

West Bay Harbour Tide Gauge

Location

OS: 346142.9E 90195.31N

WGS84: *Latitude:* 50° 42.532' N *Longitude:* 002° 45.846' E

Inner end of western breakwater

Instrument Type

Etrometa step gauge (from 30 March 2011)

Rosemount WaveRadar REX (from 25 January 2008 to 23 March 2011)



Benchmarks

Benchmark

TGBM = 3.951m above Ordnance Datum Newlyn

Aux1 = 3.556m above Ordnance Datum Newlyn

TGZ = -2.425m above Ordnance Datum Newlyn

TGZ = -0.175m above Chart Datum

TGZ = 6.376m below TGBM

Description

Cross-headed bolt embedded into top of concrete seawall

Top of step gauge

Datum

All data are to Ordnance Datum Newlyn. The height of Chart Datum relative to Ordnance Datum at Bridport is -2.25m (Admiralty Tide Tables, Supplementary Table III).

Survey information

The site was surveyed on 29 May 2008.

Site characteristics

The breakwater is on open coast but some wave reflection can occur around the breakwater and harbour entrance. Spring tidal range is approx.3.2m.

Data Quality

Recovery rate (%)	Sample interval
93	10 minutes

Service history

The step gauge was last serviced in April 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	2.68	03-Jan-2014 08:30	-1.62	31-Jan-2014 11:50
February	2.79	03-Feb-2014 09:00	-1.33	19-Feb-2014 13:50
March	2.70	03-Mar-2014 08:00	-2.30	05-Mar-2014 02:20
April	2.33	02-Apr-2014 08:00	-1.91	01-Apr-2014 13:00
May	2.03	01-May-2014 19:50	-1.88	16-May-2014 12:50
June	2.13	14-Jun-2014 19:30	-1.80	16-Jun-2014 01:40
July	2.38	14-Jul-2014 20:10	-1.85	15-Jul-2014 01:30
August	2.55	12-Aug-2014 20:00	-1.90	13-Aug-2014 01:20
September	2.53	10-Sep-2014 19:40	-2.03	11-Sep-2014 01:00
October	2.69	08-Oct-2014 18:40	-1.70	10-Oct-2014 00:40
November	2.56	06-Nov-2014 18:00	-1.54	08-Nov-2014 00:10
December	2.18	24-Dec-2014 07:40	-1.66	26-Dec-2014 02:20

Month	Surge maxima		Surge minima	
	Value (m)	Date/Time	Value (m)	Date/Time
January	0.88	31-Jan-2014 16:30	-0.21	25-Jan-2014 08:10
February	1.15	05-Feb-2014 10:30	-0.13	28-Feb-2014 20:00
March	0.71	02-Mar-2014 16:50	-0.41	05-Mar-2014 02:20
April	0.47	26-Apr-2014 01:50	-0.26	10-Apr-2014 06:20
May	0.41	10-May-2014 02:10	-0.29	15-May-2014 13:40
June	0.25	27-Jun-2014 11:20	-0.30	18-Jun-2014 16:00
July	0.31	18-Jul-2014 02:00	-0.23	17-Jul-2014 08:10
August	0.40	10-Aug-2014 04:30	-0.18	16-Aug-2014 08:50
September	0.24	16-Sep-2014 18:20	-0.24	12-Sep-2014 06:20
October	0.64	06-Oct-2014 08:00	-0.26	19-Oct-2014 20:00
November	0.63	06-Nov-2014 22:40	-0.17	26-Nov-2014 23:00
December	0.50	12-Dec-2014 04:00	-0.38	28-Dec-2014 17:10

Month	Mean Level	
	No. of days	Elevation (OD)
January	31	0.656
February	26	0.705
March	31	0.310
April	29	0.282
May	31	0.258
June	30	0.251
July	31	0.285
August	31	0.335
September	30	0.308
October	31	0.418
November	30	0.525
December	31	0.264

Highest values in 2014			
Extreme		Surge	
Elevation (OD) (Surge component)	Date/Time	Value (m)	Date/Time
2.79 (0.64)	03-Feb-2014 09:00	1.15	05-Feb-2014 10:30
2.75 (1.15)	05-Feb-2014 10:30	0.93	03-Feb-2014 11:10
2.70 (0.48)	03-Mar-2014 08:00	0.88	31-Jan-2014 16:30
2.69 (0.30)	08-Oct-2014 18:40	0.81	31-Jan-2014 15:50
2.69 (0.46)	02-Mar-2014 07:30	0.81	03-Jan-2014 06:00
2.68 (0.45)	03-Jan-2014 08:30	0.79	04-Feb-2014 18:20
2.63 (0.29)	09-Oct-2014 07:00	0.78	16-Jan-2014 17:00
2.59 (0.59)	31-Jan-2014 19:20	0.75	24-Feb-2014 20:30
2.57 (0.50)	02-Mar-2014 19:50	0.73	18-Jan-2014 06:30
2.56 (0.35)	06-Nov-2014 18:00	0.73	24-Feb-2014 20:50

