

Port Isaac Tide Gauge

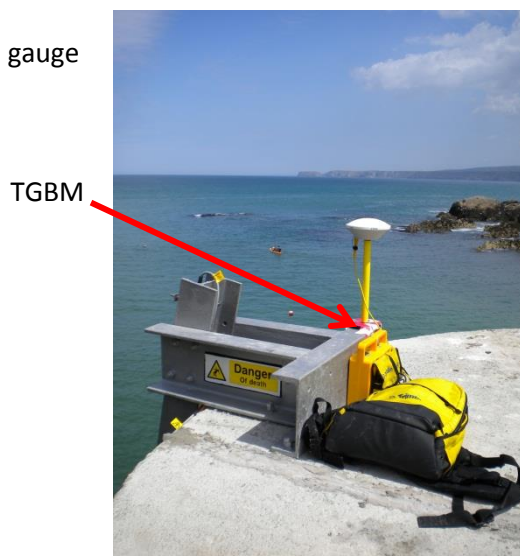
Location

OS: 199490E 80998N

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

Instrument

Etrometa step gauge



Benchmarks

Benchmark

TGBM = 7.715 m above Ordnance Datum Newlyn

TGZ = -3.970 m above Ordnance Datum Newlyn

TGZ = -0.170 m above Chart Datum

TGZ = 11.685 m 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
98	10 minutes

Service history

The step gauge became operational on 26 July 2010 and is serviced at 9-monthly intervals. 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	4.55	04-Jan-2018 06:50	-3.33	31-Jan-2018 11:20
February	4.27	03-Feb-2018 07:10	-3.69	02-Feb-2018 13:00
March	4.69	04-Mar-2018 06:50	-3.41	31-Mar-2018 23:50
April	4.42	02-Apr-2018 06:20	-3.36	01-Apr-2018 12:10
May	4.00	17-May-2018 06:20	-3.43	16-May-2018 11:50
June	4.16	15-Jun-2018 18:20	-3.33	15-Jun-2018 00:00
July	4.15	15-Jul-2018 19:10	-3.45	15-Jul-2018 00:40
August	4.40	12-Aug-2018 18:00	-3.55	14-Aug-2018 01:10
September	4.43	10-Sep-2018 17:40	-3.62	11-Sep-2018 12:30
October	4.49	10-Oct-2018 18:00	-3.45	09-Oct-2018 23:50
November	4.22	07-Nov-2018 04:40	-2.97	25-Nov-2018 00:10
December	4.06	24-Dec-2018 06:10	-3.27	25-Dec-2018 00:50

Month	Surge maxima		Surge minima	
	Value (m)	Date/Time	Value (m)	Date/Time
January	0.57	02-Jan-2018 20:50	-0.37	29-Jan-2018 16:00
February	0.43	14-Feb-2018 17:30	-0.41	04-Feb-2018 05:10
March	0.84	14-Mar-2018 14:50	-0.23	21-Mar-2018 01:10
April	0.53	04-Apr-2018 04:30	-0.21	24-Apr-2018 04:40
May	0.33	02-May-2018 03:40	-0.21	10-May-2018 09:00
June	0.28	14-Jun-2018 03:40	-0.28	21-Jun-2018 19:20
July	0.35	29-Jul-2018 05:20	-0.16	14-Jul-2018 21:20
August	0.25	26-Aug-2018 14:10	-0.19	20-Aug-2018 02:10
September	0.34	17-Sep-2018 20:50	-0.28	26-Sep-2018 04:10
October	0.77	12-Oct-2018 15:00	-0.42	23-Oct-2018 01:50
November	0.67	28-Nov-2018 14:40	-0.22	18-Nov-2018 08:50
December	0.76	15/12/2018 15:20	-0.36	21-Dec-2017 08:10

Month	Mean Level	
	No. of days	Elevation (OD)
January	31	0.404
February	28	0.232
March	31	0.471
April	30	0.371
May	31	0.286
June	30	0.280
July	31	0.314
August	31	0.324
September	30	0.317
October	31	0.340
November	30	0.544
December	31	0.450

