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A PARALLEL VERSION OF THE FULLY IMPLICIT OCEAN MODEL THCM

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ABSTRACT

Fully implicit techniques can be very efficient for simulating the large-scale ocean circulation over long periods of time because their favorable stability properties allow much larger time steps to be taken. Furthermore, such techniques enable the use of continuation techniques and stability analysis for steady state solutions.
We present a distributed memory version of the thermohaline circulation model (THCM) [1] employing the Trilinos numerical library [2]. A scalable block solver for ocean problems based on algebraic preconditioners is discussed and numerical experiments that demonstrate its efficiency and scalability are presented.

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