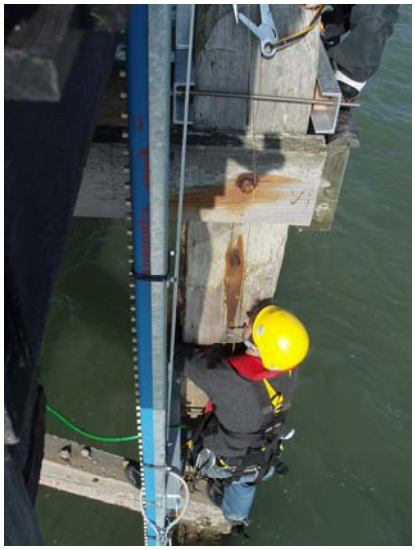
Lymington Tide Gauge

Location
OS: 434874E 93526N
WGS84 *Latitude:* 50° 44' 25.0638'' N *Longitude:* 01° 30' 25.6398'' W

SE leg of Royal Lymington Yacht Club
Starting Platform



Instrument Type
Etrometa Step Gauge

The gauge was installed on 19 April 2007

Benchmarks

Benchmark	*Description*
TGBM = 3.919m above Ordnance Datum Newlyn	Top of step gauge frame

TGZ = -2.22m above Ordnance Datum Newlyn
TGZ = -0.24m above Admiralty Chart Datum
TGZ = 6.136m below TGBM

Datum information
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 last surveyed on 20 December 2007. All data recorded by the step gauge prior to this date were adjusted to the correct level.

Site characteristics
The RLYC Starting Platform is approx. 1.7km offshore, in the Western Solent. Spring tidal range is ~2.4m.

Measurements
Tidal elevations are derived every 10 minutes. The measuring burst is 1 minute at 2.56Hz, every 10 minutes, time stamped at the start of the burst.

Data Quality

C1 (%)	Sample interval	Missing days
89	10 minutes	01-04 Jan, 01-10, 14 Feb, 01-08 Apr, 05-06 Sep, 21-26 Oct

Residuals and Elevations

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 periodicty in the surge which are, in reality, an artefact of the predictions.

Statistics

All times GMT

Month	Surge maxima		Surge minima	
	Value (m)	Date/Time	Value (m)	Date/Time
January	0.70	23-Jan-2009 03:10	-0.41	06-Jan-2009 02:20
February	0.24	12-Feb-2009 09:20	-0.37	20-Feb-2009 17:50
March	0.65	03-Mar-2009 20:50	-0.46	18-Mar-2009 08:00
April	0.32	09-Apr-2009 19:30	-0.32	22-Apr-2009 01:10
May	0.37	17-May-2009 11:40	-0.40	12-May-2009 06:00
June	0.28	26-Jun-2009 10:10	-0.25	01-Jun-2009 06:30
July	0.28	15-Jul-2009 02:40	-0.25	26-Jul-2009 15:40
August	0.26	20-Aug-2009 15:40	-0.27	14-Aug-2009 12:40
September	0.32	02-Sep-2009 18:20	-0.44	10-Sep-2009 09:50
October	0.40	04-Oct-2009 07:20	-0.26	16-Oct-2009 07:30
November	0.85	14-Nov-2009 13:00	-0.36	14-Nov-2009 22:40
December	0.69	06-Dec-2009 05:40	-0.49	18-Dec-2009 17:10

Month	Extreme maxima		Extreme minima	
	Elevation (OD)	Date/Time	Elevation (OD)	Date/Time
January	1.55	19-Jan-2009 06:30	-1.66	13-Jan-2009 17:50
February	1.27	12-Feb-2009 00:00	-1.77	11-Feb-2009 17:10
March	1.26	27-Mar-2009 10:50	-1.74	11-Mar-2009 16:50
April	1.27	09-Apr-2009 22:40	-1.39	12-Apr-2009 05:40
May	1.16	26-May-2009 23:50	-1.55	27-May-2009 06:00
June	1.22	26-Jun-2009 00:30	-1.68	25-Jun-2009 05:50
July	1.31	23-Jul-2009 11:20	-1.72	25-Jul-2009 06:20
August	1.35	20-Aug-2009 10:10	-1.77	22-Aug-2009 05:10
September	1.27	20-Sep-2009 11:20	-1.77	21-Sep-2009 05:30
October	1.41	20-Oct-2009 11:30	-1.62	18-Oct-2009 03:40
November	1.68	14-Nov-2009 08:20	-1.21	08-Nov-2009 20:10
December	1.53	06-Dec-2009 02:40	-1.57	18-Dec-2009 17:30

