

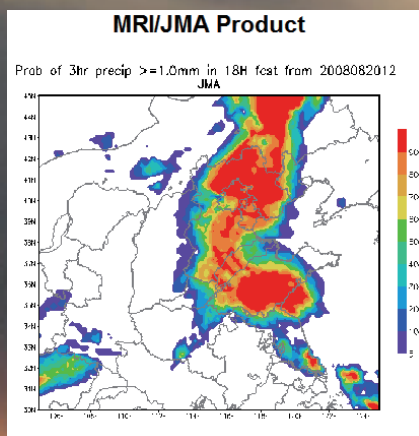
International Research for Prevention and Mitigation of Meteorological Disasters in Southeast Asia

MEXT Special Coordination Funds for Promoting Science and Technology for FY 2007 - 2009
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“Numerical Weather Prediction and Data Assimilation in Southeast Asia” on June 16, 2008

In conjunction with the program of International Research for Prevention and Mitigation of Meteorological Disasters in Southeast Asia (see Newsletter No. 1, Dec. 2007), Shigeo Yoden (Kyoto University), Tieh Yong Koh (Nanyang Technological University), and Tri Wahyu Hadi (Institut Teknologi Bandung) has successfully convened a session (AS06) entitled Numerical Weather Prediction and Data Assimilation in Southeast Asia at the 5th Annual Meeting of Asia-Oceania Geoscience Society (AOGS) that was held in Busan, Korea during 16-20 June 2008 (Photo 1). This session was aimed at strengthening and widening the network of researchers interested in weather and climate prediction in Southeast Asia.

As many as 13 presentations were registered to the A06 session of the AOGS 2008 and only one was cancelled. The core members of the International Research for Prevention and Mitigation of Meteorological Disasters in Southeast Asia research team who attended this session are : Shigeo Yoden and Shigenori Otsuka (Kyoto University), Kazuo Saito and Shugo Hayashi (MRI), Tieh Yong Koh (NTU), and Tri Wahyu Hadi (ITB). An invited talk by Hongwen Kang of APEC Climate Center (APCC) highlighted some new results in multi-model outputs statistical downscaling prediction. In addition, there are contributed talks by Fredolin Tangang (National University of Malaysia), Der Song Chen (Central Weather Bureau of Taiwan), Kevin Kei Wai Cheung (Macquarie University, Australia), Che-Kiat Teo (NTU), Bhuwan Chandra Bhatt (NTU), and Ok-Yeong Kim (Pukyong National University, South Korea).

The A06 session of the AOGS 2008 has highlighted one fundamental problem in lieu of advanced NWP modeling i.e. the predictability of weather system in the Southeast Asian region. This confirms that the complexity of weather systems in Southeast Asia, that comprises the Maritime Continent, is one of the most challenging problem in atmospheric predictability due to dominant role of the mesoscale convective system. The very same problem that is also actually addressed by Professor Taroh Matsuno in his Axford Lecture of AOGS 2008 “Modeling of Tropical Convection by Use of an Ultra-High Resolution (3.5-7 km) Global Atmosphere Model – New Age of Tropical Meteorology”. In such a situation, the “International Research for Prevention and Mitigation of Meteorological Disasters in Southeast Asia” is an excellent program to provide a knowledge hub for young scientists in Southeast Asian countries to access latest information on the ever developing science and technologies of weather and climate prediction.

As a side activity, the core members of the International Research for Prevention and Mitigation of Meteorological Disasters in Southeast Asia research team also visited the APEC Climate Center (APCC) in Busan on 16 June 2008. We would like to thank Dr. Hongwen Kang and Dr. Karumuri Ashok for their kind arrangement of the visit. Beside us, it turned out that many other scientists attending the 5th AOGS Annual Meeting were also interested in the program, so that in total there were more than 20 participants visiting APCC in the afternoon of 16 June 2008. Inline with the goals of our collaborative international research program, APCC has an excellent ensemble climate forecast data center that could help scientists in the APEC region (including those in Southeast Asia) to conduct research in the application of climate prediction. APCC has also been developing data management and data processing tools to make climate prediction more amenable for developing Asia-Pacific countries. Undoubtedly, closer collaboration with APCC in the future is necessary for the success of our program.

(Tri Wahyu Hadi, ITB)



Photo 1. Opening talk by Dr. Tieh Yong Koh.

