

Diurnal Cycle of Precipitation (DCP) project

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Precipitation exhibits pronounced diurnal variability, particularly over land, with distinct regional and seasonal features, which presents a big challenge for weather and climate models to capture. The GASS Diurnal Cycle of Precipitation (DCP) project (<https://portal.nerdc.gov/project/capt/diurnal/>) was created to address this challenge through multi-model intercomparison studies using a hierarchical modeling approach and in-situ and satellite observations. The overall goal is to understand what processes control the diurnal and sub-diurnal variation of precipitation over different climate regimes in observations and in models and identify the deficiencies and missing physics in current GCMs to gain insights for further improving the parameterization of convection in GCMs.

The DCP breakout session will provide an overview of the ongoing GASS DCP project and discuss its future plan. Since the Single-Colum Model intercomparison has been completed (Tang et al., 2021, <https://doi.org/10.1002/qj.4222>), the breakout session will mainly discuss results from its global weather and climate model simulations. In addition, a recent study on the diurnal cycle of precipitation simulated in global storm-resolving models from the DYAMOND project will be also reported. Sufficient time will be reserved for general discussion. The DCP project is looking for leadership and participations to its cloud-resolving model (CRM) and large-eddy simulations (LES) intercomparison study.