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Supporting Information for

The Earth's hum variations from a global model and seismic recordings around the Indian Ocean

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Additional Supporting Information (Files uploaded separately)

Introduction

The supporting information includes a movie that shows the influence of local storms on the hum signal recorded by the 4 stations that were used in the main text. In this text file we show the results of 3 seismic stations as an extended work to the data used in the main text.

Text S1.

We show the observed and modeled seismic PSD for 3 other stations: LSZ in Zimbabwe, ABPO in Madagascar and PLAI in Indonesia. The stations follow similar temporal trends as do their neighboring stations LBTB, VOI and JAGI respectively. We show the results in figure S1. Station ABPO (b) follows a similar trend to VOI in figure 3 the main text, and shows an equal increase in RMS amplitude as VOI. LSZ (a) follows a similar trend as LBTB in figure 4 of the main text; and PLAI follows a similar trend as WRKA in figure 4 of the main text.

Figure S2 compares infragravity wave height (top) to swell waveheight (bottom) at the time of cyclone Felleng as shown in the bottom plot of figure 4 in the main text. The infragravity wave height is parameterized at the coast from the swell wave height multiplied with the mean period and the square root of gravity divided by water depth (Ardhuin et al, 2014). Afterwards the IG wave heights are extrapolated for the deep ocean. At the coasts we see similar patterns for both wave heights. In the deep ocean the waveheights show different patterns, because the swell wave height is calculated from local winds; and the free infragravity waveheight is propagated from the coast.

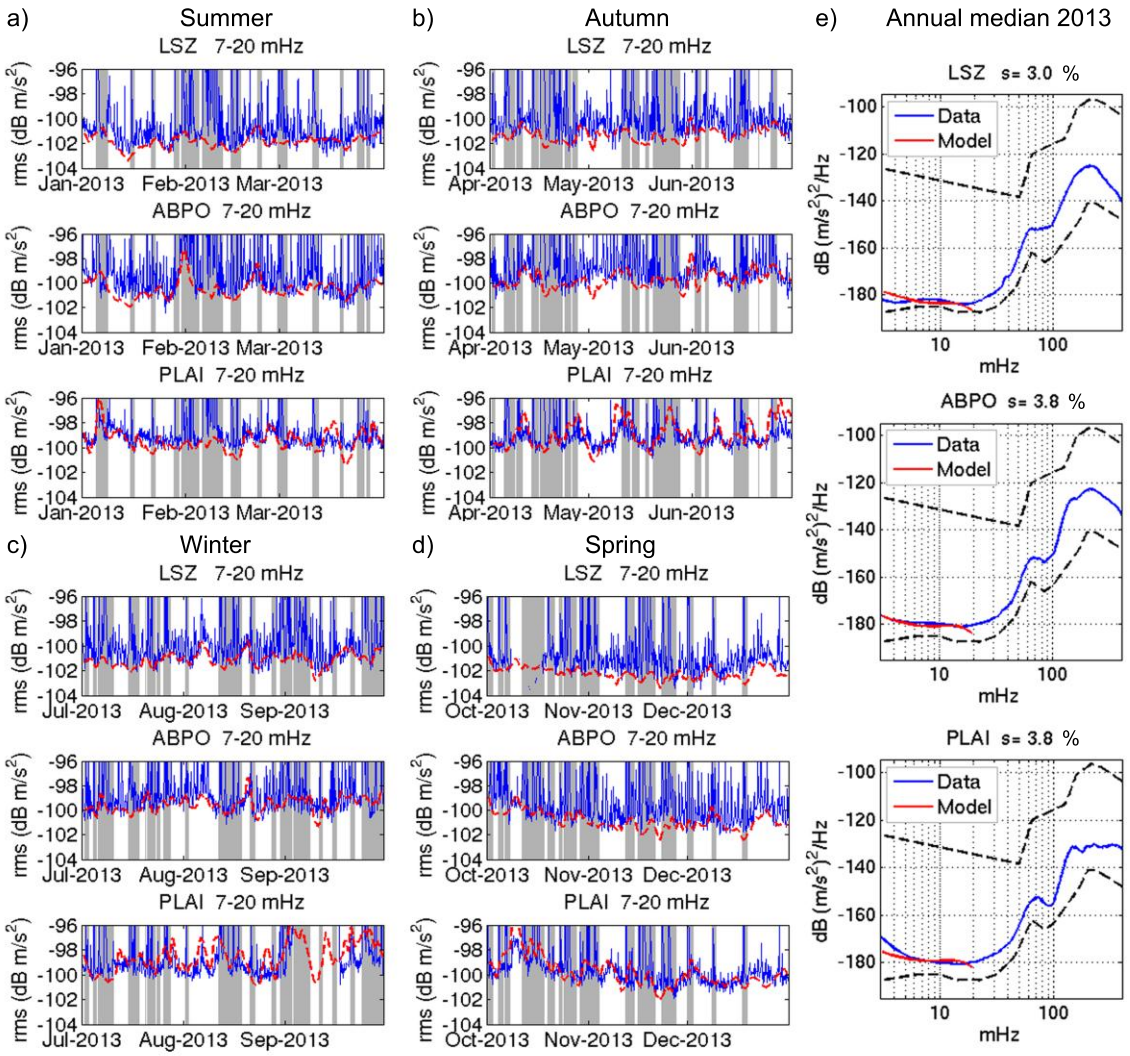

Figure S1. (a-d): Comparison between data (blue) and synthetic (red) RMS amplitudes of the vertical acceleration averaged between 7 and 20 mHz as in figure 3, but with different stations: LSZ, ABPO, PLAI. The station locations are in figure 2 of the main text in light grey. The times of earthquakes are shows in grey, coinciding with an increase in spectral amplitude in blue. (e) displays the median data in blue and median model in red; and the slope factor s required to fit the two. The black dashed lines represent the low and high noise level of (Peterson, 1993).

