

## Deal Pier Tide Gauge

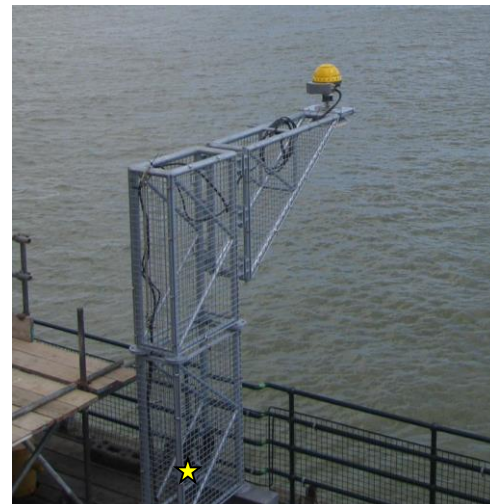
### Location

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	Description
TGBM = 3.893 above Ordnance Datum Newlyn	Top corner of NE leg of frame baseplate
Aux1 = 3.813 above Ordnance Datum Newlyn	Top of bolt
TGZ = 6.986m above Ordnance Datum Newlyn	
TGZ = 10.386m above Chart Datum	
TGZ = 3.093m above TGBM	

### 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
92	10 minutes

## Service history

The radar was last serviced in June 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.

## Statistics

*All times GMT*

Month	Extreme maxima		Extreme minima	
	Elevation (OD)	Date/Time	Elevation (OD)	Date/Time
January	3.36	05-Jan-2014 01:30	-2.93	06-Jan-2014 09:50
February	3.27	03-Feb-2014 00:50	-3.43	01-Feb-2014 07:10
March	3.09	01-Mar-2014 23:20	-3.13	03-Mar-2014 07:40
April	3.01	02-Apr-2014 00:20	-2.83	16-Apr-2014 06:50
May	2.79	01-May-2014 00:10	-2.80	16-May-2014 19:30
June	2.83	16-Jun-2014 13:20	-2.76	15-Jun-2014 20:00
July	2.97	15-Jul-2014 13:00	-2.87	16-Jul-2014 21:20
August	2.96	13-Aug-2014 13:30	-2.90	12-Aug-2014 19:40
September	3.01	10-Sep-2014 11:20	-2.93	10-Sep-2014 19:20
October	3.13	22-Oct-2014 09:40	-2.81	09-Oct-2014 19:00
November	2.92	08-Nov-2014 11:40	-2.86	07-Nov-2014 18:20
December	2.90	25-Dec-2014 00:50	-2.77	26-Dec-2014 09:20

Month	Surge maxima		Surge minima	
	Value (m)	Date/Time	Value (m)	Date/Time
January	0.61	27-Jan-2014 17:30	-1.03	25-Jan-2014 05:10
February	0.58	07-Feb-2014 14:10	-0.97	06-Feb-2014 03:20
March	0.55	15-Mar-2014 09:30	-0.81	14-Mar-2014 19:00
April	0.43	18-Apr-2014 02:10	-0.61	15-Apr-2014 21:10
May	0.26	11-May-2014 12:50	-0.48	15-May-2014 09:00
June	0.28	04-Jun-2014 19:30	-0.57	17-Jun-2014 12:00
July	0.36	09-Jul-2014 19:00	-0.69	16-Jul-2014 11:40
August	0.34	18-Aug-2014 13:10	-0.48	14-Aug-2014 11:20
September	0.35	26-Sep-2014 20:40	-0.66	12-Sep-2014 11:00
October	1.54	22-Oct-2014 02:20	-0.62	06-Oct-2014 21:20
November	0.43	15-Nov-2014 19:40	-0.83	07-Nov-2014 11:00
December	0.61	11-Dec-2014 11:50	-1.49	10-Dec-2014 01:10

Month	Mean Level	
	No. of days	Elevation (OD)
January	31	0.071
February	28	0.050
March	29	-0.010
April	30	0.096
May	31	0.087
June	30	0.043
July	31	0.120
August	31	0.124
September	30	0.111
October	31	0.185
November	30	0.152
December	31	0.138

