Evaluation Of Current and FY16 HWRF with GFSX

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Planned/Finished Retrospective HWRF Runs using new GFS

Year	2012	2013	2014	2015	Sum
Storm ID	18L	03L-14L	01L-09L	03L-12L	
Verifiable Samples	30	178	160	210	578

Completed/Total for AL storms: 242/578

Year	2013	2014	2015	Sum
Storm ID	04E-18E	01E-21E	04E-20E	
Verifiable Samples	254	450	238	942

Completed/Total for EP storms: 459/942

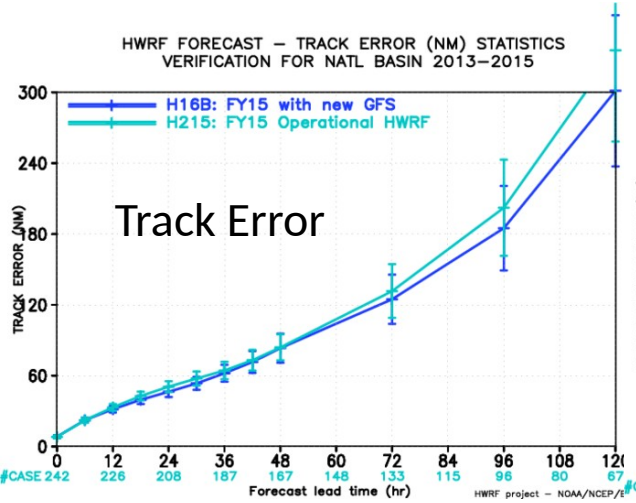
Acronym:

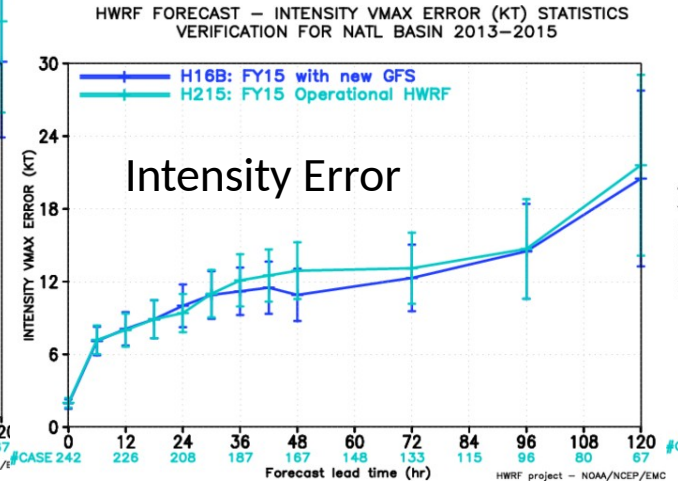
FY15 HWRF: current operational HWRF
FY16 HWRF baseline: Several bug fixes from FY15, and smaller time step

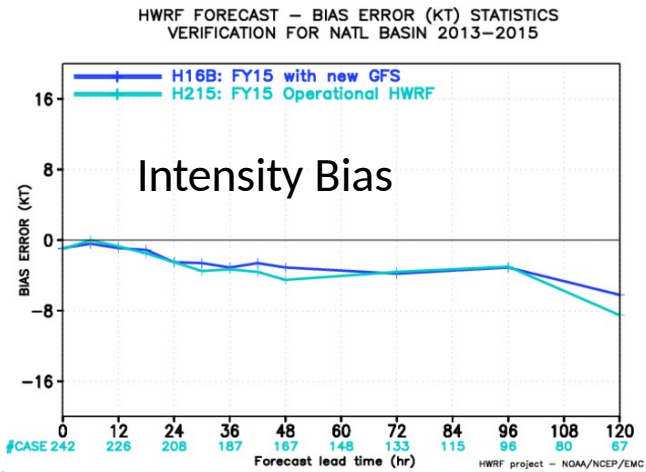
H215: FY15 HWRF, current GFS
H16B: FY15 HWRF, new GFS
H16A: FY16 HWRF baseline , current GFS
H16C: FY16 HWRF baseline, new GFS

