

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 3.3m.

Data Quality

Recovery rate (%)	Sample interval
97	10 minutes

Service history

The step gauge was last serviced in September 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	2.07	07-Jan-2011 08:10	-2.27	22-Jan-2011 13:40
February	2.25	20-Feb-2011 08:10	-2.15	21-Feb-2011 01:40
March	2.07	21-Mar-2011 08:00	-2.42	21-Mar-2011 13:00
April	2.33	19-Apr-2011 19:40	-1.97	18-Apr-2011 11:50
May	2.06	17-May-2011 18:30	-1.77	17-May-2011 23:50
June	2.25	17-Jun-2011 19:40	-1.52	03-Jun-2011 12:40
July	2.13	31-Jul-2011 18:50	-1.54	04-Jul-2011 13:50
August	2.39	31-Aug-2011 19:50	-1.96	31-Aug-2011 00:50
September	2.43	28-Sep-2011 19:20	-2.01	27-Sep-2011 23:50
October	2.56	27-Oct-2011 06:30	-2.36	27-Oct-2011 23:50
November	2.22	27-Nov-2011 07:20	-1.76	25-Nov-2011 11:20
December	2.25	12-Dec-2011 19:40	-1.85	27-Dec-2011 01:10

Month	Surge maxima		Surge minima	
	Value (m)	Date/Time	Value (m)	Date/Time
January	0.58	08-Jan-2011 03:40	-0.59	23-Jan-2011 08:50
February	0.32	13-Feb-2011 07:50	-0.59	28-Feb-2011 21:30
March	0.19	31-Mar-2011 04:10	-0.65	02-Mar-2011 11:00
April	0.28	29-Apr-2011 23:40	-0.25	12-Apr-2011 02:30
May	0.42	08-May-2011 03:30	-0.29	24-May-2011 07:30
June	0.40	17-Jun-2011 16:10	-0.28	01-Jun-2011 03:50
July	0.35	06-Jul-2011 20:30	-0.21	01-Jul-2011 03:00
August	0.38	21-Aug-2011 05:20	-0.19	10-Aug-2011 21:40
September	0.43	12-Sep-2011 01:30	-0.17	27-Sep-2011 14:00
October	0.53	24-Oct-2011 17:30	-0.23	08-Oct-2011 09:30
November	0.65	29-Nov-2011 13:20	-0.16	07-Nov-2011 02:10
December	0.79	12-Dec-2011 23:50	-0.41	27-Dec-2011 01:40

Month	Mean Level	
	No. of days	Elevation (OD)
January	31	0.081
February	28	0.117
March	25	-0.016
April	30	0.237
May	31	0.224
June	30	0.264
July	31	0.276
August	31	0.293
September	30	0.312
October	31	0.313
November	30	0.367
December	31	0.333

Highest values in 2011			
Extreme		Surge	
Elevation (OD) (Surge component)	Date/Time	Value (m)	Date/Time
2.56 (0.30)	27-Oct-2011 06:30	0.79	12-Dec-2011 23:50
2.43 (-0.01)	28-Sep-2011 19:20	0.65	29-Nov-2011 13:20
2.42 (0.12)	27-Oct-2011 18:50	0.58	08-Jan-2011 03:40
2.41 (0.19)	26-Oct-2011 18:00	0.55	15-Dec-2011 23:10
2.39 (-0.04)	31-Aug-2011 19:50	0.54	16-Dec-2011 08:20
2.37 (-0.06)	30-Aug-2011 19:30	0.53	24-Oct-2011 17:30
2.36 (-0.05)	29-Sep-2011 20:00	0.52	02-Dec-2011 05:40
2.33 (0.01)	19-Apr-2011 19:40	0.52	03-Nov-2011 06:00
2.32 (0.05)	01-Sep-2011 20:40	0.50	02-Dec-2011 05:30
2.32 (0.00)	19-Apr-2011 07:20	0.50	14-Dec-2011 13:30

Year	Annual extreme maxima		Annual surge maxima		Z ₀ (OD)	Annual recovery rate
	Elevation (OD) (Surge)	Date/Time	Value (m)	Date/Time		
2008 ¹	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%

Tidal levels		
Observation period	January 2008 to December 2011	
Tide Level	Elevation (OD)	Elevation (CD)
HAT	2.50	4.75
MHWS	1.84	4.09
MHWN	0.85	3.10
MSL	0.22	2.47
MLWN	-0.41	1.84
MLWS	-1.41	0.84
LAT	-2.13	0.12

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 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.

