

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.

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	3.93	22-Jan-2011 07:00	-3.74	22-Jan-2011 13:20
February	4.59	21-Feb-2011 07:20	-3.75	21-Feb-2011 01:30
March	4.41	21-Mar-2011 06:20	-3.87	22-Mar-2011 01:00
April	4.32	19-Apr-2011 05:50	-3.69	18-Apr-2011 11:30
May	3.94	18-May-2011 18:00	-3.42	19-May-2011 00:30
June	3.96	17-Jun-2011 18:20	-2.95	17-Jun-2011 00:10
July	3.91	31-Jul-2011 17:50	-3.13	31-Jul-2011 23:50
August	4.48	31-Aug-2011 18:50	-3.69	31-Aug-2011 00:40
September	4.55	28-Sep-2011 17:40	-3.78	29-Sep-2011 00:10
October	4.56	27-Oct-2011 05:00	-3.60	28-Oct-2011 12:00
November	4.16	26-Nov-2011 05:30	-3.36	27-Nov-2011 12:30
December	3.87	26-Dec-2011 06:00	-3.27	26-Dec-2011 12:30

Month	Surge maxima		Surge minima	
	Value (m)	Date/Time	Value (m)	Date/Time
January	0.46	07-Jan-2011 18:00	-0.40	23-Jan-2011 17:30
February	0.45	17-Feb-2011 01:20	-0.40	28-Feb-2011 22:30
March	0.25	12-Mar-2011 18:50	-0.48	01-Mar-2011 10:30
April	0.18	01-Apr-2011 23:20	-0.38	12-Apr-2011 01:00
May	0.29	08-May-2011 05:00	-0.35	15-May-2011 01:40
June	0.30	17-Jun-2011 14:40	-0.28	02-Jun-2011 03:40
July	0.24	07-Jul-2011 01:20	-0.18	01-Jul-2011 03:40
August	0.23	25-Aug-2011 13:50	-0.15	10-Aug-2011 22:10
September	0.43	11-Sep-2011 23:50	-0.21	07-Sep-2011 00:40
October	0.50	23-Oct-2011 16:20	-0.23	07-Oct-2011 09:50
November	0.58	02-Nov-2011 18:50	-0.22	27-Nov-2011 11:50
December	0.70	13-Dec-2011 02:30	-0.41	28-Dec-2011 20:50

Month	Mean Level	
	No. of days	Elevation (OD)
January	31	0.289
February	28	0.330
March	31	0.204
April	29	0.233
May	31	0.258
June	30	0.297
July	31	0.307
August	31	0.333
September	30	0.358
October	31	0.364
November	30	0.430
December	31	0.344

Highest values in 2011			
Extreme		Surge	
Elevation (OD) (Surge component)	Date/Time	Value (m)	Date/Time
4.59 (0.09)	21-Feb-2011 07:20	0.70	13-Dec-2011 02:30
4.56 (0.29)	27-Oct-2011 05:00	0.58	02-Nov-2011 18:50
4.56 (-0.02)	20-Feb-2011 06:40	0.56	13-Dec-2011 13:50
4.55 (0.03)	28-Sep-2011 17:40	0.56	29-Nov-2011 12:20
4.52 (0.11)	19-Feb-2011 05:50	0.54	03-Nov-2011 18:30
4.49 (0.16)	27-Oct-2011 17:30	0.52	02-Nov-2011 19:00
4.48 (0.03)	31-Aug-2011 18:50	0.50	23-Oct-2011 16:20
4.46 (0.00)	29-Sep-2011 18:30	0.47	24-Oct-2011 11:10
4.44 (0.06)	20-Feb-2011 18:50	0.46	03-Nov-2011 20:50
4.41 (-0.21)	21-Mar-2011 06:20	0.46	07-Jan-2011 18:00

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%

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.

