



## **On the convergence of the modified elastic-viscous-plastic method of solving for sea-ice dynamics**

Madlen Kimmritz

Germany (madlen.kimmritz@awi.de)

Most sea ice models for climate type simulations are based on the viscous-plastic (VP) rheology. The resulting stiff system of partial differential equations on ice velocity is either solved implicitly at great computational cost, or explicitly with added pseudo-elasticity (elastic-viscous-plastic, EVP). A recent modification of the EVP approach seeks to improve the convergence of the EVP method by reformulating it as a pseudotime VP solver. It is shown that convergence is reached provided the stability requirements are satisfied and the number of pseudotime iterations is sufficiently high. Only in this limit, the VP and the modified EVP solvers tend to converge to the same solution. Related questions of the impact of mesh resolution and incomplete convergence additionally are addressed.