

Deal Pier Tide Gauge

Location

OS: 638145E 152700N
 WGS84: Latitude: 51° 13.427' N Longitude: 001° 24.550' E

Seaward end of Deal Pier, lower deck

Instrument Type

Rosemount WaveRadar REX



Benchmarks

Benchmark

TGBM = 3.893 above Ordnance Datum Newlyn
 Aux1 = 3.813 above Ordnance Datum Newlyn
 TGZ = 6.986m above Ordnance Datum Newlyn
 TGZ = 10.386m above Chart Datum
 TGZ = 3.093m above TGBM

Description

Top corner of NE leg of frame baseplate
 Top of bolt

Datum

All data are to Ordnance Datum Newlyn. The height of Chart Datum relative to Ordnance Datum at Deal is -3.40m (Admiralty Tide Tables, Supplementary Table III).

Survey information

The site was first surveyed on 25 August 2005 by levelling from a nearby surveyed benchmark. The re-survey of the TGBM on 08 December 2009 used an 8 hour GPS static survey on the frame. The result was 0.016m lower than the original survey. No change was made to the tide gauge datum.

Site characteristics

The Pier is on open coast, with no nearby estuaries. Spring tidal range is 5.4m. Some wave reflection from the Pier legs can occur.

Data Quality

Recovery rate (%)	Sample interval
96	10 minutes

Service history

The radar was last serviced in November 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.

Statistics

All times GMT

Month	Extreme maxima		Extreme minima	
	Elevation (OD)	Date/Time	Elevation (OD)	Date/Time
January	2.96	07-Jan-2011 00:30	-2.90	23-Jan-2011 08:40
February	2.99	22-Feb-2011 01:40	-3.14	21-Feb-2011 08:30
March	3.19	22-Mar-2011 00:20	-3.11	21-Mar-2011 07:20
April	3.09	20-Apr-2011 00:00	-3.00	19-Apr-2011 07:00
May	2.92	19-May-2011 12:10	-2.77	18-May-2011 06:30
June	2.83	19-Jun-2011 13:10	-2.46	15-Jun-2011 17:50
July	2.79	17-Jul-2011 12:20	-2.76	31-Jul-2011 18:50
August	3.20	31-Aug-2011 12:30	-2.92	31-Aug-2011 20:00
September	3.20	29-Sep-2011 12:00	-3.03	29-Sep-2011 19:40
October	3.23	28-Oct-2011 11:40	-2.78	27-Oct-2011 18:30
November	3.75	28-Nov-2011 00:30	-2.88	25-Nov-2011 05:40
December	3.15	09-Dec-2011 10:50	-2.97	28-Dec-2011 08:50

Month	Surge maxima		Surge minima	
	Value (m)	Date/Time	Value (m)	Date/Time
January	0.54	06-Jan-2011 10:50	-0.49	23-Jan-2011 23:50
February	0.84	04-Feb-2011 20:30	-0.66	04-Feb-2011 06:20
March	0.36	11-Mar-2011 00:40	-0.68	23-Mar-2011 11:10
April	0.28	12-Apr-2011 02:40	-0.39	01-Apr-2011 19:40
May	0.55	24-May-2011 15:00	-0.63	24-May-2011 03:50
June	0.32	18-Jun-2011 23:10	-0.35	13-Jun-2011 08:30
July	0.74	24-Jul-2011 03:20	-0.25	27-Jul-2011 16:40
August	0.40	29-Aug-2011 07:10	-0.36	10-Aug-2011 17:00
September	0.44	07-Sep-2011 10:30	-0.57	06-Sep-2011 16:10
October	0.66	07-Oct-2011 08:40	-0.49	24-Oct-2011 21:10
November	1.25	27-Nov-2011 20:30	-0.48	28-Nov-2011 10:40
December	1.07	09-Dec-2011 14:00	-0.94	08-Dec-2011 19:10

Month	Mean Level	
	No. of days	Elevation (OD)
January	31	0.106
February	28	0.055
March	31	-0.025
April	30	0.056
May	30	0.049
June	30	0.101
July	31	0.125
August	31	0.133
September	30	0.121
October	31	0.138
November	30	0.171
December	30	0.221

