

Supplementary Information

Wave setup at Tristan da Cunha

PL Woodworth

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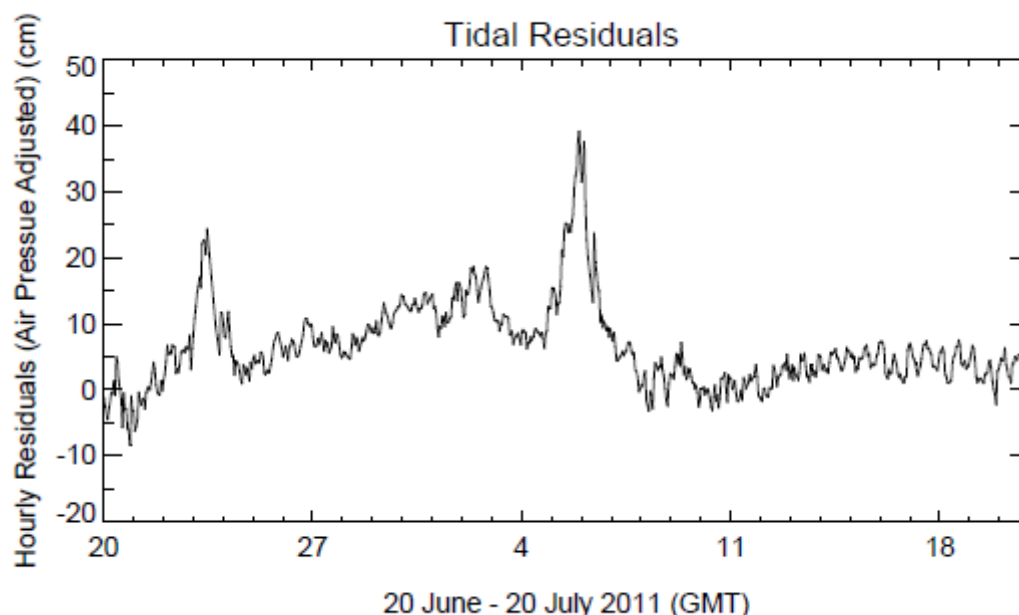


Figure S1(a)

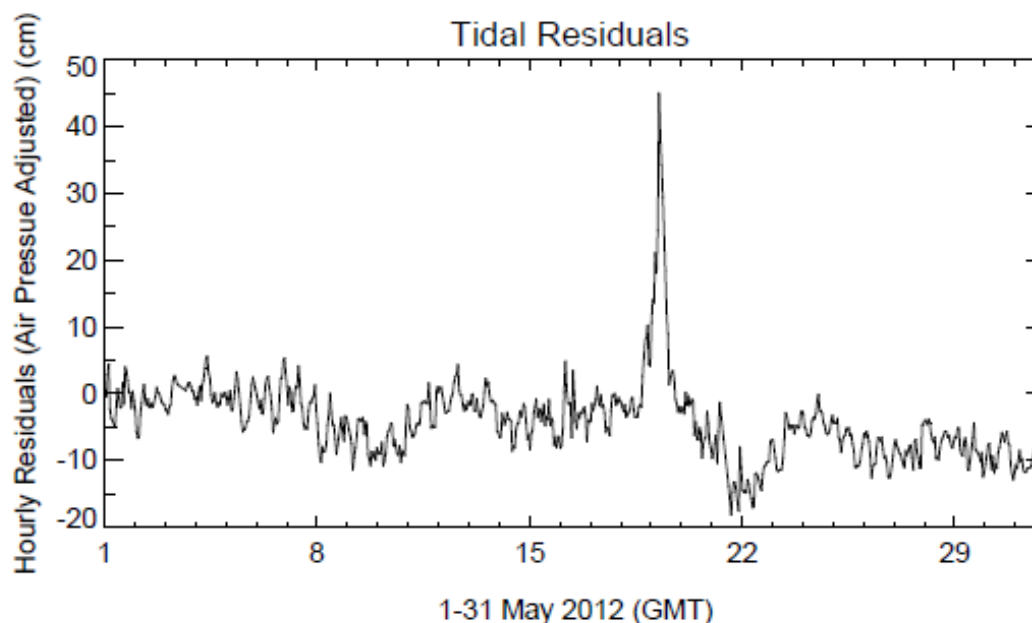


Figure S1(b)