Highest values in 2014			
Extreme		Surge	
Elevation (OD) (Surge component)	Date/Time	Value (m)	Date/Time
3.36 (0.18)	05-Jan-2014 01:30	1.54	22-Oct-2014 02:20
3.27 (-0.07)	03-Feb-2014 00:50	0.66	22-Oct-2014 09:40
3.13 (0.66)	22-Oct-2014 09:40	0.64	21-Oct-2014 18:40
3.11 (0.76)	21-Oct-2014 22:00	0.61	11-Dec-2014 11:50
3.09 (-0.15)	01-Mar-2014 23:20	0.61	27-Jan-2014 17:30
3.06 (0.00)	02-Jan-2014 23:50	0.60	20-Dec-2014 17:50
3.01 (-0.31)	10-Sep-2014 11:20	0.58	07-Feb-2014 14:10
3.01 (-0.27)	02-Apr-2014 00:20	0.58	07-Feb-2014 13:40
2.99 (-0.22)	08-Oct-2014 10:30	0.57	28-Feb-2014 08:30
2.98 (0.07)	18-Apr-2014 00:30	0.55	15-Mar-2014 09:30

Year	Annual extreme maxima		Annual surge maxima		Z <sub>0</sub> (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%
2012	3.21 (0.15)	17-Sep-2012 11:30	1.30	05-Jan-2012 17:20	0.127	94%
2013	4.40 (1.53)	06-Dec-2013 01:00	1.77	05-Dec-2013 22:10	0.103	85%
2014	3.36 (0.18)	05-Jan-2014 01:30	1.54	22-Oct-2014 02:20	-	92%

Tidal levels		
Observation period	January 2006 to December 2012	
Tide Level	Elevation (OD)	Elevation (CD)
HAT	3.40	6.80
MHWS	2.84	6.24
MHWN	1.57	4.97
MSL	0.15	3.55
MLWN	-1.27	2.13
MLWS	-2.54	0.86
LAT	-3.22	0.18

