

***Interactive comment on* “Estimation of Tropical Cyclone Wind Hazards in Coastal Regions of China” by Genshen Fang et al.**

Anonymous Referee #1

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The manuscript presents an interesting study on the estimation of tropical cyclone wind hazards. The topic falls in the scope of Natural Hazards and Earth System Sciences (NHESS). Generally, the paper is well written and organized. Some new findings different from suggestions in current specifications are highlighted and discussed. The presented research is of great importance to the wind-resistant design in coastal areas of China. The manuscript can be accepted for publication after minor revisions.

The reviewer has the following concerns for the revisions of the manuscript.

1. The values of the shape parameter of radial pressure profile in Fig. 11. Holland (1980) suggested that it should fall in the range [1.0, 2.5]. Vickery et al. (2000) suggested the range should be [0.5, 2.5]. There are a number of points larger than 2.5 in Fig. 11, which goes against our conventional cognition. Please give some essential

explanations to clarify this point. i) Holland, G. J.: An analytic model of the wind and pressure profiles in hurricanes, *Monthly Weather Review*, 108, 1212-1218, 1980. ii) Vickery, P. J., Skerlj, P. F., Steckley, A. C., and Twisdale, L. A.: Hurricane Wind Field Model for Use in Hurricane Simulations, *Journal of Structural Engineering*, 126, 1203-1221, 2000.

2. Fig. 11 can be improved to avoid some data points obscured by legend.

3. Lines 24, 37, 40, 416, 440: characterizing tropical cyclone as 'non-synoptic' is questionable. Tropical cyclone is actually a non-frontal synoptic-scale cyclone as discussed by Vallis et al (2019). Vallis, M. B., Loredou-Souza, A. M., Ferreira, V., Nascimento E. L.: Classification and identification of synoptic and non-synoptic extreme wind events from surface observations in South America, *Journal of Wind Engineering and Industrial Aerodynamics*, 193, 2019, 103963.

4. Although this paper focuses on the characteristics of the mean components of tropical cyclones, some discussions on the fluctuation components (stationary or non-stationary) are suggested to be supplemented in the introduction part. The following references may do some help. i) Modelling of longitudinal evolutionary power spectral density of typhoon winds considering high-frequency subrange. *Journal of Wind Engineering and Industrial Aerodynamics* 2019, 193, 103957. ii) Reduced-Hermite bifold-interpolation assisted schemes for the simulation of random wind field. *Probabilistic Engineering Mechanics* 2018, 53, 126-142.

5. There are some typos in the manuscript, e.g., In line 124, "influnence" should be "influence"; In line 149, "modeling" was used while "modelling" was utilized in line 154. Please use a consistent form.

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Discussion paper

