



Progress on
Beijing 2008 Olympics
Research and Development Project

Meso-scale Ensemble
Prediction

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Outline

- **The activities and progresses in 2007**
- **The progresses since the 3rd workshop**
- **The implementation plan in 2008**

The progresses since the third workshop

- RDP implementation plan in 2008
- RDP Data collection and backup system
- B08RDP website, new discussion forum
- New automatic platform for data processing and display
- Upgrading on background field and lateral boundary condition for CMA regional ensemble prediction system
- New product processing program
- New statistical post-processing method

Update on RDP data collection and backup in 2008

- Data collection platform:
- Collecting RDP Data with International Telecommunications System at National Meteorological Information Center(NMIC) and data download is supported:

Server address: rthbj.cma.gov.cn

Logging in Account: b08rdp

Products data Directory: ~b08rdp/realtime/Center_Name/YYYYMMDDH

- Data backup platform(NEW in 2008):
- To backup RDP data with storage server at NMIC, and storage directory is same as that of data collection server.

- Upgrading on background field and lateral boundary condition for CMA regional ensemble prediction system due to Global EPS upgrading:
- Analysis scheme for global EPS is upgraded from OI scheme to SSI scheme plus ATOVS data assimilation, and the uncertainties of analysis field is re-evaluated, which solves the problem of too large spread at starting period existed in original global EPS at CMA.

New product processing platform

- New product processing platform is underway

- Old method

 - Decode the Grib2 data to a certain format

 - Read the data and plot figures

 - Hard to add new products; wasting time and storage space

- New method

 - Read Grib2 data directly

 - Reorganize the software and could extend new products ease.

Statistical Post-Processing

We upgrade Bias Correction method from first moment to second moment, which decrease the system errors greatly

$$B_{i,j}(t) = (1 - w)B_{i,j}(t - 1) + w b_{i,j}(t)$$

$$R_{i,j}(t) = (1 - w)R_{i,j}(t - 1) + w r_{i,j}(t)$$

Error evaluation

FIRST MOMENT

B = ensemble average – verification analysis

SECOND MOMENT

R = RMSE of ensemble average / Ensemble spread

Bias correction

1st moment =

Ensemble Average – B

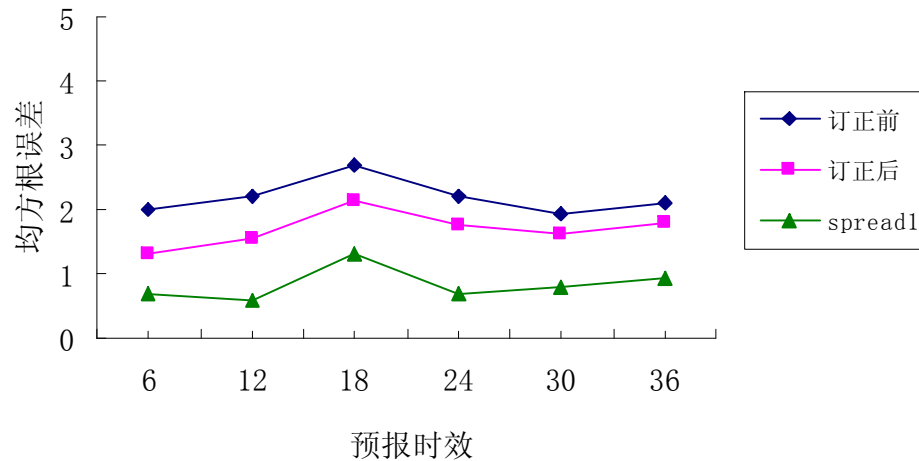
**2nd moment = Ensemble Average – B
– (Ensemble Forecast – Ensemble
Average) * R**

