

Séminaire **Vendredi 28** février 2014 **11:00h** / Seminar **Friday** February 28th 2014 **11:00h**

Sujet/Subject: **Subseasonal variability of North American wintertime surface air temperature**

Conférencier/Lecturer: Hai Lin (RPN)

Résumé/Abstract

Using observational pentad data of the most recent 34 Northern Hemisphere extended winters, subseasonal variability of surface air temperature (SAT) over North America is analyzed. The four leading modes of subseasonal SAT variability, that are identified with an empirical orthogonal function (EOF) analysis, account for about 60% of the total variance. Lagged regression analysis is conducted to identify the precursors of large-scale atmospheric circulation for each mode a few pentads in advance, and to understand the processes that influence the subseasonal SAT variability and the predictability signal sources. EOF1 is found to be closely related to the Pacific - North American (PNA) circulation pattern and is preceded by the East Asian cold surge. The cold surge leads to low-level convergence and enhanced convection in the tropical central Pacific which in turn induces the PNA. EOF2 tends to oscillate at a period of about 70 days, and is influenced by the low-frequency component of the Madden-Julian Oscillation (MJO). On the other hand, EOF3 and EOF4 are connected to the high-frequency part of the MJO which has a period range of 30-50 days. These findings would help understanding the mechanisms of subseasonal surface air temperature variability in North America and improving weather predictions on a subseasonal time scale.