## 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 and tide levels were produced by Fugro EMU Limited.

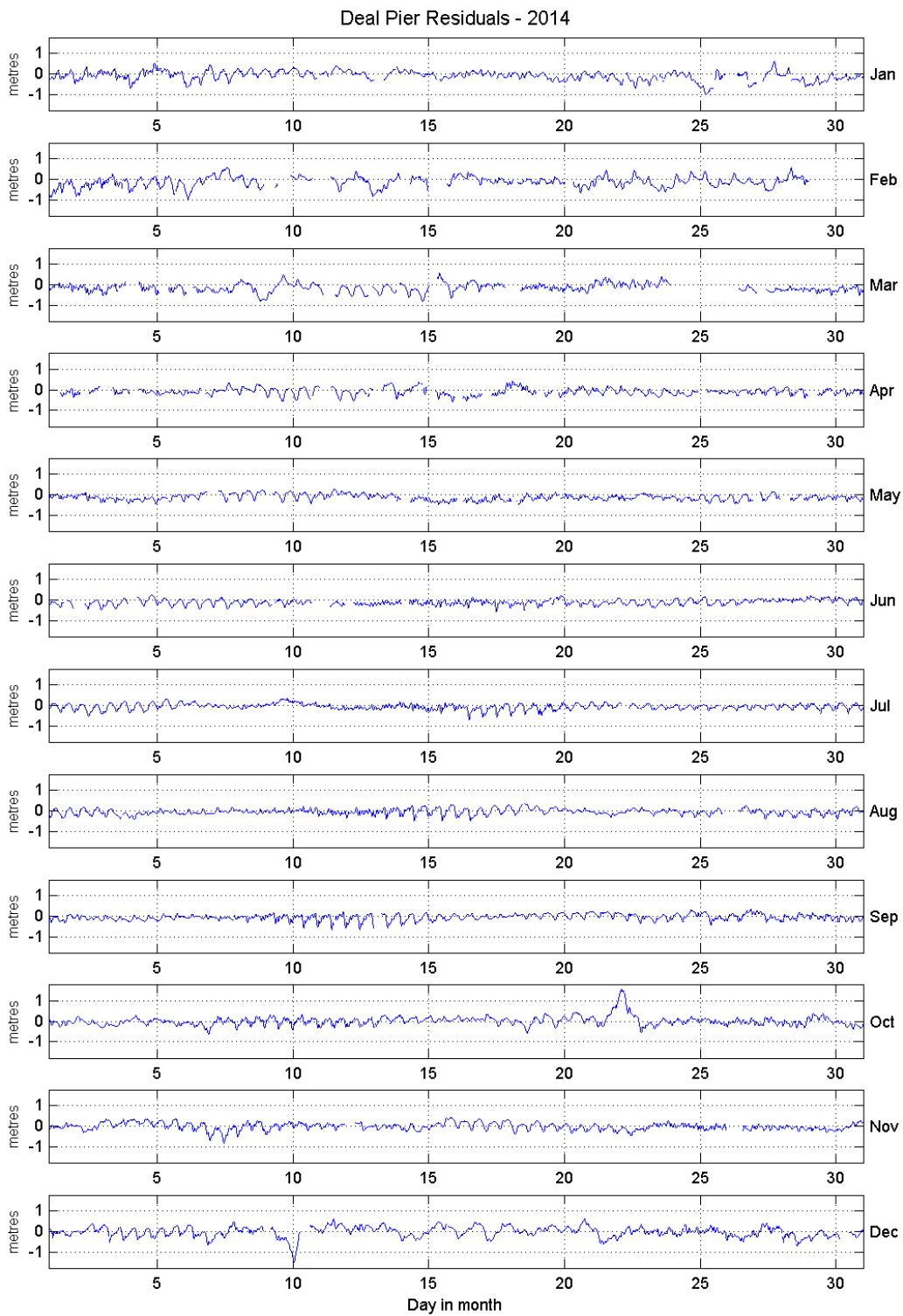


Figure 1: Deal Pier residuals for 2014