Year	Annual extreme maxima		Annual surge maxima		Z ₀ (OD)	Annual recovery rate
	Elevation (OD) (Surge)	Date/Time	Value (m)	Date/Time		
2008 ¹	2.22 (-0.04)	09-Mar-2008 07:00	1.10	10-Mar-2008 05:20	-	88%
2009	2.36 (0.39)	09-Feb-2009 18:40	1.04	14-Nov-2009 08:20	0.232	78%
2010	2.34 (-0.08)	01-Feb-2010 07:50	0.66	11-Nov-2010 06:30	-	62%
2011	2.56 (0.30)	27-Oct-2011 06:30	0.79	12-Dec-2011 23:50	0.238	97%
2012	2.79 (0.45)	17-Oct-2012 07:20	0.71	31-Oct-2012 17:40	0.266	92%
2013	2.52 (0.32)	05-Nov-2013 07:00	0.98	23-Dec-2013 15:00	0.271	88%
2014	2.79 (0.64)	03-Feb-2014 09:00	1.15	05-Feb-2014 10:30	-	93%

¹Due to the requirements of the Harbour owners, the tide gauge in 2008 was sited at a lower elevation than ideal. A combination of high surge, high spring tides and significant wave action caused the instrument to be swamped on 10 March 2008 and, accordingly, the elevations given in the table are likely to be an under-estimate of the actual tidal levels.

Tidal levels		
Observation period	July 2008 to December 2012	
Tide Level	Elevation (OD)	Elevation (CD)
HAT	2.52	4.77
MHWS	1.86	4.11
MHWN	0.86	3.11
MSL	0.23	2.48
MLWN	-0.41	1.85
MLWS	-1.40	0.85
LAT	-2.12	0.14

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.

Acknowledgements

Tidal predictions were produced using the TASK windows edition software, kindly provided by the Marine Data Products team at the UK National Oceanography Centre (Liverpool).

