

Sample Moored Ship Motion Measurements at Port of Esperance



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1. Test case

Capesize ship “Fortune Violet” loading iron ore at Esperance Berth 3, 7th-8th June 2024.

Four JAVAD Triumph-2 dual-frequency GNSS receivers (RMS error 10-15 mm) measuring at 1 Hz and positioned as follows:

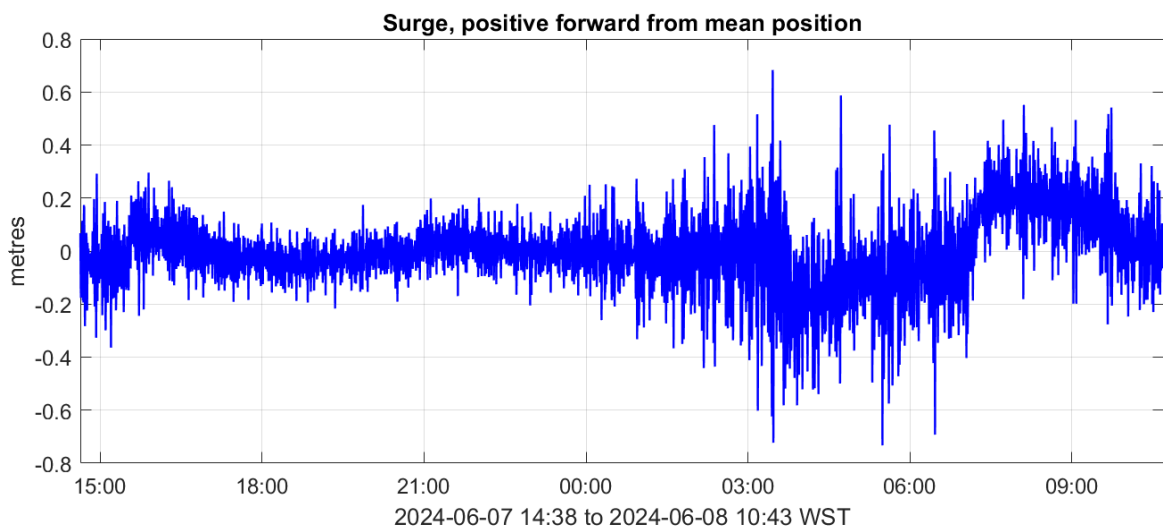
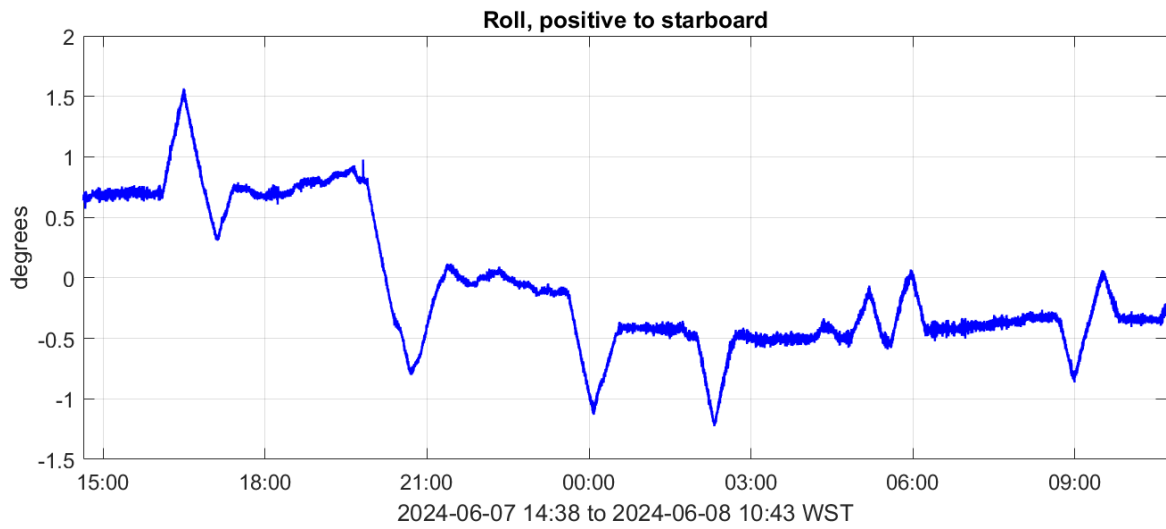
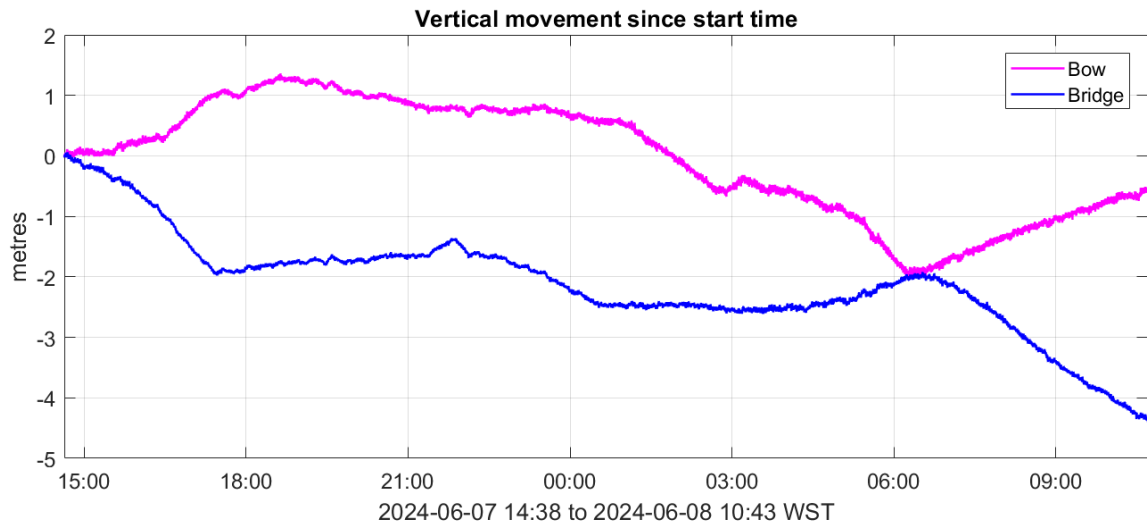
- Berth 3 jetty (fixed base station)
- Port bridge wing (roving receiver)
- Starboard bridge wing (roving receiver)
- Bow extremity (roving receiver)