Figure S1: (a) Hourly tidal residuals of sea level at Tristan da Cunha in the South Atlantic, measured by the OTT radar level sensor, adjusted using air-pressures values from a reanalysis project by the United States National Centers for Environmental Prediction (NCEP)–National Center for Atmospheric Research (NCAR) (as described in the main text), for June–July 2011, and (b) the tidal residuals for May 2012. The tidal residuals are the adjusted sea levels themselves minus their tidal component derived from a tidal analysis of the whole radar-derived time-series for 2011–2013

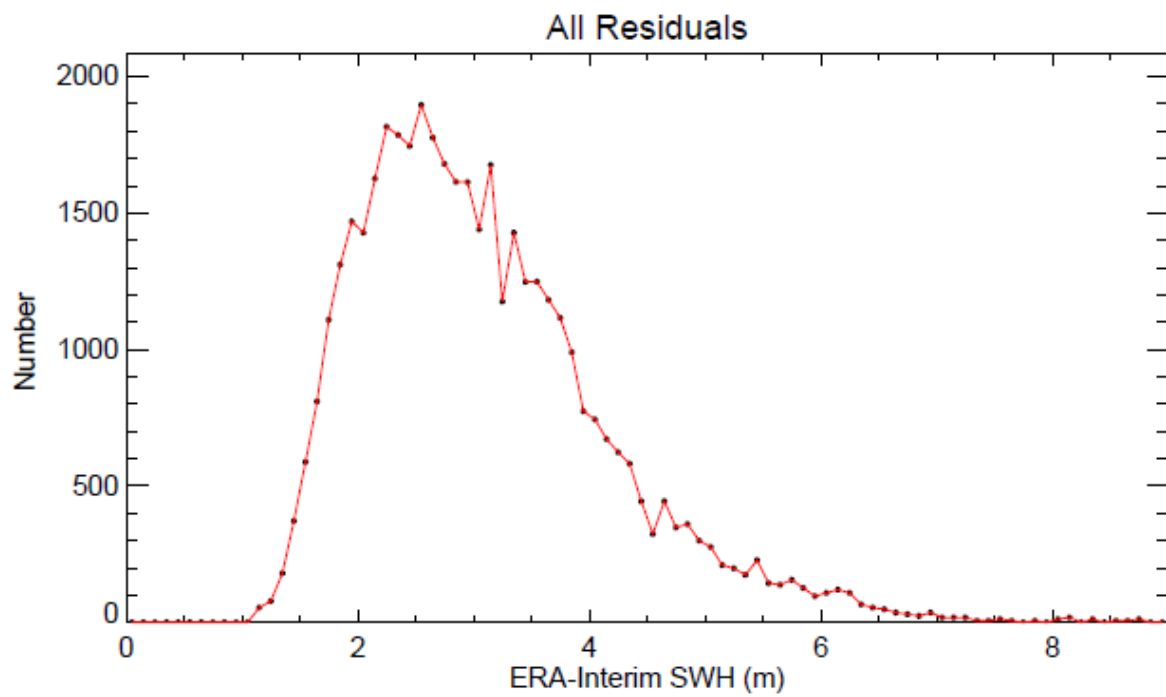


Figure S2(a)

