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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 gzipped 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