

# A Dynamical Downscaling System for Climate Prediction in Taiwan

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At National Taiwan University and National Taiwan Normal University, a climate dynamical-downscaling system is being developed based on five general circulation models and the Purdue Regional Model. The GCMs are widely used global models such as the ECHAM4, NCEP/GSM, NCAR/CCM3, CWBGFS, and NTUGCM. The Purdue Regional Model (PRM) has been used for mesoscale simulation for many years. An evaluation of the PRM, based on 10-year simulation driven by the ERA40 data, indicated that the model is capable of simulating the overall characteristics of the East Asian summer monsoon on the seasonal, intraseasonal, onset, and daily time scales.

The Dynamical Downscaling System includes two parts: prediction by the GCMs (T42) and the PRM. The GCMs use the forecast SST from NCEP and Central Weather Bureau as forcing to make seasonal prediction. Each simulation consists of 10 members. Ten members of 23-year (1981-2003) hindcasts were done to establish model climatology. A SVD-biased correction is carried out before making a three-category forecast.

The 10-member seasonal forecasts by the ECHAM4 are now used as the initial and lateral boundary conditions to drive the PRM for seasonal forecast. The PRM has two nested domains. The outer domain covers East Asia with a 45-Km resolution and the inner domain focuses on Taiwan with a 15-Km resolution. Ten members of 23-year (1981-2003) hindcasts are being carried out to establish model climatology. A SVD-biased correction will be done before making a three-category forecast. The system, while being developed, is used for experimental forecasts for the JJA 2005 and DJF 2005/06.