Highest values in 2018			
Extreme		Surge	
Elevation (OD) (Surge component)	Date/Time	Value (m)	Date/Time
4.69 (0.45)	04-Mar-2018 06:50	0.84	14-Mar-2018 14:50
4.61 (0.31)	03-Mar-2018 06:10	0.77	12-Oct-2018 15:00
4.55 (0.27)	04-Jan-2018 06:50	0.76	15-Dec-2018 15:20
4.51 (0.39)	03-Mar-2018 18:40	0.67	28-Nov-2018 14:40
4.49 (0.14)	10-Oct-2018 18:00	0.66	14-Mar-2018 12:20
4.43 (-0.03)	10-Sep-2018 17:40	0.65	12-Oct-2018 03:00
4.43 (0.35)	02-Jan-2018 17:30	0.63	15-Mar-2018 01:10
4.42 (0.38)	02-Apr-2018 06:20	0.62	10-Mar-2018 09:30
4.40 (0.42)	05-Mar-2018 07:20	0.59	18-Dec-2018 05:40
4.40 (-0.08)	11-Sep-2018 18:30	0.59	11-Mar-2018 21:10

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%
2015	4.74 (0.17)	28-Oct-2015 17:50	0.84	14-Jan-2015 23:20	-	98%
2016	4.65 (0.15)	16-Oct-2016 17:20	1.01	08-Feb-2016 07:30	-	96%
2017	4.39 (0.10)	30-Mar-2017 06:40	1.05	29-Dec-2017 06:30	-	99%
2018	4.69 (0.45)	04-Mar-2018 06:50	0.84	14-Mar-2018 14:50	0.361	98%

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 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.

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 and tide levels were produced by Fugro GB Marine Limited.

