pier by kind permission of the Pier owners.

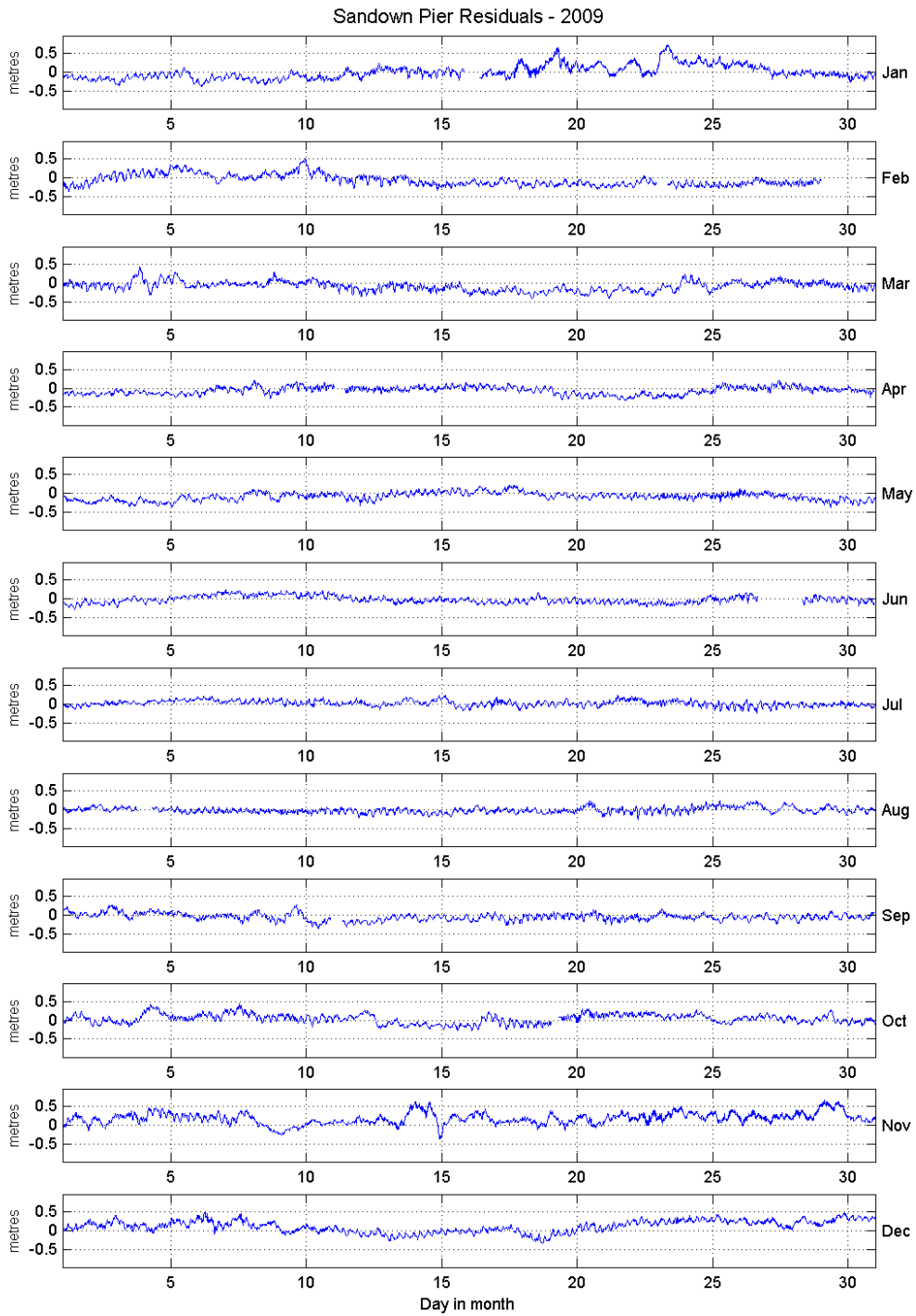


Figure 1 Residuals for 2009

