

**Séminaire ven 15 Oct 2010 11h / Seminar Fri Oct 15th 2010 11h**

**Conférencier/Lecturer:** Mark Buehner

**Sujet/Subject:** Proposed modifications to the global 4d-var analysis system

**Présentation/Presentation:** Anglais / English

**Lieu/Room:** Salle des vents (Dorval)

**iweb:** <http://web-mrb.cmc.ec.gc.ca/mrb/rpn/SEM/>  
**web:** <http://collaboration.cmc.ec.gc.ca/science/rpn/SEM/index.php>

**Abstract**

This seminar describes a proposed set of improvements to the global deterministic prediction system and presents a full set of verification scores from these improvements. The changes have been added on top of the configuration run in parallel during the summer that includes improved physics to reduce the over-prediction of tropical cyclones. The largest change to the system is an increase in the volume of assimilated observations in the 4d-var analysis. This increase results from both the addition of new satellite observations and the increase in the horizontal density of all assimilated satellite radiances. The new observations are from the IASI (62 channels) and SSMIS (7 channels) instruments and from instruments on three geostationary satellites not previously assimilated (1 channel). In addition, humidity from aircraft and several channels of AIRS radiances at high latitudes are now assimilated. The horizontal density of all satellite radiance observations is increased such that they have an average spacing of 150km instead of the 250km (but 200km for SSMI) spacing in the operational system. The combined effect of new instruments and increased horizontal density results in a  $\sim 200\%$  increase in the volume of satellite radiances assimilated. Other changes to the system include using the improved sea surface temperature analysis of Brasnett (2008, QJRMS) and several minor modifications to the way some radiance observations are assimilated and their error bias is estimated. In light of the positive impacts on forecast quality seen from these modifications, a proposal will be made to CPOP for implementation in a parallel run.