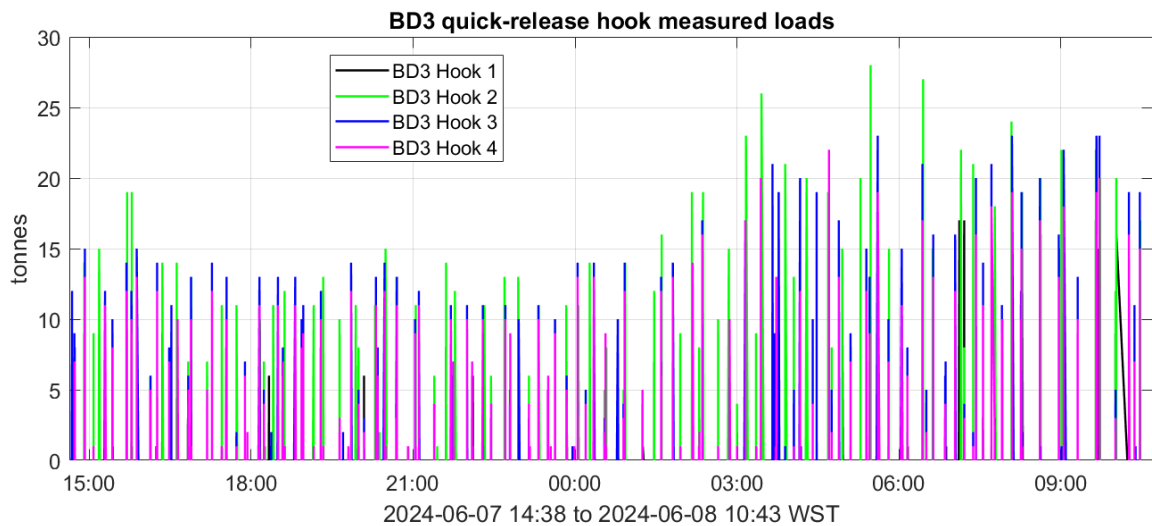
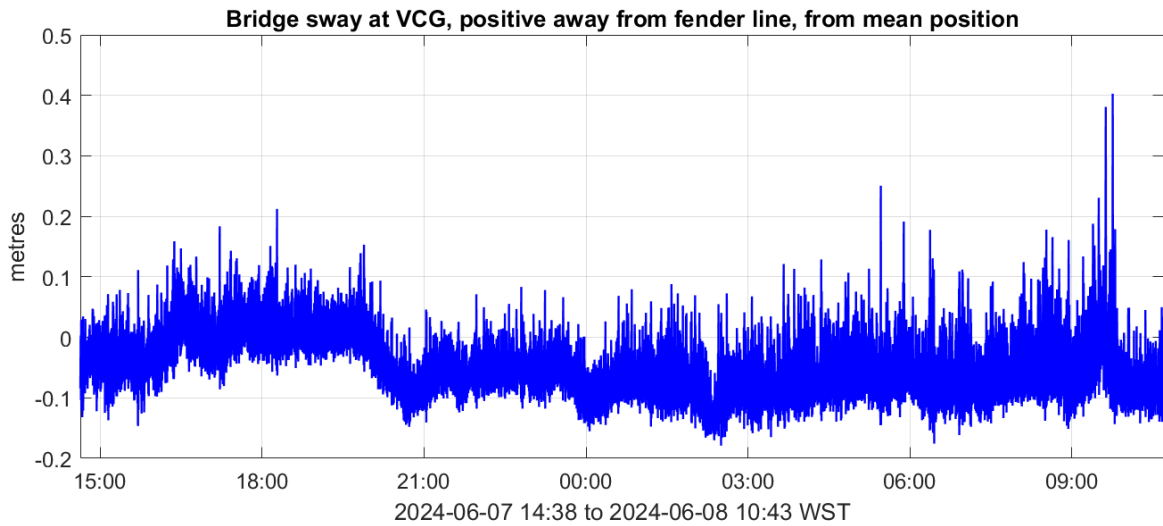
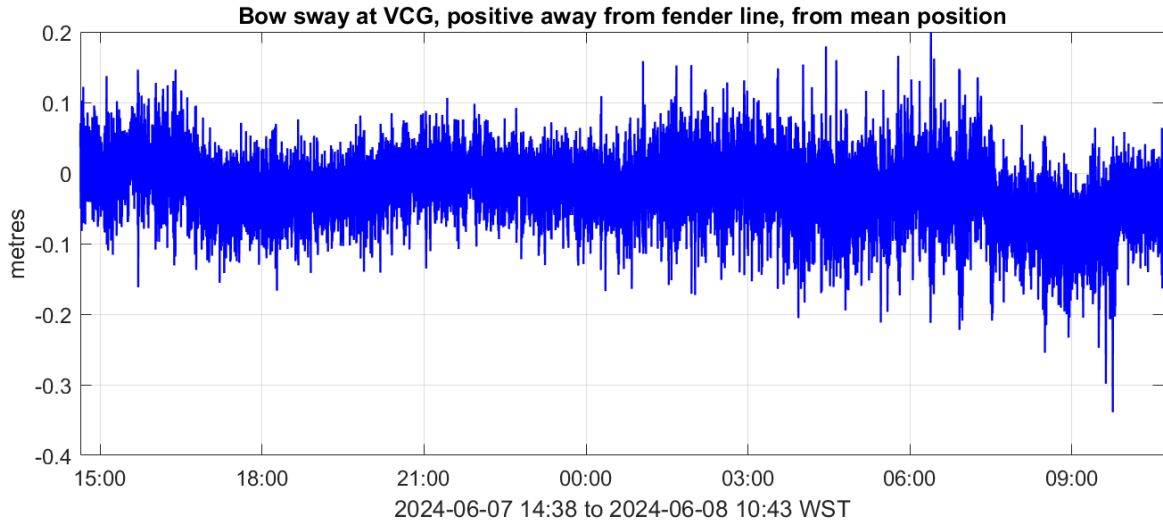
Measured load data from BD3 quick release hooks was supplied by Southern Ports Authority. This data is output as a single data point every few minutes. It may be possible to extract higher-resolution data from these load cells in future.



