

EGU22-11865

<https://doi.org/10.5194/egusphere-egu22-11865>

EGU General Assembly 2022

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



## A new Finite Elements Framework for Fjord-Iceshelf Interaction (FEFFII)

Stefano Ottolenghi<sup>1</sup>, Jonathan Wiskandt<sup>2</sup>, and Josefin Ahlkrona<sup>3</sup>

<sup>1</sup>Stockholms universitet, Matematiska institutionen, Stockholm, Sweden (stefano@math.su.se)

<sup>2</sup>Stockholms universitet, MISU, Stockholm, Sweden (jonathan.wiskandt@misu.su.se)

<sup>3</sup>Stockholms universitet, Matematiska institutionen, Stockholm, Sweden (ahlkrona@math.su.se)

Modeling interactions between ice sheets and ocean has proved of significant importance in order to properly understand larger-scale phenomena such as ice sheet melting and ocean circulation. We introduce the Finite Elements Framework for Fjord-Iceshelf Interaction (FEFFII), a new simulation framework for fjord dynamics. Open source and Python-based, it employs the full non-hydrostatic Navier-Stokes equations to account for the ocean evolution, while ice shelf behavior is accounted by the 3-equations parametrization. Even though some its features are still under experimentation, FEFFII is already capable of simulating realistic scenarios and handling relatively complex geometries, as well as moving boundaries. The model has been tested against several benchmarks from literature.