EGUsphere, referee comment RC2
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Comment on egusphere-2022-347

Anonymous Referee #2

Referee comment on "Importance of non-stationary analysis for assessing extreme sea levels under sea level rise" by Damiano Baldan et al., EGUsphere, https://doi.org/10.5194/egusphere-2022-347-RC2, 2022

In this submission, authors study the value of nonstationary analysis of coastal flooding under sea level rise. They have fitted various extreme value models (e.g. GEV, GPD, PP and JPM) to a long-term record of observational water level record at Venice, Italy and quantified the difference in estimated flood risk with and without consideration of nonstationarity. The idea is very interesting and timely, the research is well designed, and the manuscript is well written. I have no significant comment, except a few very minor suggestions below:

- "extreme event theory" has been used in multiple occasions (i.e. Page 1, lines 8 and 25); I've ween usually called "extereme value theory" in the literature. Are the authors referring to a different concept/theory?

- Some recent studies on nonstationary extreme value analysis must be cited and their contribution be acknowledged

1. Cheng et al., (2014),Non-stationary extreme value analysis in a changing climate, Climatic Change volume 127, pages353–369, doi:10.1007/s10584-014-1254-5.

2. Ragno E., AghaKouchak A., Cheng L., Sadegh, M., 2019, A Generalized Framework for Process-informed Nonstationary Extreme Value Analysis, Advances in Water Resources, 130, 270-282, doi: 10.1016/j.advwatres.2019.06.007

Well done!