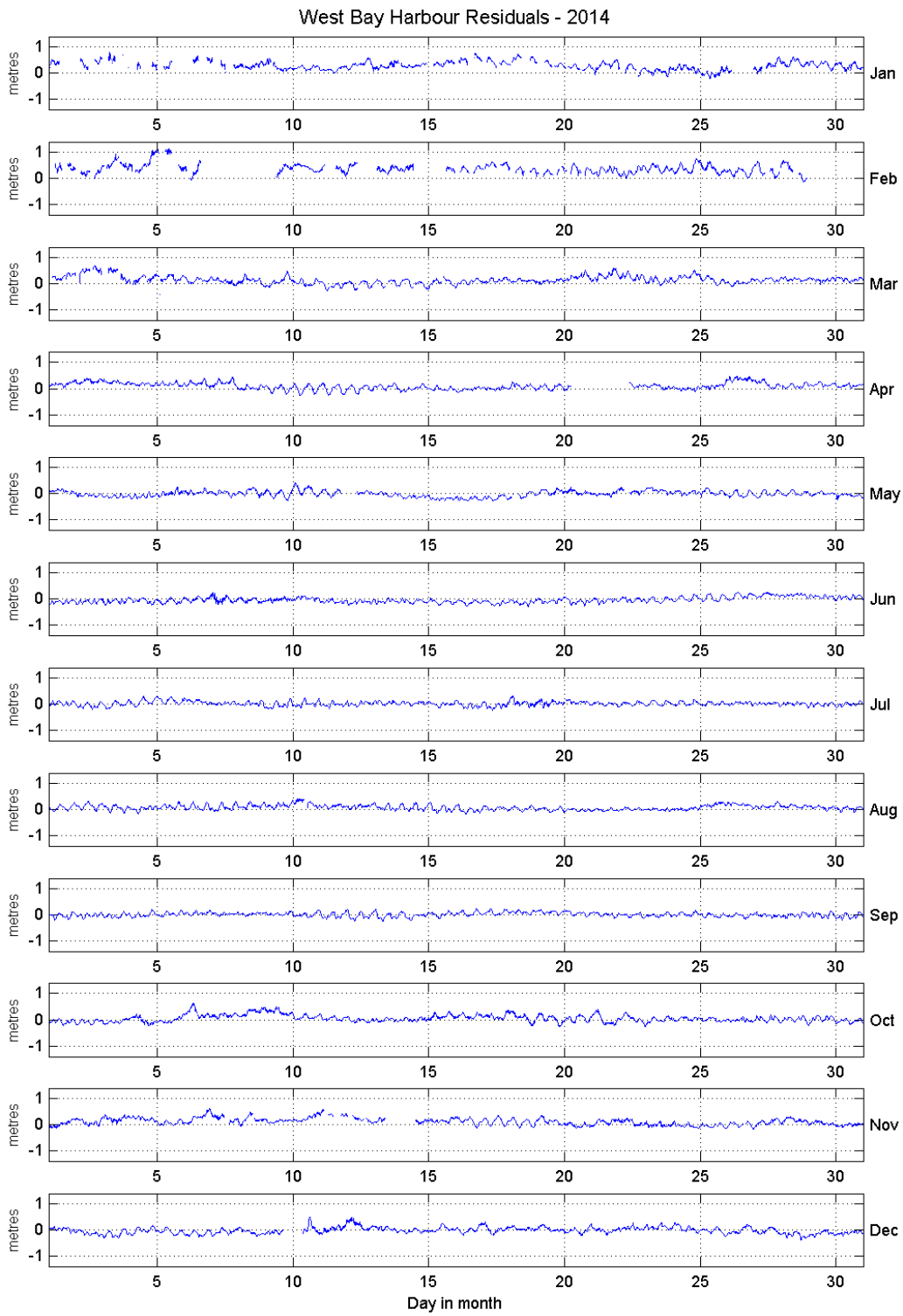


Figure 1: West Bay Harbour residuals for 2014

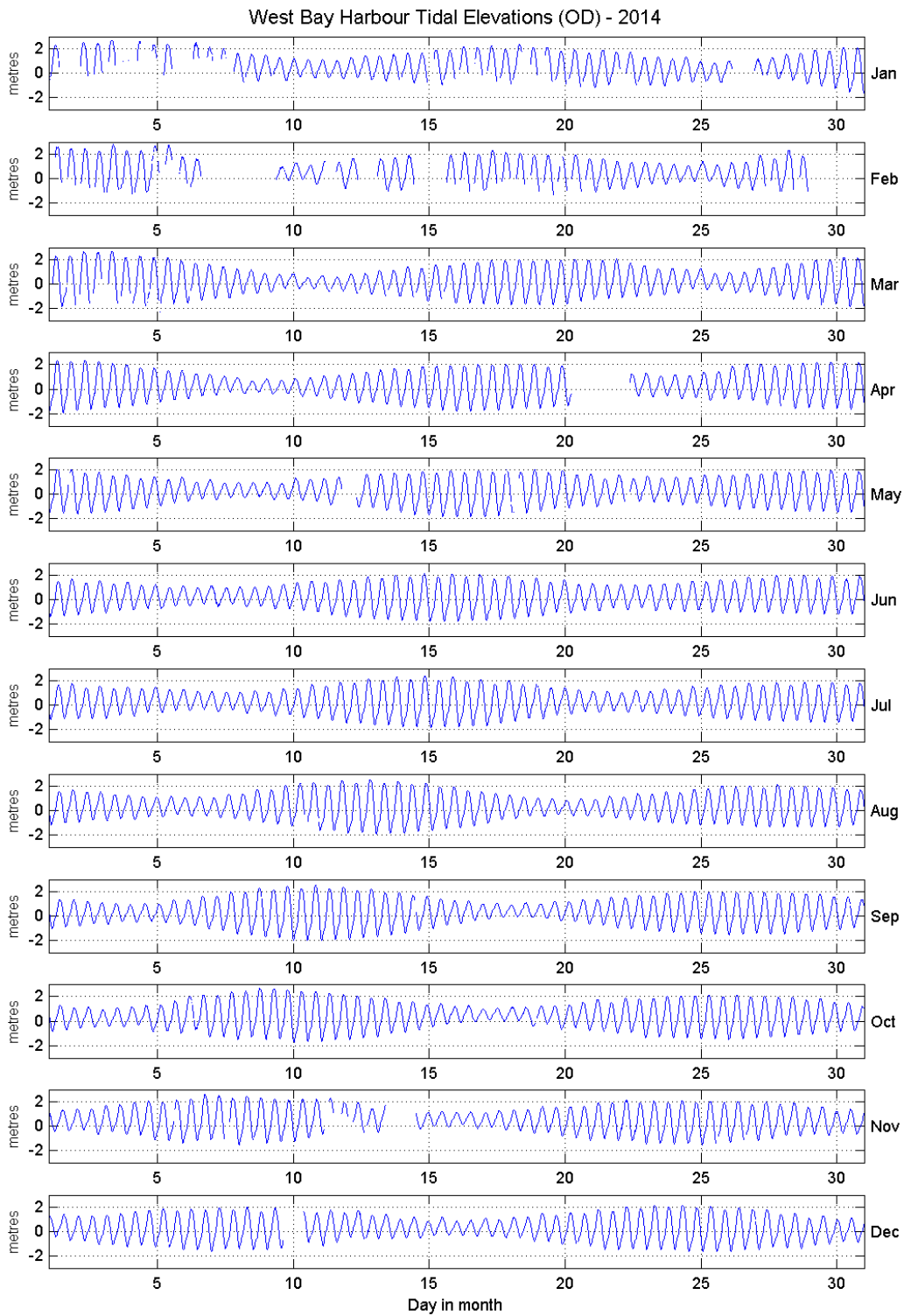


Figure 2: West Bay Harbour tidal