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PROTECTIVE STRUCTURES FOR THE MITIGATION OF NATURAL HAZARDS CAUSED BY ENVIRONMENTAL FLOWS

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ABSTRACT

This minisymposium comprises the study of protective structures to mitigate natural hazards caused by environmental flows. These structures include, but are not limited to:

- Breakwaters, seawalls, groynes, etc. for coastal protection against tides, currents, water waves, and storm surges.
- Retaining walls, gabion meshes, and drainage systems to control erosion and prevent landslides and floods.
- Artificial windbreaks to protect soil from erosion and to keep snow from drifting.

The main focus of the minisymposium is on the design of relevant structural components, the simulation of complex fluid flows around or within the components, and the evaluation of the efficacy and the feasibility of the protective measures. Topics range from the reinforcement of existing structures to prevent floods and collapses, the dissipation and the redirection of flows using engineered obstacles and channels, e.g., by modifying their shape, up to procedures that minimize the risk and the potential damage of catastrophic natural disasters, such as tsunami, earthquakes, and hurricanes.

Advances and novel approaches to obstacle flow problems in computational fluid mechanics, investigations of phenomena at complex interfaces between fluids and solid structures, as well as contributions to the mathematical modeling, treatment, and numerical simulation of physical processes that may lead to hazardous events are within the scope of this minisymposium.