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Multiscaling in Hydro-Meteorologic Research: Recent Results from the European MAPPER Project

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Today scientists and engineers are faced with the challenge of modelling, predicting and controlling multiscale systems which cross scientific disciplines and where several processes acting at different scales coexist and interact. Such multidisciplinary multiscale models, when simulated in three dimensions, require large scale or even extreme scale computing capabilities. Progress in science and technology is limited by our ability to solve efficiently such problems on available distributed computing infrastructures. The MAPPER project responds to such critical needs by developing computational strategies, software and services for distributed multiscale. Hydro-meteorologic research (HMR) is one of the drivers for MAPPER to deploy services aiming at enabling the distributed execution of multiscale models. MAPPER develops tools, software and services that allow two modes (loosely coupled and tightly coupled) of multiscale computing in a user friendly and transparent way.