

Recent Verification of NMOO Weather Operational Mesoscale Spectral Model (MSM)

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Abstract

Taiwan Naval Meteorological and Oceanographic Office (NMOO) and previous Naval Meteorological Center (NMC) have been used NCEP Regional Spectral Model (RSM) and Mesoscale Spectral Model (MSM) for routinely daily weather forecasts to support Naval navigation. Since 1997, when Taiwan NMC had Cray machine for weather forecast, RSM was used as operational weather forecast model. Then, different versions of RSM and MSM were used for operational routinely weather forecast whenever they upgraded to new super computers. Recently, NMOO had a new massively parallel cluster machine, which requires a new version of model to take advantage of cluster machine. The recent version of RSM/MSM with massively parallel computing capability were adapted and implemented into NMOO operational suite for weather forecast. For advancing in nonhydrostatic modeling, we decide to use MSM (nonhydrostatic) for operational computation without RSM (hydrostatic).

After several operational tries, tuning and adjustments etc, a much stable and well-performed version of MSM has been routinely running in the NMOO operational suite since January 2019. The major elements for verification used for NMOO are 10m wind and 2m temperature. The bias of afore-mentioned major forecast elements, 2m temperature and 10 m wind, are verified with respect to its analysis and shown very promising results in term of daily, monthly and seasonal scores.

For Naval navigational safety, the forecast of typhoon is also very important, especially around Taiwan. We have selected several different cases during past year with different typhoon track-types to investigate the performance of this newly implemented MSM. The tracks of selected typhoon cases do indicate the reasonable and well-predicted tracks from MSM.

References:

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