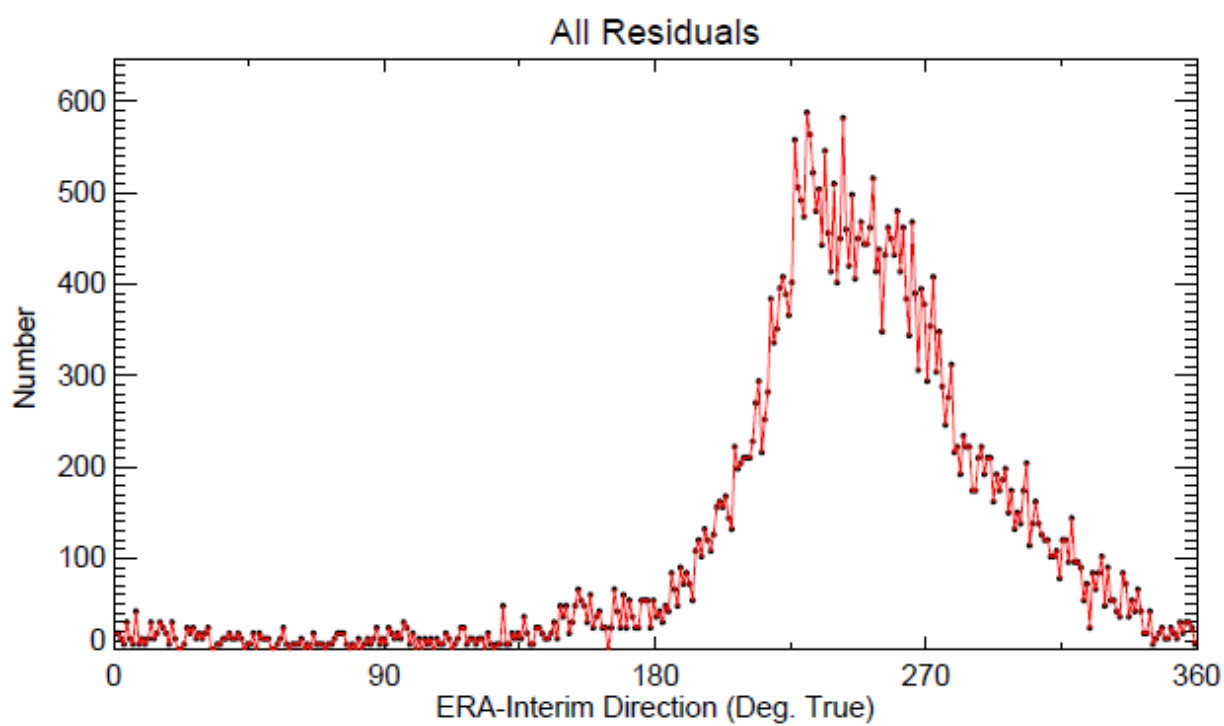


Figure S2(b)

