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

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Topics

MRI Scientist visited CMMCS in India

Syugo Hayashi of the Meteorological Research Institute visited CSIR / CMMCS (Council of Scientific and Industrial Research / Centre for Mathematical Modeling and Computer Simulation) of India in March 2009. His visit was done to help the installation of the JMA nonhydrostatic model (NHM) to the CMMCS's computer system and to promote the mutual collaboration between MRI and CMMCS.

From 23rd to 25th March, Hayashi visited CMMCS and met Krushna Chandra Gouda, a research scientist of CMMCS (Photo. 1). NHM was installed in the CMMCS's super computer SGI ALTIX 3700 BX2, which has 24 CPUs of Itanium2 processor at 1.6GHz clock speed, 96GB physical memory. Intel Fortran and C compilers and MPI libraries are available for parallel computing. To see NHM's output with the NuSDaS format (JMA original data format), a visualization software package 'WEBPANDAH' was installed in the web-server SGI ORIGIN. As the disk storages of both machines are shared, access from ORIGIN to the result of NHM by ALTIX is easy.

For a test, a heavy rain case in south India on 22nd March 2008 was selected. The 24 hour simulation was conducted with the 20 km horizontal resolution. The NCEP final analysis with 1 degree is used for initial and boundary conditions. Figure 1 shows the 24 hour accumulated precipitation, sea level pressure and surface wind at 00 UTC 22 March 2008 predicted by NHM. The observed intense rain was well simulated, but some positional errors remained.

Photo 1. Photograph taken at the hotel Basil Ikon (Bangalore, India). Krushna Chandra Gouda (left) and Syugo Hayashi (right).

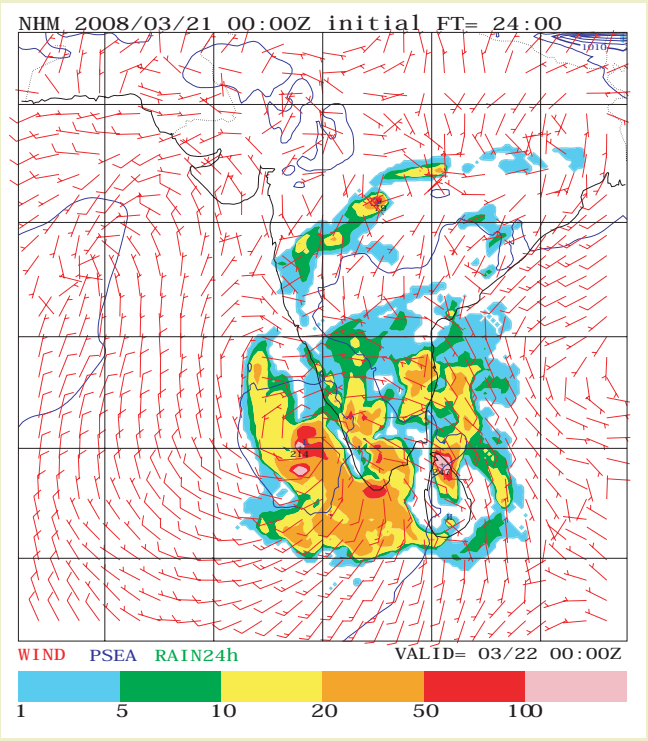

Figure 1. Predicted 24 hour accumulated precipitation, sea level pressure and surface wind at 24-hour forecast by NHM with a horizontal resolution of 20 km. NCEP final analysis at 00 UTC 21 March 2008 was used as the initial condition.

In the afternoon of 25th March, Hayashi made a presentation at the CMMCS seminar. The introduction of NHM and the performance of NHM in mid- and low- latitudes were shown. At low latitudes, NHM performance is insufficient compared with mid-latitudes. Therefore, tuning of the model for low-latitudes is needed to improve the forecast accuracy. In addition, it has to be confirmed that the model performance improves with finer horizontal resolutions (e.g., 5 km). Cooperation of researchers in various countries/regions is needed for further model's improvements.