RMSE & Spread

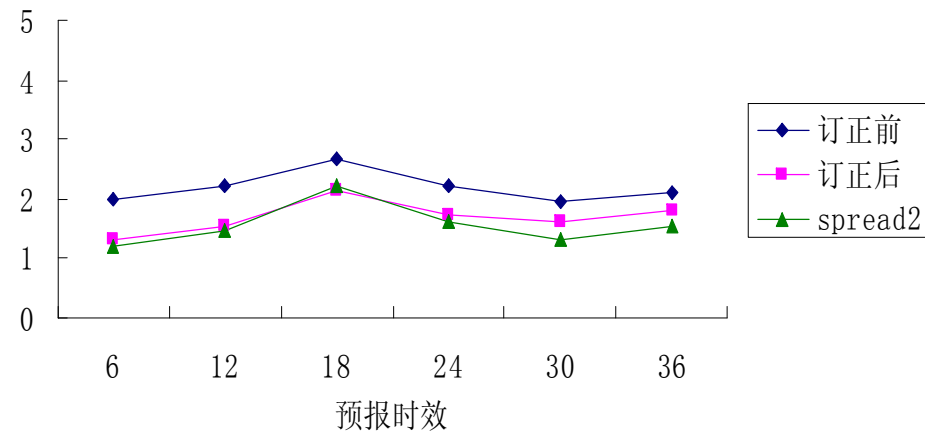
1st calibration

2nd calibration

nmcc模式集合平均的均方根误差



nmcc模式集合平均的均方根误差和离散度



After bias correction, RMSE decrease obviously, and the spread is improved, especially with second moment calibration method.