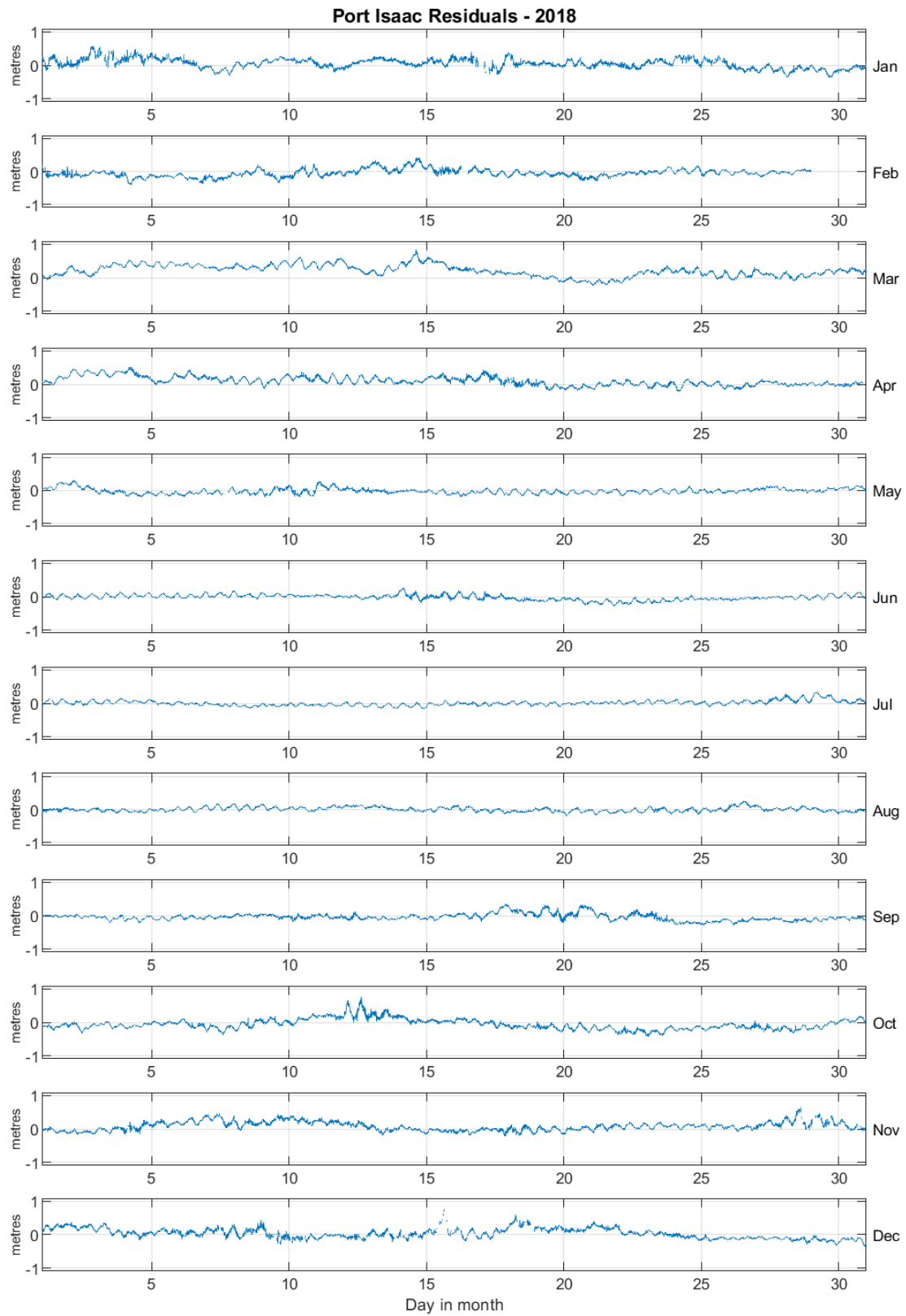


Figure 1: Port Isaac residuals for 2018

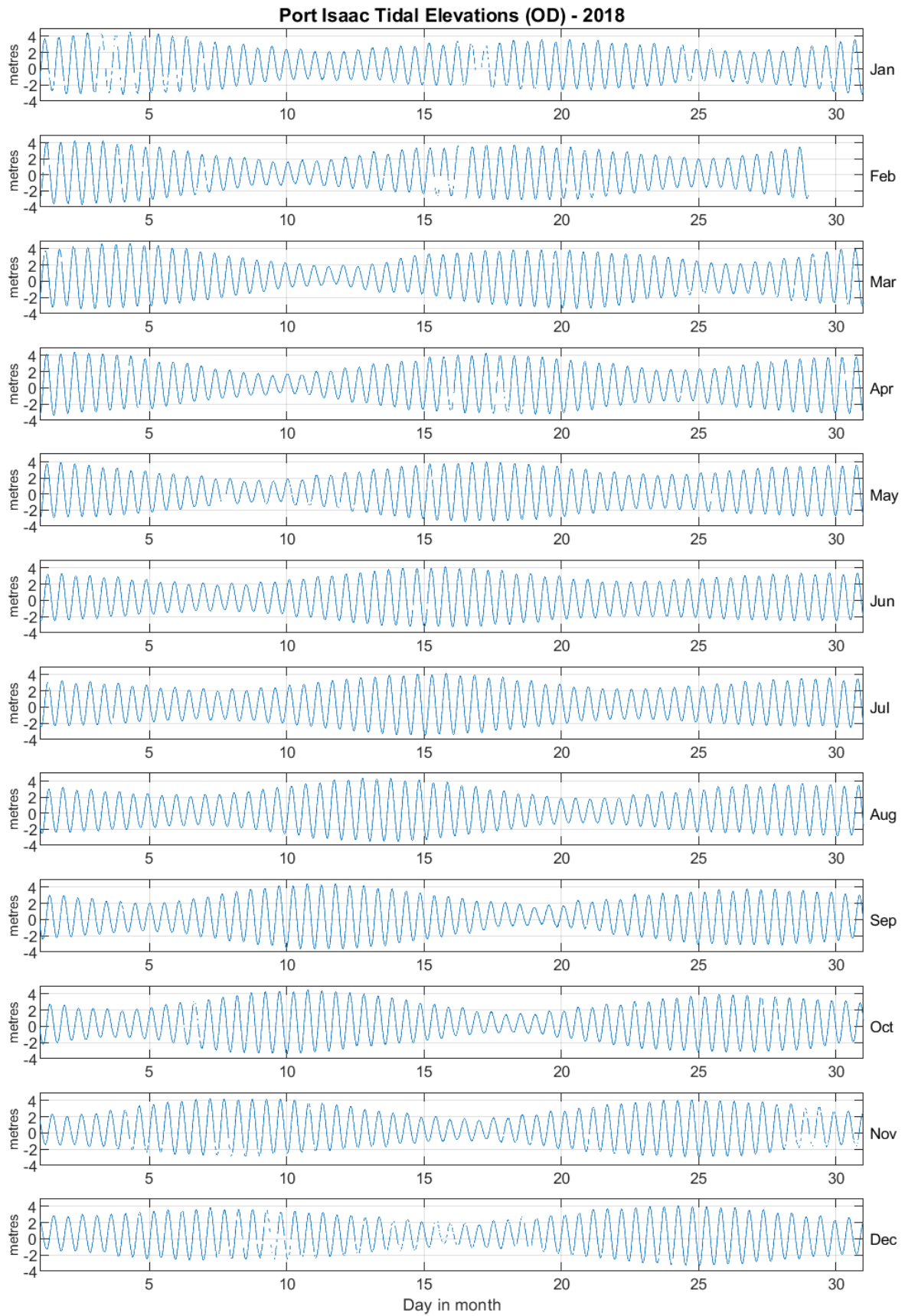


Figure 2: Port Isaac tidal