

## Herne Bay Tide Gauge

### Location

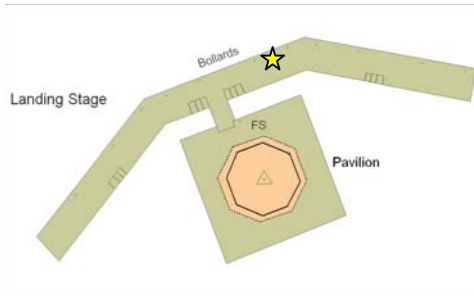
OS: 616895E 169377N

WGS84 Latitude: 51° 22.919196' N Longitude: 01° 6.9335907' E

NE front of Herne Bay Pier (the pier head is now detached from the shore)

### Instrument Type

Etrometa Step Gauge



### Benchmarks

TGBM = 5.524 OD                      616894.912E 169376.689N                      Steel pin

TGZ = -3.510m above Ordnance Datum Newlyn

TGZ = -0.790m above Admiralty Chart Datum

TGZ = 9.034m below TGBM

### Datum information

All data are to Ordnance Datum Newlyn. The height of Chart Datum relative to Ordnance Datum at Herne Bay is -2.72m (Admiralty Tide Tables, Supplementary Table III).

### Survey information

The site was last surveyed on 26 November 2004. All data prior to this date were re-adjusted to the new level.

### Site characteristics

The old pier head is now detached from the shore. Some wave reflection from the dolphin legs can occur. The frontage is along the outer Thames estuary. Spring tidal range is 4.9m.

### Measurements

Prior to 01 May 2008, the step gauge measuring burst was 10 minutes at 2.56Hz, every 10 minutes, with the time stamp for the 10 minute average at the centre of the burst. From 00:00Z 01 May 2008, 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 data
98	10 minutes	None

Residuals and Elevations

Residuals and Elevations (OD and CD) for the whole year are shown in Figures 1 to 3 respectively.

Statistics

All times GMT

Month	Surge maxima		Surge minima	
	Value (m)	Date/Time	Value (m)	Date/Time
January	0.95	23-Jan-2009 08:20	-1.03	22-Jan-2009 11:00
February	0.77	10-Feb-2009 11:00	-0.61	01-Feb-2009 01:10
March	1.96	31-Mar-2009 09:10	-0.89	04-Mar-2009 01:00
April	0.25	18-Apr-2009 19:00	-0.46	21-Apr-2009 07:00
May	0.49	11-May-2009 21:30	-0.49	18-May-2009 14:50
June	0.32	18-Jun-2009 07:20	-0.45	17-Jun-2009 13:20
July	0.59	10-Jul-2009 09:50	-0.46	19-Jul-2009 17:00
August	0.56	29-Aug-2009 02:20	-0.46	31-Aug-2009 04:40
September	1.15	09-Sep-2009 10:30	-0.50	08-Sep-2009 21:50
October	1.12	04-Oct-2009 07:50	-0.54	25-Oct-2009 12:30
November	0.81	30-Nov-2009 18:30	-0.93	14-Nov-2009 18:40
December	0.60	17-Dec-2009 14:50	-0.56	02-Dec-2009 08:40

Month	Extreme maxima		Extreme minima	
	Elevation (OD)	Date/Time	Elevation (OD)	Date/Time
January	2.94	13-Jan-2009 13:50	-2.71	12-Jan-2009 07:20
February	2.96	10-Feb-2009 12:40	-2.52	11-Feb-2009 07:40
March	2.79	13-Mar-2009 01:20	-2.70	12-Mar-2009 07:20
April	2.65	28-Apr-2009 01:50	-2.36	10-Apr-2009 06:50
May	2.67	27-May-2009 01:40	-2.40	27-May-2009 20:30
June	2.75	26-Jun-2009 02:40	-2.31	25-Jun-2009 20:30
July	2.81	25-Jul-2009 02:20	-2.53	24-Jul-2009 20:40
August	2.82	22-Aug-2009 01:20	-2.56	23-Aug-2009 20:50
September	2.91	20-Sep-2009 13:00	-2.41	19-Sep-2009 19:00
October	2.99	04-Oct-2009 11:50	-2.36	18-Oct-2009 18:20
November	2.78	04-Nov-2009 12:40	-2.45	14-Nov-2009 17:30
December	2.64	04-Dec-2009 00:50	-2.40	06-Dec-2009 09:30