Month	Mean Level	
	No. of days	Elevation (OD)
January	27	0.158
February	17	0.014
March	31	0.044
April	22	0.080
May	31	0.046
June	30	0.109
July	31	0.160
August	31	0.119
September	28	0.067
October	25	0.139
November	30	0.328
December	31	0.249

Highest values in 2009			
Surge		Extreme	
Value (m)	Date/Time	Elevation (OD) (surge component)	Date/Time
0.85	14-Nov-2009 13:00	1.68 (0.67)	14-Nov-2009 08:20
0.81	14-Nov-2009 00:40	1.57 (0.69)	13-Nov-2009 20:50
0.74	29-Nov-2009 02:50	1.55 (0.68)	19-Jan-2009 06:30
0.70	23-Jan-2009 03:10	1.54 (0.48)	04-Nov-2009 11:00
0.70	19-Jan-2009 06:50	1.53 (0.63)	29-Nov-2009 08:20
0.69	06-Dec-2009 05:40	1.53 (0.48)	06-Dec-2009 02:40
0.69	29-Nov-2009 02:20	1.51 (0.60)	07-Dec-2009 14:10
0.65	03-Mar-2009 20:50	1.49 (0.38)	16-Nov-2009 10:00
0.62	29-Nov-2009 15:20	1.46 (0.41)	03-Nov-2009 10:40
0.60	07-Dec-2009 14:10	1.44 (0.69)	23-Jan-2009 08:40

Year	Annual surge maxima		Annual extreme maxima		Z_0 (OD)	Annual recovery rate (C1)
	Value (m)	Date	Elevation (OD) (surge component)	Date		
2008	1.14	10-Mar-2008 06:20	2.01 (0.91)	10-Mar-2008 12:10	-	95%
2009	0.85	14-Nov-2009 13:00	1.68 (0.67)	14-Nov-2009 08:20	-	89%

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 average values should not be used for any purpose without consideration of the recovery rate.

Acknowledgements

Tidal predictions were produced by EMU Limited. The step gauge is installed on their Starting Platform by kind permission of the Royal Lymington Yacht Club