elevations for 2018 relative to Ordnance Datum

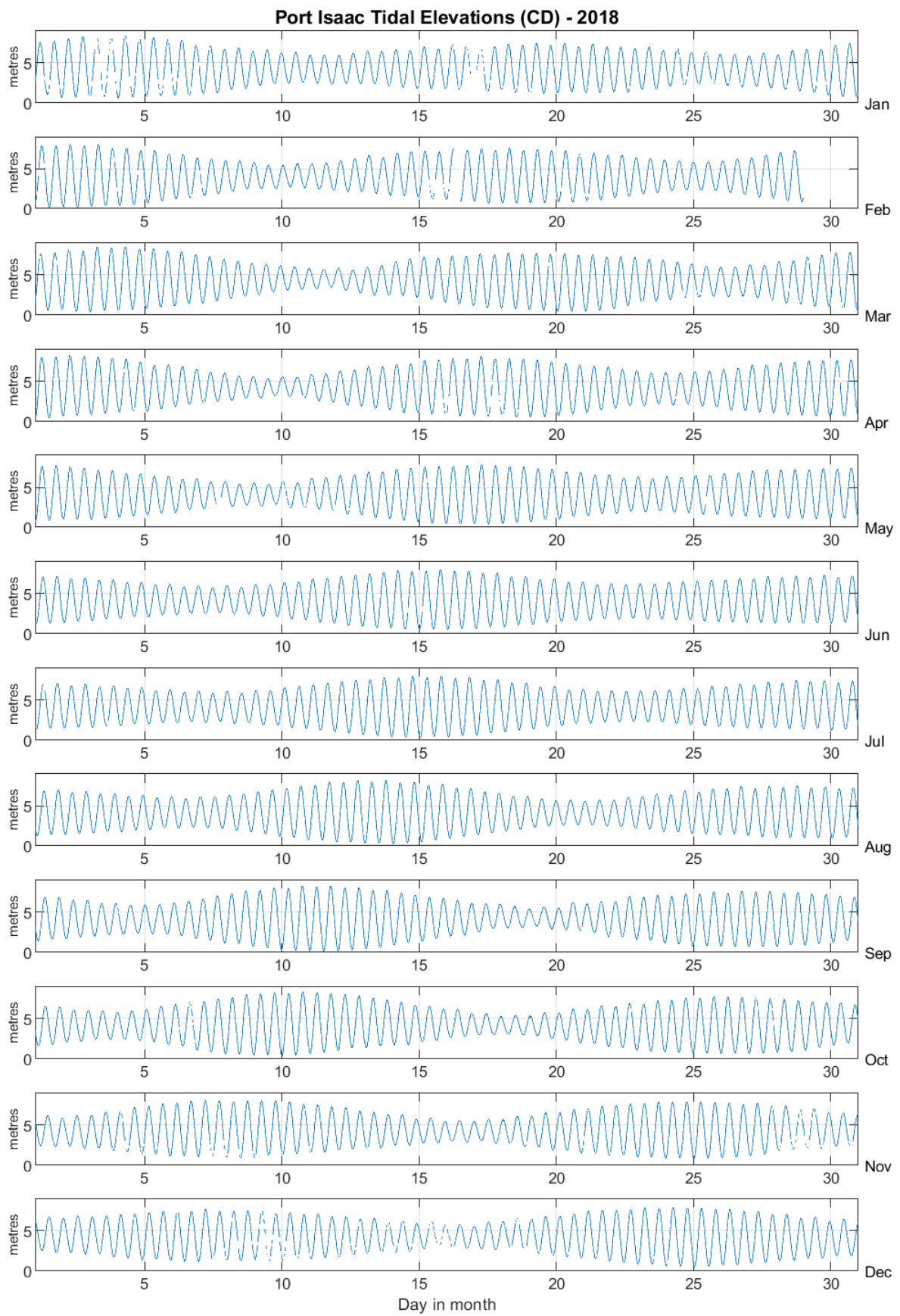


Figure 3: Port Isaac tidal elevations for 2018 relative to Chart Datum