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Title: Status and Outlook of LAPS-MM5 System in Central Weather Bureau, Taiwan

Abstract: Abstract A diabatically initialized LAPS (local analysis and prediction system) PSU/NCAR MM5 system (or called hot-start MM5) is under a joint development program between FSL/NOAA and CWB to be capable of effectively shortening the spin-up problem of simulating convective storms. Conventional and unconventional data sources (such as the upper-air soundings, radar, and satellite data, etc.) are assimilated into the first guess field of the MM5 system (Jan et al., 2003). The uniqueness of hot-start MM5 lies in the (1) cloud analysis scheme, which is designed to provide a more realistic description of the hydrometers in the atmosphere, (2) moisture analysis scheme, which can generate a three-dimensional moisture field consistent with the moisture integrations sensors, (3) dynamic balance scheme, which is to ensure that the momentum and mass fields are consistent with the cloud-derived vertical motions. It turned out that hot-start MM5 was capable to predict the strength and location of heavy precipitation system with 6-hourly rain rate greater than 35mm (higher Equitable Threat Score), yet prone to over-predict the rainfall rate when precipitating system was weaker. In order to suit the need for near real-time severe weather forecast (2-12hr), many challenging tasks related to the cloud analysis, dynamic and thermodynamic balance schemes are to be overtaken in the forthcoming years. References Jan, G.-J., S.-L. Shieh, J. Mcginley, 2003: Precipitation simulation associated with typhoon Sinlaku (2002) in Taiwan area using the LAPS diabatic initialization for MM5. Terrestrial, Atmospheric and Oceanic Sciences., 14, 1-28.

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