Highest values in 2011			
Extreme		Surge	
Elevation (OD) (Surge component)	Date/Time	Value (m)	Date/Time
3.75 (1.00)	28-Nov-2011 00:30	1.25	27-Nov-2011 20:30
3.32 (0.51)	25-Nov-2011 23:10	1.07	09-Dec-2011 14:00
3.23 (0.09)	28-Oct-2011 11:40	1.02	28-Nov-2011 00:10
3.20 (-0.03)	29-Sep-2011 12:00	0.93	03-Dec-2011 15:00
3.20 (0.03)	31-Aug-2011 12:30	0.88	02-Dec-2011 00:30
3.19 (-0.06)	22-Mar-2011 00:20	0.88	01-Dec-2011 23:40
3.15 (0.92)	09-Dec-2011 10:50	0.84	04-Feb-2011 20:30
3.14 (0.41)	26-Dec-2011 11:50	0.80	09-Dec-2011 21:30
3.14 (-0.05)	28-Sep-2011 11:20	0.79	29-Dec-2011 09:40
3.14 (-0.01)	30-Sep-2011 12:40	0.78	03-Dec-2011 14:00

Year	Annual extreme maxima		Annual surge maxima		Z ₀ (OD)	Annual recovery rate
	Elevation (OD) (Surge)	Date/Time	Value (m)	Date/Time		
2006	3.58 (0.33)	07-Oct-2006 10:50	1.60	31-Oct-2006 22:10	0.156	98%
2007	3.83 (1.26)	09-Nov-2007 10:40	1.87	09-Nov-2007 06:00	0.182	97%
2008	3.34 (0.25)	16-Oct-2008 11:50	1.15	21-Nov-2008 12:20	0.158	92%
2009	3.36 (0.03)	20-Sep-2009 11:50	1.03	23-Jan-2009 07:30	-	90%
2010	3.48 (0.39)	03-Feb-2010 01:30	1.13	16-Dec-2010 17:10	0.164	96%
2011	3.75 (1.00)	28-Nov-2011 00:30	1.25	27-Nov-2011 20:30	0.110	96%

Tidal levels		
Observation period	January 2006 to December 2011	
Tide Level	Elevation (OD)	Elevation (CD)
HAT	3.40	6.80
MHWS	2.86	6.26
MHWN	1.58	4.98
MSL	0.16	3.56
MLWN	-1.26	2.14
MLWS	-2.54	0.86
LAT	-3.18	0.22

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_0 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 were produced using the TASK2000 software, kindly provided by the Permanent Service for Mean Sea Level (PSMSL), Proudman Oceanographic Laboratory. Tide levels were produced by EMU Limited.