Topics

The WWRP Beijing Olympics 2008 Forecast Demonstration / Research and Development Project

The WWRP Beijing Olympics 2008 Forecast Demonstration / Research and Development Project (B08FDP/RDP) is an international research project for a short range weather forecast of the WMO World Weather Research Programme (WWRP), which succeeded the Sydney 2000FDP. The B08FDP/RDP is divided into two components; the FDP component for a short range forecast up to 6 hours based on the nowcasting (<http://www.b08fdp.org>), and the RDP component for a short range forecast up to 36 hours based on the mesoscale ensemble prediction (MEP) system (<http://www.b08rdp.org>). Aims of the RDP project are to improve understanding of the high-resolution probabilistic prediction processes through numerical experimentation and to share experiences in the development of the real-time MEP system. In the 2008 experiment, six participating systems from Austria and France (ZAMG and Météo-France), Canada (MSC), China (NMC and CAMS), Japan (MRI/JMA) and United States (NCEP) joined B08RDP, and intercomparisons of MEP systems were conducted for one month from 24 July to 24 August, including the period of the Olympic games. Every participants ran their MEP forecasts in real-time and sent the 36 forecasts to the CMA's ftp server. The products were displayed every day on the B08RDP's website (Fig. 1) for reference of Beijing Meteorological Bureau's forecasters.

Collaborating with the Numerical Prediction Division of JMA, MRI developed its MEP system with a horizontal resolution of 15 km. It consists of 11 members: one control run and ten perturbed members. Initial conditions of the control run were given by the meso 4DVAR analysis which assimilated precipitation data over China, while initial perturbations were computed by the global targeted singular vector method. Lateral boundary perturbation method was newly implemented, and the latest version of NHM was employed as the forecast model. MRI also supported the Hong Kong Observatory (HKO) team by providing boundary conditions to NHM used in the HKO's B08FDP short range forecasting system SWIRLS. Results and outcome of the intercomprisons will be discussed at the 4th international B08FDP/RDP workshop held in 2009 at Beijing.

(Kazuo Saito, MRI)