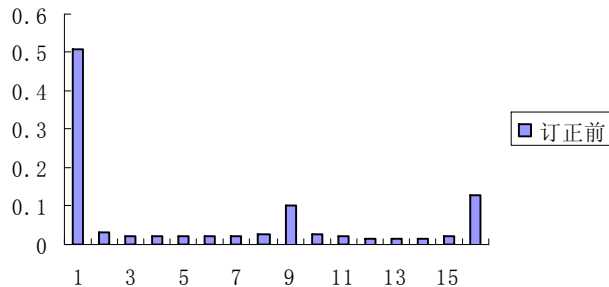
Talagrand Distribution

Before

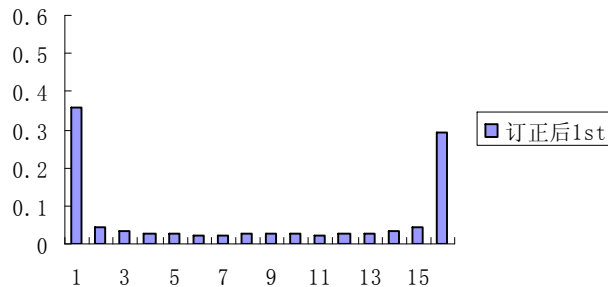
1st Calibration

2nd Calibration

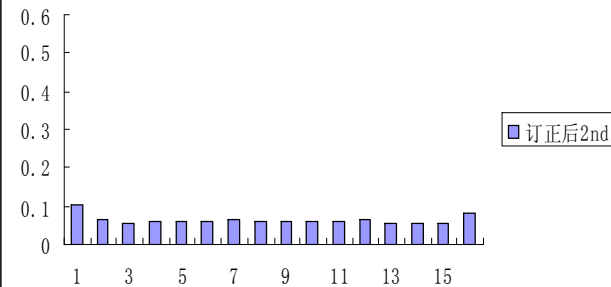
订正前6h预报的talagrand分布



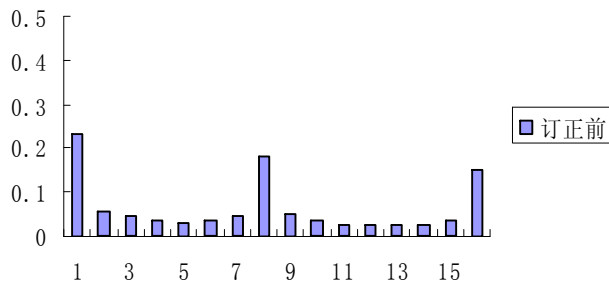
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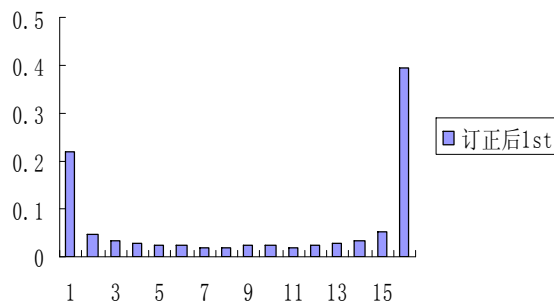
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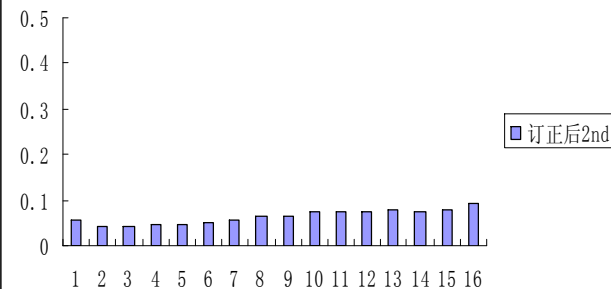
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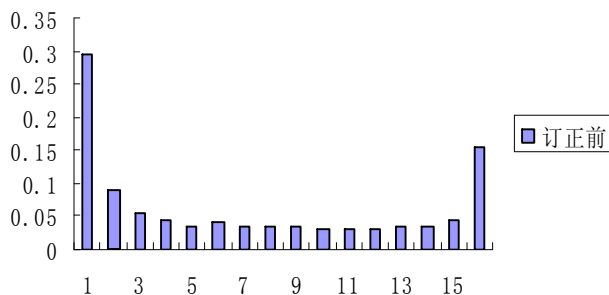
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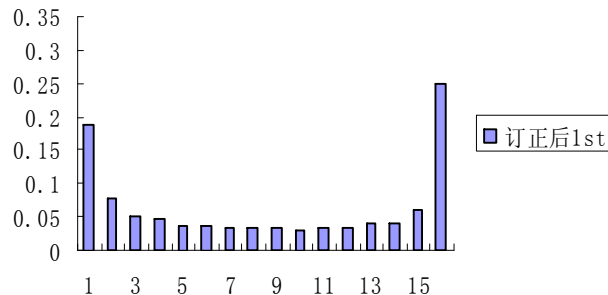
2nd订正后18h预报的talagrand分布



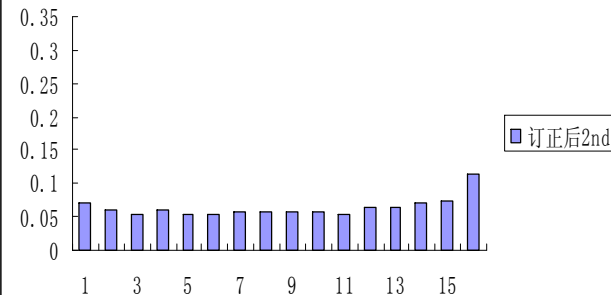
订正前36h预报的talagrand分布



1st订正后36h预报的talagrand分布



2nd订正后36h预报的talagrand分布



RDP implementation plan in 2008

Tier-1 (15km) MEPS test (from July 1st to August 31)

- Bias-correction is performed in the third RDP test to get an enough training period for bias-correction and a longer time assessment for Meso-scale EPS.
- NMC/CMA will start preparative RDP test from beginning of spring, 2008, in order to perfect RDP flow, including observation data, data transfer, bias-correction, verification, RDP website and so on.
- The new product processing software is used to deal with GRIB2 data for NMC REPS products.
- Check the consistency in RDP participants data

RDP implementation plan in 2008

Tier-2 progress

- Comparison between Tier-I and Tier-II, it is suggested that JMA perform it.
- Different participating groups compare simulations of the two selected cases (1 August 2006 and 31 July 2007), and the participating groups include JMA, CMA and NCAR/BMB.
- MRI/JMA will assess the impact of several factors as follows: Data assimilation, Impact of GPS PW, Digital filter

RDP implementation plan in 2008

■ Scientific issues

- How to verify MEPS is useful?
- What is the efficient way to perturb initial condition?
- How to increase 2m temperature perturbation spread?
- How to combine Tier-1 and Tier-2?
- How to combine multi-center EPS data?

■ Publication plan

■ Support to FDP and Beijing Olympic Games

■ Products requirement and B08RDP website

■ Training to forecasters (only in CMA)

■ Link to other international project

■ Topics for next workshop

Time schedule

- NCEP products generating code are used successfully before May of 2008
- CMA provides a standard format for GRIB2 coding of B08RDP before the April of 2008
- NMC/CMA will provide all EPS data in the second test period before March of 2008
- The implementation plan of each science issue is decided in the end of March
- The research results of science issue will be collected before November of 2008
- The science papers are submitted before 2009?
- The third test of Tier-1 will be performed from July 1st to August 31, 2008.
- RDP workshop will be held in the spring of 2009.

**Thank you
for your attention**