Session 2: Critical Operational Information Technology: Ongoing Joint Development

Mark DeMaria, NHC – Introduction and NRL ATCF

Craig Mattocks, NHC – NWS plans for ATCF

Chris Mello, NHC - NWS and NHC plans for AWIPS2

Brian Strahl, JTWC - JTWC Plans for AWIPS2

Frank Marks, HRD - HRD support for ATCF and AWIPS2

Tropical Cyclone Operations and Research Forum

70th Interdepartmental Hurricane Conference

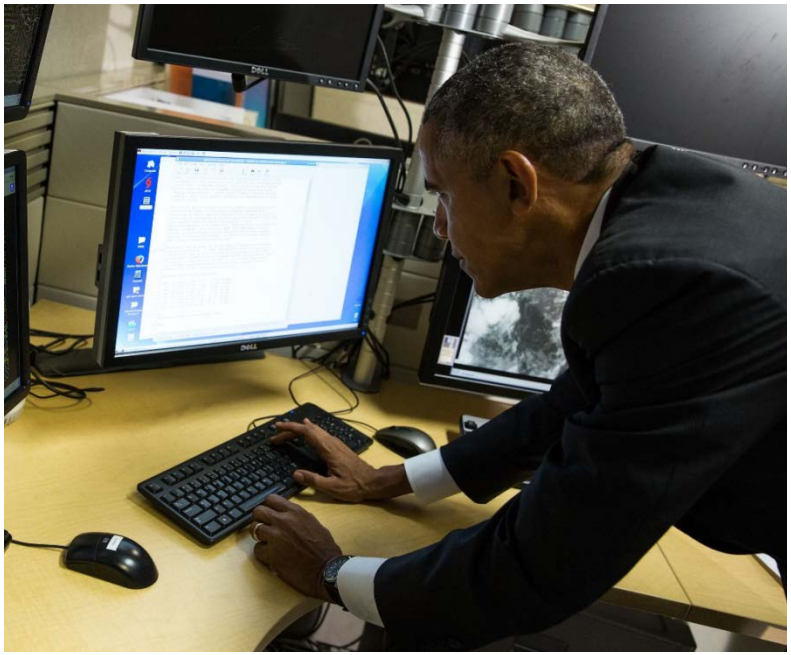
March 2016, Miami, FL

The Atlantic Forecast Desk

Evolution of NHC Information Technology

- 1980s
  - Hard copy (FAX) maps and satellite imagery, manual product generation, AFOS, McIDAS, 88-D Radar PUP, local mainframe for NHC models, text and FAX products
- 1990s
  - DOS-ATCF, Intergraph for map drawing, N-AWIPS, NHC web page, NHC models on NCEP supercomputers, many new graphical products
- 2000s
  - Unix/Linux ATCF, AWIPS1, Continued expansion of graphical products, new probabilistic products, NWS NDFD
- 2010s
  - AWIPS2, Use of GFE for TAFB marine products, Continued expansion of graphical and probabilistic products, increased use of social media

