

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC3  
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## **Comment on nhess-2021-118**

Anonymous Referee #3

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Referee comment on "Distribution of coastal high water level during extreme events around the UK and Irish coasts" by Julia Rulent et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2021-118-RC3>, 2021

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In the paper "Distribution of coastal high water level during extreme events around the UK and Irish Coasts" Julia Rulent and co-authors investigate the relative importance of waves, surges, tides, and their interaction to total water level elevations during the winter 2013/4 around the UK. The winter of 2013/4 was characterized by a number of heavy storms leading to significant flooding and damages. Here, the authors use a high resolution coupled ocean model to simulate the winter conditions and compare them relative to the climatological mean over 1979-2015. The authors find that the total water level distribution was heterogeneous along the coast and that the tide controls the timing of extreme surges in most cases (i.e. they usually occur during flood tide a few hours before high tide). The manuscript is very well written, the topic is an important one, and I have only a few comments and suggestions, none of which should prevent publication in NHESS.

Line 2: lead is a repetition to the first half of the sentence. Maybe better "trigger"

Lin 76-Line83: Could you please briefly elaborate on why the model performance is less good at locations such as Newlyn, Newport and Cromer? Are these very special locations that are difficult to model?

Line 120: Am I reading the plot wrong? Isn't the overall maximum of Hs along the Shetland Islands?

Caption Figure 2: (S)chematic

Figure 3: The text says that Hs have been 138% higher than the climatological mean, but the map looks like that it is far below 100 in most areas. Probably something wrong with the colorbar?

Figure 5: I think it might be helpful to mark the location of the overall maximum within each of the maps as the colorbar is not very easy to read.

Figure 8: (M)ean

Line 160: hazards(s)