

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
96	10 minutes

Service history

The step gauge became operational on 26 July 2010 and was last serviced on 30 October 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	4.80	03-Jan-2014 06:50	-3.23	30-Jan-2014 23:30
February	4.75	03-Feb-2014 07:30	-3.67	02-Feb-2014 13:20
March	4.79	02-Mar-2014 05:40	-3.59	01-Mar-2014 11:40
April	4.33	01-Apr-2014 06:10	-3.47	01-Apr-2014 00:20
May	3.83	01-May-2014 06:20	-3.39	16-May-2014 00:10
June	3.94	14-Jun-2014 18:10	-3.42	15-Jun-2014 00:30
July	4.36	14-Jul-2014 18:40	-3.56	15-Jul-2014 01:00
August	4.67	12-Aug-2014 18:40	-3.70	13-Aug-2014 00:50
September	4.65	10-Sep-2014 18:10	-3.75	09-Sep-2014 23:50
October	4.70	08-Oct-2014 17:00	-3.37	10-Oct-2014 00:20
November	4.42	06-Nov-2014 16:50	-3.00	07-Nov-2014 23:50
December	4.01	23-Dec-2014 05:40	-3.32	25-Dec-2014 13:50

Month	Surge maxima		Surge minima	
	Value (m)	Date/Time	Value (m)	Date/Time
January	0.88	03-Jan-2014 11:00	-0.33	25-Jan-2014 23:00
February	1.09	12-Feb-2014 11:20	-0.28	28-Feb-2014 05:20
March	0.64	02-Mar-2014 14:50	-0.31	14-Mar-2014 21:20
April	0.53	26-Apr-2014 11:50	-0.22	11-Apr-2014 20:20
May	0.42	10-May-2014 13:30	-0.35	16-May-2014 10:30
June	0.29	28-Jun-2014 15:10	-0.31	15-Jun-2014 10:00
July	0.28	18-Jul-2014 05:50	-0.20	30-Jul-2014 00:10
August	0.40	10-Aug-2014 01:50	-0.20	19-Aug-2014 14:20
September	0.28	17-Sep-2014 18:50	-0.16	26-Sep-2014 23:00
October	0.52	09-Oct-2014 00:30	-0.27	21-Oct-2014 23:50
November	0.69	14-Nov-2014 02:50	-0.19	25-Nov-2014 20:40
December	0.45	12-Dec-2014 00:40	-0.43	10-Dec-2014 09:00

Month	Mean Level	
	No. of days	Elevation (OD)
January	31	0.583
February	28	0.585
March	31	0.302
April	30	0.342
May	31	0.290
June	30	0.290
July	31	0.322
August	31	0.357
September	30	0.358
October	31	0.483
November	29	0.569
December	31	0.310

Highest values in 2014			
Extreme		Surge	
Elevation (OD) (Surge component)	Date/Time	Value (m)	Date/Time
4.80 (0.46)	03-Jan-2014 06:50	1.09	12-Feb-2014 11:20
4.79 (0.37)	02-Mar-2014 05:40	1.07	12-Feb-2014 14:10
4.75 (0.43)	03-Feb-2014 07:30	1.05	05-Feb-2014 14:10
4.73 (0.33)	04-Jan-2014 07:20	1.00	14-Feb-2014 15:10
4.72 (0.26)	03-Mar-2014 06:40	0.95	05-Feb-2014 03:30
4.70 (0.23)	08-Oct-2014 17:00	0.89	14-Feb-2014 13:30
4.67 (0.11)	12-Aug-2014 18:40	0.88	03-Jan-2014 11:00
4.66 (0.20)	01-Feb-2014 06:30	0.86	06-Jan-2014 13:30
4.65 (0.00)	10-Sep-2014 18:10	0.80	07-Jan-2014 17:20
4.62 (0.35)	02-Mar-2014 18:10	0.76	01-Feb-2014 14:00

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%
2013	4.48 (0.06)	24-Jul-2013 18:30	1.12	27-Dec-2013 06:50	0.318	99%
2014	4.80 (0.46)	03-Jan-2014 06:50	1.09	12-Feb-2014 11:20	-	96%

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. Tide levels were produced by Fugro EMU Limited.

