10-2022

README

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Public Data used in the manuscript: The Effect of Advection on the Three Dimensional Distribution of Turbulent Kinetic Energy and its Generation in Idealized Tropical Cyclone Simulations

The data in this repository is for the four runs analyzed the manuscript: CAT5-WA, CAT5-NA, CAT1-WA, CAT1-NA. CAT5 represents the category-5 simulations and CAT-1 represents the category-1 simulations. -WA represents simulations with TKE advection and -NA represents simulations without TKE advection turned on.

All the simulations run for 6 days and an individual NETCDF file of post-processed relevant variables is made for every half day. The first 12 hours per day are noted under the file extension "_P1" and the second 12 hours per day are noted under the file extension "_P2". That means there are 12 files per simulation for a total of 48 files. Each file is gziped for space. The total space of the uncompressed files is about ~875 GB. Only data from the innermost domain is shown which is solely what the manuscript analyzes.

The variables in each file are:

heights: interpolated heights for all of the 4-D variables
u_east: zonal wind speed
v_north: meridional wind speed
w_up: vertical wind speed
tke: turbulent kinetic energy
tke_shear: shear budget term of TKE
tke_buoy: buoyancy budget term of TKE
tke_diss: dissipation budget term of TKE
tke_wt: vertical transport budget term of TKE
dtke: change in TKE between time steps
the_advect: calculated advection of TKE
Psfc: surface pressure
Pressure: full pressure field
u10: zonal wind speed at 10-m altitude
v10: meridional wind speed at 10-m altitude
reflectivity: simulated radar reflectivity
Temperature: air temperature
Theta_e: air equivalent potential temperature (θ_e)
sst: sea surface temperature
ocean_temperature: full ocean temperature profile
ocean_levels: ocean vertical levels
latentHF: latent heat flux
sensibleHF: sensible heat flux