

## Using High Performance Computing for Online Flood Monitoring and Prediction

**Authors :** Stepan Kuchar, Martin Golasowski, Radim Vavrik, Michal Podhoranyi, Boris Sir, Jan Martinovic

**Abstract :** The main goal of this article is to describe the online flood monitoring and prediction system Floreon+ primarily developed for the Moravian-Silesian region in the Czech Republic and the basic process it uses for running automatic rainfall-runoff and hydrodynamic simulations along with their calibration and uncertainty modeling. It takes a long time to execute such process sequentially, which is not acceptable in the online scenario, so the use of high-performance computing environment is proposed for all parts of the process to shorten their duration. Finally, a case study on the Ostravice river catchment is presented that shows actual durations and their gain from the parallel implementation.

**Keywords :** flood prediction process, high performance computing, online flood prediction system, parallelization

**Conference Title :** ICW 2015 : International Conference on Water

**Conference Location :** Montreal, Canada

**Conference Dates :** May 11-12, 2015