

README: NAWDEX hackathon data

ccf_data – cloud-controlling factor data; for the various simulations, histogram values of total cloud cover (clct) between 0 and 100% and pressure velocity at 500 hPa (omega500) between -1 and 1 Pa/s

clc-qc-qi_data – cloud properties data; for the various simulations, cloud cover (clc), diagnostic specific humidity (tot_qv_dia), diagnostic cloud liquid mass mixing ratio (tot_qc_dia), and diagnostic cloud ice mass mixing ratio (tot_qi_dia) all as a function of time and height

cloudclass_data – classifications of grid cells into cloud classes for different thresholds and all time steps of the various simulations

cloudheating_for_cloudclass – for three sets of thresholds (hq60_mq60_lq25, hq62_mq67_lq30, hq65_mq70_lq35), time mean area mean cloud radiative heating rates (longwave, shortwave, and net) associated with different cloud classes as a function of height. hqn_mqm_lqo denotes a high cloud classification threshold of $n\%$, a middle cloud classification threshold of $m\%$, and a low cloud classification threshold of $o\%$

cloudprops_for_cloudclass - for three sets of thresholds (hq60_mq60_lq25, hq62_mq67_lq30, hq65_mq70_lq35), time mean area mean diagnostic cloud liquid mass mixing ratio, diagnostic cloud ice mass mixing ratio, and cloud cover as a function of height. hqn_mqm_lqo denotes a high cloud classification threshold of $n\%$, a middle cloud classification threshold of $m\%$, and a low cloud classification threshold of $o\%$

domain-mean_data – includes a land-sea mask for our simulation domain and period (201609-land-sea-mask.nc); ERA5 longwave (lw_crh), shortwave (sw_cr), and net cloud-radiative heating (nt_crh); external parameter file for our simulations (extpar_icon-grid_nawdex_78w40e23n80n_R5000m_bitmap.nc)

occurrence_data – pickled data of cloud class occurrences, both with and without area weighting, for the various simulations

openoceanmask – ocean mask (1 for ocean, 0 for land) for the various simulations

q_data – time mean area mean diagnostic cloud liquid mass mixing ratio (qc), diagnostic cloud ice mass mixing ratio (qi), and specific humidity (qv) associated with different cloud classes as a function of height. mp1 denotes one-moment microphysics and mp2 denotes two-moment microphysics. hqn_mqm_lqo suffixes are as in **cloudheating_for_cloudclass** and **cloudprops_for_cloudclass**.

qg_qnx_for_cloudclass – time mean area mean graupel and hail mass mixing ratios (qg, qh); cloud droplet, snow, ice crystal, rain drop, graupel, and hail number concentrations (qnc, qns, qni, qnr, qng, qnh) associated with different cloud classes as a function of height. hqn_mqm_lqo suffixes are as in **cloudheating_for_cloudclass** and **cloudprops_for_cloudclass**.

qs_qr_for_cloudclass – time mean area mean snow and rain mass mixing ratios (qs, qr) associated with different cloud classes as a function of height. hqn_mqm_lqo suffixes are as in **cloudheating_for_cloudclass** and **cloudprops_for_cloudclass**.

radheat_data – mean longwave and shortwave clear-sky and all-sky heating rates for the various simulations as a function of time and height

seaice – sea ice coverage from ERA5 from 2012 through 2016

temp_tendencies_data – area mean temperature tendencies from dynamics (dyn2), shortwave clear-sky radiation (radsw), longwave clear-sky radiation (radlw), turbulence (turb), convection (pconv), microphysics (ddt_temp_mphy), and the summation of these (ddt_temp_totnwpphy) as a function of time and height

w_temp_qv_for_cloudclass - time mean area mean vertical velocity (w), temperature (temp), and specific humidity (qv) associated with different cloud classes as a function of height. hqn_mqm_lqo suffixes are as in **cloudheating_for_cloudclass** and **cloudprops_for_cloudclass**.