

Instructions:

This scheme requires a new input geo-static data. So after untar the files, put the sd_flt directory (standard deviation of orography based on Beljaars et al., 2004) in the GEOG data directory. There is no other change during compiling and model run. I did not add namelist option for this scheme, thus it is automatically switched on.

Main modifications for implementation of this scheme:

WPS:

geogrid/GEOGRID.TBL

geogrid/GEOGRID.TBL.ARW

WRFV3:

Registry/Registry.EM_COMMON

run/grib2map.tbl

run/gribmap.txt

dyn_em/module_first_rk_step_part1.F

phys/module_pbl_driver.F

References:

Beljaars, A. C. M., A. R. Brown, and N. Wood (2004), A new parametrization of turbulent orographic form drag, *Q J Roy Meteor Soc*, 130(599), 1327-1347, doi:10.1256/qj.03.073.

Wang, Y., et al. (2020), Synergy of orographic drag parameterization and high resolution greatly reduces biases of WRF-simulated precipitation in central Himalaya, *Climate Dynamics*, doi: 10.1007/s00382-019-05080-w.

Zhou, X., K. Yang, A. Beljaars, H. D. Li, C. G. Lin, B. Huang, and Y. Wang (2019), Dynamical impact of parameterized turbulent orographic form drag on the simulation of winter precipitation over the western Tibetan Plateau, *Climate Dynamics*, 53(1-2), 707-720, doi:10.1007/s00382-019-04628-0.

Zhou, X., K. Yang, and Y. Wang (2018), Implementation of a turbulent orographic form drag scheme in WRF and its application to the Tibetan Plateau, *Climate Dynamics*, 50(7-8), 2243-2255, doi:10.1007/s00382-017-3677-y.