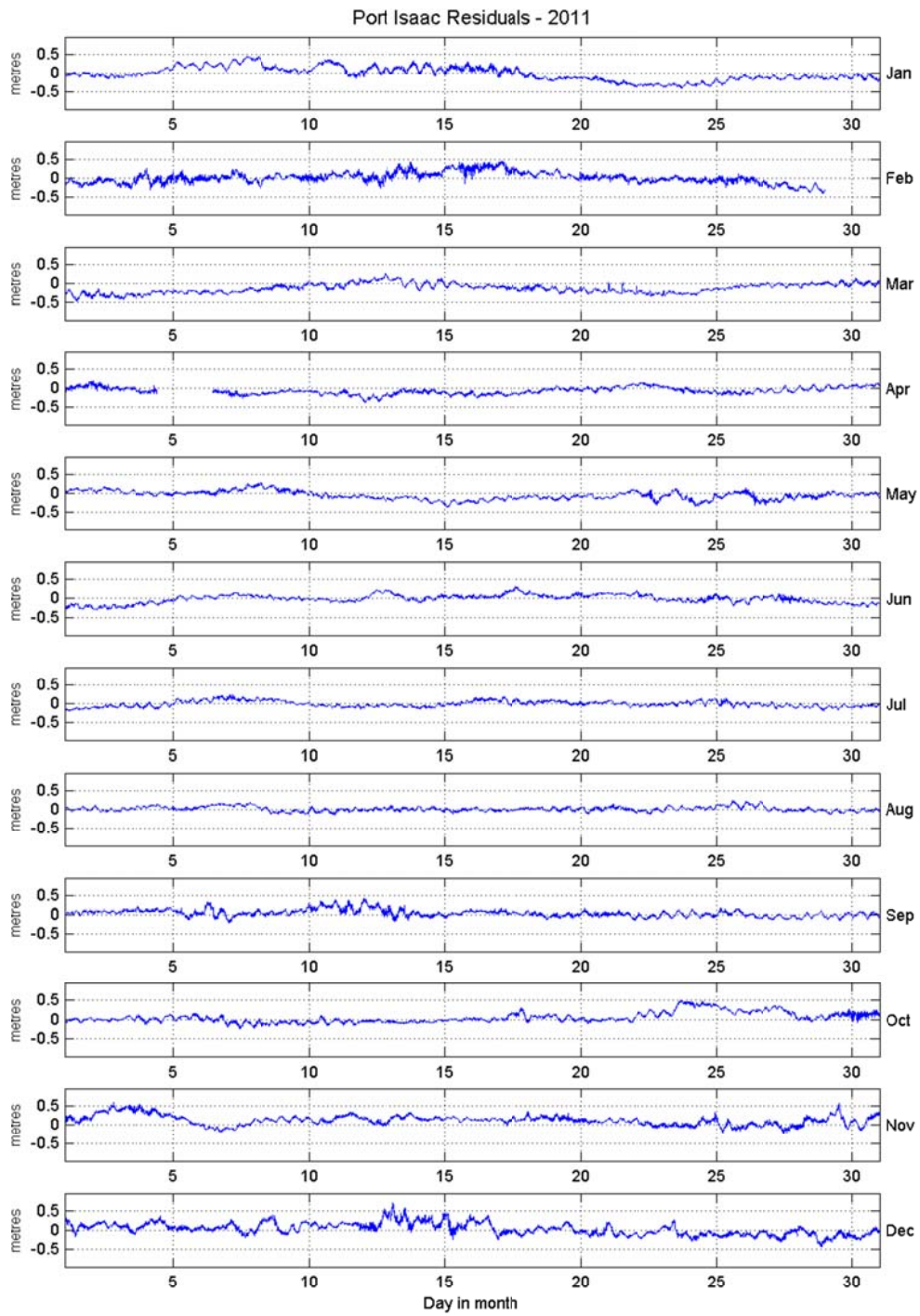


Figure 1: Port Isaac residuals for 2011

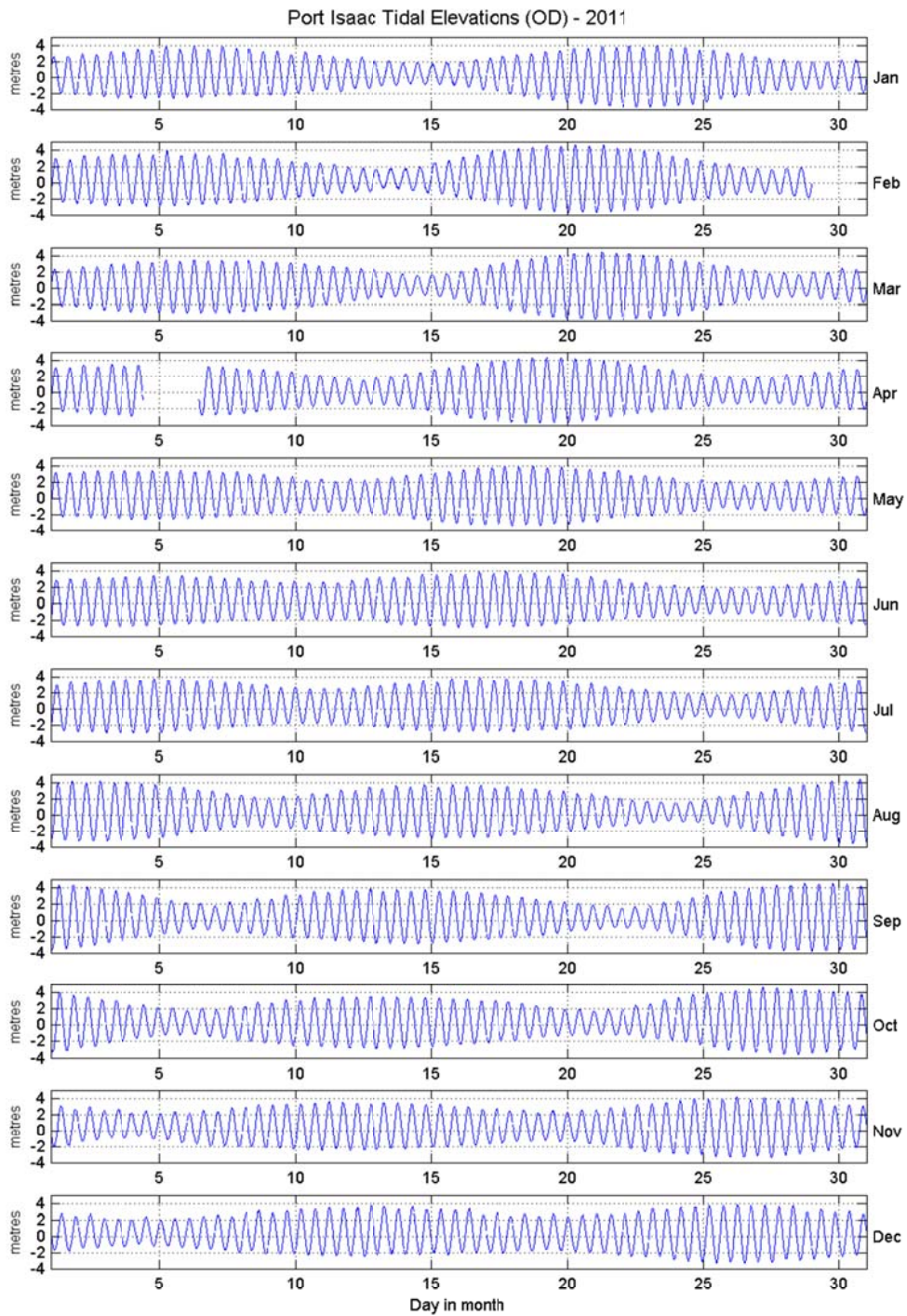