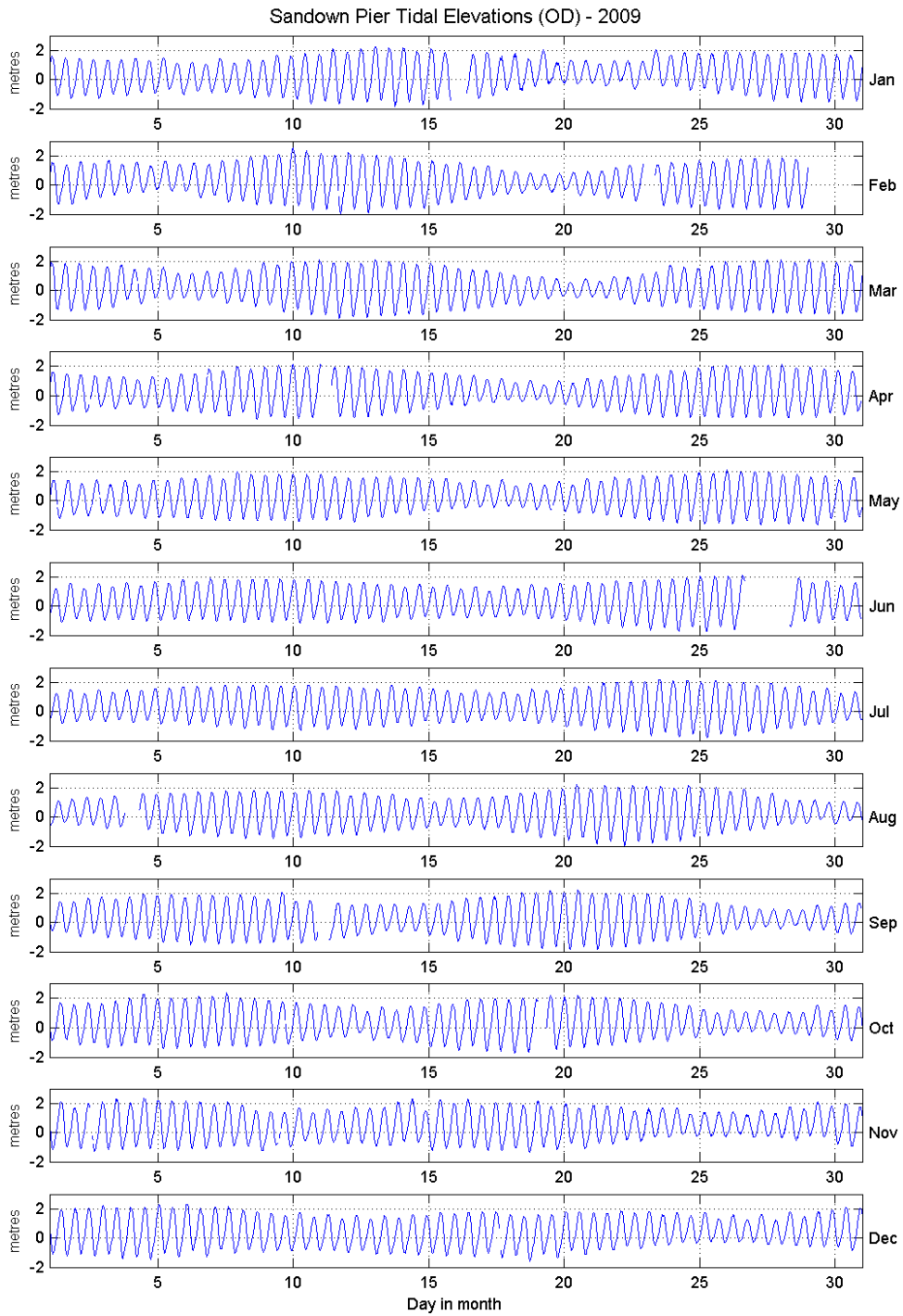


Figure 2 Tidal elevations relative to Ordnance Datum for 2009