(Syugo Hayashi, MRI / JMA)

Visits to three institutions in Jakarta, Indonesia for further international research collaborations

On August 14, 2009, Prof. Shigeo Yoden took an early flight from Singapore and arrived around 08:30 local time at the Sukarno-Hatta International Airport, Jakarta. I picked him with a chartered car and we started a "one day tour" to three institutions in Jakarta, Indonesia : (1) Japan International Cooperation Agency (JICA) – Indonesia Office, (2) Southeast Asian Ministers of Education Organization, Regional Open Learning Center (SEAMOLEC), and (3) Meteorological, Climatological, and Geophysical Agency (BMKG) Head Quarter. The main purpose of our visit was to explore new possibilities to promote collaboration between Kyoto University, Bandung Institute of Technology (ITB), and other institutions in Indonesia on the development of weather prediction technology for mitigating hydrometeorological disasters in Indonesia and other tropical Asian Countries through a JST-JICA program, Science and Technology Research Partnership for Sustainable Development (SATREPS).

The most important institution that we visited this time was the JICA Indonesia Office, which is located at Jl. Sudirman in Central Jakarta. Our purpose for visiting JICA was to obtain detailed information on the implementation of SATREPS in Indonesia. Mr. Kiichi Tomiya, a senior representative of JICA, kindly accepted our visit from 11:30 until 12:00 local time (Photo 1). From this visit, we learned the possibility for Kyoto University and ITB to submit a proposal to SATREPS.

The second institution we visited was SEAMOLEC, which is located in Ciputat area, South Jakarta. It was unfortunate that we could not see the Director, Dr. Gatot Haripriyanto because of his health problem. Mr. Ith Vuthy (Deputy Director of Program) and Ms. Dina Mustafa (Research and Development Manager) cordially met us and gave comprehensive explanations about the center's activities (Photo 2). We found out that, with wide access to educational resources in Southeast Asian countries, SEAMOLEC is one of potential counterpart to enhance "weather and climate literacy" in the region.

The visit to BMKG office was planned just a few days before Prof. Yoden's arrival in Jakarta. In spite of very limited time, we decided to visit BMKG because our partnership with the national weather service will be crucial for the envisioned proposal to SATREPS. Due to the timing, it was difficult to see higher authorities at BMKG but we met Dr. Dodo Gunawan (staff of Research and Development Center) and Mr. Sasmito (operational staff) (Photo 3). We found that they, who represent the work force of the institution, were very supportive to our ideas on the new collaboration between Kyoto University, ITB, and BMKG.

Photo 1.

Photo 2.

Photo 3.

Our tour of the day was completed but we had to catch up with Prof. Yoden's flight through a terrible traffic jam. I was relieved when I saw Prof. Yoden finally came out of the check in counter several minutes before it was closed, but I kept thinking about the big work on the preparation of our new proposal during my trip back to Bandung.

(Tri Wahyu HADI , Bandung Institute of Technology)

Lectures in KAGI21 International Summer School

Two lectures on “Decision support system for prevention and mitigation of meteorological disasters” and “DVD-NHM” were given during the 5th KAGI21 International Summer School in Ohmi-Maiko, Siga on 26-27 September 2009. There were 14 participants (7 from Asian countries and 7 from Japan).

Shigenori Otsuka was the lecturer of the former. In the lecture, the participants learned how to utilize ensemble numerical weather forecasting data for disaster prevention and mitigation, in which a decision support system built on a web-based visualization tool and database server "Gfdnavi" was used. The data for the exercise was an output of an experimental ensemble numerical weather forecasts on cyclone Nargis, which attacked Myanmar in May 2008. The data was provided by Dr. Kuroda (MRI / JMA) and his colleagues. The participants used laptop PCs to run the decision support system and tried several visualization methods to extract information from ensemble numerical weather predictions.

Syugo Hayashi (MRI/JMA) was the lecturer of the latter. In his lecture, the participants learned how to perform numerical simulations using a nonhydrostatic regional weather forecasting model JMA-NHM installed on a bootable DVD-ROM (DVD-NHM). Using DVD-NHM on the laptop PCs, the participants performed numerical experiments on a low-pressure system over Japan on 23rd April 2008, following instructions shown on a web-browser. The horizontal resolutions were 20 km and 5 km with one-way nesting. The participants learned how to analyze the result with a web-based visualization tool "web-pandah".

(Shigenori Otsuka, Kyoto University)

Photo 1.

Photo 2.

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Shigeo Yoden
Department of Geophysics, Kyoto University, Kyoto 606-8502, Japan
Tel: +81-75-753-3932
Fax: +81-75-753-3715
E-mail: yoden@kugi.kyoto-u.ac.jp
Web: http://www-mete.kugi.kyoto-u.ac.jp/project/MEXT/