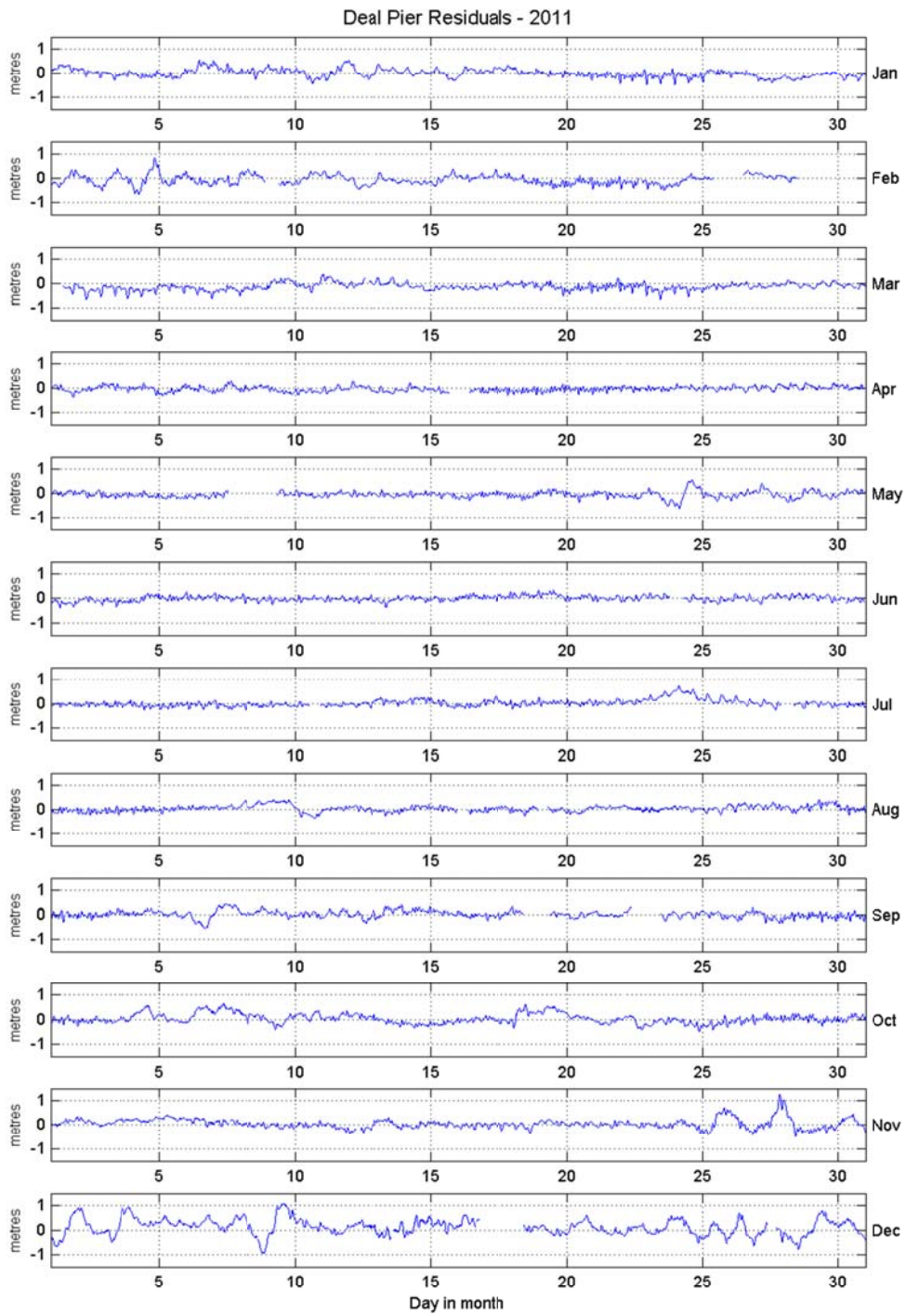


Figure 1: Deal Pier residuals for 2011

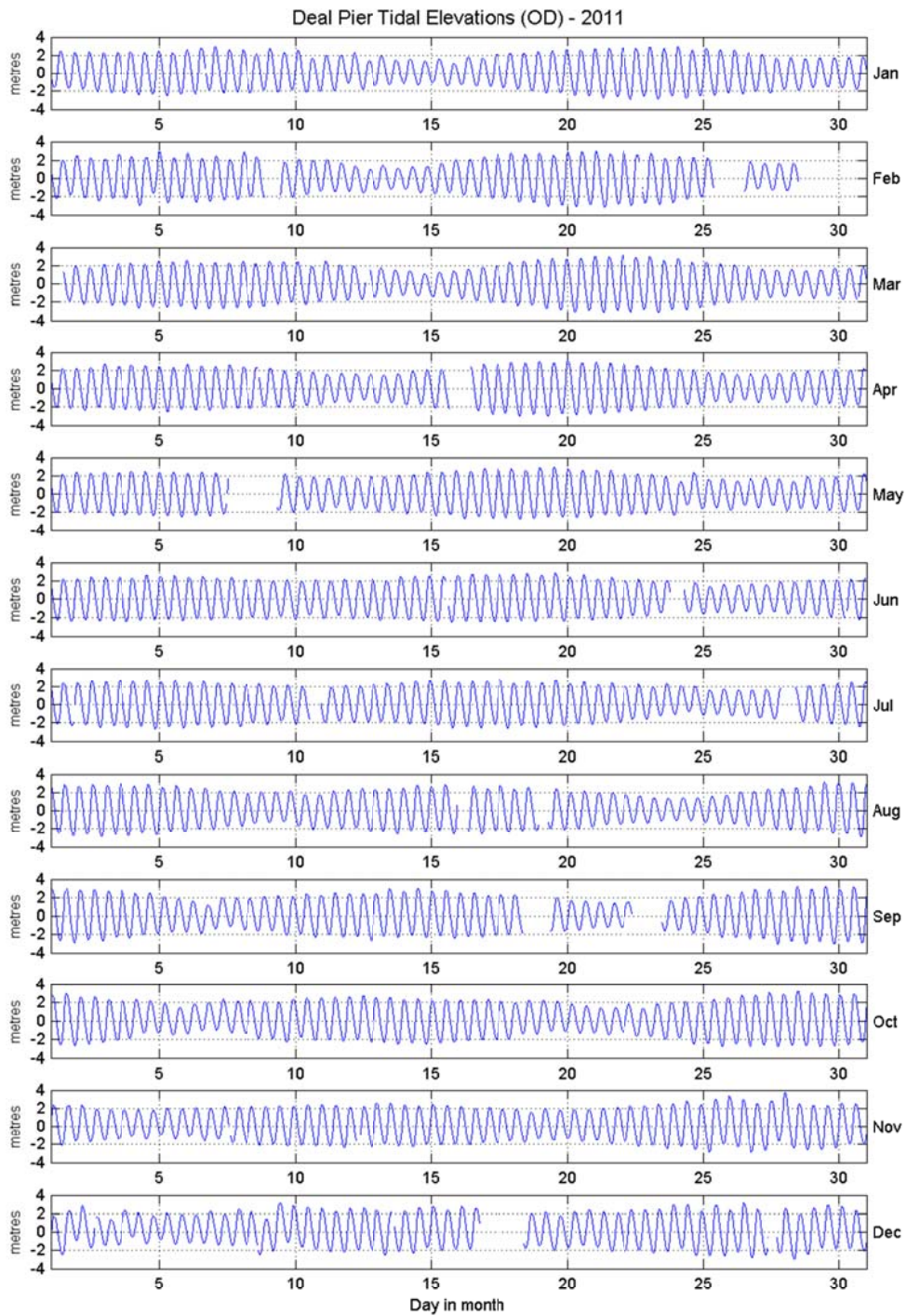


Figure 2: Deal Pier tidal