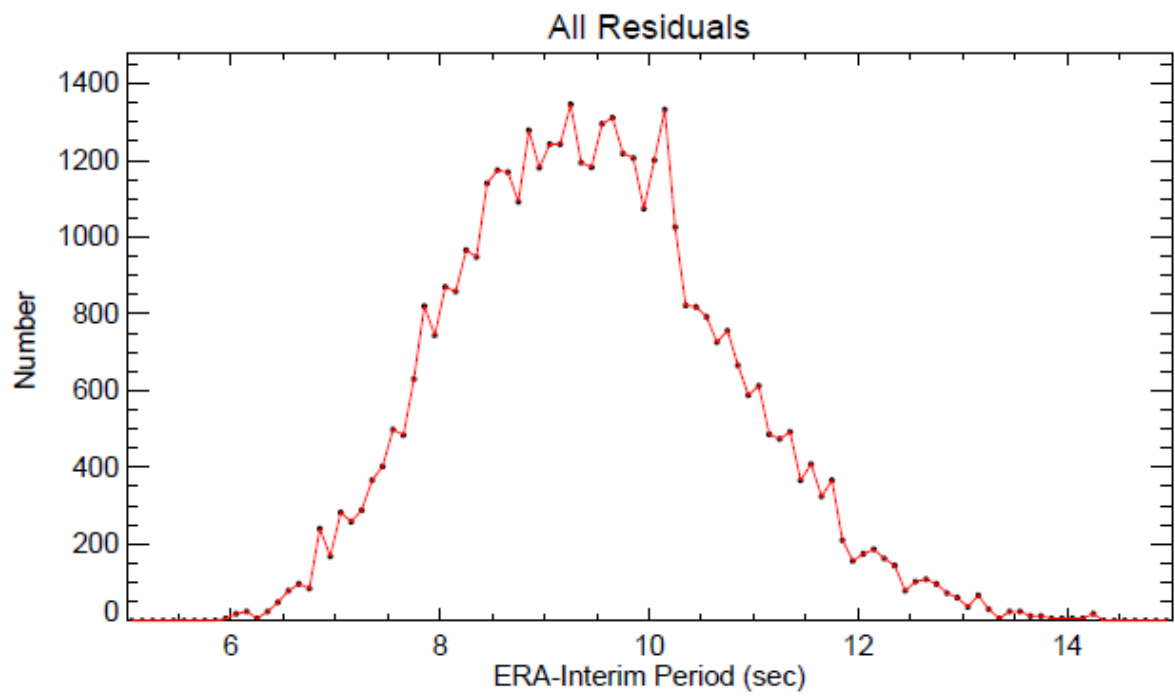


Figure S2(c)

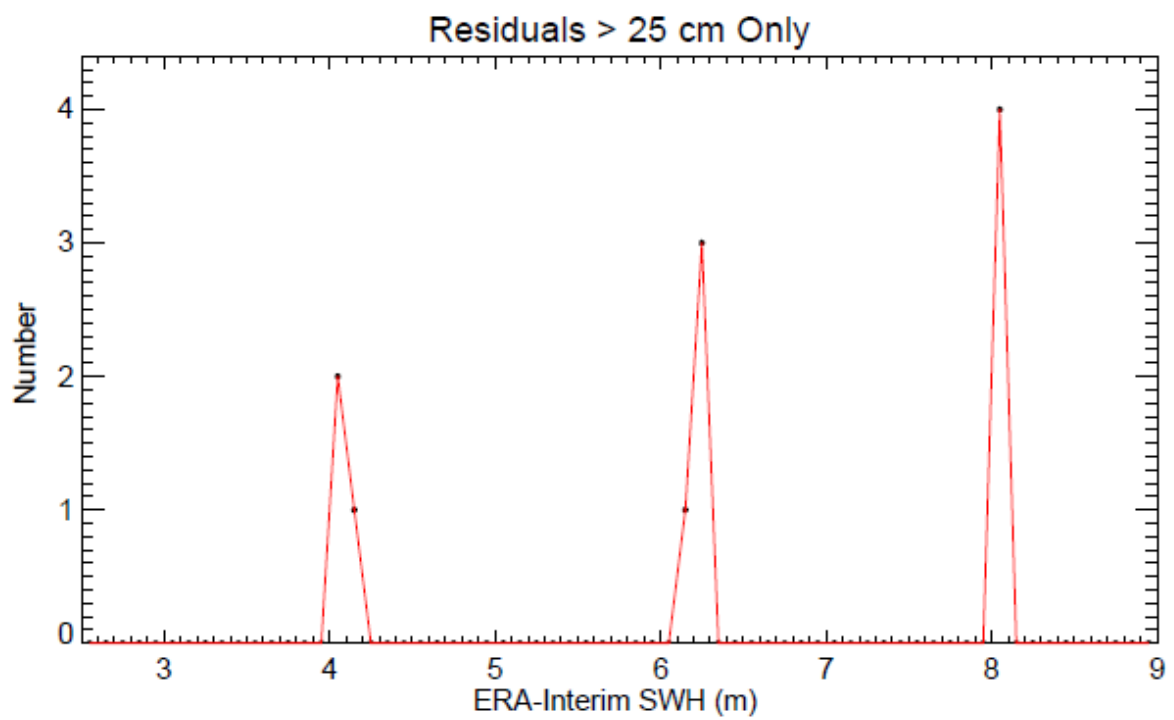


Figure S2(d)