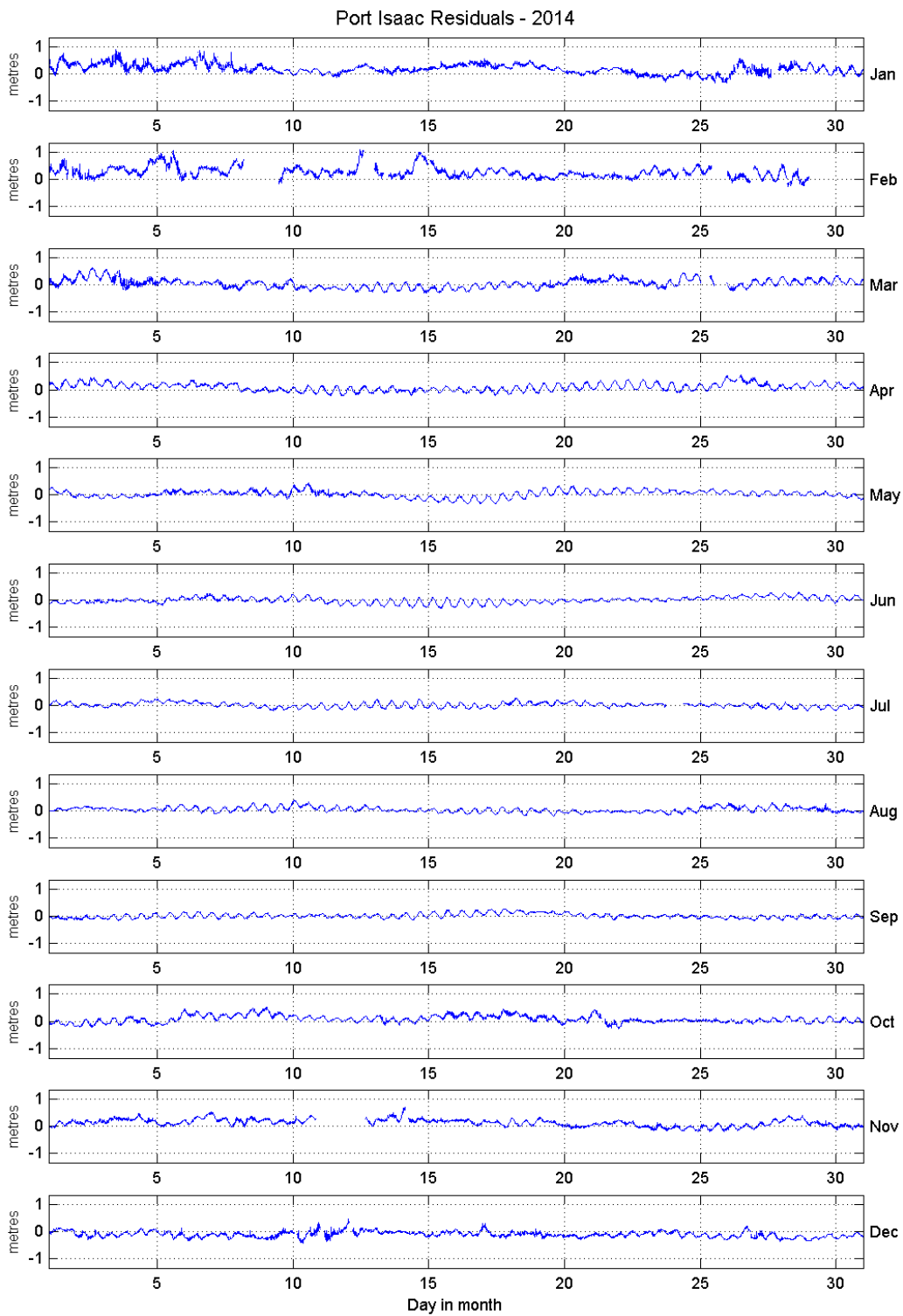


Figure 1: Port Isaac residuals for 2014

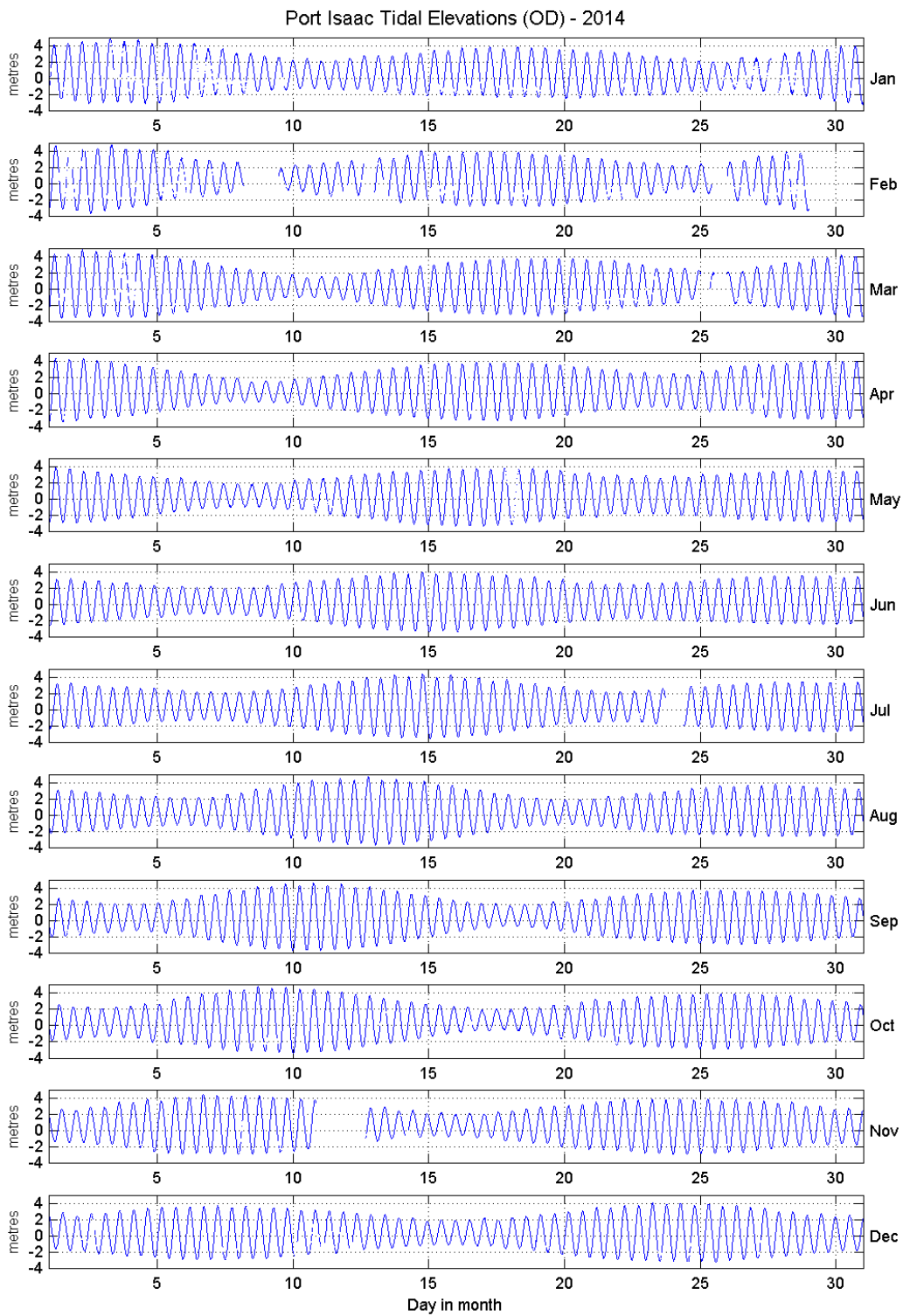