¹ Due 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 may be an under-estimate of the actual tidal levels.

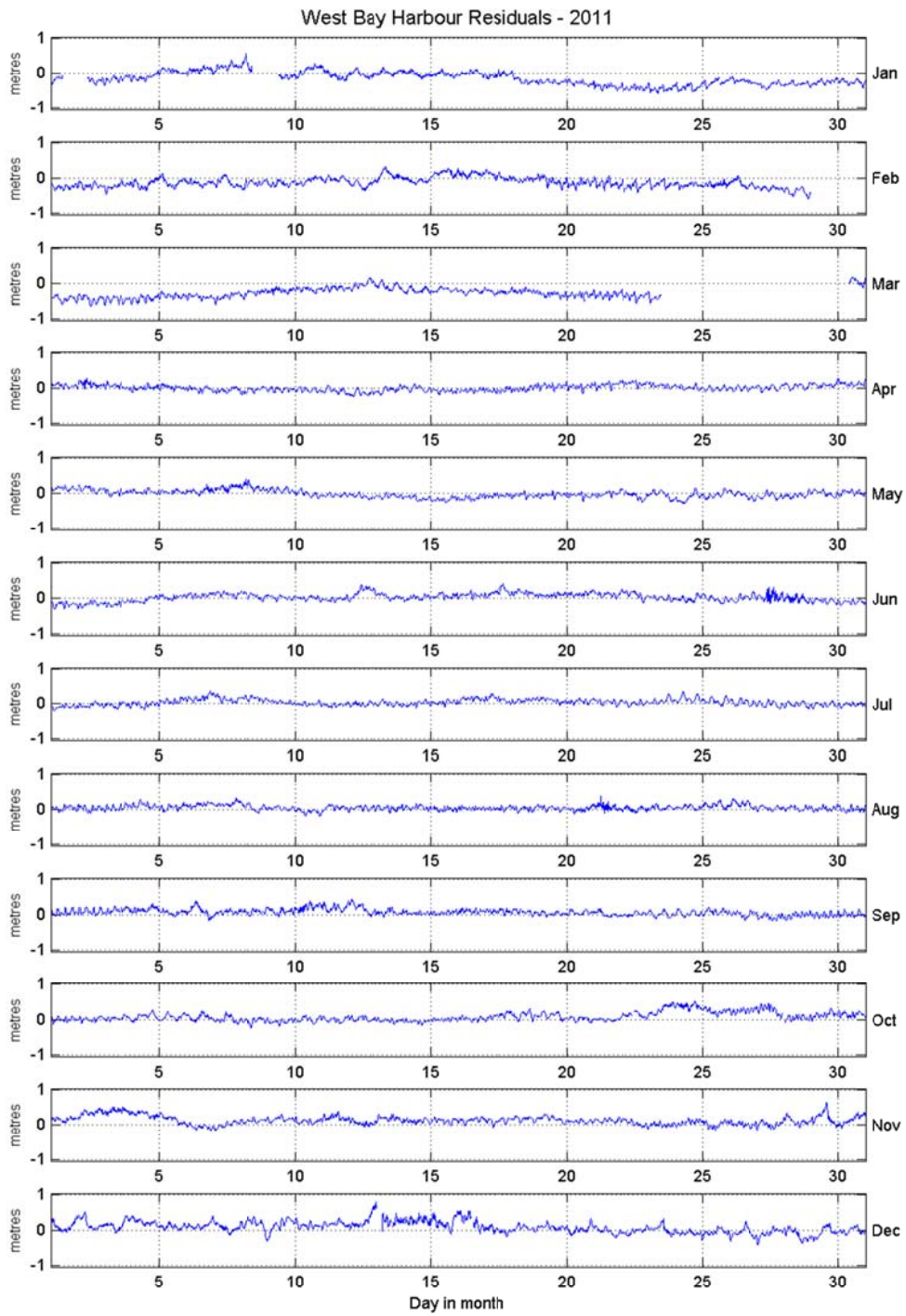