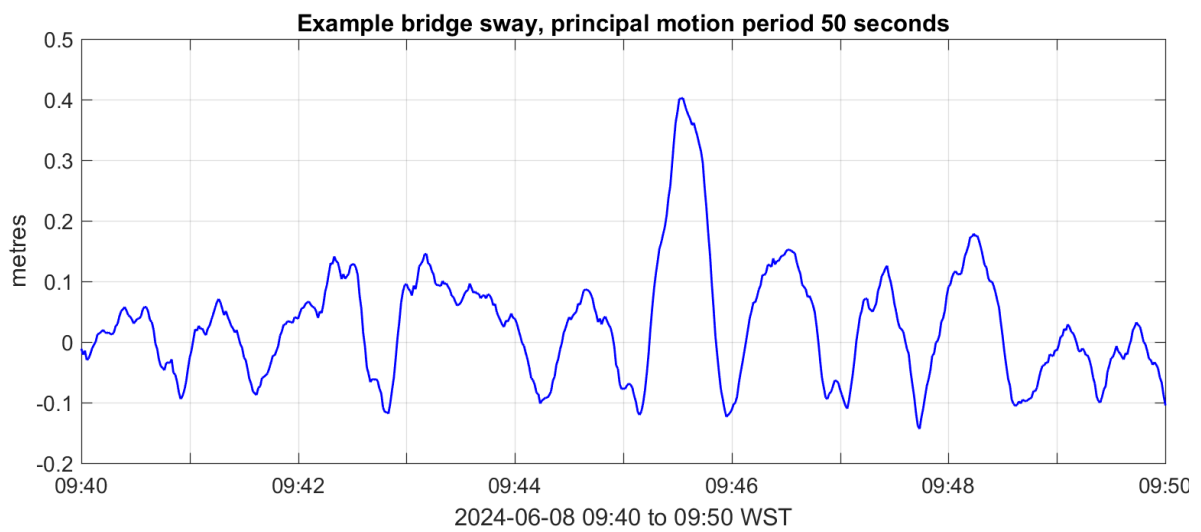
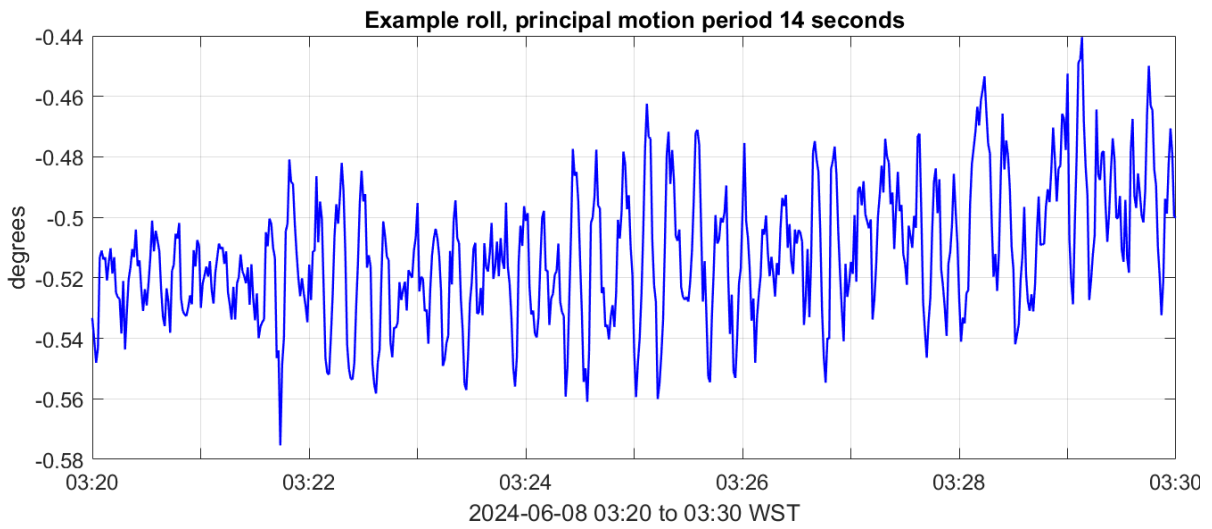
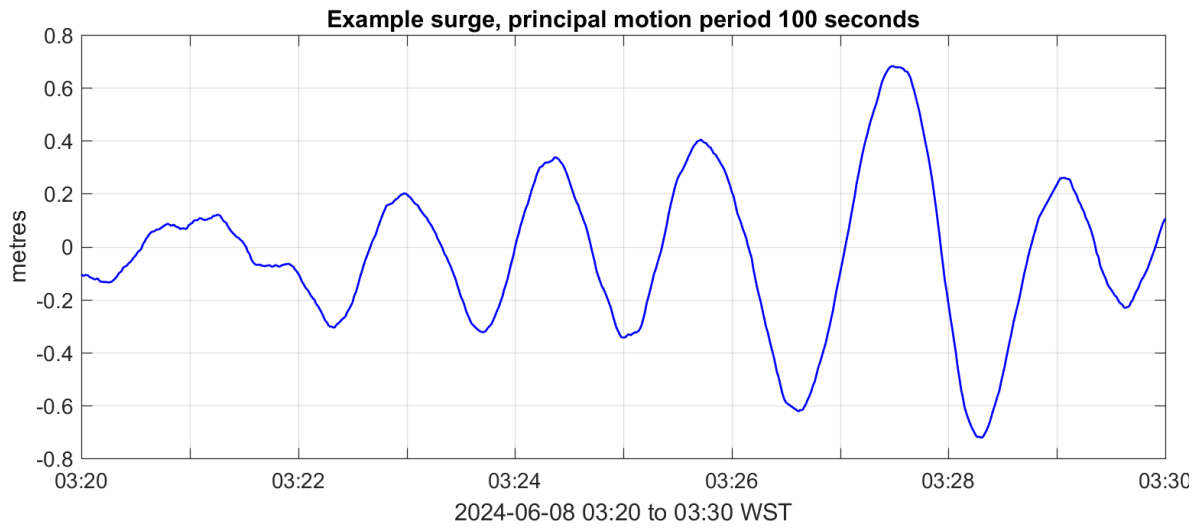
Figure 1: (Top) Fixed base station on Berth 3 jetty; (Bottom) Roving receiver on port bridge wing.

