

Convective cloud model calibration for short and medium term precipitation forecast in the Philippines

In the Philippines, rain is the most important weather parameter. In particular, convective rain or cumulonimbus clouds make up majority of precipitation during the Asian southwest monsoon season. Aside from the hazards associated with intense rainfall, crop productivity of rain-fed agricultural farms relies on the onset and amount of seasonal precipitation. This study explores the calibration of several parameters in the Kain-Fritsch cumulus parameterization included in the WRF weather model. Convection trigger, CAPE consumption time and auto-conversion rate are found to be most sensitive in rainfall amount quantification. However, parameter calibration varies with different global models (i.e. GFS, CFS, etc.) that drive the WRF model. In addition, significant improvement is seen with adjusted cumulus mode while its impact on overall computing time is negligible. Case studies for (1) a successive thunderstorm events for short-range forecast and (2) five month-long rain and wind for medium-term seasonal prediction will be presented.

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