The 8th European Congress on Computational Methods in Applied Sciences and Engineering
ECCOMAS Congress 2022
5-9 June 2022, Oslo, Norway

AN ADAPTIVE MODEL FOR METEOTSUNAMIS

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Keywords: *Meteotsunamis, Proudman Resonance, Discontinuous Galerkin Method, Adaptive Mesh Refinement*

Meteotsunamis are atmospherically induced, potentially destructive and extreme waves in the tsunami frequency band. While the main underlying physical mechanisms have been widely known for a long time (see for example [1]), computational modelling capabilities are still not widely available or scarce. In this talk, we consider an adaptive discontinuous Galerkin (DG) model with advanced filtering, or slope limiting, capabilities as in [2, 3] to simulate idealised meteotsunamis caused by Proudman resonance. A number of idealised testcases demonstrate the model's performance and the general effects of resonant wave events. The model uses an adaptive, triangular mesh that is driven by heuristic, or application-based refinement indicators. The discussion of the model's computational efficiency will be guided by efficiency metrics as in [4] that we define and apply to model results. The model's practical applicability is highlighted by its application to an idealised but realistic meteotsunami event.

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