

Improvement of the non-interpolated semi-Lagrangian method

*okazaki kohei¹, enomoto takeshi¹

1. Kyoto University

The semi-Lagrangian method, which is not constrained by the CFL condition, allows a several times longer time step than that of the Eulerian method. The non-interpolation scheme proposed by Ritchie (1987) does not require interpolation commonly used in the semi-Lagrangian method. This study proposes an improved non-interpolation and its accuracy is evaluated in several test cases for tracer advection on a sphere. The improved non-interpolation advection scheme is more accurate than the non-interpolation method of Ritchie (1987). It is also more accurate with less grid point information than existing interpolation methods, and is pseudo-mass conserving.

Keywords: semi-Lagrangian method, tracer advection, sphere