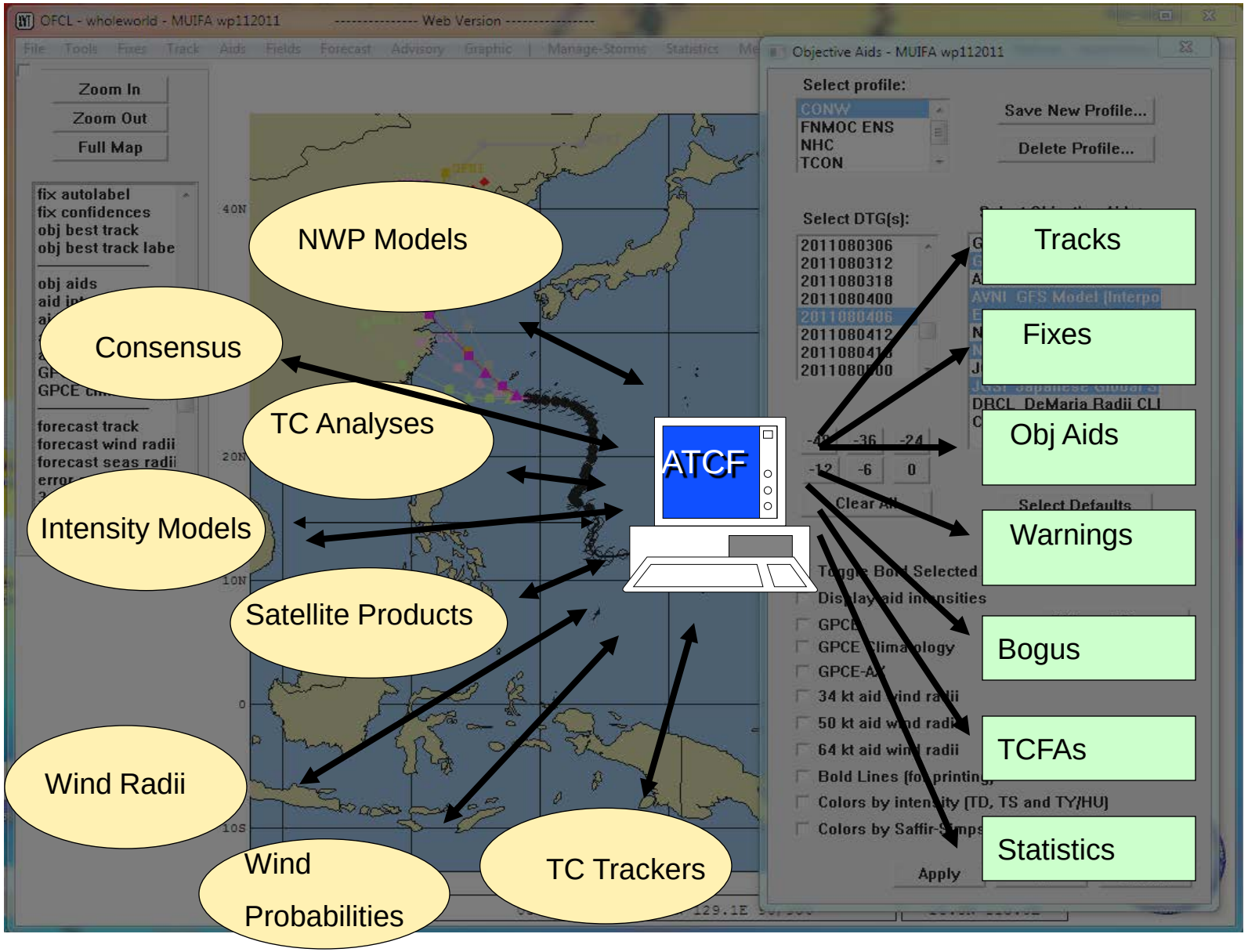
NRL Plans for the Automated Tropical Cyclone Forecast System (IHC, March 2016)



Forecaster hard at work generating products on ATCF

NRL Contributors
Mike Frost, Kim Richardson, Buck Sampson (NRL)
Ann Schrader and Jim Goerss (SAIC)

Some Other Contributors for 2015
Brian Strahl, Ed Fukada, Angelo Alvarez, Matt Kucas, Marshall Wilson, Mike Brennan, Monica Bozeman, Craig Mattocks, Mark DeMaria, John Knaff, Rodney Jacques, Chris Gutierrez


NWP Models
Consensus
TC Analyses
Intensity Models
Satellite Products
Wind Radii
Wind Probabilities
TC Trackers
ATCF
Tracks
Fixes
Obj Aids
Warnings
Bogus
TCFAs
Statistics
OFCL - wholeworld - MUIFA wp112011
Web Version
Objective Aids - MUIFA wp112011
Select profile:
CONW
FNMOC ENS
NHC
TCON
Save New Profile...
Delete Profile...
Select DTG(s):
2011080306
2011080312
2011080318
2011080400
2011080406
2011080412
Zoom In
Zoom Out
Full Map
Apply

Project Comparison

- **AWIPS2 $38.0M/yr**
- **NITES Next $ 9.0M/yr**
- **ATCF $ 0.2M/yr**

ATCF is a very small system and relies heavily on outside efforts of other entities, e.g.,