2. GNSS results – whole timeseries



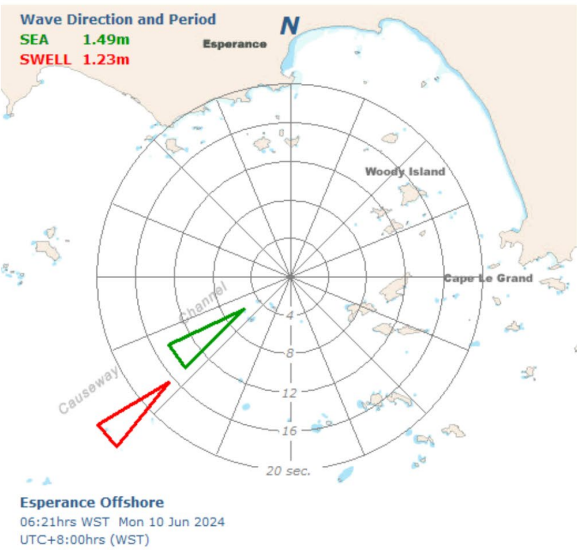


3. Ten-minute snapshots

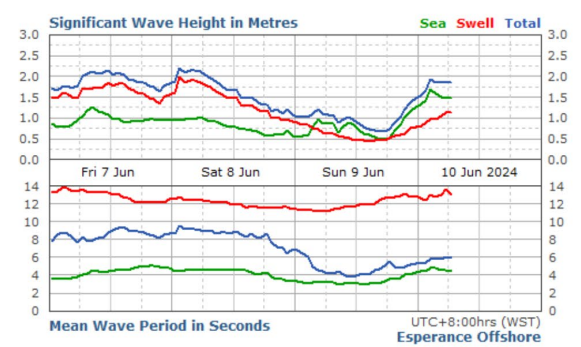


4. Measured waves

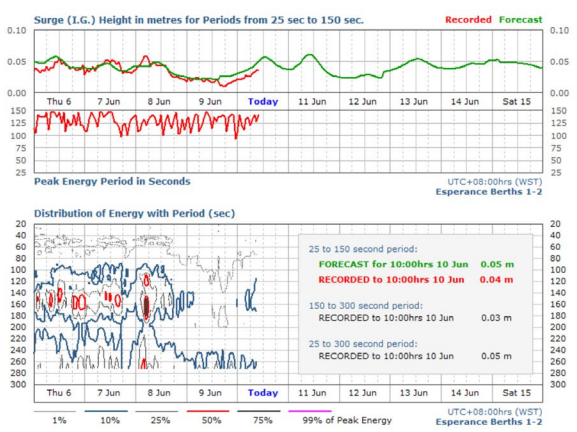
WAVE DIRECTION AND PERIOD



SIGNIFICANT WAVE HEIGHT & METRES



INFRAGAVITY WAVE HEIGHT



SWELL HEIGHT