Figure 2: Port Isaac tidal elevations for 2014 relative to Ordnance Datum

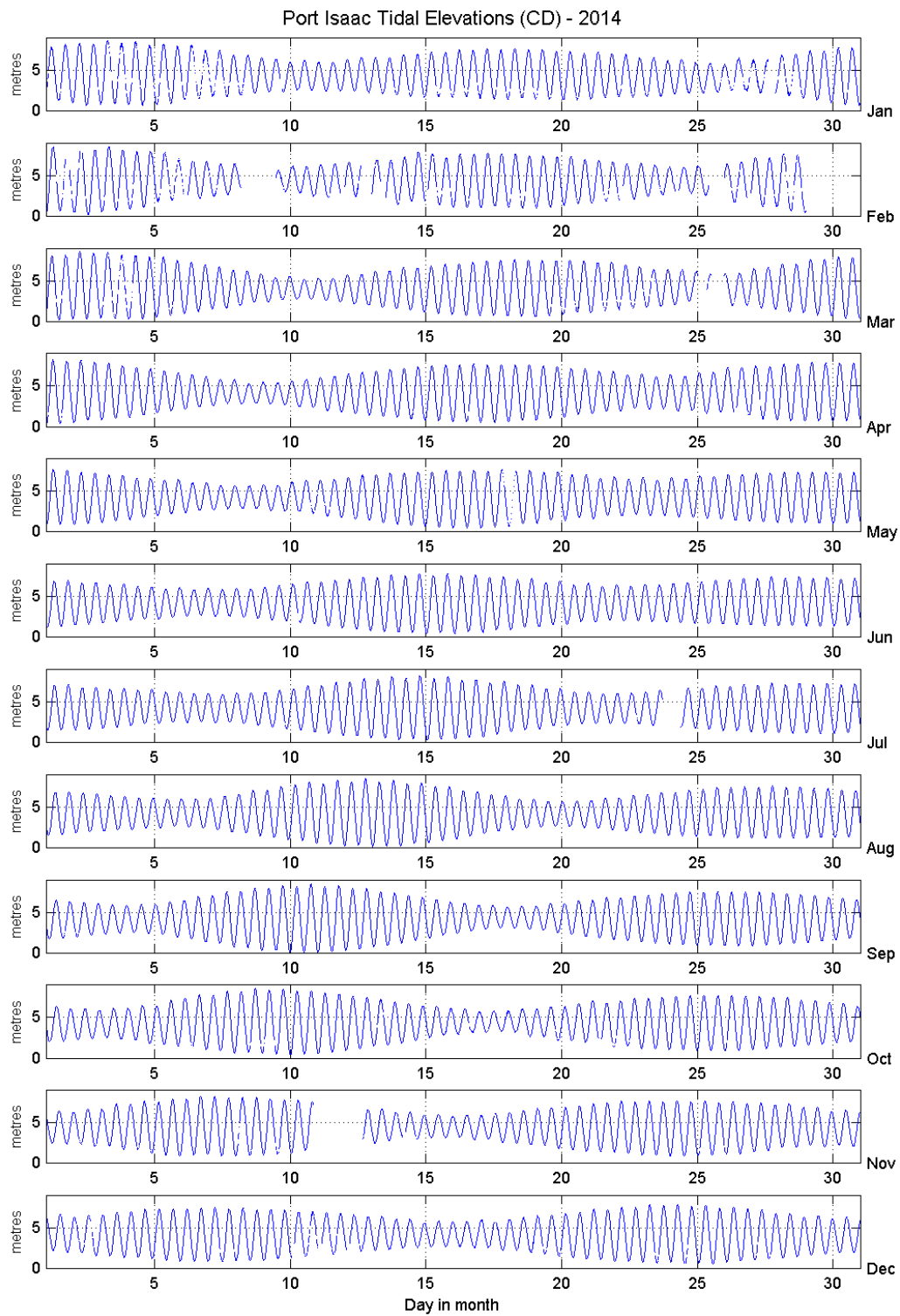


Figure 3: Port Isaac tidal elevations for 2014 relative to Chart Datum