

Interactive comment on “Tidal influences on a future evolution of the Filchner-Ronne Ice Shelf cavity in the Weddell Sea, Antarctica” by Rachael D. Mueller

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Dear Dr. Mueller and coauthors,

I am not a reviewer of this paper, but I would like to pick the rarely used opportunity for a discussion including more participants than just authors and reviewers.

I think this is a very interesting study, rightfully questioning one of the conclusions drawn from the coupled ice sheet – ocean model RAnGO (Timmermann & Goeller, Ocean Science 2017). TG17 state that in a warm-water-inflow scenario with thinning ice shelf, the increasing ice base slope and increasing water column thickness tend

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to increase melt rates due to an easier supply of warm(ing) water to the (still) deepest parts of the ice shelf. Now, this study here reminds us that tidal velocities may decrease as an answer to increasing wct, which may partly, fully or over-compensate the effect that we found to be dominant in RAnGO. I find myself wondering how much trouble it would be to run the tidal model for ice shelf geometries varying on a year-to-year basis, let's say as part of a coupling interface between ice shelf and ocean, and then use the tidal velocities as an additional forcing field for the ocean model. I am not arguing this should be discussed in the paper; it's just a thought that crossed my mind.

Congratulations to this nice piece of work!

Respectfully yours, Ralph Timmermann

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