

Port Isaac Tide Gauge

Location

OS: 199490E 80998N

WGS84: *Latitude: 50° 35' 39.083" N Longitude: 04° 50' 03.881" W*

Instrument Type

Etrometa step gauge

TGBM



Benchmarks

Benchmark

TGBM = 7.715 above Ordnance Datum Newlyn

TGZ = -3.970m above Ordnance Datum Newlyn

TGZ = -0.170m above Chart Datum

TGZ = 11.685m below TGBM

Description

Top of galvanised horizontal frame

Datum

All data are to Ordnance Datum Newlyn. The height of Chart Datum relative to Ordnance Datum at Port Isaac is -3.80m (Admiralty Tide Tables, Supplementary Table III).

Survey information

The site was first surveyed on 29 June 2010, using a ~25 hour occupation to account for tidal loading.

Site characteristics

The breakwater is on open coast, although sheltered from the southwest by a headland. Some wave reflection from the breakwater can occur. There are no nearby estuaries. Spring tidal range is approx. 6.6m.

Data Quality

Recovery rate (%)	Sample interval
99	10 minutes

Service history

The step gauge became operational on 26 July 2010 and was last serviced on October 2012. 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	4.00	25-Jan-2012 06:30	-3.22	11-Jan-2012 12:40
February	3.94	10-Feb-2012 06:50	-3.67	10-Feb-2012 13:10
March	4.15	10-Mar-2012 06:30	-3.95	11-Mar-2012 01:00
April	4.43	09-Apr-2012 19:20	-3.97	18-Apr-2012 08:10
May	4.41	07-May-2012 18:10	-3.48	06-May-2012 23:40
June	4.21	05-Jun-2012 18:00	-3.32	04-Jun-2012 23:20
July	4.16	05-Jul-2012 18:30	-3.22	06-Jul-2012 01:00
August	4.24	03-Aug-2012 18:10	-3.29	31-Aug-2012 23:30
September	4.33	17-Sep-2012 18:00	-3.48	18-Sep-2012 12:30
October	4.76	17-Oct-2012 18:30	-3.33	16-Oct-2012 11:40
November	4.26	15-Nov-2012 05:50	-3.52	15-Nov-2012 12:10
December	4.53	14-Dec-2012 05:20	-3.16	15-Dec-2012 12:50

Month	Surge maxima		Surge minima	
	Value (m)	Date/Time	Value (m)	Date/Time
January	0.46	03-Jan-2012 01:30	-0.36	05-Jan-2012 14:10
February	0.06	23-Feb-2012 14:30	-0.46	15-Feb-2012 08:10
March	0.09	03-Mar-2012 08:00	-0.44	12-Mar-2012 01:40
April	0.58	25-Apr-2012 14:50	-0.37	04-Apr-2012 12:40
May	0.26	10-May-2012 00:50	-0.35	12-May-2012 20:30
June	0.50	08-Jun-2012 01:40	-0.17	27-Jun-2012 10:20
July	0.23	07-Jul-2012 16:10	-0.19	21-Jul-2012 20:50
August	0.51	15-Aug-2012 10:50	-0.25	30-Aug-2012 15:00
September	0.39	26-Sep-2012 11:40	-0.24	05-Sep-2012 05:40
October	0.77	17-Oct-2012 11:10	-0.25	27-Oct-2012 02:40
November	0.62	22-Nov-2012 14:10	-0.29	27-Nov-2012 14:50
December	0.70	29-Dec-2012 00:30	-0.49	07-Dec-2012 11:20

Month	Mean Level	
	No. of days	Elevation (OD)
January	30	0.224
February	29	0.065
March	29	0.116
April	30	0.340
May	30	0.271
June	29	0.363
July	30	0.316
August	31	0.399
September	30	0.328
October	30	0.469
November	30	0.445
December	30	0.419

Highest values in 2012			
Extreme		Surge	
Elevation (OD) (Surge component)	Date/Time	Value (m)	Date/Time
4.76 (0.53)	17-Oct-2012 18:30	0.77	17-Oct-2012 11:10
4.76 (0.47)	17-Oct-2012 06:00	0.70	29-Dec-2012 00:30
4.53 (0.41)	14-Dec-2012 05:20	0.69	15-Dec-2012 01:50
4.51 (0.35)	18-Oct-2012 06:40	0.64	18-Oct-2012 02:10
4.47 (0.18)	16-Oct-2012 17:50	0.62	16-Dec-2012 01:00
4.44 (0.24)	15-Dec-2012 06:30	0.62	22-Nov-2012 14:10
4.43 (0.22)	09-Apr-2012 19:20	0.61	15-Dec-2012 12:20
4.41 (0.20)	16-Oct-2012 05:30	0.59	29-Dec-2012 15:00
4.41 (0.12)	07-May-2012 18:10	0.59	16-Dec-2012 19:10
4.38 (0.07)	09-Apr-2012 06:50	0.59	16-Dec-2012 13:00

