Post-processed data for "Increasing precipitation variability on daily-to-multiyear timescales in a warmer world"

Wenxia Zhang (zhangwx@lasg.iap.ac.cn)

State Key Laboratory of Numerical Modeling for Atmospheric Sciences and Geophysical Fluid Dynamics, Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China.

Here we provide the post-processed data for the moisture budget analysis. For each timescale (namely, synoptic, monthly, intraseasonal and interannual), we provide the standard deviation of the filtered time series for different variables.

Simulations: HadGEM3-GC3.05 Perturbed Parameter Ensemble with 14 model variants developed by the Met Office Hadley Centre (Sexton et al., 2021; Yamazaki et al., 2021).

Spatial scale: global grid boxes

Format: STDDEV_${varname}_${timescale}_${period}_multirun_${years}.nc

- "timescale": synoptic, monthly, intraseasonal and interannual
- "period" and "years": hist_1900-1959 and rcp85_2040-2099
- "varname":
  - pr (precipitation)
  - evspsbl (evaporation)
  - hori_adv (horizontal moisture advection; Eq. (3) in MATERIALS AND METHODS)
  - vert_adv (vertical moisture advection; Eq. (3) in MATERIALS AND METHODS)
  - residual (residual; Eq. (3) in MATERIALS AND METHODS)
  - vert_adv_term_2layer (vertical moisture advection approximated by the two-layer model; Eq. (5) in MATERIALS AND METHODS)
  - vert_adv_term_lower (lower level component of vert_adv_term_2layer)

- vert_adv_term_upper (upper level component of vert_adv_term_2layer)
- TH_q1fw0f (thermodynamic term of vertical moisture advection; Eq. (8) in MATERIALS AND METHODS)
- DY_w1fq0f (dynamic term of vertical moisture advection; Eq. (9) in MATERIALS AND METHODS)
- wfqb (simplified dynamic term; Eq. (14) in MATERIALS AND METHODS)

References:

Sexton DMH, McSweeney CF, Rostron JW, et al. A perturbed parameter ensemble of HadGEM3-GC3.05 coupled model projections: Part 1: Selecting the parameter combinations. Clim. Dyn. (2021). Accepted. DOI: 10.1007/s00382-021-05709-9.

Yamazaki K, Sexton DMH, Rostron JW, et al. A perturbed parameter ensemble of HadGEM3-GC3.05 coupled model projections: Part 2: Global performance and future changes. Clim. Dyn. (2021). Accepted. DOI: 10.1007/s00382-020-05608-5.