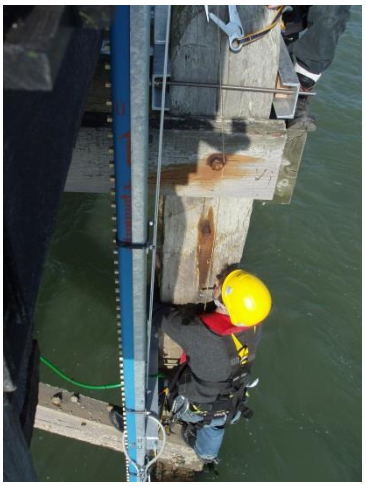
Lymington Tide Gauge

Location

OS: 434874E 93526N

WGS84:*Latitude:* 50° 44’ 25.0638’’ N *Longitude:* 01° 30’ 25.6398’’ W

On the Royal Lymington Yacht Club Starting Platform



Instrument Type

Etrometa Step Gauge

Benchmarks

Benchmark	*Description*
TGBM = 3.919 m above Ordnance Datum Newlyn	Top of step gauge frame
TGZ = -2.217 m above Ordnance Datum Newlyn	
TGZ = -0.240 m above Chart Datum	
TGZ = 6.136 m below TGBM	

Datum

All data are to Ordnance Datum Newlyn. The height of Chart Datum relative to Ordnance Datum at Lymington is -1.98m (Admiralty Tide Tables, Supplementary Table III).

Survey information

The site was surveyed on 20 December 2007.

Site characteristics

The Royal Lymington Yacht Club Starting Platform is approx. 1.7 km offshore, in the Western Solent. Spring tidal range is 2.1m.

Data Quality

Recovery rate (%)	Sample interval
97	10 minutes

Service history

The step gauge became operational on 19 April 2007 and is serviced at 9-monthly intervals. The lower section of the gauge required replacement during the winter of 2015. 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. It should be noted that, given the small tidal range and double High Waters, tidal predictions are particularly difficult at this site, both for elevation and especially for timing. Accordingly, there may be instances of apparent tidal surge and/or a periodicity in the surge which are, in reality, an artefact of the predictions.

Statistics

All times GMT

Month	Extreme maxima		Extreme minima	
	Elevation (OD)	Date/Time	Elevation (OD)	Date/Time
January	1.56	14-Jan-2017 01:40	-1.68	13-Jan-2017 16:50
February	1.47	27-Feb-2017 23:20	-1.80	12-Feb-2017 17:20
March	1.38	01-Mar-2017 00:00	-1.72	29-Mar-2017 17:10
April	1.30	30-Apr-2017 00:40	-1.74	27-Apr-2017 04:30
May	1.30	27-May-2017 11:20	-1.67	28-May-2017 05:40
June	1.34	25-Jun-2017 11:10	-1.57	26-Jun-2017 05:30
July	1.27	27-Jul-2017 15:20	-1.69	25-Jul-2017 05:20
August	1.26	22-Aug-2017 23:00	-1.57	22-Aug-2017 04:10
September	1.46	08-Sep-2017 23:50	-1.52	22-Sep-2017 05:10
October	1.53	21-Oct-2017 11:10	-1.64	07-Oct-2017 04:50
November	1.37	04-Nov-2017 22:30	-1.65	06-Nov-2017 17:30
December	1.55	10-Dec-2017 06:00	-1.80	05-Dec-2017 17:20

Month	Surge maxima		Surge minima	
	Value (m)	Date/Time	Value (m)	Date/Time
January	0.41	14-Jan-2017 02:50	-0.45	19-Jan-2017 20:30
February	0.79	02-Feb-2017 20:20	-0.34	12-Feb-2017 22:40
March	0.48	05-Mar-2017 09:40	-0.35	25-Mar-2017 14:00
April	0.32	30-Apr-2017 10:10	-0.30	20-Apr-2017 02:30
May	0.38	01-May-2017 01:20	-0.25	24-May-2017 13:40
June	0.41	05-Jun-2017 23:50	-0.23	17-Jun-2017 08:00
July	0.30	21-Jul-2017 15:10	-0.25	16-Jul-2017 07:20
August	0.41	02-Aug-2017 13:50	-0.22	10-Aug-2017 13:00
September	0.59	12-Sep-2017 21:10	-0.24	26-Sep-2017 06:50
October	0.75	29-Oct-2017 13:00	-0.35	29-Oct-2017 23:20
November	0.49	22-Nov-2017 18:50	-0.35	14-Nov-2017 08:50
December	0.64	31-Dec-2017 02:40	-0.48	19-Dec-2017 00:00

