

Severn Bridge Tide Gauge

Location

OS: 351580E 185927N

WGS84: *Latitude: 51° 34.207' N Longitude: 02° 42.001' W*

Mid-span of Second Severn Crossing

Instrument Type

Rosemount WaveRadar REX

Security considerations mean that no photographs of the tide gauge installation on the Severn Bridge may be made public.

Benchmarks

TGBM = 50.459 above Ordnance Datum Newlyn

TGZ = 47.984m above Ordnance Datum Newlyn

TGZ = 54.484 above Chart Datum

TGZ = 2.475 below TGBM

Datum

All data are to Ordnance Datum Newlyn. The height of Chart Datum relative to Ordnance Datum at Avonmouth and Sudbury is -6.50m (Admiralty Tide Tables, Supplementary Table III).

Survey information

The site was surveyed on 29 May 2008, using a 25 hour occupation to account for tidal loading.

Site characteristics

The Bristol Channel/Severn estuary experiences large tides and strong tidal currents mid-stream. Spring tidal range is approx. 12m.

Data Quality

Recovery rate (%)	Sample interval
59	10 minutes

Service history

The REX became operational on 01 August 2011. It was last serviced in November 2011. No re-calibration of the instrument is required.

Measurements

Elevations (OD and CD) are shown in Figures 1 to 2 respectively. No residuals will be derived until the gauge has been deployed for a year.

Statistics*All times GMT*

Month	Extreme maxima		Extreme minima	
	Elevation (OD)	Date/Time	Elevation (OD)	Date/Time
January	-	-	-	-
February	-	-	-	-
March	-	-	-	-
April	-	-	-	-
May	-	-	-	-
June	-	-	-	-
July	-	-	-	-
August	7.77	31-Aug-2011 21:00	-6.28	31-Aug-2011 03:50
September	7.89	29-Sep-2011 20:40	-6.39	29-Sep-2011 03:30
October	7.74	27-Oct-2011 07:10	-6.10	28-Oct-2011 15:20
November	7.44	26-Nov-2011 07:40	-5.88	27-Nov-2011 15:50
December	7.05	26-Dec-2011 08:10	-5.78	26-Dec-2011 15:30

Month	Surge maxima		Surge minima	
	Value (m)	Date/Time	Value (m)	Date/Time
January	-	-	-	-
February	-	-	-	-
March	-	-	-	-
April	-	-	-	-
May	-	-	-	-
June	-	-	-	-
July	-	-	-	-
August	-	-	-	-
September	-	-	-	-
October	-	-	-	-
November	-	-	-	-
December	-	-	-	-

Month	Mean Level	
	No. of days	Elevation (OD)
January	-	-
February	-	-
March	-	-
April	-	-
May	-	-
June	-	-
July	-	-
August	31	0.377
September	30	0.405
October	31	0.430
November	30	0.407
December	30	0.453

Highest values in 2011			
Extreme		Surge	
Elevation (OD) (Surge component)	Date/Time	Value (m)	Date/Time
7.89 (-)	29-Sep-2011 20:40	-	-
7.80 (-)	29-Sep-2011 08:20	-	-
7.77 (-)	31-Aug-2011 21:00	-	-
7.74 (-)	27-Oct-2011 07:10	-	-
7.73 (-)	27-Oct-2011 19:30	-	-
7.71 (-)	30-Aug-2011 20:20	-	-
7.67 (-)	30-Sep-2011 09:00	-	-
7.63 (-)	28-Oct-2011 08:00	-	-
7.58 (-)	28-Oct-2011 20:20	-	-
7.56 (-)	28-Sep-2011 07:40	-	-

Year	Annual extreme maxima		Annual surge maxima		Z ₀ (OD)	Annual recovery rate
	Elevation (OD) (Surge)	Date/Time	Value (m)	Date/Time		
2011	7.89 (-)	29-Sep-2011 20:40	-	-	-	59%

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.

Acknowledgement

The WaveRadar REX is installed on the Severn Bridge by kind permission of Second Severn Crossing Partnership.

