



HFIP STREAM 1.5 CONCEPT OF OPERATIONS AND TIMELINE FOR FY11

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Presentation Outline

- Definitions
- Performance evaluation standards for candidate track forecasts
- Performance evaluation standards for candidate intensity forecasts
- Model run sample size requirements and example
- FY11 time line



HFIP STREAM 1.5

Definition/Objective



Definitions

- Stream 1: Yearly upgrades to operational numerical weather prediction capabilities
- Stream 2: Enhancements to operations that require multiple years of applied research, development and transition-to-operations work
- Stream 1.5: Improved models (mainly) that the NHC, based on prior assessments, wants to access in real-time during a particular hurricane season, but which can't be made available to the NHC by the operational modeling center in conventional "production" mode (typically due to limits in computing capability and/or programmer time)



HFIP STREAM 1.5

Performance evaluation standards— track forecasts



Recognizing Stream 1 and NHC track errors decrease by about 3-4% per year, highest consideration is given to Stream 1.5 candidates where:

- Projected improvement is more than 3-4% over an operational scheme's previous year's performance; or, for a new technique, 3-4% better than the average error of the previous year's top-flight models
- Technique improves upon the conventional model consensus track error by at least 3-4%
- Scheme otherwise enhances operational forecast by providing better "guidance on guidance"
- An especially high "frequency of superiority"
- High run-to-run consistency and acceptable performance



HFIP STREAM 1.5

Performance evaluation standards— intensity forecasts



Recognizing over the past twenty years (a) there has been little to no improvement in NHC tropical cyclone intensity forecasts guidance, and (b) model guidance has improved but is still no better than NHC forecasts, a Stream 1.5 Stream candidate will be selected if it:

- Improves upon existing guidance for tropical cyclone intensity;
 - techniques that improve guidance on rapid intensification events receive special consideration



HFIP STREAM 1.5 SAMPLE SIZE REQUIREMENTS



Background: EMC and NHC operational standard requires three years of retrospective results for a new model and two years of retrospective cases for upgrade of an existing model.

For Stream 1.5: Nominal benchmark is two full years using models run on all storms on a 6-hour cycle.

NHC discourages a test period with fewer cases than stated above. Fewer test cases will require larger projected increases in capability, and assessments of statistical significance and breadth of sample.



HFIP STREAM 1.5 SAMPLE SIZE REQUIREMENTS



Example of sample size issue from FY10.

SSI = AHW provided statistically significant improvement to consensus

SSD = AHW provided statistically significant degradation to consensus

2008-09 Retrospective

Forecast Period (h)	00	06	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120
Track Error					SSI	SSI			SSI	SSI	SSI	SSI	SSI	SSI	SSI	SSI	SSI	SSI	SSI	SSI	SSI
Intensity Error		SSI				SSI	SSI	SSI	SSI	SSI		SSI	SSI	SSI		SSI	SSI	SSI	SSI		

2008-09 Retrospective + 2010 Demo

Forecast Period (h)	00	06	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120
Track Error					SSI	SSI		SSI	SSI	SSI	SSI	SSI	SSI	SSI	SSI	SSI	SSI	SSI	SSI	SSI	SSI
Intensity Error		SSI		SSI		SSI	SSI	SSI	SSI	SSI		SSI	SSI	SSI	SSI	SSI	SSI	SSI	SSI	SSI	SSI



HFIP STREAM 1.5 FY11 Time Line



Nov. 10, 2010: Initial interest expressed to HFIP by candidates

Dec. 15, 2010: New IT requirements for NHC real-time access made known by candidates and HFIP leaders

Jan. 15, 2011: Test plan including retrospective case information finalized and disseminated

Feb. 15, 2011: Finalized major new IT requirements for real-time access provided to NHC

May 1, 2011: Tier 1 retrospective model data submitted to HFIP & NHC; applications prototypes delivered to NHC

May 7, 2011: Clean retrospective data sets finalized by candidates

Jun 1, 2011: Assessment of retrospective tests completed by HFIP and NHC

Jun 15, 2011: NHC decision on prospective projects

Jul 31, 2011: Technical preparations completed (e.g., computer accounts, NHC communications & product access)

Aug 1, 2011: Real-time activities begin

Oct 20, 2011: Real-time activities conclude

Dec 1, 2011: Preliminary verification and/or evaluation presented at NOAA Hurricane Conference

Mar 1, 2012: Verification and/or evaluation presented at Interdepartmental Hurricane Conference



Questions?