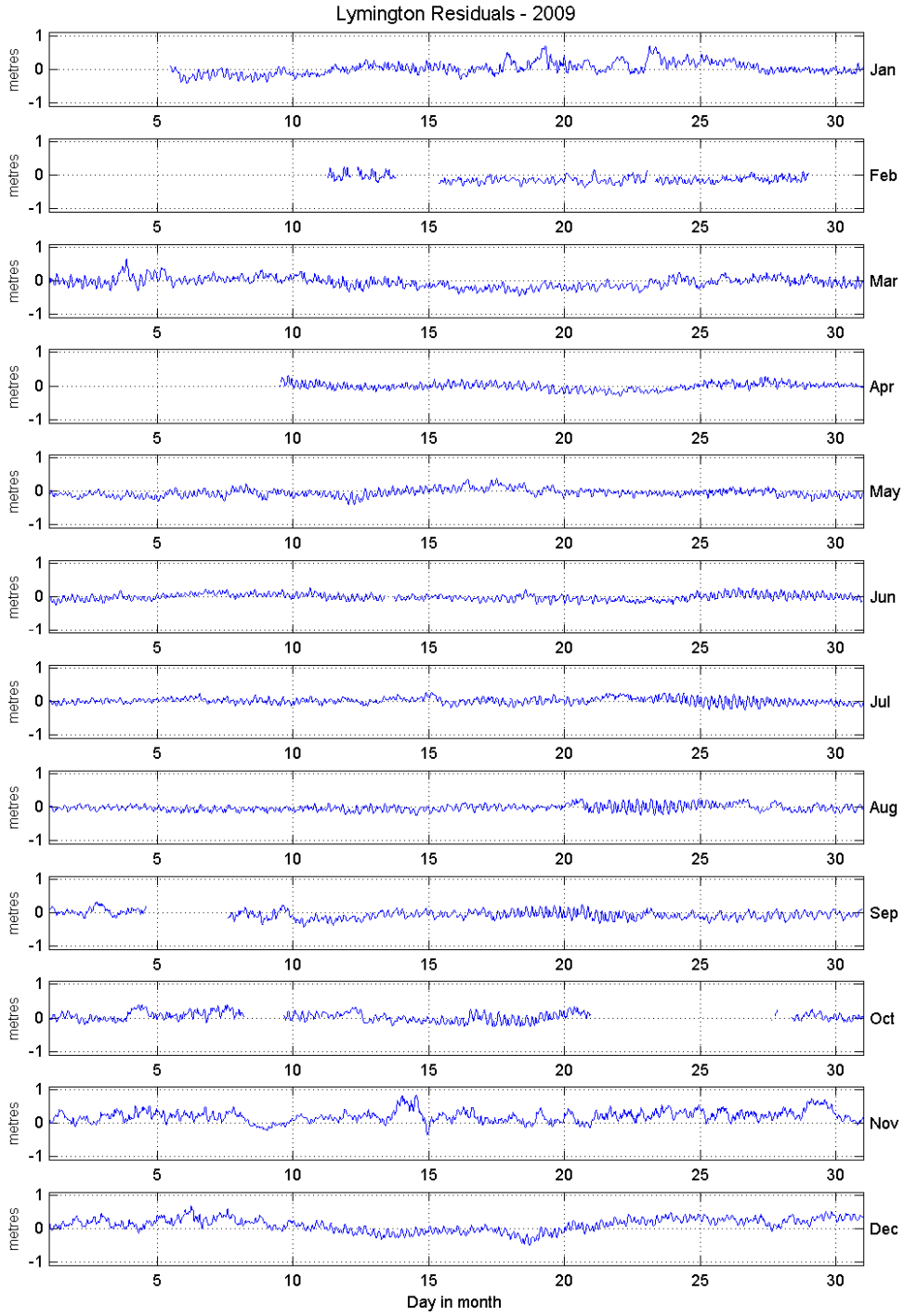


Figure 1 Residuals for 2009

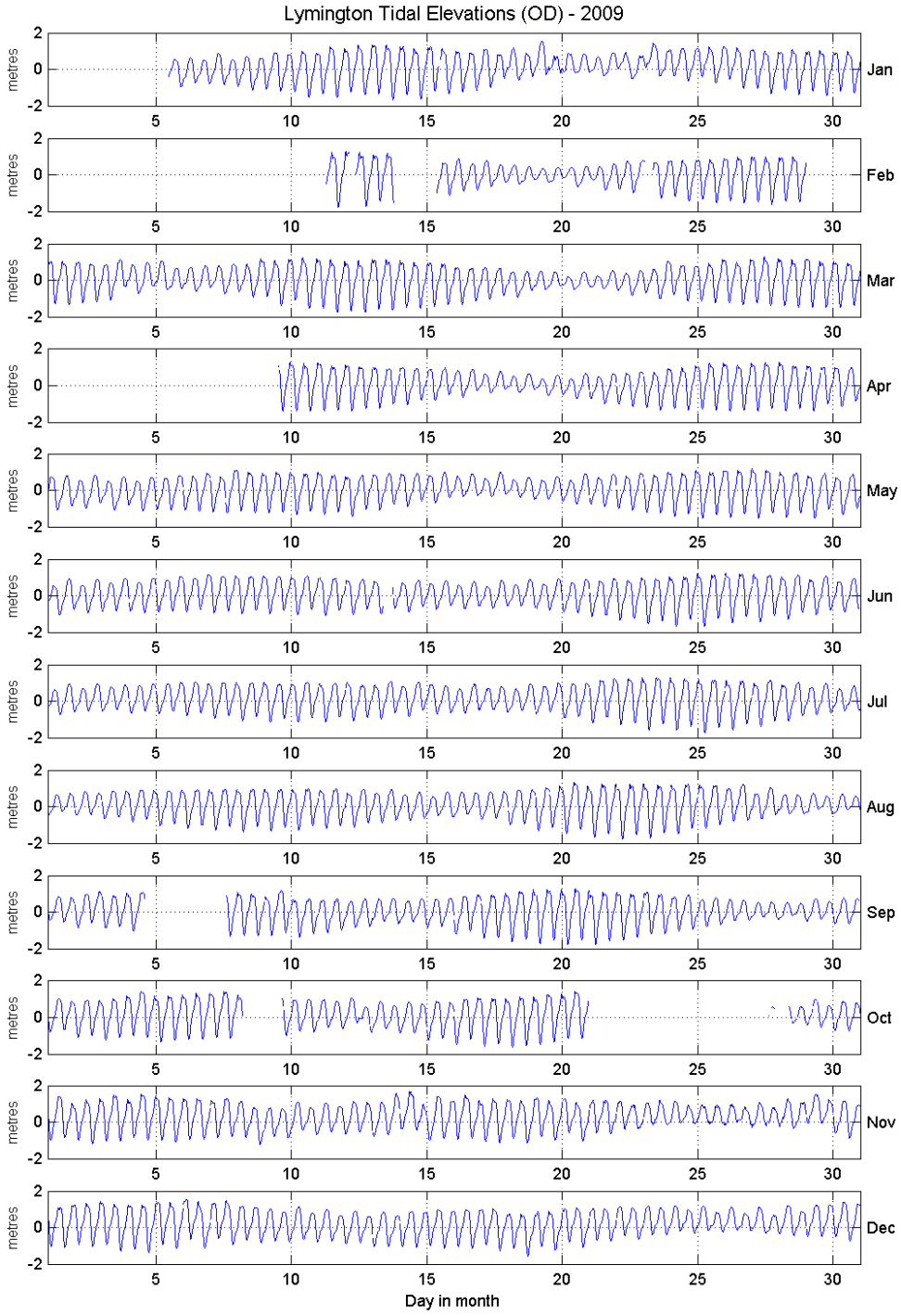


Figure 2 Tidal elevations