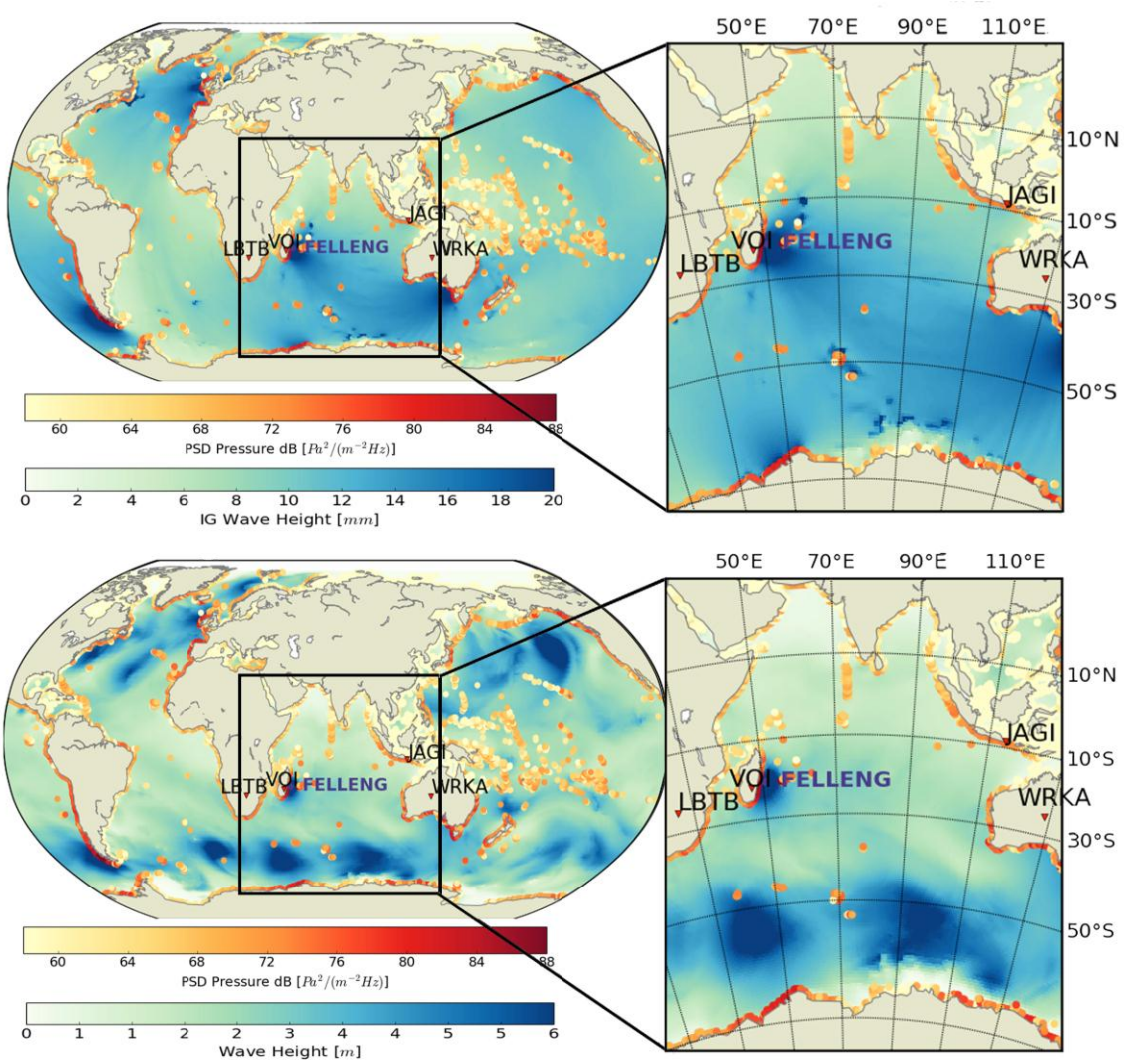

Figure S2. Infragravity wave height in mm (top) and swell wave height in m (bottom) and PSD pressure sources in similar to figure 4 of the main text. The infragravity wave height in mm is calculated following Ardhuin et al. (2014).

Movie S1. Global time lapse of storms (in purple) with infragravity waveheight (in blue colorscale [mm]) and hum pressure sources (in red colorscale [dB of pressure]). Station locations and names are indicated with red triangles and black letters respectively. In the bottom are the recorded (blue) and modeled (red) rms in dB of seismic acceleration at 4 stations (LBTB, VOI, JAGI and WRKA) between 7 and 20 mHz. The red dot indicates the point in time corresponding to the top figure.