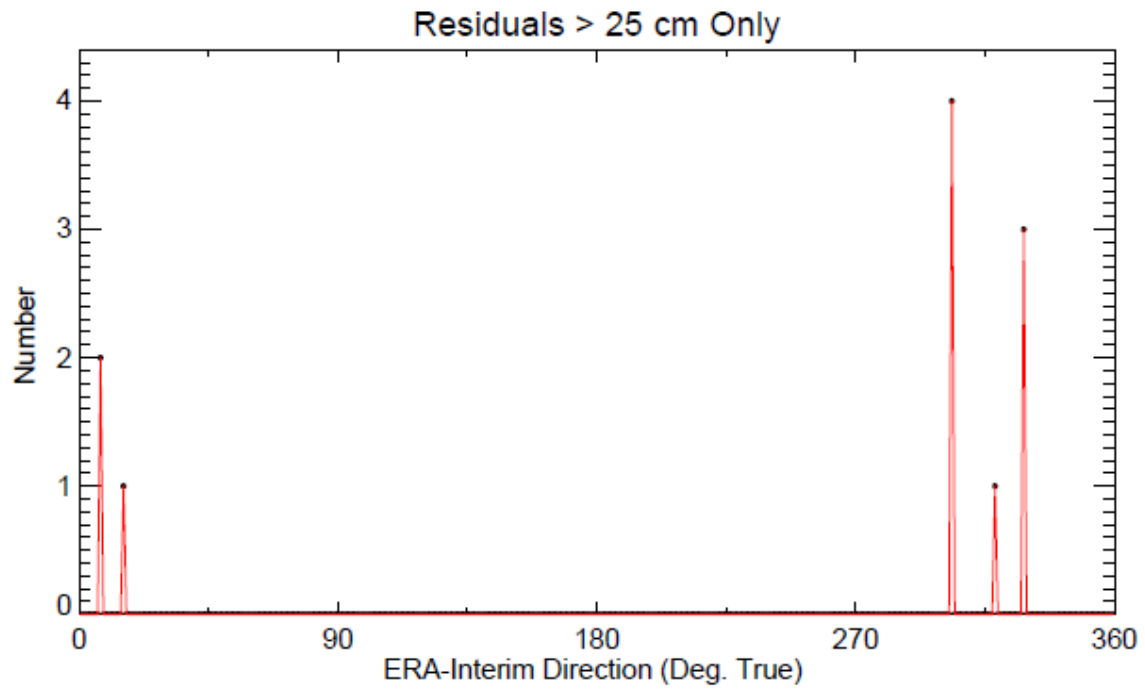


Figure S2(e)

