

Ocean Sci. Discuss., author comment AC3 https://doi.org/10.5194/os-2021-41-AC3, 2021 © Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.

Reply on RC2

Eli Børve et al.

Author comment on "Rectified tidal transport in Lofoten–Vesterålen, northern Norway" by Eli Børve et al., Ocean Sci. Discuss., https://doi.org/10.5194/os-2021-41-AC3, 2021

Here are some additional comments to the reviewer's question regarding the scaling of the vorticity production terms in Line 404:

"The along-isobath velocity scale U may be much stronger than the cross-isobath current used in the previous scaling (line 403)".

We calculated the along- and cross-isobath velocities (u and v, respectively) around the depth contours encircling the two island groups. Taking the contour-mean amplitude of the two oscillating velocity components, the along-slope velocity component U is only up to 1.6 times the amplitude of the cross-slope velocity component V.

The mean ratio U/V around Røst is 1.4 and around Mosken/Værøy is 1.2. This ratio (U/V) varies off course somewhat around the contours and may be up to almost 3 at some places, which certainly increases importance of the bottom frictional torque. However, the over-all impression, is that a scaling assuming U and V has similar magnitude is a reasonable assumption.

Comparing the U/V ratios with Figure 1 in our previous answer, we still, in general, have a weak dominance of the vorticity generation by squeezing and stretching even if we assume U/V = 1.5.

We will include these results and discuss this more carefully in the revised manuscript.