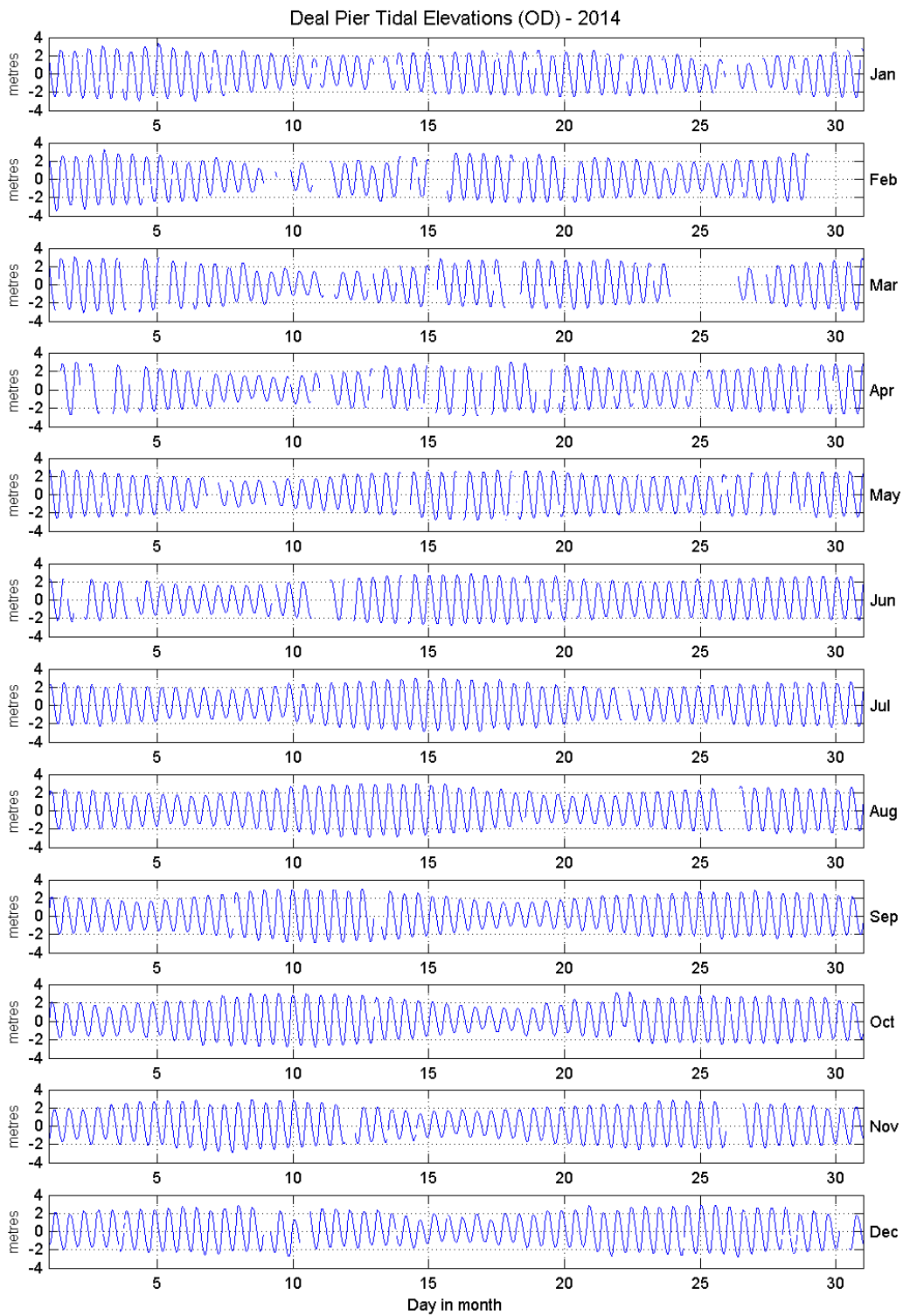


Figure 2: Deal Pier tidal elevations for 2014 relative to Ordnance Datum

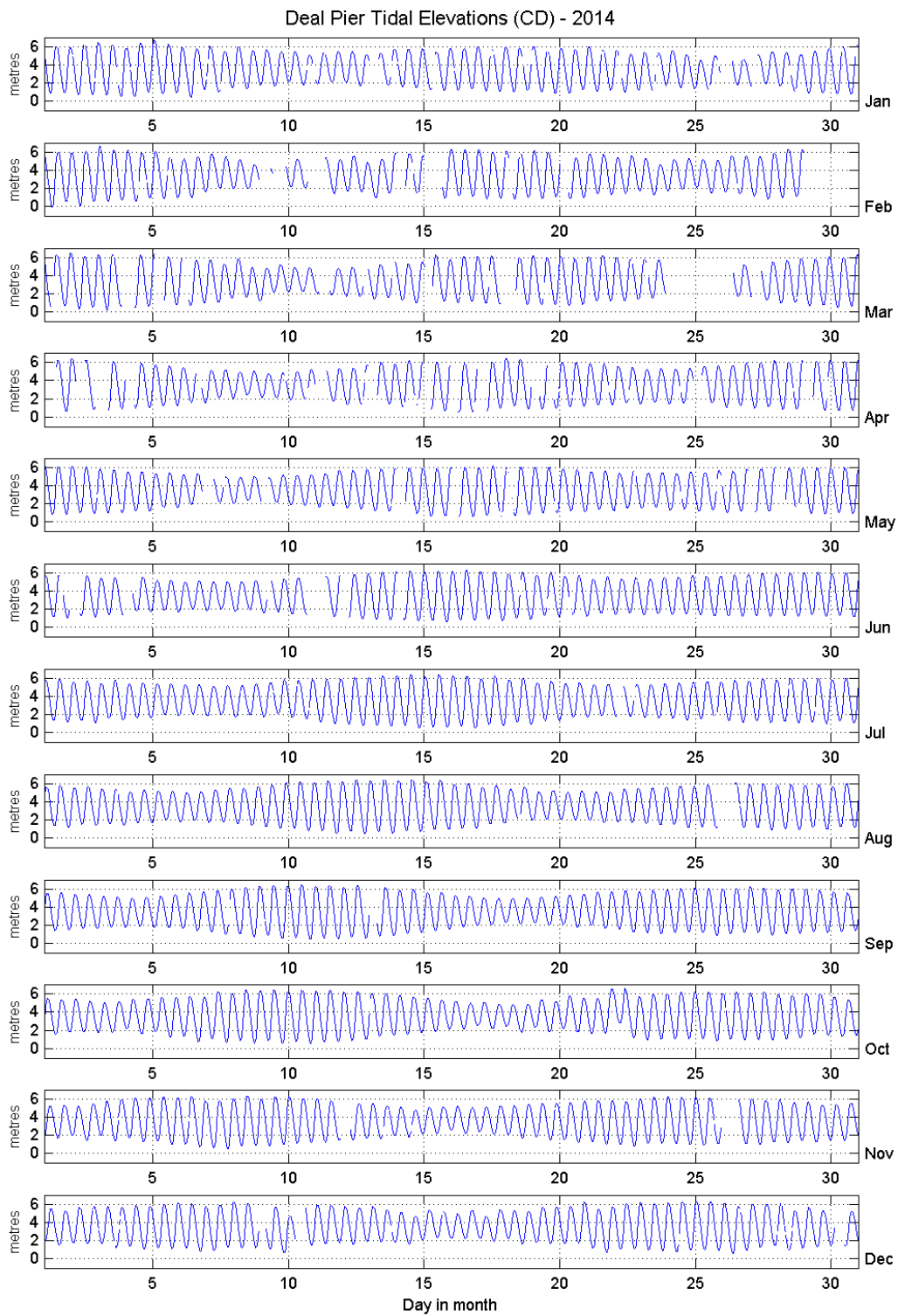


Figure 3: Deal Pier tidal elevations for 2014 relative to Chart Datum