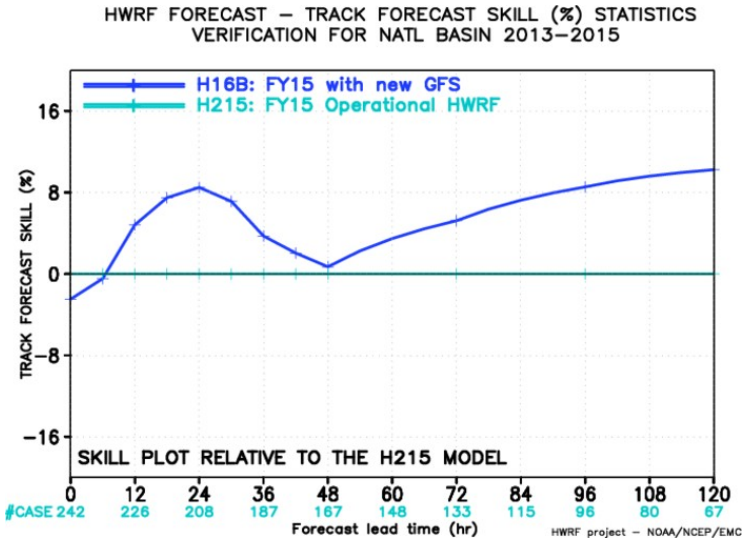
Most of the samples are from 2014 storms because new GFS archiving issue

