



Observed ocean waves by tropical cyclones

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Ocean waves produced by tropical cyclones (TC) modify air-sea fluxes which in turn are crucial to the storms' intensity and development, yet they are poorly understood. Here we use 24 years (1992-2015) of observed waves, winds and TC-track information to stratify storm-centered composite maps of waves and winds according to TC intensities and translation speeds (U_h). While the wind field is rightward-asymmetric independent of U_h , the wave field is rightward-symmetric in concert with the wind for slow-translating TCs ($U_h \leq 3 \text{ m s}^{-1}$), but right-rear asymmetric with strongest waves in the 4th quadrant for medium to fast-translating TCs ($3 < U_h \leq 7 \text{ m s}^{-1}$), especially for the very fast storms ($U_h > 7 \text{ m s}^{-1}$), all independent of TC-intensity. The dominance of the right-rear asymmetry for fast-translating TCs appears to be related to the development of cross swells as the storms move faster, but further research using models are needed to understand the physical mechanisms.