



Study on monotonic limiters on spherical Icosahedral-hexagonal Grids

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A comprehensive study on the performance of various priori and posteriori limiters on spherical icosahedral hexagonal meshed has been presented. A conservative 2nd order transport scheme (Miura 2007) has been used in this work. The monotonicity on this base scheme has been imposed by Zalesak (1979), Dukowicz and Kodis (1987) and Thuburn (1995) limiter. The effect of these limiters has been tested on a number of smooth and complex deforming test flow fields viz solid body rotation of cosine bell and slotted cylinder; static vortex and moving dynamic vortex, representative of different flow patterns in real atmosphere. It has been found that on this grid system Zalesak and Thuburn limiters perform almost similar in terms of accuracy. Thuburn limiter is a bit computationally less expensive but has more stringent stability conditions. Whereas, the Dukowicz limiter is slight more diffusive than the other two, but is highly efficient computationally.

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