## Supplementary Material for "The persistent signature of tropical cyclones in ambient seismic noise"

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Figure S1: TC wind speed from (a) the Joint Typhoon Warning Center (JTWC) best-track dataset (used in this study) and (b) the ERA-Interim reanalysis by the European Centre for Medium-Range Weather Forecasts (commonly used as a input in ocean wave models). TCs have been identified in the JTWC catalog and their locations have been used to track TCs in the reanalysis dataset. Only TCs within 40° from the TATO seismic stations are shown, including tropical depression and tropical storms. For a global scale view of these datasets, please see Figure 1b and 1f in *Murakami, 2014*.



Figure S2: Characteristics of TCs as a function of time between 2000 and 2005: (A) TC intensity, (B) radius of 5kt winds, (C) propagation speed, and (D) number of simultaneous TCs. TCs in this figure occurred within 40° of station TATO and they have been selected as explained in section 2.1.



Figure S3: Same as in Figure S2, but between 2006 and 2010.



Figure S4: Scatterplot between intensity and size of TCs. TC intensity is defined as the one-minute mean sustained surface wind speed. The size of a TC is defined as the squared radius of 5-kt (1 kt=0.514 m/s) winds, therefore it incorporates wind speeds larger than this threshold.



Figure S5: Ambient seismic noise and tropical cyclone intensity. (A) Ambient seismic noise recorded at stations (A) TATO and (B) GUMO between 2008 (bottom) and 2012 (top). Black lines denote TC intensity (scale on the right).



Figure S6: Histogram of TC intensity. (A) Data between 2000-2010, (B) data between 2000-2012. The histogram of TC intensity can be approximated as a gamma distribution in both cases (red).



Figure S7: Comparison between observed and predicted TC intensity in 2011 (top) and 2012 (bottom) releasing the condition of the minimum wind speed considered in the best-track data. As explained in the manuscript (section 3.3), here we exclude all tropical storms (wind speed larger than 18 m/s) that last for less than two days and we include long-lasting ones. Tropical storms often occur simultaneously with typhoons (grey shadow), but the correlation between observed (grey) and estimated (blue and red) intensity is still very good (Pearson correlation coefficient shown as a label).