Month	Mean Level	
	No. of days	Elevation (OD)
January	31	0.043
February	28	0.122
March	31	0.084
April	30	0.059
May	31	0.085
June	30	0.161
July	31	0.152
August	31	0.139
September	30	0.202
October	31	0.183
November	30	0.157
December	31	0.233

Highest Values in 2009			
Surge		Extreme	
Value (m)	Date/Time	Elevation (OD) (surge component)	Date/Time
1.96	31-Mar-2009 09:10	2.99 (0.57)	04-Oct-2009 11:50
1.15	09-Sep-2009 10:30	2.97 (0.53)	07-Oct-2009 13:40
1.12	04-Oct-2009 07:50	2.96 (0.29)	10-Feb-2009 12:40
1.01	16-Oct-2009 18:40	2.94 (0.25)	13-Jan-2009 13:50
0.95	23-Jan-2009 08:20	2.91 (0.14)	20-Sep-2009 13:00
0.92	16-Oct-2009 19:30	2.90 (0.34)	16-Oct-2009 23:00
0.90	12-Oct-2009 02:00	2.89 (0.51)	09-Sep-2009 14:40
0.89	19-Jan-2009 01:00	2.83 (0.38)	04-Oct-2009 00:10
-	-	2.82 (0.01)	22-Aug-2009 01:20
-	-	2.81 (0.03)	25-Jul-2009 02:20

Year	Annual surge maxima		Annual extreme maxima		Z <sub>0</sub> (OD)	Annual Recovery rate (C1)
	Value (m)	Date	Elevation (OD) (surge component)	Date		
1996	1.29	12-Sep-1996 20:30	3.11 (0.54)	13-Nov-1996 00:50	-	60%
1997	1.23	18-Feb-1997 17:40	3.16 (0.66)	11-Apr-1997 15:00	-	88%
1998	1.39	11-Mar-1998 18:40	3.35 (0.52)	08-Oct-1998 13:40	-	90%
1999	1.87	05-Feb-1999 11:00	3.15 (0.55)	27-Nov-1999 14:50	-	76%
2000	1.78	30-Jan-2000 03:40	3.20 (0.51)	22-Jan-2000 12:50	-	84%
2001	1.71	08-Nov-2001 14:30	3.28 (0.65)	08-Feb-2001 12:00	-	91%
2002	1.68	27-Oct-2002 22:10	3.14 (0.39)	07-Nov-2002 01:10	-	99%
2003	1.61	30-Jan-2003 18:00	3.09 (0.61)	08-Oct-2003 23:30	-	100%
2004	1.81	08-Feb-2004 21:10	3.35 (0.77)	13-Nov-2004 00:20	-	96%
2005	1.78	25-Nov-2005 01:10	3.35 (1.19)	16-Dec-2005 12:40	0.148	84%
2006	1.95	31-Oct-2006 22:20	3.18 (0.40)	07-Oct-2006 11:40	0.141	87%
2007	2.52	09-Nov-2007 06:50	3.35 (0.76)	25-Nov-2007 11:50	0.168	97%
2008	1.43	21-Nov-2008 12:30	3.14 (0.70)	21-Mar-2008 11:50	-	70%
2009	1.96	31-Mar-2009 09:10	2.99 (0.57)	04-Oct-2009 11:50	0.140	98%

### 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.

Tidal predictions were produced using TASK2000. The monthly Mean Level is calculated as the average of all readings for the given month. The annual Z<sub>0</sub> 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.

The TGBM was surveyed on 26 November 2004 and the resulting elevation of the TGZ was found to be -3.510 OD, which is 0.050m lower than the TGZ which has been used since 1996. All tidal data from 1996 to 2005 inclusive were re-adjusted by -0.050m, to conform to the new TGZ.