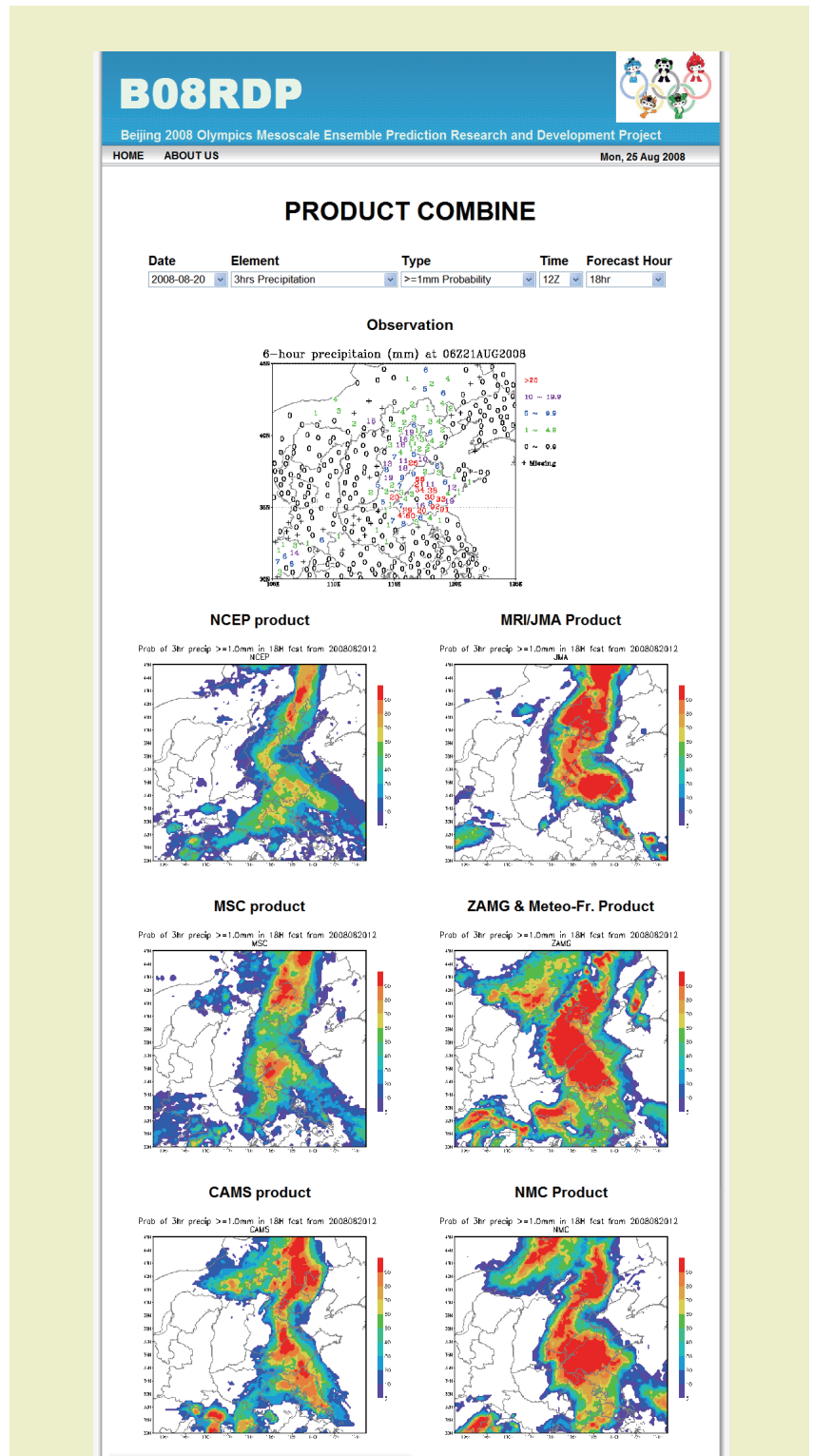


Figure 1. Example of the B08RDP product. Probability of precipitation greater than 1 mm in 3 hours from 03 UTC to 06 UTC 21 August 2008 predicted by MEP systems of 6 participants. Initial time is 12 UTC 20 August (FT=18). Observation shows accumulated 6 hour precipitation from 00 UTC to 06 UTC. After CMA's B08RDP website (<http://www.b08rdp.org>).

Topics

The Second Domestic Workshop

The second domestic workshop on the International Research for Prevention and Mitigation of Meteorological Disasters in Southeast Asia was held in September 9-10, 2008, at the Meteorological Research Institute in Tsukuba, Japan. There were 28 participants and we had active discussions. The program was as follows:

September 9 (Tue)

1310-1330 Opening

1330-1620 Session 1: Observation and Data

Taiichi HAYASHI (DPRI, Kyoto University)

Recent research trend of mesoscale phenomena in South Asia.

Takehiko SATOMURA (DG, Kyoto University)

Precipitation characteristics in northern Indochina.

Noriyuki NISHI (DG, Kyoto University)

Detection of precipitation using split-window measurements by geostationary satellite.

Hirohiko ISHIKAWA (DPRI, Kyoto University)

Myanmar Cyclone Nargis: Satellite images and numerical experiments by WRF.

Masato SHIOTANI (RISH, Kyoto University)

Stationary circulation observed in the upper troposphere over the western Indian Ocean.

Yoshinori SHOJI (MRI, JMA)

Global realtime analysis of GPS data and plan of assimilation experiments.

Takeshi HORINOUCI (RISH, Kyoto University)

Gfdnavi: present and future prospects.

Seiya NISHIZAWA (DG, Kyoto University)

Experimental development of a decision support system for prevention and mitigation of meteorological disasters with Gfdnavi.

1620-1700 Invited talks

Shuichi MORI (JAMSTEC/IORGC)

Present status of JEPP/HARIMAU radar-profiler network observations in Indonesia.

Manabu YAMANAKA (JAMSTEC/IORGC)

Coastline length governing equatorial rainfall amount.

1700-1730 Discussions on data archive and cooperation

September 10 (Wed)

0910-1200 Session 2: Numerical weather prediction

Shigeo YODEN (DG, Kyoto University)

Ensemble forecasts with regional models.

Kohei ARANAMI (NPD, JMA)

Improvements of utility tools to carry out NHM and introduction of DVD-NHM.

Syugo HAYASHI (MRI, JMA)

Intercomparisons of NHM and WRF forecasts over topical and Japan areas.

Tohru KURODA (MRI, JMA)

Development of utility tools for NHM execution in tropics and reproduce/forecast experiments of Nargis.

Kazuo SAITO (MRI, JMA)

Tidal wave simulation on ensemble forecast of Nargis.

Mitsuru UENO (MRI, JMA)

Some aspects of typhoon structure represented in the JMA meso-analyses and synthetic data.

Masaru KUNII (MRI, JMA)

Regional data assimilation experiment in southeast Asia.

Hiromu SEKO (MRI, JMA)

Structure of the regional heavy rainfall occurred at Santacruz, India on 26 July 2005.

1200-1230 Discussion on Bandung WS

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