relative to Ordnance Datum for 2009

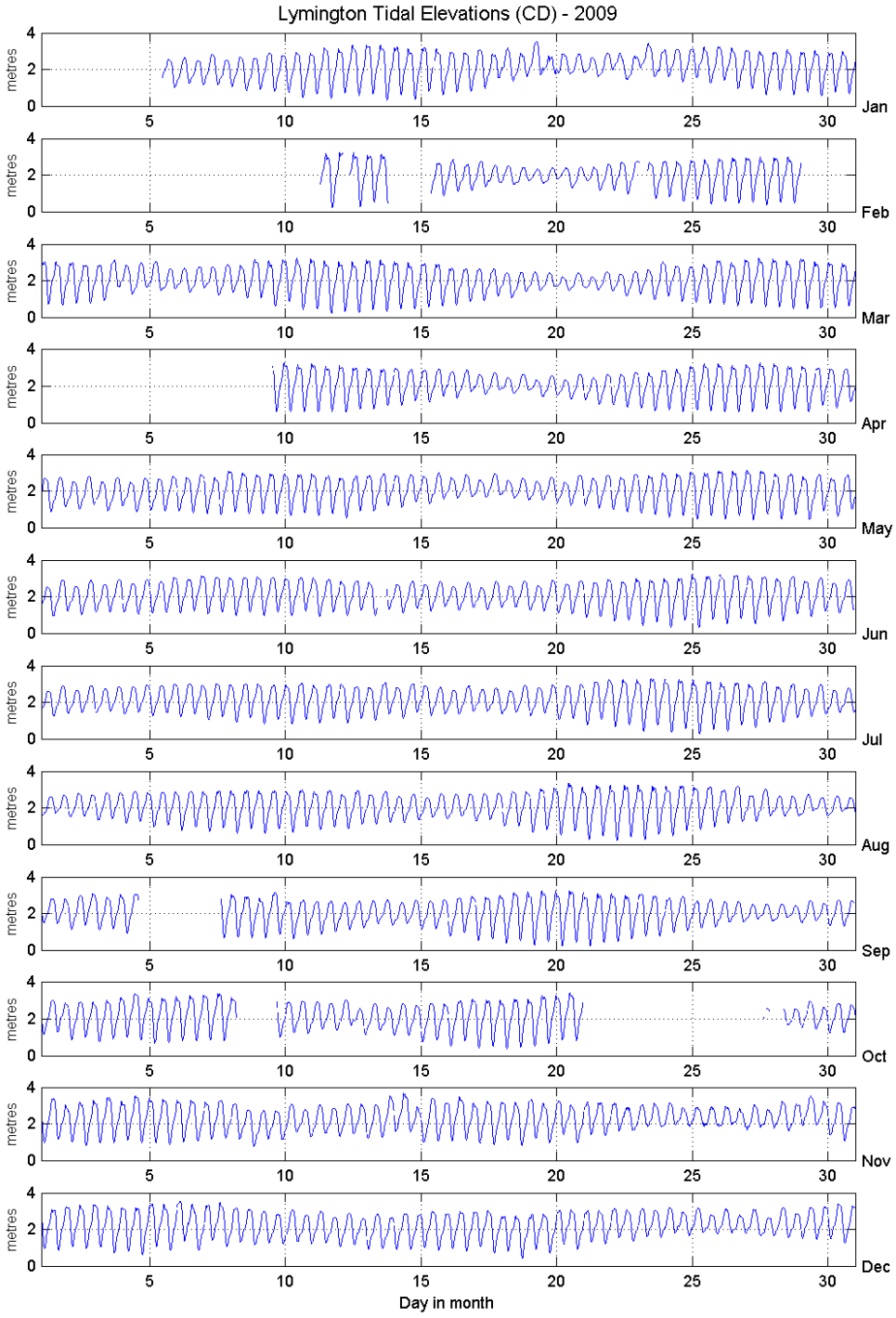


Figure 3 Tidal elevations relative to Chart Datum for 2009