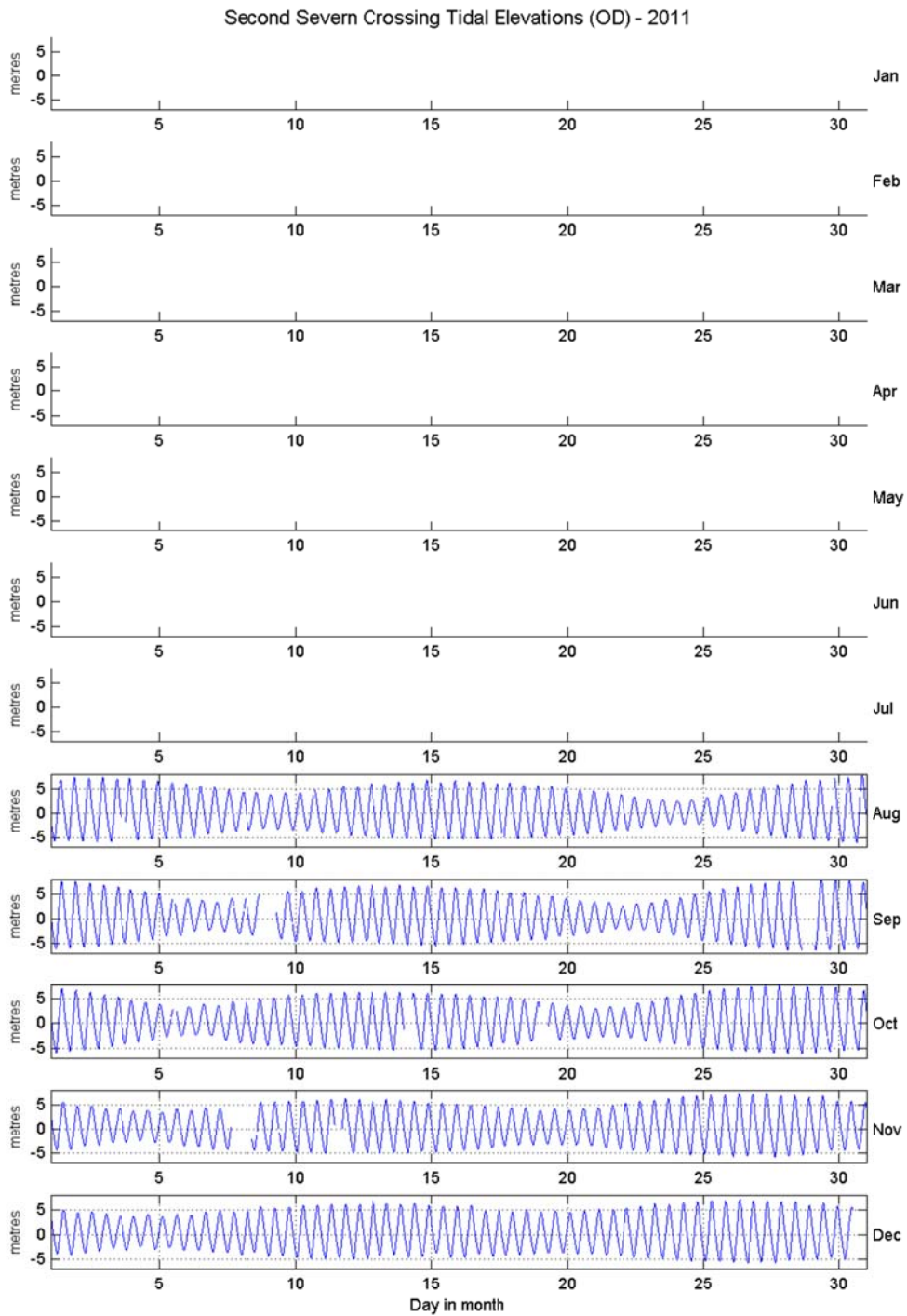


Figure 1: Severn Bridge tidal elevations for 2011 relative to Ordnance Datum

