

Supplementary material: Nudging an inversion-based ice sheet model towards observed mass change during model relaxation: application to CH Ostenfeld Glacier.

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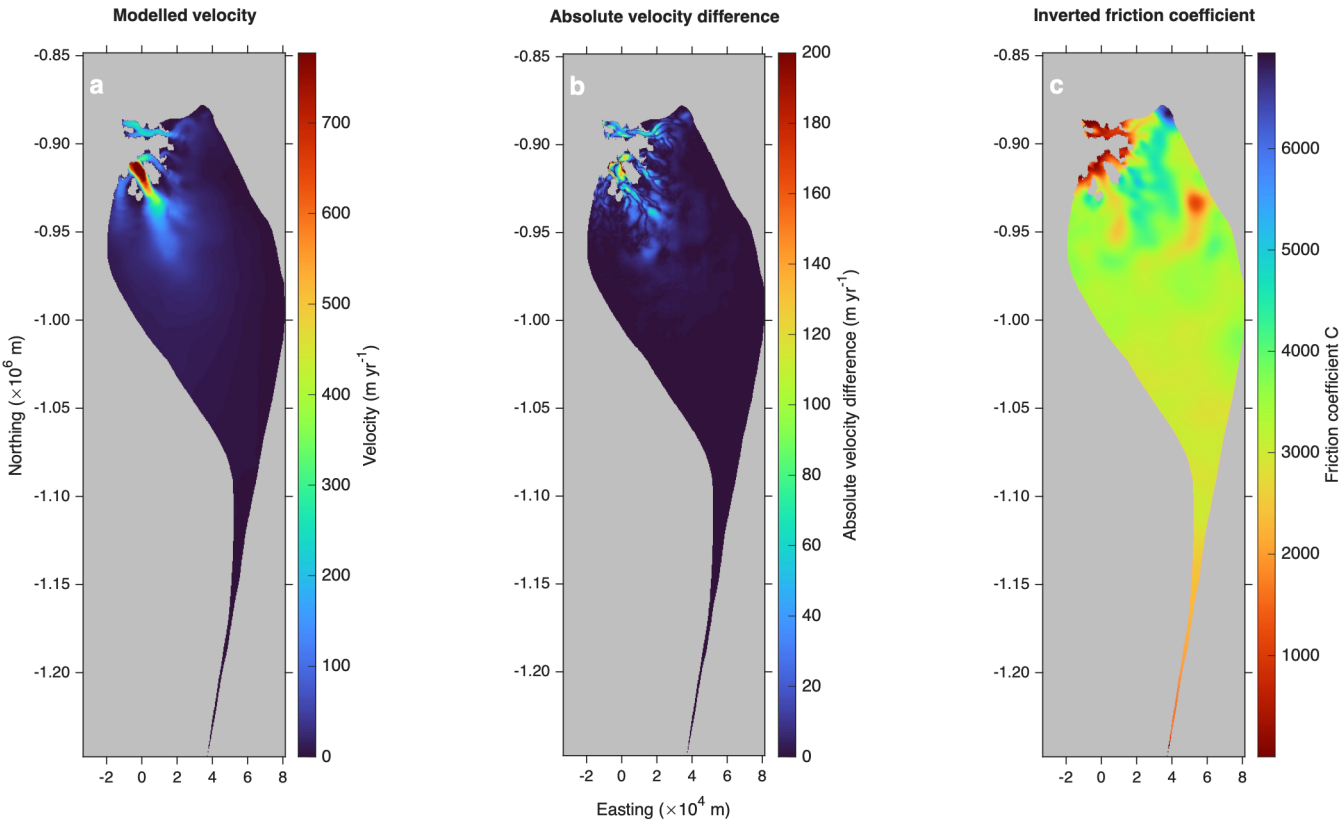
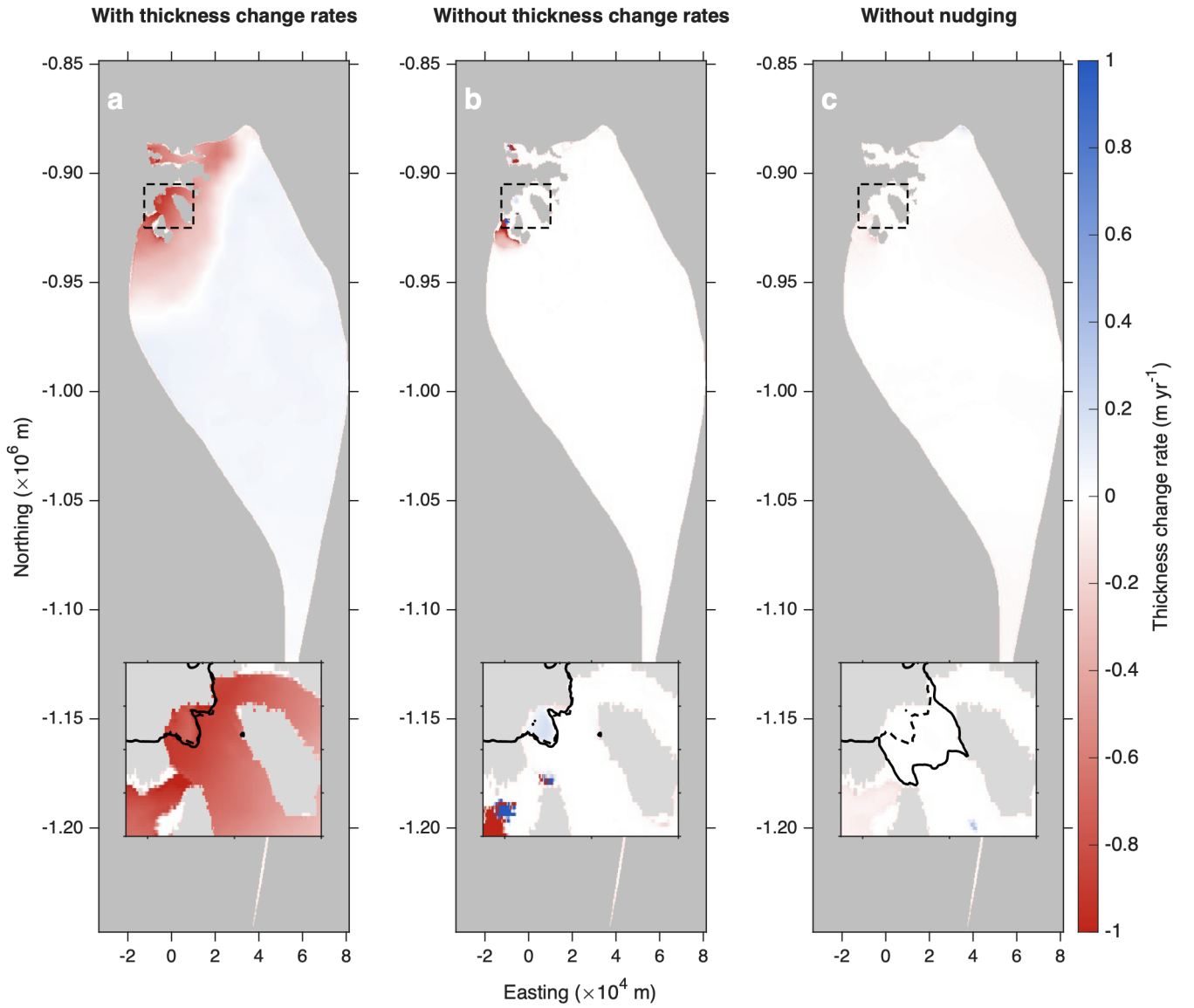


Figure S1 Modelled ice surface velocities (a), the absolute difference with respect to the observations (b) and the inverted friction coefficient (c) of the optimal inversion simulation.



15 **Figure S2.** Mass change rates of a single transient timestep of $1/24^{\text{th}}$ year (i.e. half a month) for the nudging simulations with the present day mass change rates embedded (a), not embedded (b) and not embedded and not nudged (c). Surface mass balance and basal mass balance are constant. **(Inset)** Mass change rates of a single transient timestep of $1/24^{\text{th}}$ year (i.e. half a month) for the nudging simulations with the present day mass change rates embedded (a), not embedded (b) and not embedded (c) and not nudged zoomed in at the grounding line. Modelled grounding line is shown with the black solid line.

References