**Team 4: *Data Assimilation/Vortex Initialization Team***

* Perform a detailed evaluation of integrated global and regional advanced

data assimilation systems for hurricane prediction, using the current

operational systems as a baseline. This includes testing an integrated

global/regional EnKF system for GFS/FIM and HWRF/WRF-ARW.

The evaluation of the global/regional EnKF

systems is a joint milestone with the Ensemble Team.

* + - Assess the value added by regional model assimilation by comparing the skill of track and intensity forecasts generated by the global model, and the regional model initialized from a regional analysis and driven by global model boundary conditions report Sept 30, 2010 **(NRL, ESRL, EMC, AOML, MMM)**  (Stream 2) **4.1.1**
    - Compare forecasts from NRL NOGAPS-based 4DVAR analysis with GFS-based EnKF ensemble mean analysis (with ensemble team) report Sept 30, 2010 **(NRL, ESRL)** (Stream 2) **4.1.2**

* Evaluate the impact of assimilating inner core observations, using both

variational and ensemble-based data assimilation schemes. This includes

assimilation of airborne radar data, dropsondes, estimated position and

intensity observations, and cloudy radiances. Special attention will be

paid to minimizing the “spin-down” problem commonly seen in short-term

hurricane forecasts.

* + - Increase use of satellite data near hurricane core to

define initial vortex.

Sept 30,, 2010

**(JCSDA, AOML)**  (Stream 1) **4.2.1**

* + - Improve HWRF initial conditions using GSI by assimilating
      * new near core obs
      * JASON-2 data
      * cloudy radiances

**(EMC HWRF I1, D2)** Sept 30 2010

**(EMC, JCSDA, AOML, MMM)** (Stream 1) **4.2.2**

* Improve HWRF initial conditions by assimilating near-core observations in an EnKF. report Sept 30, 2010 **(AOML)** (Stream 2) **4.2.3**
* Evaluate the impact of assimilating eye dropsondes in the global EnKF and GSI.report Sept 30, 2010 **(EMC, ESRL)** (Stream 2) **4.2.4**
  + - Develop improved wind, pressure relationship in HWRF GSI.

**(EMC HWRF-D1) (EMC)** Sept 30, 2010 (Stream 1) **4.2.5**

* + - Mitigate initial spin-up adjustment of the hurricane vortex using methods such as digital filters and diabatic initialization (**NRL, ESRL**) Sep 30, 2010 (Stream 2) **4.2.6**
* Test methods for representing background errors associated with model

uncertainty in 4D variation and EnKF systems, including multi-model, multi-parameterization ensembles and stochastic convection. This is a joint milestone with the Ensemble Team.

* + - Preliminary test of stochastic convection parameterization to account for model error (with Ensemble team) report **(ESRL, NRL)** Sept 30, 2010 (Stream 2) **4.3.1**