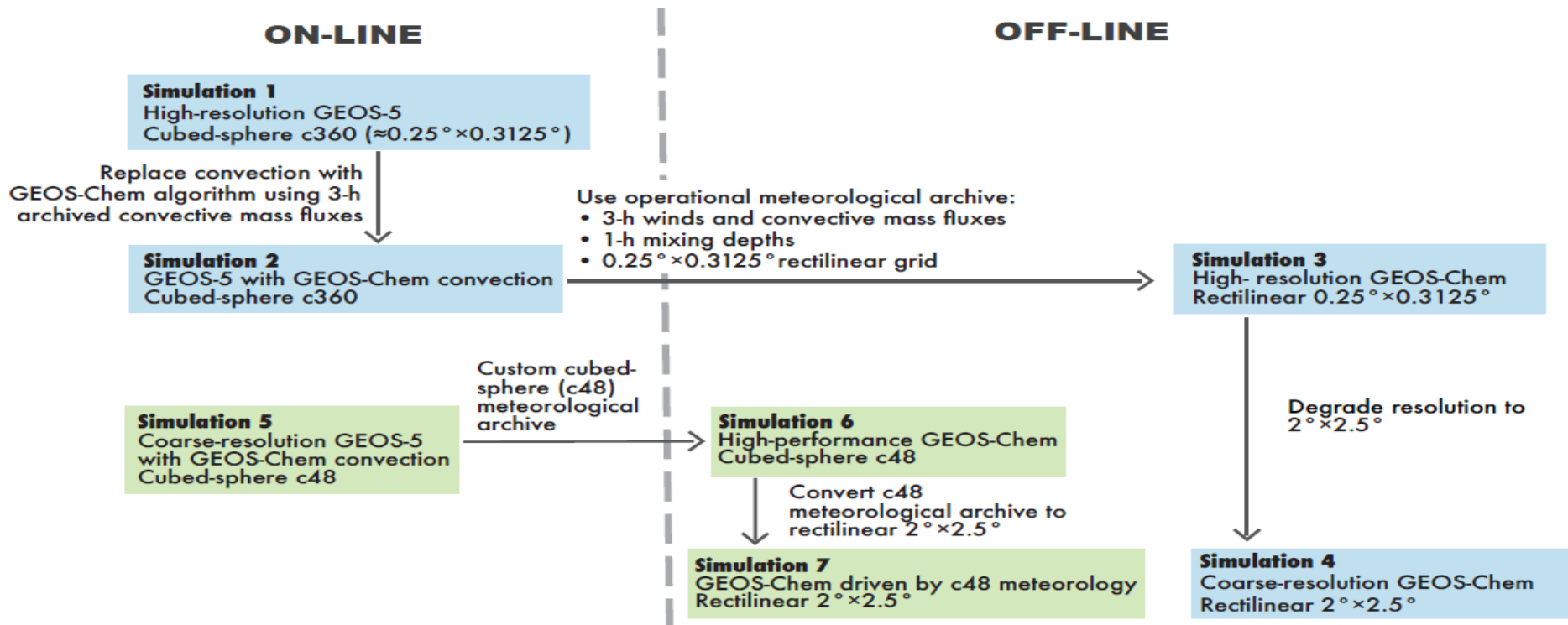


# Error cascade in off-line modeling of atmospheric transport

Comparing  $^{22}\text{Rn}$ - $^{210}\text{Pb}$ - $^7\text{Be}$  simulations on-line (GEOS-5) and off-line (GEOS-Chem) in a wide range of configurations and from c360 to  $2^\circ \times 2.5^\circ$  resolution



- Significant loss of vertical transport in off-line model from missing transient grid-resolved convection and grid coarsening; fix by re-diagnosing convection off-line
- Off-line averaging of mixing depths must give more weight to deeper values to properly represent boundary layer mixing

K. Yu, C.A. Keller, D.J. Jacob, A.M. Molod, S.D. Eastham, and M.S. Long, Errors and improvement in the use of archived meteorological data for chemical transport modeling, *Geosci. Model. Dev.*, 11, 305-319, 2018.