Month	Mean Level	
	No. of days	Elevation (OD)
January	31	0.063
February	28	0.122
March	31	0.092
April	30	0.025
May	31	0.130
June	30	0.151
July	31	0.164
August	31	0.145
September	30	0.202
October	31	0.188
November	30	0.183
December	31	0.167

Highest values in 2017			
Extreme		**Surge**	
Elevation (OD) *(Surge component)*	Date/Time	Value (m)	Date/Time
1.56 *(0.38)*	14-Jan-2017 01:40	0.79	02-Feb-2017 20:20
1.55 *(0.48)*	10-Dec-2017 06:00	0.75	29-Oct-2017 13:00
1.53 *(0.43)*	21-Oct-2017 11:10	0.64	31-Dec-2017 02:40
1.50 *(0.50)*	30-Dec-2017 07:40	0.60	02-Feb-2017 08:10
1.47 *(0.49)*	27-Feb-2017 23:20	0.59	12-Sep-2017 21:10
1.46 *(0.37)*	08-Sep-2017 23:50	0.59	16-Oct-2017 11:50
1.45 *(0.49)*	29-Dec-2017 08:10	0.56	10-Dec-2017 07:50
1.44 *(0.39)*	16-Oct-2017 10:00	0.56	10-Dec-2017 16:00
1.43 *(0.38)*	11-Jan-2017 21:50	0.56	13-Dec-2017 19:40
1.42 *(0.19)*	08-Dec-2017 03:20	0.55	11-Sep-2017 07:40

Year	Annual extreme maxima		Annual surge maxima		Z_0 (OD)	Annual recovery rate
	Elevation (OD) *(Surge)*	Date/Time	Value (m)	Date/Time		
2006*	1.58 *(-)*	05-Dec-2006 10:00	-	-	-	-
2007*	1.64 *(-)*	06-Mar-2007 01:40	-	-	-	-
2008	2.01 *(0.91)*	10-Mar-2008 12:10	1.14	10-Mar-2008 06:20	-	95%
2009	1.68 *(0.67)*	14-Nov-2009 08:20	0.85	14-Nov-2009 13:00	-	89%
2010	1.61 *(0.49)*	30-Mar-2010 22:40	0.68	12-Nov-2010 17:00	-	99%
2011	1.57 *(0.29)*	27-Oct-2011 10:10	0.65	12-Dec-2011 23:20	-	98%
2012	1.78 *(0.53)*	17-Oct-2012 11:10	0.71	26-Apr-2012 01:20	-	89%
2013	1.88 *(0.67)*	06-Dec-2013 02:50	0.87	28-Oct-2013 05:10	-	92%
2014	1.66 *(0.49)*	05-Feb-2014 03:30	0.93	14-Feb-2014 20:40	-	72%
2015	1.52 *(0.37)*	25-Dec-2015 10:00	0.65	17-Nov-2015 01:10	-	76%
2016	1.76 *(0.94)*	28-Mar-2016 03:40	1.03	28-Mar-2016 04:10		96%
2017	1.56 *(0.38)*	14-Jan-2017 01:40	0.79	02-Feb-2017 20:20	-	97%

* Note that tidal elevations prior to August 2007 were derived using a different instrument; the elevations are thought to be reasonably reliable but timing issues prevented production of residuals.