H16B vs. H215, AL

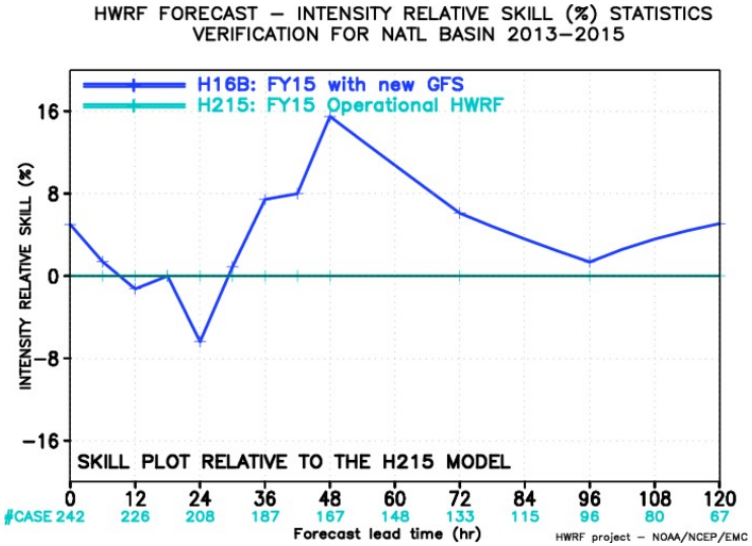






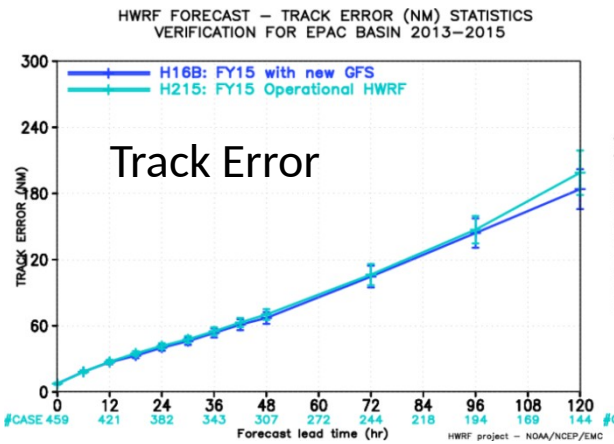


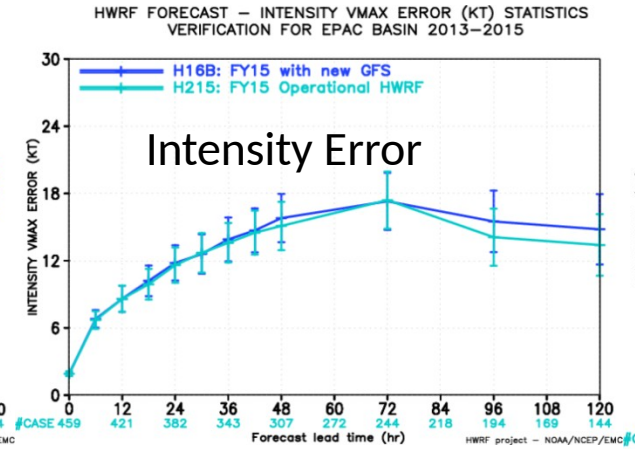
Track Skill improvement

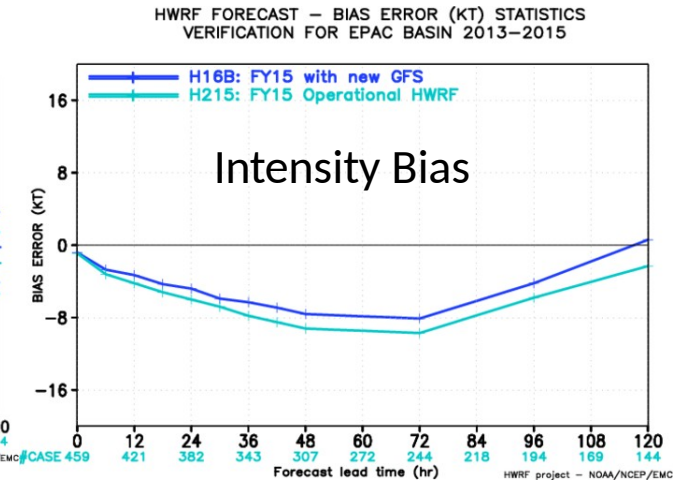


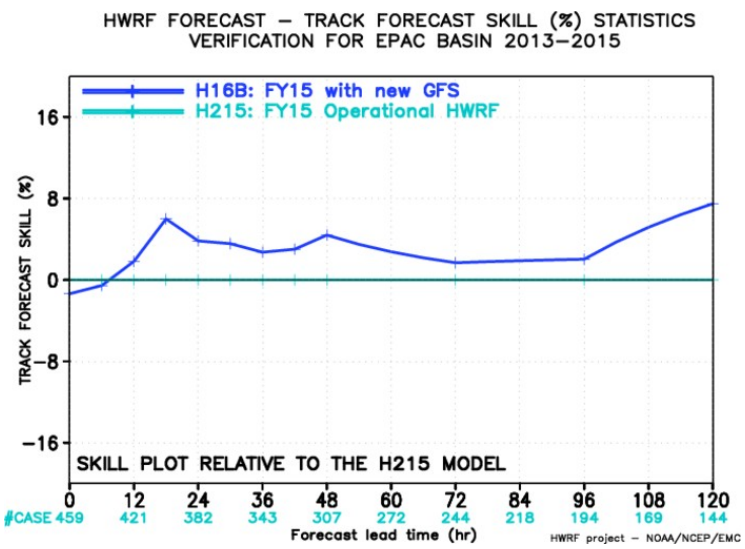
Intensity Skill improvement

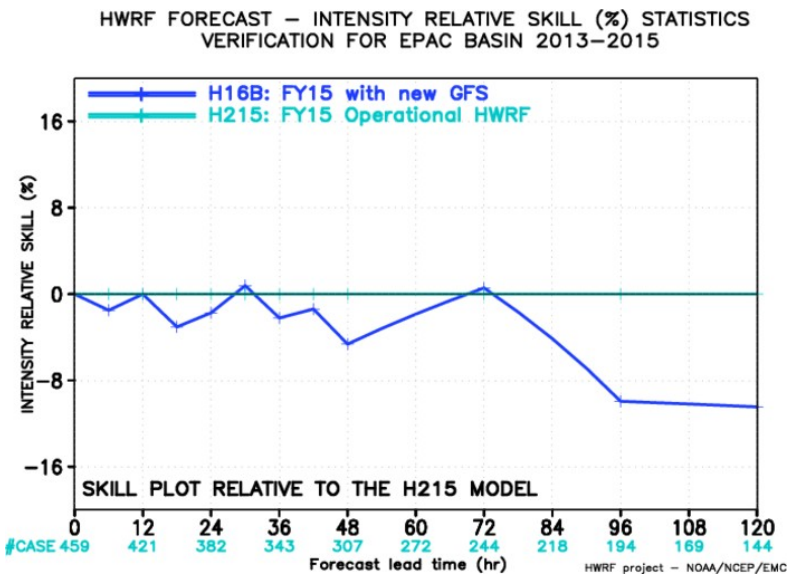
H16B vs. H215, EP







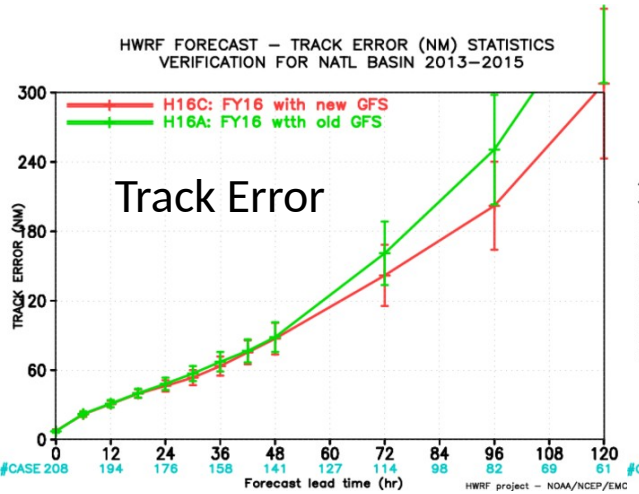


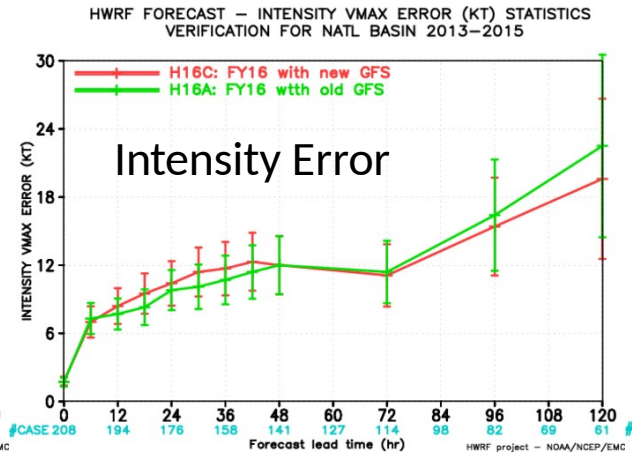


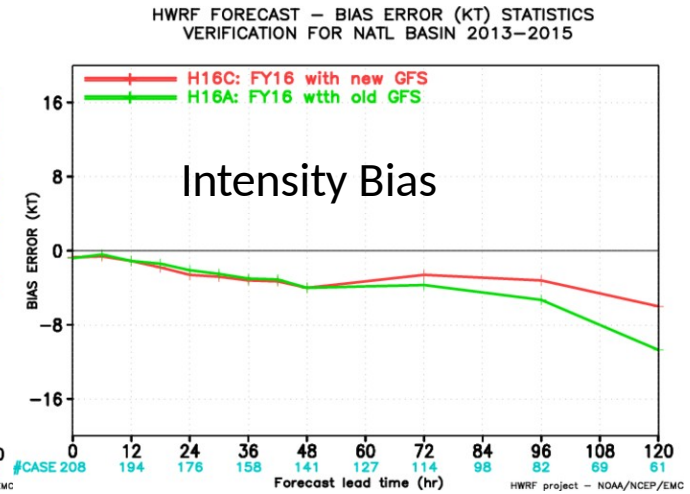
Track Skill improvement

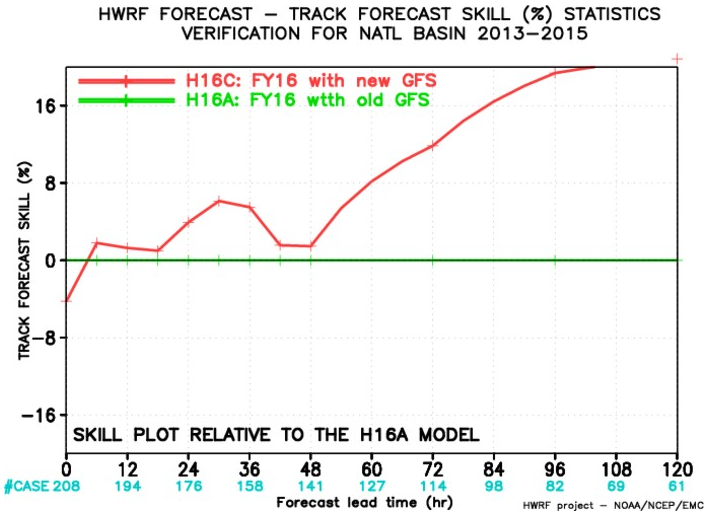
Intensity Skill improvement