Figure 1: West Bay Harbour residuals for 2011

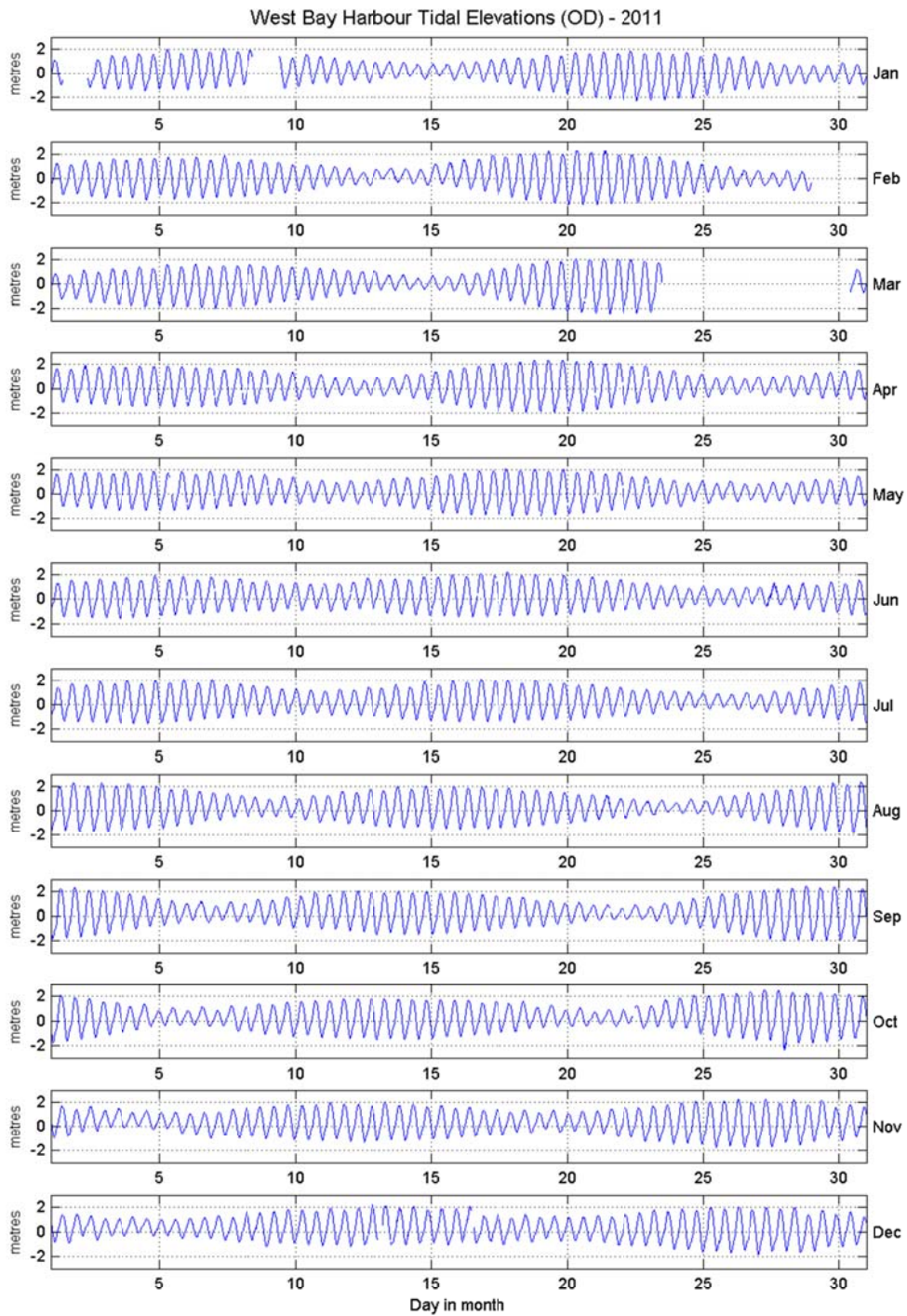


Figure 2: West Bay Harbour tidal elevations for 2011 