elevations for 2011 relative to Ordnance Datum

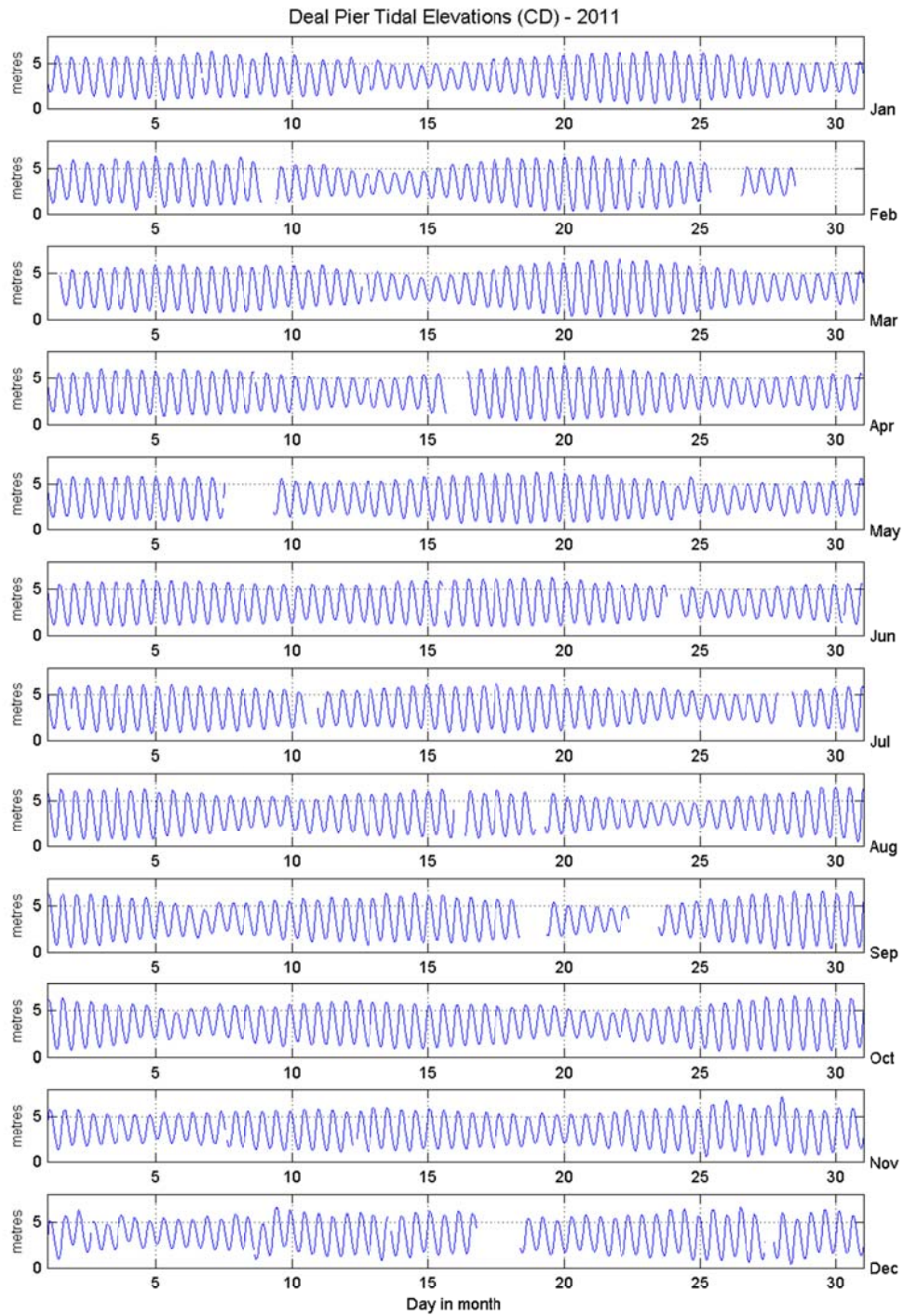


Figure 3: Deal Pier tidal elevations for 2011 relative to Chart Datum