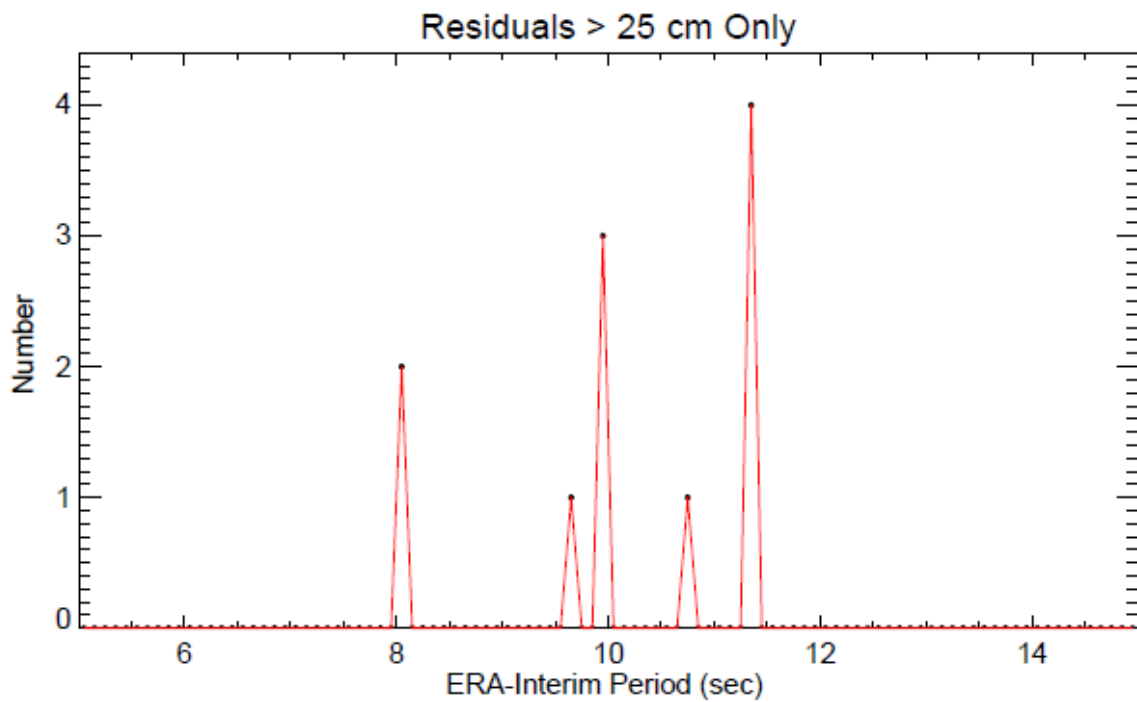


Figure S2(f)

Figure S2: (a) Six-hourly significant wave height during 1993–1997, obtained from the ERA-Interim reanalyses of ECM-WF (European Centre for Medium-Range Weather Forecasts), (b) wave direction (the direction from which waves arrive measured clockwise from north), and (c) wave period at Tristan da Cunha in the South Atlantic. (d–f) As for figures (a–c) selecting only those occasions when there were positive spikes in the 1-hour tide gauge residuals larger than 25 cm (or 25 mbar in terms of subsurface pressure)

