Geophysical Research Abstracts
Vol. 15, EGU2013-3322, 2013
EGU General Assembly 2013

Short-Range (0-12hr) Typhoon PQPFs from Time-Lagged Multimodel Ensembles Using LAPS in Taiwan

Hui-Ling Chang (1,2), Huiling Yuan (3), and Pay-Liam Lin (1)

(1) Department of Atmospheric Sciences, National Central University, Jhong-Li, Taiwan , (2) Central Weather Bureau, (3) School of Atmospheric Sciences, Nanjing University, Nanjing, Jiangsu, China

This study pioneers the development of short-range (0-12hr) probabilistic quantitative precipitation forecasts (PQPFs) in Taiwan and aims to produce the PQPFs from time-lagged multimodel ensembles using the Local Analysis and Prediction System (LAPS). By doing so, the critical uncertainties in prediction processes can be captured and conveyed to the users. Since LAPS adopts diabatic data assimilation, it is utilized to mitigate the "spin-up" problem and produce more accurate precipitation forecasts during the early prediction stage (0-6hr).
The LAPS ensemble prediction system (EPS) has a good spread-skill relationship and good discriminating ability. Therefore, though it is obviously wet-biased, the forecast biases can be corrected to improve the skill of PQPFs through a linear regression (LR) calibration procedure. Sensitivity experiments for two important factors affecting calibration results are also conducted, including: (1) the experiments on different training samples, and (2) the experiments on the accuracy of observation data. The first point reveals that the calibration results vary with training samples. Based on the statistical viewpoint, there should be enough samples for an effective calibration. Nevertheless, adopting more training samples does not necessarily produce better calibration results. It is essential to adopt training samples with similar forecast biases as validation samples to achieve better calibration results. The second factor indicates that due to the inconsistency of observation data accuracy in the sea and land areas, only separate calibration for these two areas can ensure better calibration results of the PQPFs.