BMB-UCAR WRF 3D-Var project

21 April – 25 May 2007
Reporting time (for this report): 25 May 2007

Task 5. Meteorological performance

5.1. BE

Waiting for Shuiyong's report….

5.2. WRFDFI

Min finished tuning the DDFI process. For a cold start run for 9km domain, we are able to have an ideal noise level and the un-damaged verification scores after DFI. In addition, Min found 1) the misplacement of the start_indexes in x/y direction of the nested domain, even one point (namelist_input value: 45/52, while the correct value in geogrid is 46/53), may lead to severe noise. This kind of noise can't be removed by digital filtering. 2) DDFI can't work with the option of NOAH land-surface model. The problem is still under investigation.

5.3. Cycling runs of WRF 3DVAR system

A pre-operational cycling system based on WRF and WRFVAR has been constructed on the computing platform of BMB. The cycling system performs data assimilation and 18-h forecasts for both 27/9km domains with 3-hour updated interval every day. Also, a post-processing procedure based on cycling results to make convective forecast products has been developed.

Task 6. Monitoring of pre-operational runs and case studies

6.1. OSE

A real-time GTS data collecting system, which is able to collect and pre-process the GTS data including SYNOP, METAR, AMDAR, TEMP, PILOT, SHIP/BUOY and other intense observations etc., has been finally setup. According to the previous OSE results, PILOT data has been ignored to be pre-processed and assimilated as they're duplicated from sounding wind observations. SHIP and BUOY data are also ignored as they're found no impact on forecast qualities. Therefore, the cycling system will assimilate

SYNOP (conventional + intensive), TEMP (conventional + intensive) and AMDAR, along with the local AWS (METAR) and GPS/pw data in Beijing area.

6.2. Regular comparison of pre-operational runs with operational MM5 runs

No progress for this part.

6.3. Implementation of DFI on cycling system of WRF 3DVAR

Min performed a 4-day cycling experiments for the 9-km domain with 3-hr updated interval for two parallel runs: NODFI and DDFI. She found DDFI may lead to better noise level and forecast scores. However, the DDFI cycling crashed after 4 days' integration. Min will focus on resolving this problem.

6.4. Tuning of WRF Model

No progress for this part.

6.5. Verification

No progress for this part.

Next report time: 8th June, 2007