

Please note special date and time

Special Seminar

Munehiko Yamaguchi

Visiting from the Typhoon Research Department, Meteorological
Research Institute, Japan Meteorological Agency

Kosuke Ito

Visiting from the Department of Physics and Earth Sciences, University of the Ryukyus

Recent Research and Development in Japan to Improve Typhoon Forecasts

Hosted by Michael Bell

Thursday, October 20, 2016

**ATS room 101; Discussion will begin at 3:00pm
Refreshments will be served at 2:45pm in the weather lab**

After the 8th WMO International Workshop on Tropical Cyclones in 2014, the Japanese Meteorological Research Institute (MRI) at the Japanese Meteorological Administration (JMA) in cooperation with the RSMC Tokyo Typhoon Center sorted out issues in the JMA's typhoon forecasting and then strengthened research and development activities toward improving the tropical cyclone related services. One of the examples is implementing the Statistical Hurricane Improvement System (SHIPS) with great support of SHIPS developers in the US and at CIRA/CSU. Another example is typhoon genesis forecasts using the early Dvorak method and global ensembles. Recent activities at MRI/JMA to improve typhoon forecasts will be introduced and discussed.

A new sensitivity analysis method developed at the University of the Ryukyus is proposed for the ensemble prediction system in which a tropical cyclone (TC) position is directly taken as a metric. Sensitivity is defined as a slope of linear regression (or its approximation) between state variable and a scalar representing the TC position based on ensemble simulation. The experiment results illustrate important regions for ensemble TC track forecast. The typhoon-position-oriented sensitivity analysis (TyPOS) is applied to Typhoon Shanshan (2006) for the verification time of up to 48 h. The sensitivity field of the TC central latitude with respect to the vorticity field obtained from large-scale random initial perturbation is characterized by a horizontally tilted pattern centered at the initial TC position. The results are consistent with the sensitivity signals obtained from existing methods. The verification experiments indicate that the signals from TyPOS quantitatively reflect an ensemble-mean position change as a response to the initial perturbation. The new sensitivity analysis method will be discussed along with several additional tests and applications in T-PARCII.

Link to colloquium videos and announcement page: <http://www.atmos.colostate.edu/dept/colloquia.php>