Tidal levels		
Observation period	August 2008 to December 2012	
Tide Level	Elevation (OD)	Elevation (CD)
HAT	1.34	3.32
MHWS	1.19	3.17
MHWN	0.69	2.67
MSL	0.12	2.10
MLWN	-0.46	1.52
MLWS	-0.95	1.03
LAT	-1.99	-0.01

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

Tidal predictions and levels were produced by Fugro GB Marine Limited. The step gauge is mounted on their Starting Platform by kind permission of the Royal Lymington Yacht Club.

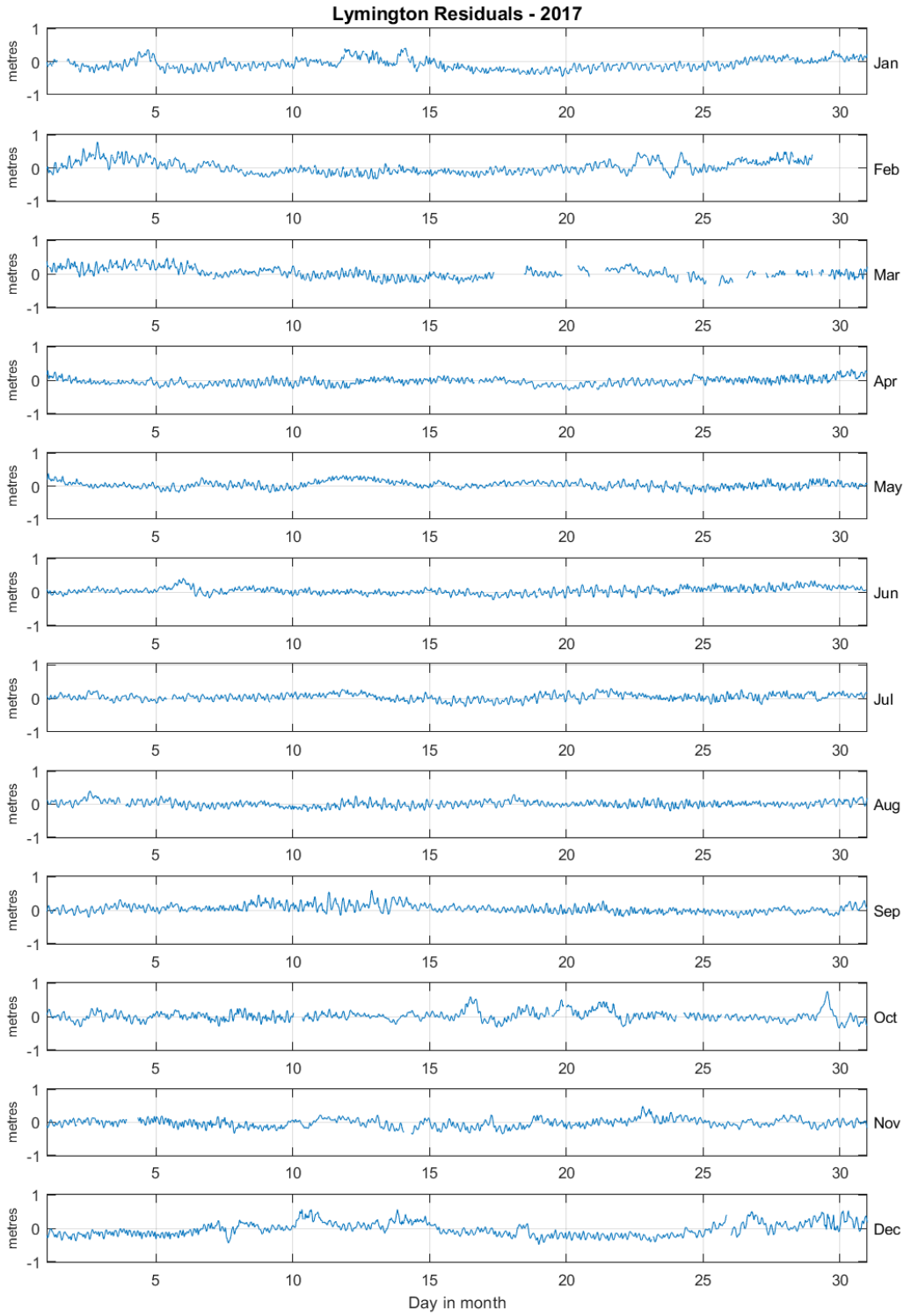