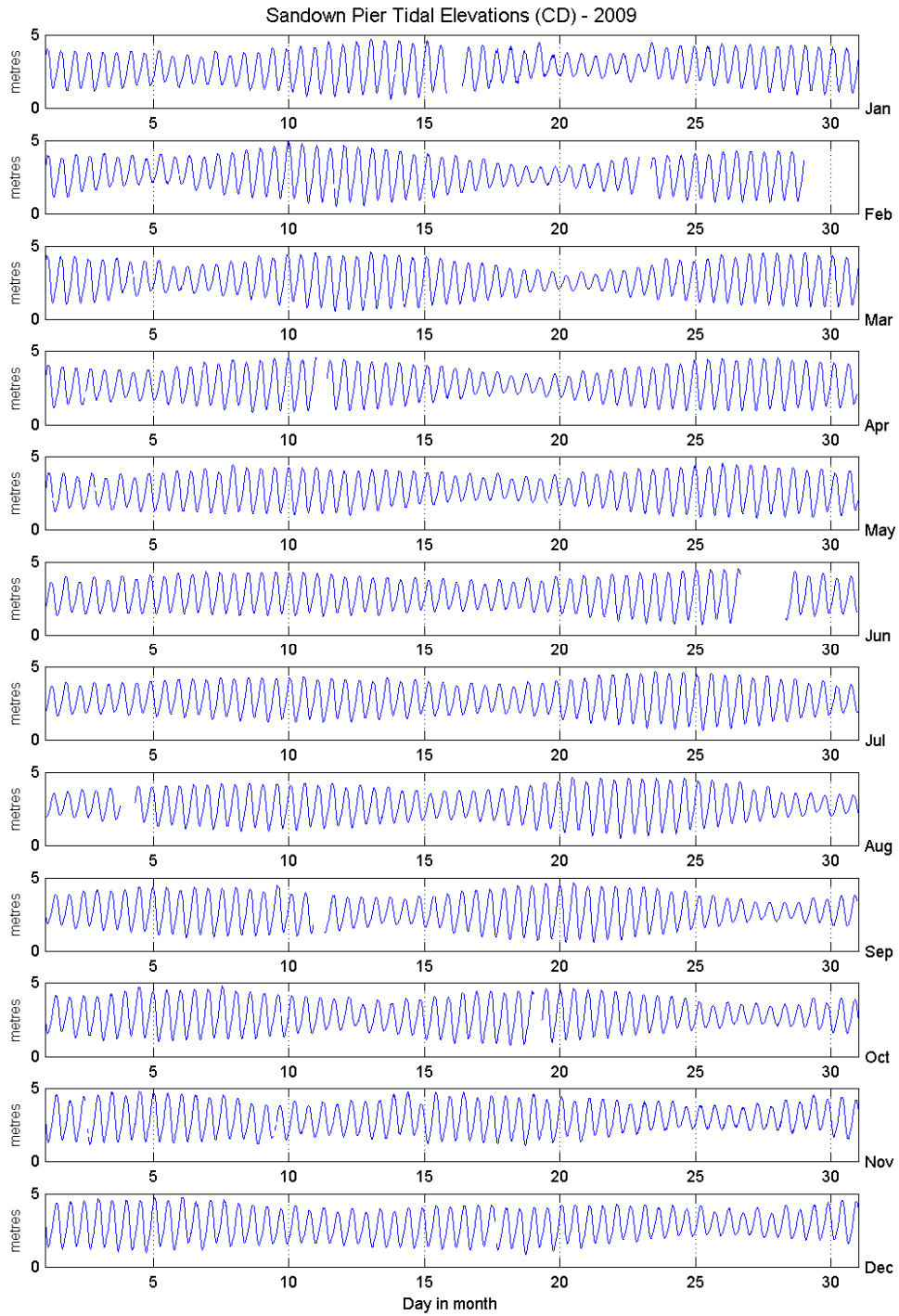


Figure 3 Tidal elevations relative to Chart Datum for 2009