3. VERTICAL TRANSPORT OF TRACER (AND MOISTURE)

(Impact of the Second- and Third-Kind Errors)

For vertical transport,

The Second-Kind Error: Error through discretization of $\frac{\partial q}{\partial z}$ in $W\frac{\partial q}{\partial z}$,

The Third-Kind Error: Error through nonlinearity in $w\frac{\partial q}{\partial z}$.

q : Mixing ratio of a tracer or any specific property

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W : A quasi-constant part of w

CLAIM

The Second- and Third-Kind Errors in Eulerian formulations produce downgradient transport of tracers