

A Parallel Domain Decomposition Approach for the Implicit Solution of Shallow Water Equations on the Cubed-sphere

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ABSTRACT

In this talk, we discuss the parallel performance of an overlapping domain decomposition method for solving the global shallow water equations on the cubed-sphere. Most existing techniques for climate modeling are explicit and semi-implicit, which often have some restrictions on the time step size. We present a fully implicit approach with a well-balanced high order finite volume discretization, and report the parallel scalability of a Newton-Krylov-Schwarz method on machines with a few thousand processors. This is a joint work with C. Yang.