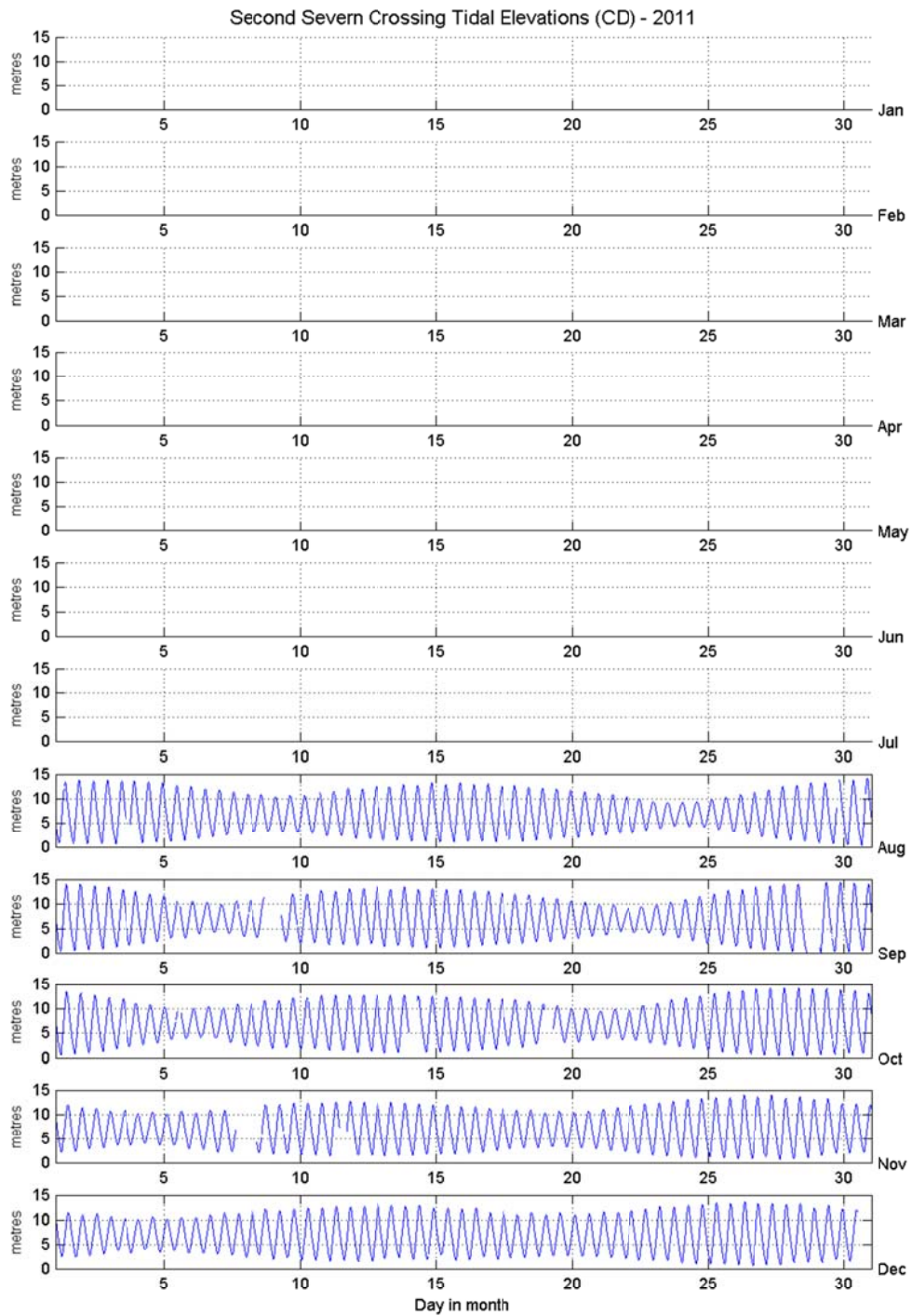


Figure 2: Severn Bridge tidal elevations for 2011 relative to Chart Datum