Figure 1: Lymington residuals for 2017

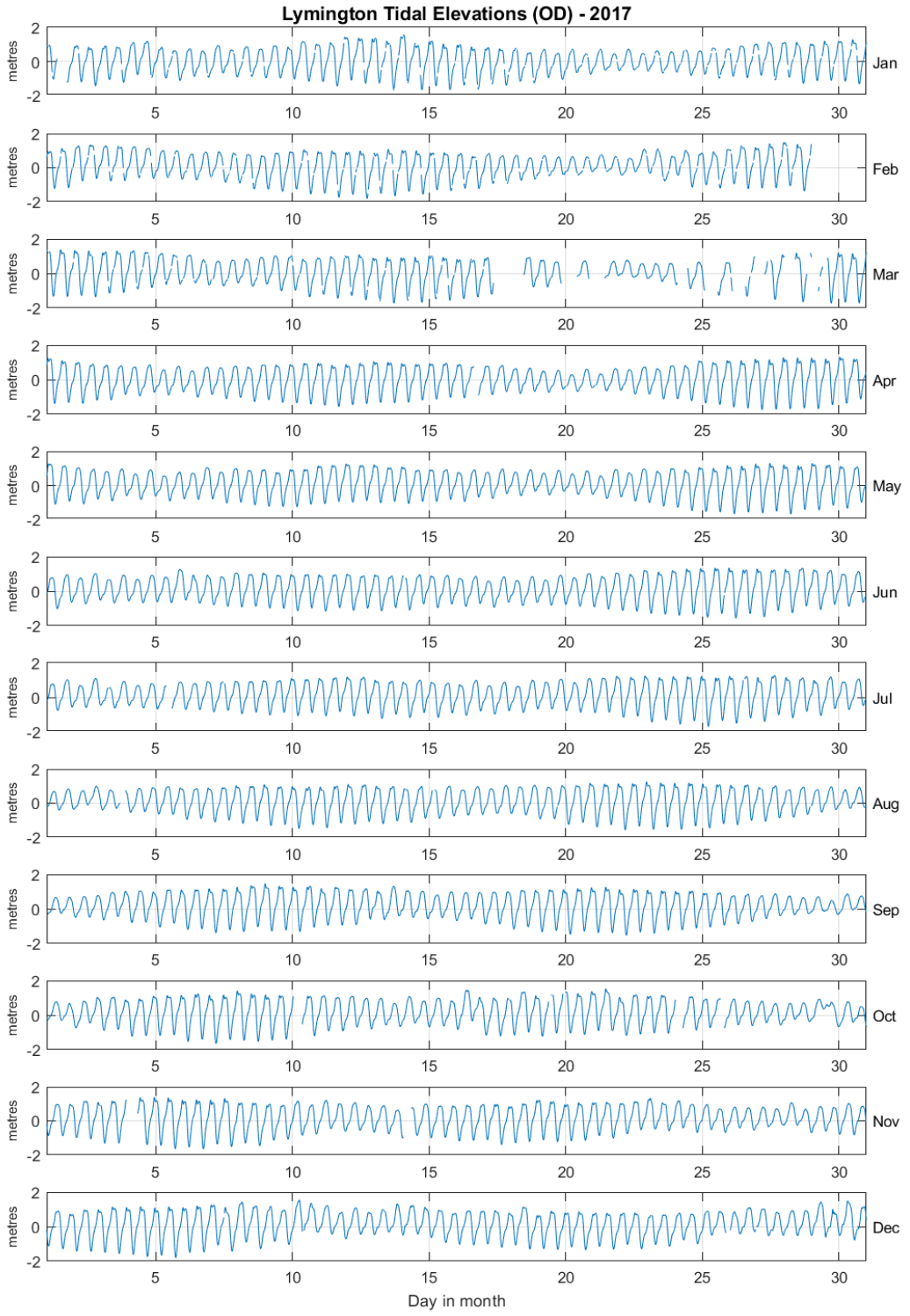


Figure 2: Lymington tidal elevations for 2017 relative to Ordnance Datum

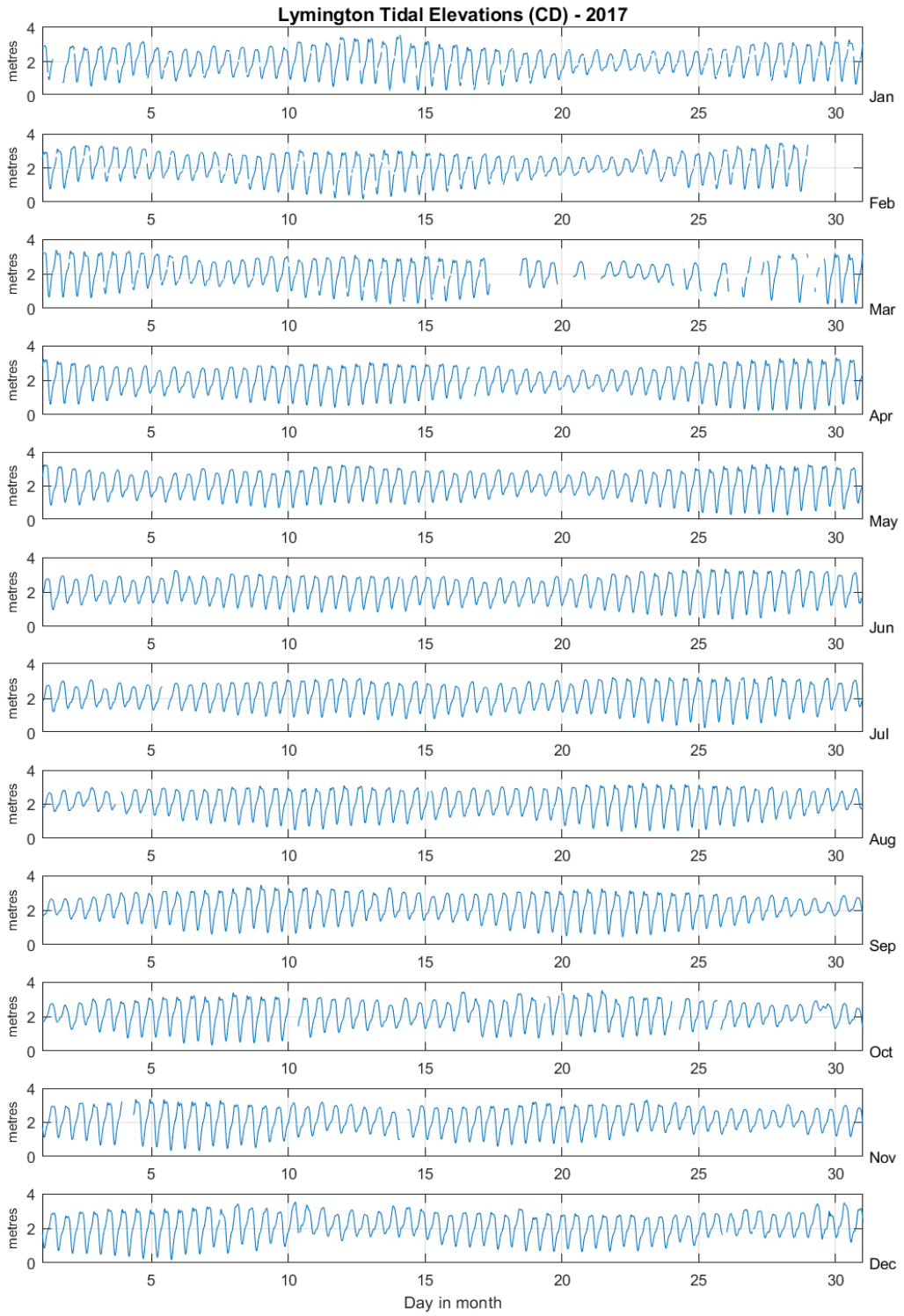


Figure 3: Lymington tidal elevations for 2016 relative to Chart Datum