Year	Annual extreme maxima		Annual surge maxima		Z ₀ (OD)	Annual recovery rate
	Elevation (OD) (Surge)	Date/Time	Value (m)	Date/Time		
2010	4.66 (-)	08-Oct-2010 17:40	-	-	-	44%
2011	4.59 (0.09)	21-Feb-2011 07:20	0.70	13-Dec-2011 02:30	0.304	99%
2012	4.76 (0.53)	17-Oct-2012 18:30	0.77	17-Oct-2012 11:10	0.311	99%

Tidal levels		
Observation period	August 2010 to December 2012	
Tide Level	Elevation (OD)	Elevation (CD)
HAT	4.73	8.53
MHWS	3.64	7.44
MHWN	1.88	5.68
MSL	0.31	4.11
MLWN	-1.27	2.53
MLWS	-3.03	0.77
LAT	-4.01	-0.21

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

The step gauge is mounted on Port Isaac breakwater by kind permission of the Port Isaac Harbour Commissioners and the shore station is kindly hosted by Port Isaac Aquarium. 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 Fugro EMU Limited.

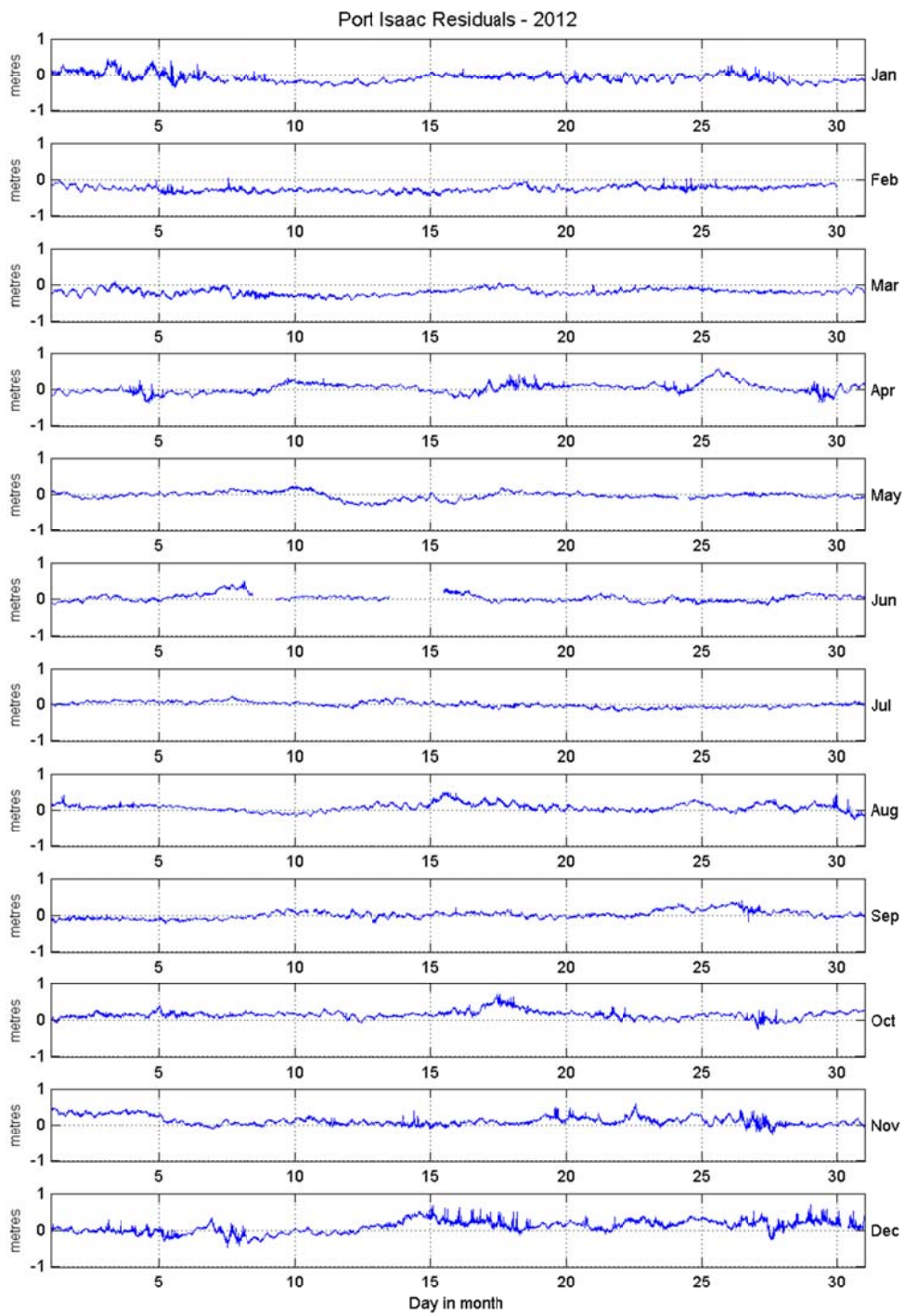


Figure 1: Port Isaac residuals for 2012

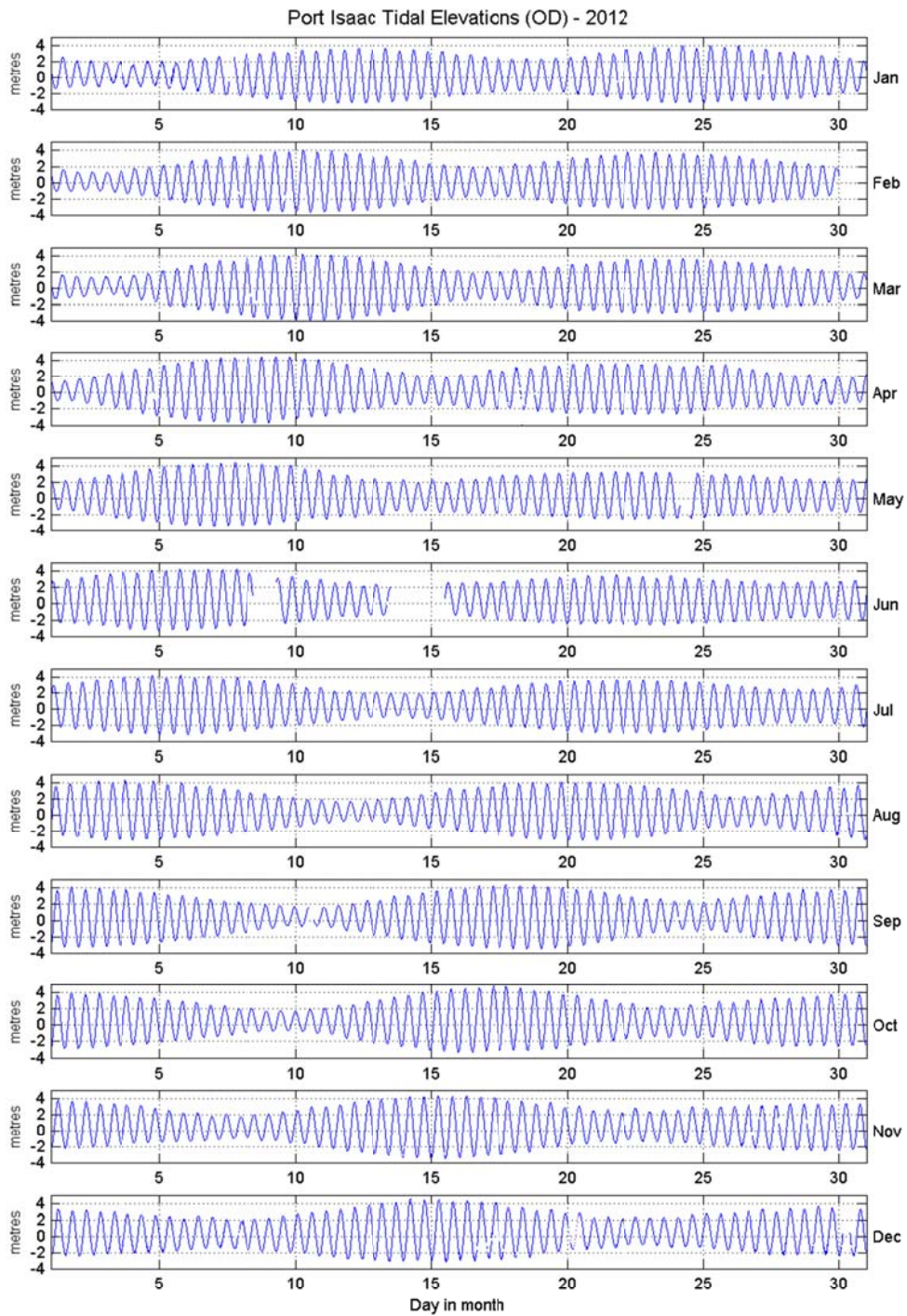


Figure 2: Port Isaac tidal elevations for 2012 relative to Ordnance Datum

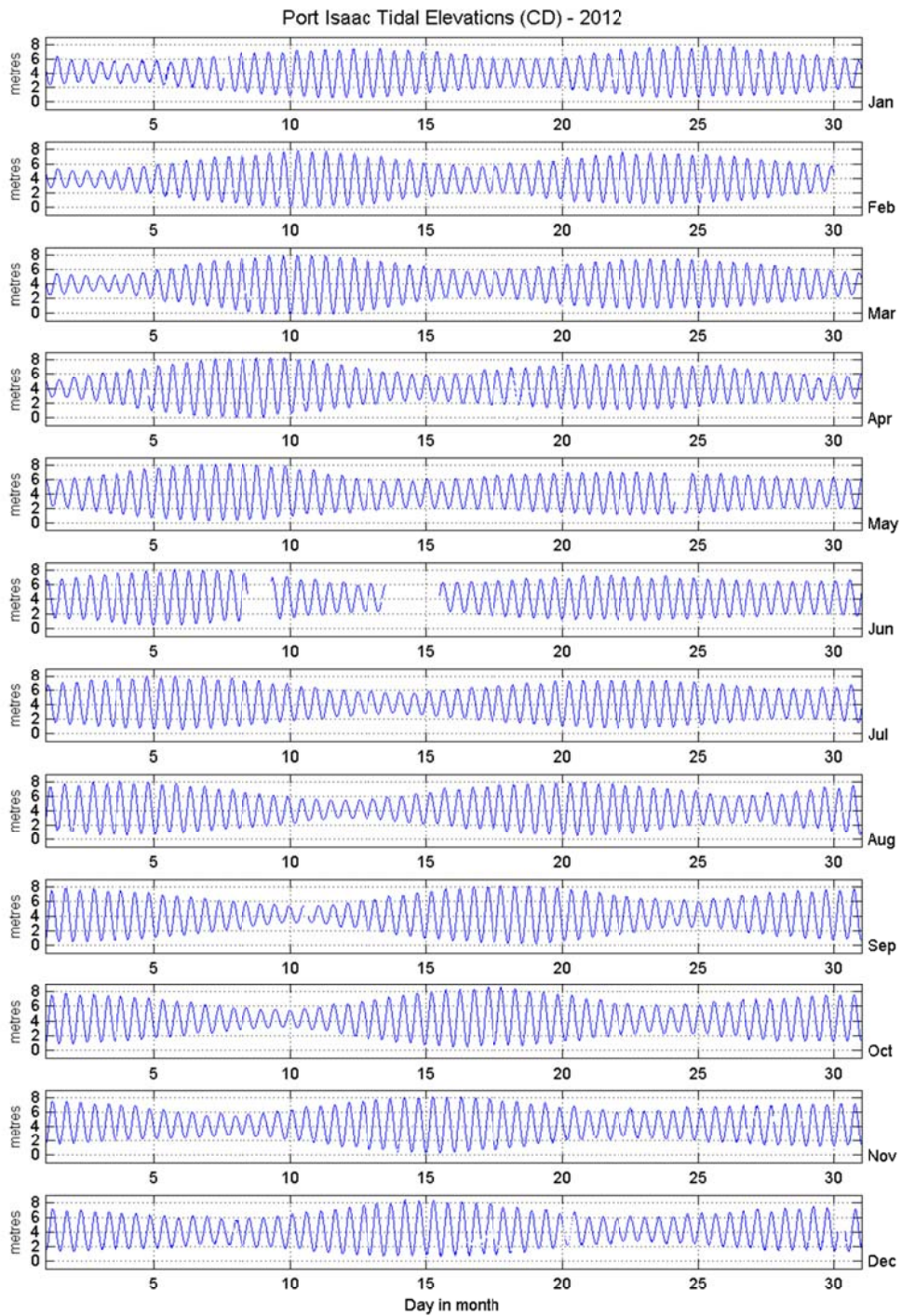


Figure 3: Port Isaac tidal elevations for 2012 relative to Chart Datum