relative to Ordnance Datum

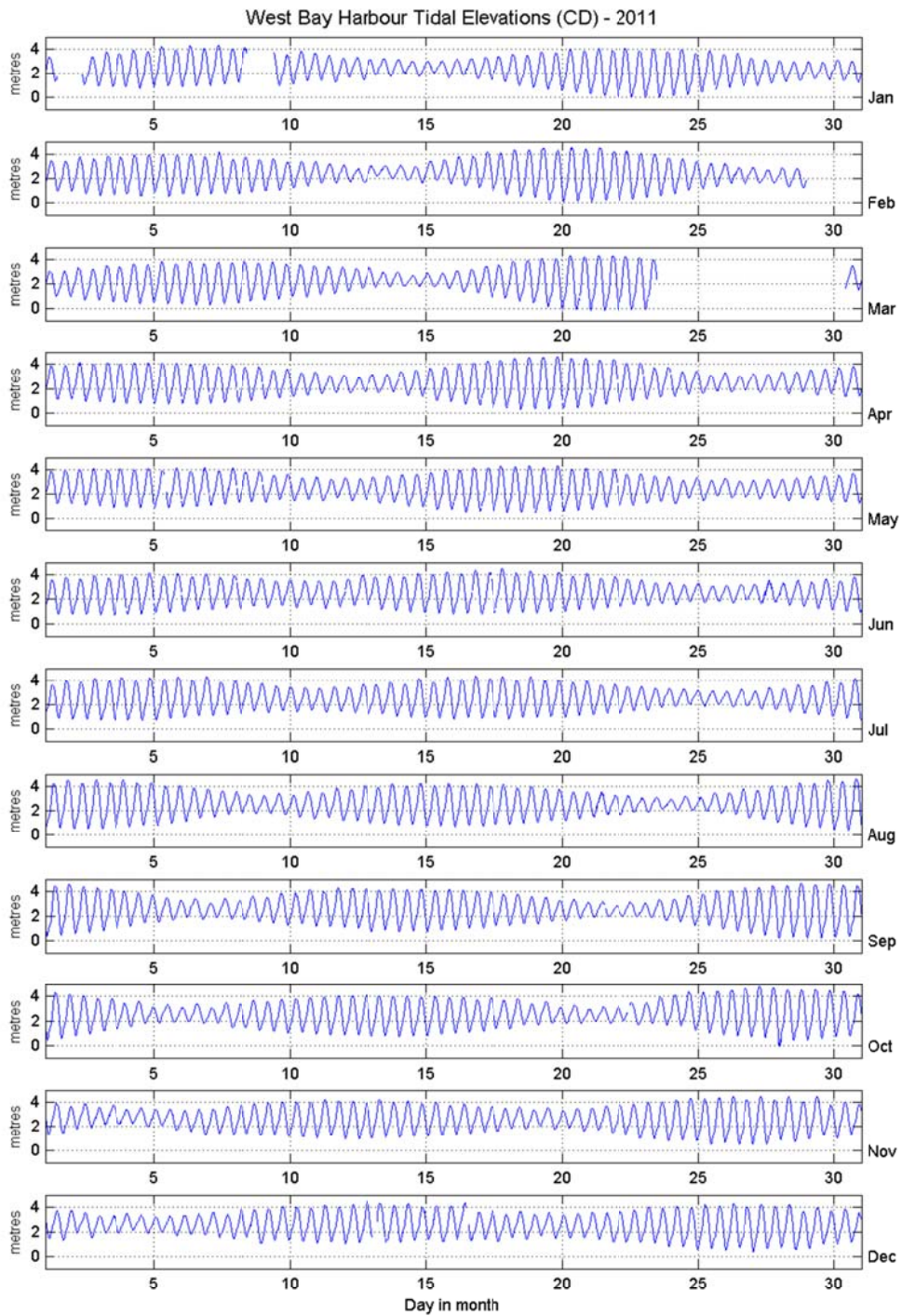


Figure 3: West Bay Harbour tidal elevations for 2011 relative to Chart Datum