Numerical method for solving the shallow water equation on a curved surfaces

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ABSTRACT
We present a finite difference method for solving the shallow water equation numerically on a curved surface. Although most of the flow dynamics on the earth are modeled by the shallow water equation, it is too complicated to solve the shallow water equation analytically in the majority of cases even on flat surfaces. Using the closest point method, embedding a problem within a structured Cartesian domain of an original equation, the conventional numerical solver and grid mesh and can be applied instead of complex ones. To examine the method, we perform the several numerical simulations.

REFERENCES