**Acknowledgements**

Tidal predictions were produced using the TASK2000 software, kindly provided by the Permanent Service for Mean Sea Level (PSMSL), Proudman Oceanographic Laboratory.

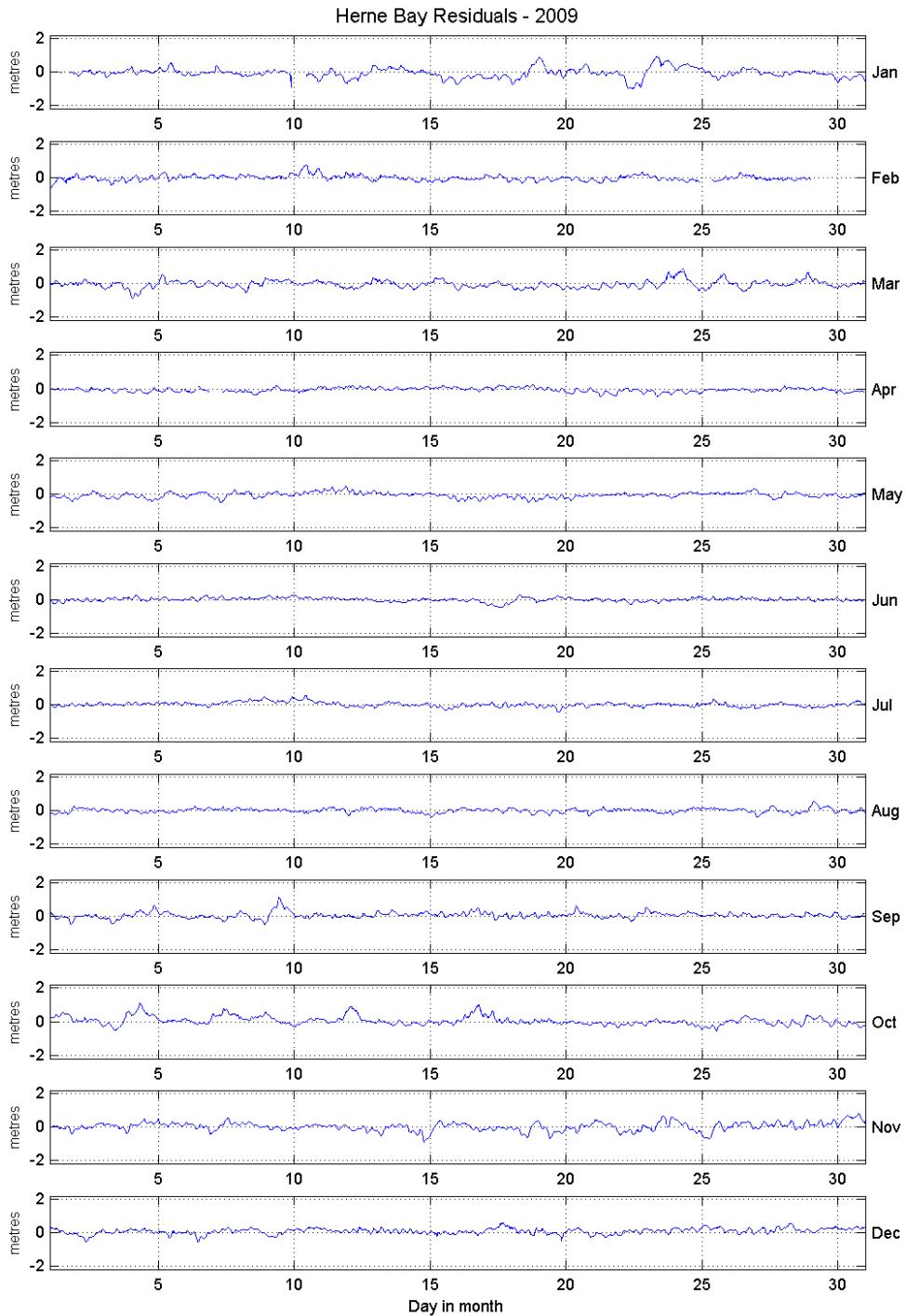


Figure 1 Residuals for 2009

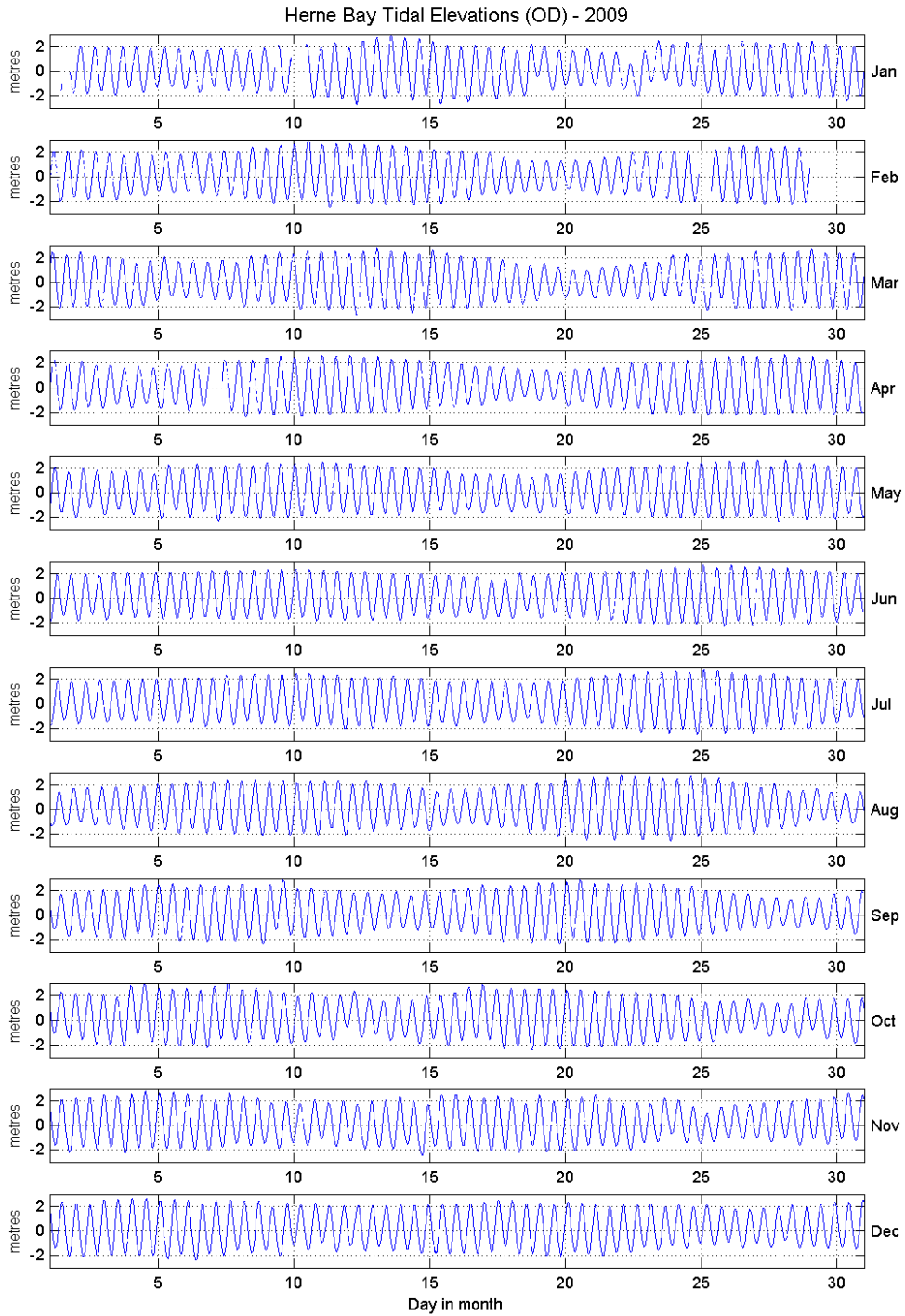


