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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Extreme water levels, waves and coastal impacts during a severe tropical cyclone in Northeast Australia: a case study for cross-sector data sharing" *by* Thomas R. Mortlock et al.

Anonymous Referee #1

Received and published: 31 May 2018

General Comments: This manuscript brings together observations from diverse sources and analyzes these in the context of spatial variations in coastal impacts from tropical cyclone Debbie that made landfall on the eastern Australian coast in March 2017. Compiled data of waves, water levels, and beach erosion coupled with some relatively simple and straightforward analytical calculations of wave extrapolations, wave runup, and relative contributions of low pressures and wind-setup to storm surge, and observations are used to evaluate flooding, erosion, and infrastructure damage and makes causal connections of these patterns with duration of the storm, timing with as-

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Discussion paper

tronomic tides, and locations and geomorphological settings of the most and affected areas. The paper highlights the importance of data sharing across industry, government and academia to improve understanding and reduce coastal risk. The paper is very well written: it is clear, concise, and draws clear connections between the data, results, and conclusions, including pointing out the uncertainties. The figures and tables are clear and not superfluous nor lacking.

Specific Comments: The only comment I have is that it is stated throughout the paper that storm surge and tides are the largest contributor to the total water level; it appears that this is true but supporting evidence is not really presented. The Stockdon (and other) runup equation is very sensitive to foreshore slope. Whereas the foreshore slopes employed at each of the sites seem reasonable, tanB could have been quite different when TC Debbie made landfall, since the measurements were obtained 5 months prior. I recommend that a sensitivity test of the relative contribution of the wave runup, inclusive of a range of plausible foreshore slopes, to the total water level be included in the study.

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