elevations for 2014 relative to Ordnance Datum

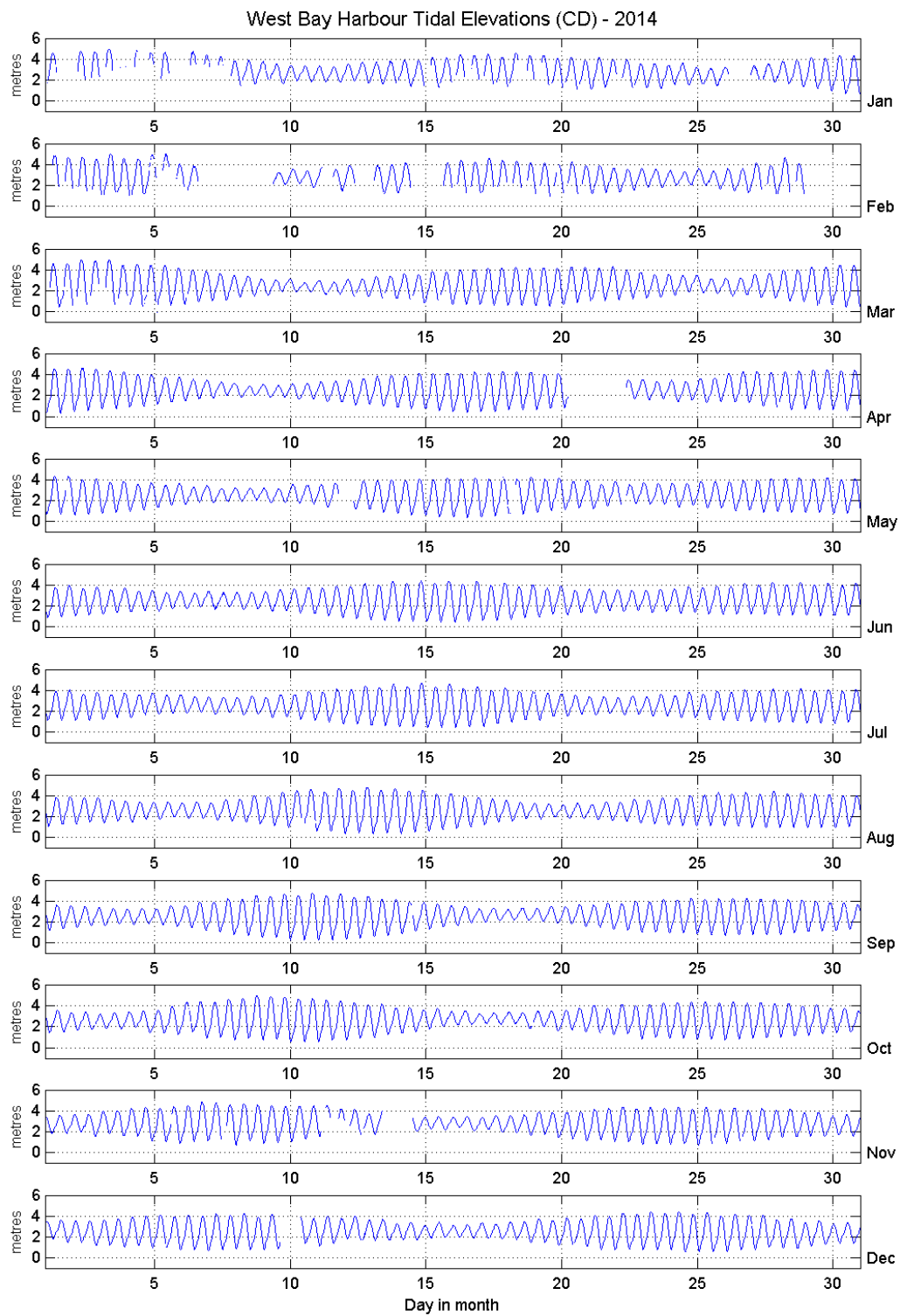


Figure 3: West Bay Harbour tidal elevations for 2014 relative to Chart Datum