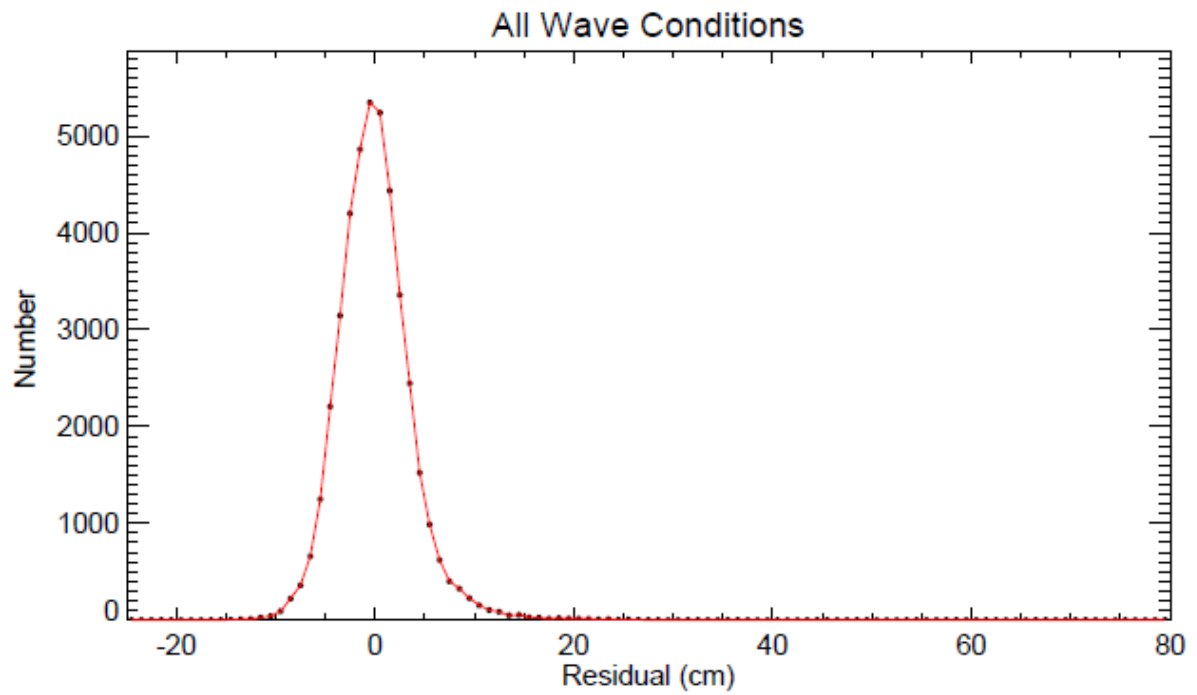


Figure S3(a)

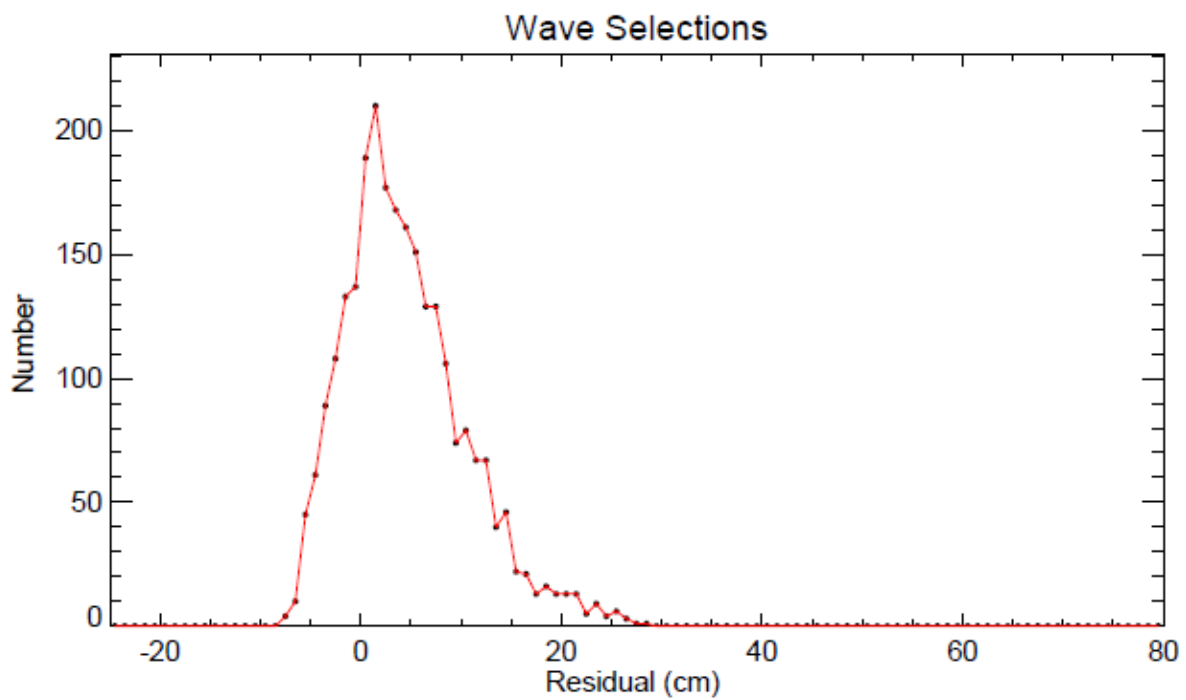


Figure S3(b)

Figure S3: (a) A frequency polygon of all tide gauge residuals for Tristan da Cunha in the South Atlantic during 1993–1997, and (b) a frequency polygon of 6% of the tidal residuals, selecting for large waves (significant wave height >4 m) and from the northerly direction (270° to 45°)