RCEMIP MODEL DOCUMENTATION FORM

Please fill out the below with the relevant information for the model simulations you are submitting to RCEMIP. If you are submitting multiple sets of simulations from multiple versions or configurations of a model, please fill out a documentation form for each.

Your information

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Model information

Model Name/Version: Meso-NH version 5.4.1
Model Name Abbreviation ($MDL used in upload to DKRZ Cloud): MESONH
Citation for model: Lac et al.: Overview of the Meso-NH model version 5.4 and its applications, Geosci. Model Dev., 11, 1929-1969, https://doi.org/10.5194/gmd-11-1929-2018, 2018.

Model dynamical core

Type of grid (cartesian, spherical): Cartesian
Dynamical core (e.g. finite volume): anelastic equations, fully staggered Arakawa C-type grid
Time step: <=15 s for RCE_small and <=20 s for RCE_large, 900 s for the radiation scheme

Grid information

RCE_small, number of grid points: 100x100x74
RCE_small, horizontal grid spacing: 1 km
RCE_large, number of grid points: 2000x128x74
RCE_large, horizontal grid spacing: 3 km
Number of vertical levels: 74 (model top at 33 km)
Vertical levels: RCEMIP grid as specified in GMD paper
Sponge layer: damping between 22 and 33 km

Physics packages (fill out all applicable)

Radiation scheme: RRTM for LW and the Fouquart and Bonnel (1980) scheme for SW
Microphysics scheme: single-moment mixed microphysical scheme (Pinty and Jabouille 1998)
Boundary layer scheme: none
Convection scheme: eddy diffusivity mass flux scheme for shallow conv. (Pergaud et al. 2009)
Sub-grid scale turbulence scheme: 1.5-order closure TKE scheme (Cuxart et al. 2000) using the mixing length of Bougeault and Lacarrere (1989)
Other: 4^{th} centered advection scheme for momentum variables and PPM for other variables

Other models-specific settings or parameters (beyond the specified RCEMIP parameters):