Figure 2 Tidal elevations relative to Ordnance Datum for 2009

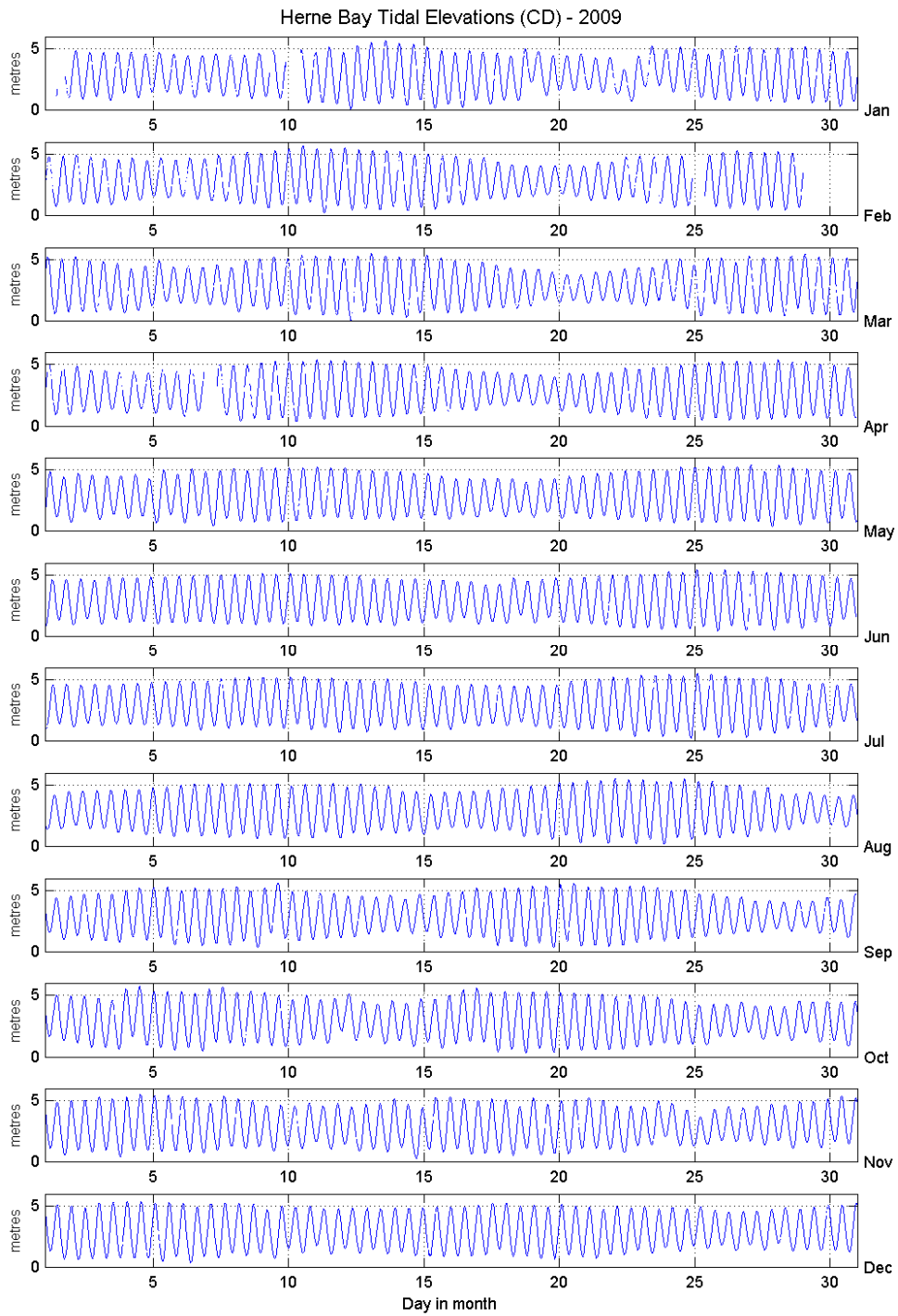


Figure 3 Tidal elevations relative to Chart Datum for 2009