

Interactive comment on “Bardsey – an island in a strong tidal stream: Underestimating coastal tides due to unresolved topography” by J. A. Mattias Green and David T. Pugh

Anonymous Referee #1

Received and published: 6 May 2020

I think the ms invokes an important issue on the estimation of tidal dissipation using an altimeter-based tidal product, which is widely used worldwide. In my view, the observations were designed with care and conclusions seems to have supported sufficiently by the text. I therefore think the ms would be considered for publication after making technical corrections shown below.

Specific issues: P5L133 Table 2: M2 amp for Stn NE/TPXO (1.5m) is probably 1.15m. P6L170 Fig.2(a) (this is just a comment and need not to response) In my view, the sea level (especially at site E) seems to show some asymmetric feature, i.e., shorter duration of flood. Is there any possible mechanism leading such a feature?

C1

P7L178 (Fig.3 colour bar legend) I suggest modifying the legend from "current amplitude" to "current magnitude", as stated in the figure caption, to avoid a misunderstanding that the property is compiled solely by a single tidal constituent. For the Fig.3 caption, explanation for (a) and (b) is opposite.

P7L199-200 I could not follow how the two figures $\Delta H = 0.07$ and $U_{astro, sm} = 1.5 \text{ m/s}$ were deduced (using values in Fig2a?). Please add a brief explanation on this point.

P8L206-207 I suggest removing of a phrase "take the TPXO speed ... as North Mainland, and" to make the context clear. The assumption of using the u_{sm} was already applied to the discussions developed in the previous paragraph and probably need not to be repeated here.

P8L228 I guess a factor of 0.5 is missing in the definition of the dissipation. In addition, please indicate the actual depth adopted when estimating the dissipation value.

(comment, no need to response) I personally am interested in the impact of the Llyn Peninsula being tilted diagonally (toward NE and SW) against the axis of the Irish Sea and the difference between the main direction of the flood and ebb current around the island indicated, e.g., by Figs.2b and c. This is obviously beyond the range of the current study and looking forward investigating in a near future.

Interactive comment on Ocean Sci. Discuss., <https://doi.org/10.5194/os-2020-23>, 2020.

C2