RCEMIP-ACI MODEL DOCUMENTATION FORM

Please fill out the below with the relevant information for the model simulations you are submitting to RCEMIP-ACI. 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
Your Name: Yunpeng Shan, Jiwen Fan

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Model information
Model Name/Version: WRF version 4.6.0 (https://github.com/wrf-model/WRF/tree/v4.6.0). We employed the Morrison scheme with the prognostic supersaturation for condensation and evaporation as documented in Zhang et al. (2021).

 Model Name Abbreviation (used when uploaded to JASMIN): WRF_Morr_progSS

Citation for model:

- Zhang, Y., Fan, J., Li, Z., and Rosenfeld, D.: Impacts of cloud microphysics parameterizations on simulated aerosol–cloud interactions for deep convective clouds over Houston, Atmos. Chem. Phys., 21, 2363–2381, https://doi.org/10.5194/acp-21-2363-2021, 2021.
- Skamarock, W.C.; Klemp, J.B.; Dudhia, J.; Gill, D.O.; Liu, Z.; Berner, J.; Wang, W.; Powers, J.G.; Duda, M.G.; Barker, D.M. A Description of the Advanced Research WRF Model Version 4; National Center for Atmospheric Research: Boulder, CO, USA, 2019; p. 145.

Time step: 6s

Grid information (modify if needed)
RCE_small, number of grid points: 100x100x74

RCE_small, horizontal grid spacing: 1 km

 RCE_large, number of grid points: 2000x134x74

 RCE_large, horizontal grid spacing: 3km

Number of vertical levels: 74 (model top at 33 km) Vertical levels: RCEMIP grid as specified in Wing et al 2018.

Physics packages
Radiation scheme: RRTMG (longwave and shortwave)

Temporal resolution of radiation calculations: 180s

Microphysics scheme: Morrison scheme with prognostic supersaturation for condensation and evaporation as documented in Zhang et al. (2021).

The model includes the Twomey effect of liquid (i.e., the microphysics is online coupled to the radiation and transfer the droplets size): yes

Sub-grid scale turbulence scheme: YSU

Other comments:

Please notice that 2-D vertical velocity at 500 hPa and sea surface pressure are missing in our outputs. We set them as filling values.