H16C vs. H16A, AL

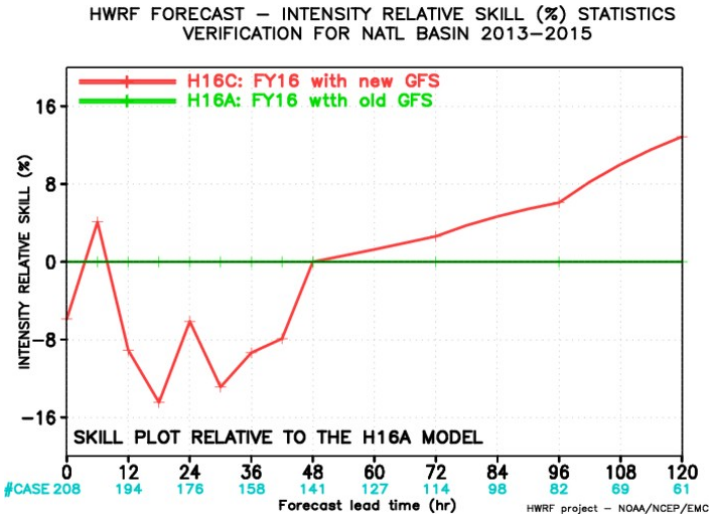






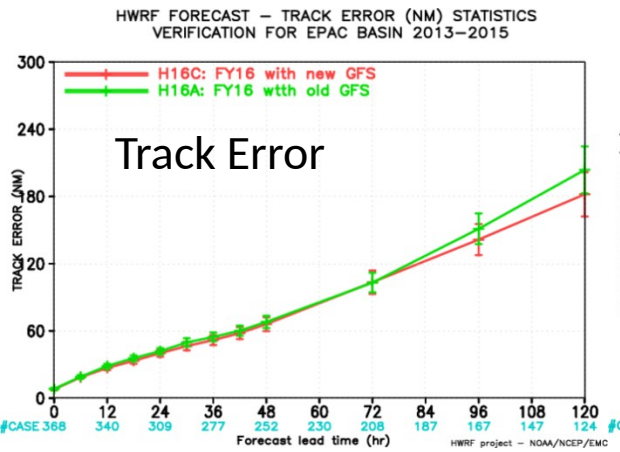


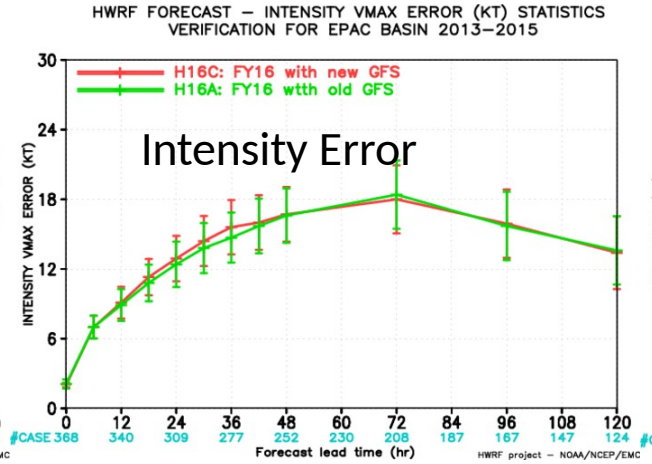
Track Skill improvement

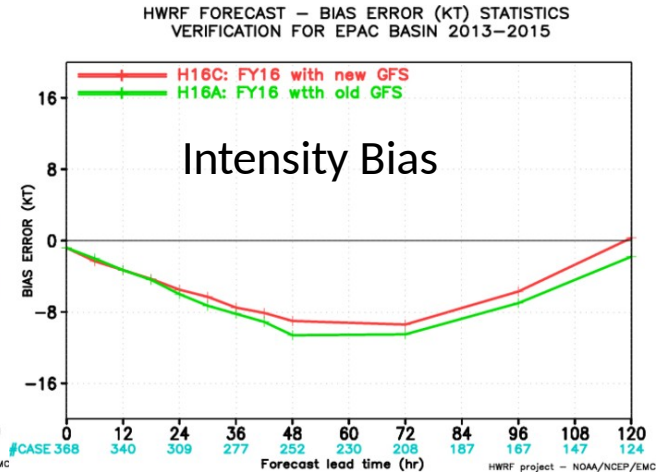


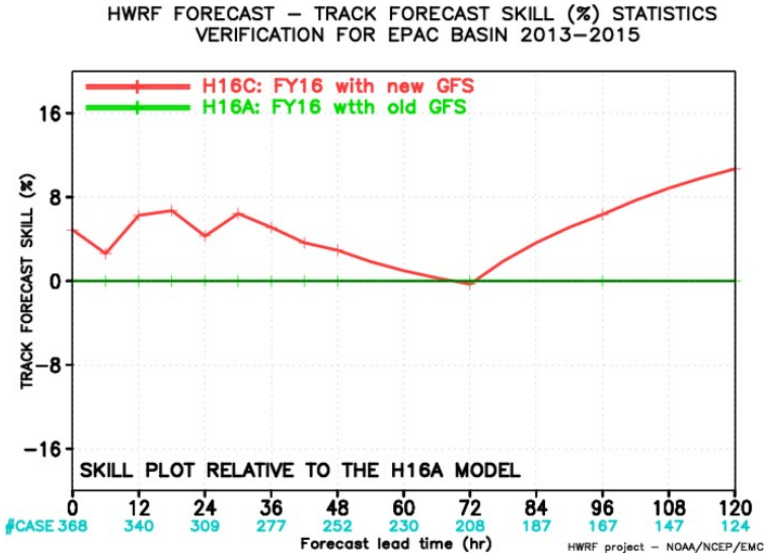
Intensity Skill improvement

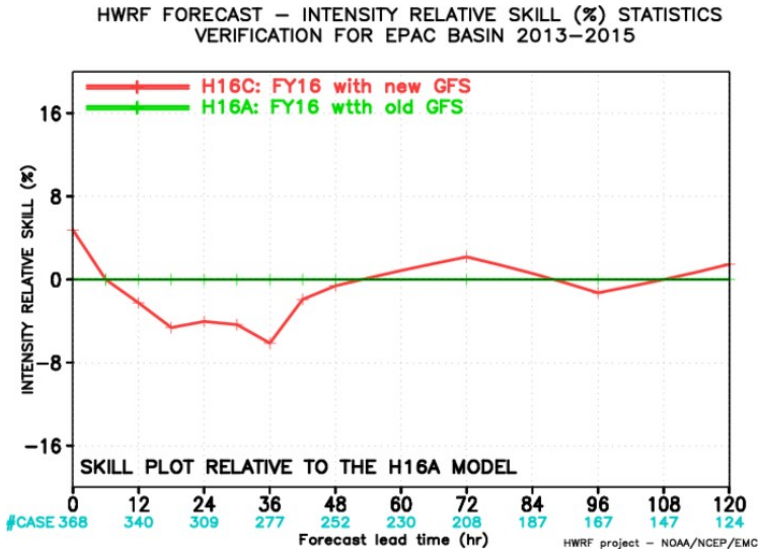
H16C vs. H16A, EP











Track Skill improvement

Intensity Skill improvement

HWRF Upgrade Plan for 2016 Implementation

Multi-season Pre-Implementation

	Model upgrades	Physics and DA upgrades				Combined
