EGU23-4541, updated on 14 Apr 2024
https://doi.org/10.5194/egusphere-egu23-4541
EGU General Assembly 2023

Can rifts alter ocean dynamics beneath ice shelves?

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The ongoing ablation of Antarctic ice shelves - to a large extent due to enhanced melting at the grounding line - is known to accelerate the outflow of upstream glaciers into the world oceans, rising the global sea level. A better understanding of ocean heat intrusion under the ice base is therefore essential to accurately estimate basal melt and the consequent impact on ice sheet dynamics. Observations also show that most ice shelves are crossed by full-thickness ice rifts. Nevertheless, their impact on ocean circulation around and below ice shelves has been largely unexplored as ocean models are commonly characterized by resolutions that are too coarse to resolve km-sized features in the ice draft. In this work, we investigate ocean circulation under rifted ice-shelves using the Massachusetts Institute of Technology ocean general circulation model. We find that the rift presence modulates oceanic heat transport toward the grounding line with potential repercussion in the dynamics of the most vulnerable portions of the ice shelf.