**Title:** Parallel exponential time differencing methods for ocean dynamics

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**Abstract:** Exponential time differencing has been numerically proven to be an effective and efficient approach for time integration of the ocean dynamics. It allows use of large time step sizes much beyond the CFL restriction while still maintaining good numerical stability. Its main cost lies in the calculation of the products of matrix exponentials and vectors. In this talk, we report the recent progress we made towards developing and implementing scalable parallel exponential time differencing algorithms within the MPAS framework and demonstrate their performance by applying them to the simulations of the rotating shallow water equations and the primitive equations.