	Baseline (H16C)	**Physics Test1 (H16D)**	**~~Physics Test2 (H16M)~~**	**Coupling test (H16N/H16Ñ)**	**Data Assimilation***	**H216**
Descriptions	1. WRF-NMM V3.7.1a dynamic core with 1.a. retention of non-hydrostatic status during the nest movement; 1.b icloud=3 bugfix; 2. New GFS upgrade 3. Smaller time step	New GFS convective SAS, Eddy Diffusivity Mass-Flux Scheme w/ alpha in storm region	~~Alternative physics suite~~	Three-way HWRF-MPIPOM-WaveWatch-III coupled system for AL and HYCOM coupling	Hybrid GSI/HWRF-EPS based DA	Baseline + EDMF+newMP+3-Coupling+DA
Cases	Three-season 2013-2015 simulations in ATL/EPAC, cases (~1500)	Priority cases (TBD)	~~Priority cases (TBD)~~	Priority cases (TBD)	Only Aircraft DA cases for 2013-2015	Three-season 2013-2015 retrospectives ~1500 simulations in ATL/EPAC
Platform	WCOSS	WCOSS	~~Jet~~	Jet/Zeus	WCOSS/Jet	Jet/WCOSS/Zeus

The plan is based on the assumption that 2016 operational HWRF system will have 2.5x computer resources as current system on WCOSS within HWRF operational time windows.

*** DA experiment requires additional computer resources outside current operational time window.***