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Ice-shelf tidal deflections modelled with a full 3D elastic model

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Ice-shelf flexure modelling was performed using a full 3D finite-difference elastic model, which takes into account sub-ice-shelf seawater flow. The numerical experiments were carried out for the thin plate of ice with changing ice thickness (with trapezoidal profile along the center line). The sub-ice seawater flow was described by the wave channel equation (Holdsworth and Glynn, 1978). In the model ice shelf flexures result from variations in the incoming (outgoing) sea water flux, which flows into (out of) the sub-ice-shelf channel. The numerical experiments were carried out for harmonic incoming seawater fluxes and the ice-shelf flexures were obtained for tidal ocean impacts and for different ice-shelf spatial extents.

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