Figure 2: Port Isaac tidal elevations for 2011 relative to Ordnance Datum

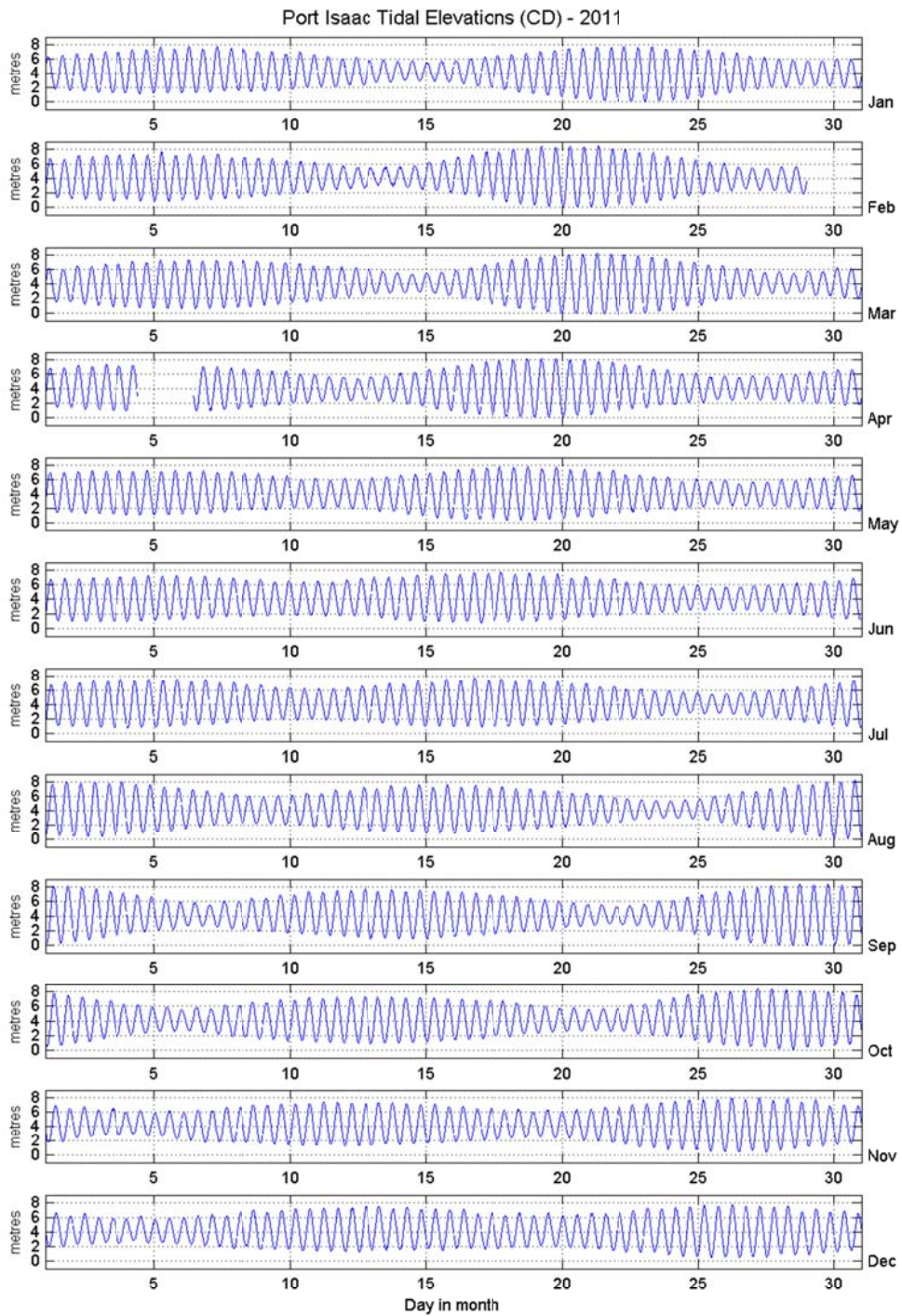


Figure 3: Port Isaac tidal elevations for 2011 relative to Chart Datum