Rainfall forecast with improved high resolution regional Model-hrm & verification results in Vietnam

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The vital moisture from Indian monsoonal westernization in convergence with TCs -ITCZ of WP causes heavy rainfall leading to severe flooding for IP and adjacent countries, makes it extremely important to improve rain forecast, may be by a Regional Numerical Weather Prediction Model nested in a Global Model. The heavy rainfall over SEA region caused mostly by convection (70%-80% of the total amount) makes it extremely important to choose and improve an appropriate convection parameterization scheme for this tropical region. The High Resolution Regional Model (HRM) originated from DWD nested in the GME is used for weather forecast in Vietnam with concentration on typhoon forecasting and QPF by improvements : increasing model resolution to horizontal resolution of 14 km and 31 vertical levels, changing the convection parameterization scheme of Tiedtke 1989 (TK) by scheme of Bettes-Miller-Janijc (BMJ) and assimilating of surface measurements, sounding and satellite observations by 3DVAR, which originated from DWD for GME and developed for HRM by Le Duc and all together is called H14-31/BMJ+3DVAR. The verification results with categorical statistics show that the rainfall forecast by H14-31/BMJ have been improved averagely 15%-25% in comparision with the forecast of the original HRM of DWD. The verification of the 1.day rainfall forecast by our H14-31/BMJ with CRA method provided with errors decomposition as: displacement error of 46,1 %, volume error of 7,8 % and pattern error of 46,1 % based on 633 CRAs during 3

rain seasons (2003-2005) for the Northeast subregion of Vietnam. Those errors may be comparable with corresponding errors of (50 1) % (5 0,3) % and (45 1) % of LAPS for Australian region. Our funding also shows that although the model with convection scheme of BMJ provided rainfall forecast for the region of interest much best than with Tiedtke convection scheme, but not enough good for the southeast Asian region. The data assimilation by 3DVAR shows: A significant improvement in forecasting during the first 12 hours; A marginal/neutral improvement on surface pressure, temperature and humidity forecasts with the forecast range more than 12 hours; A small impact on 24h precipitation forecast with increment in correlations and reduction in RMSE and false alarm rates and Improvement mainly comes from background fields. The new improved HRM is operational model in Vietnam National Centre for hydrometeorological Forecasting. We have developed 3DVAR to reach a system automatically runing cyclic every 6h to change GME-Analysis by forecast of improved HRM .The problem is how to find a more suitable convection parameterization scheme for SEA region or to do combination of different schemes. Keywords: Atmospheric Science, Precipitation forecasting, verification. Dir Sir , I sent my Abstract to EGU-2007, but I can come to participate in this EGU-meeting to prend only if I have financial support for my travel from EGU. Thank you very much for your understand. Sincerely yours. Kieu Thi Xin