- CIRA (wind probabilities, SHIPS, STIPS, fixes, …)
- JTWC (local scripts, support, kml, …)
- FNMOC (NWP, raw data, grids)
- NHC (local scripts, fix errors, shape files, …)
- CIMSS (feature tracked winds, shear, …)
- HRD (SHIPS-RI, H-WRF, …)
- NESDIS (fixes)
- GFDL (NWP, statistics)
- NCEP (NWP, trackers)

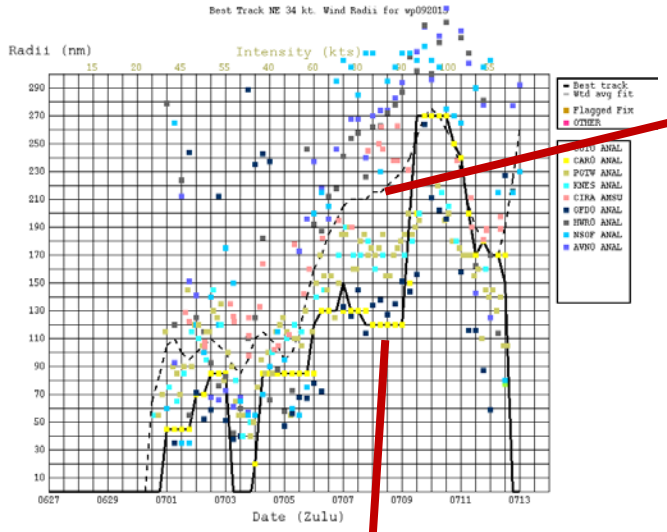
Progress

- FY12
  - 70 tasks completed
- FY13 (new hardware)
  - 83 tasks completed
- FY14 (RHEL 6)
  - 45 tasks completed
- FY15 (genesis probabilities)
  - 65 tasks completed
- FY16 (64-bit)
  - Upgrade to Navy only

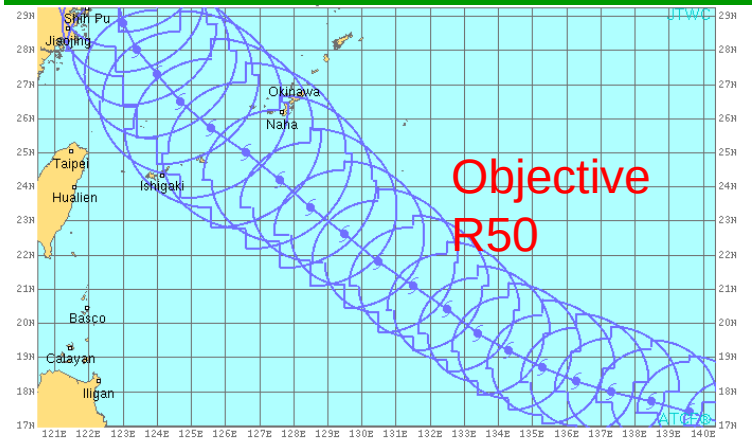
ATCF 5.8 Highlights (Navy only)

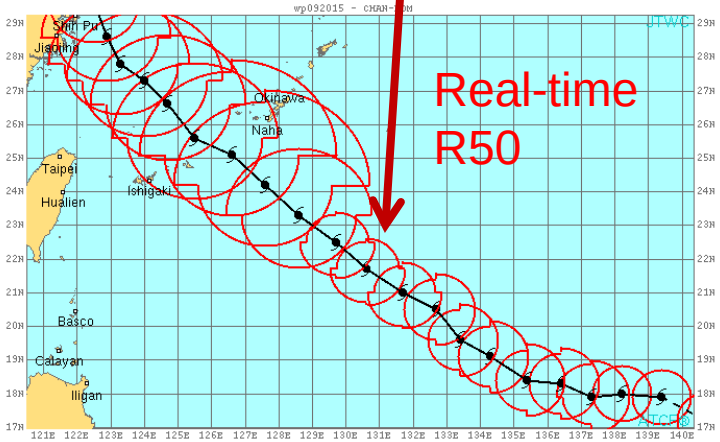
- 64-bit application (easier to support)
- 34-kt wind radii (R34) estimates, equations for R50 and R64
- Wind radii consensus (RVCN, Sampson and Knaff 2015)

Objective Radii Example



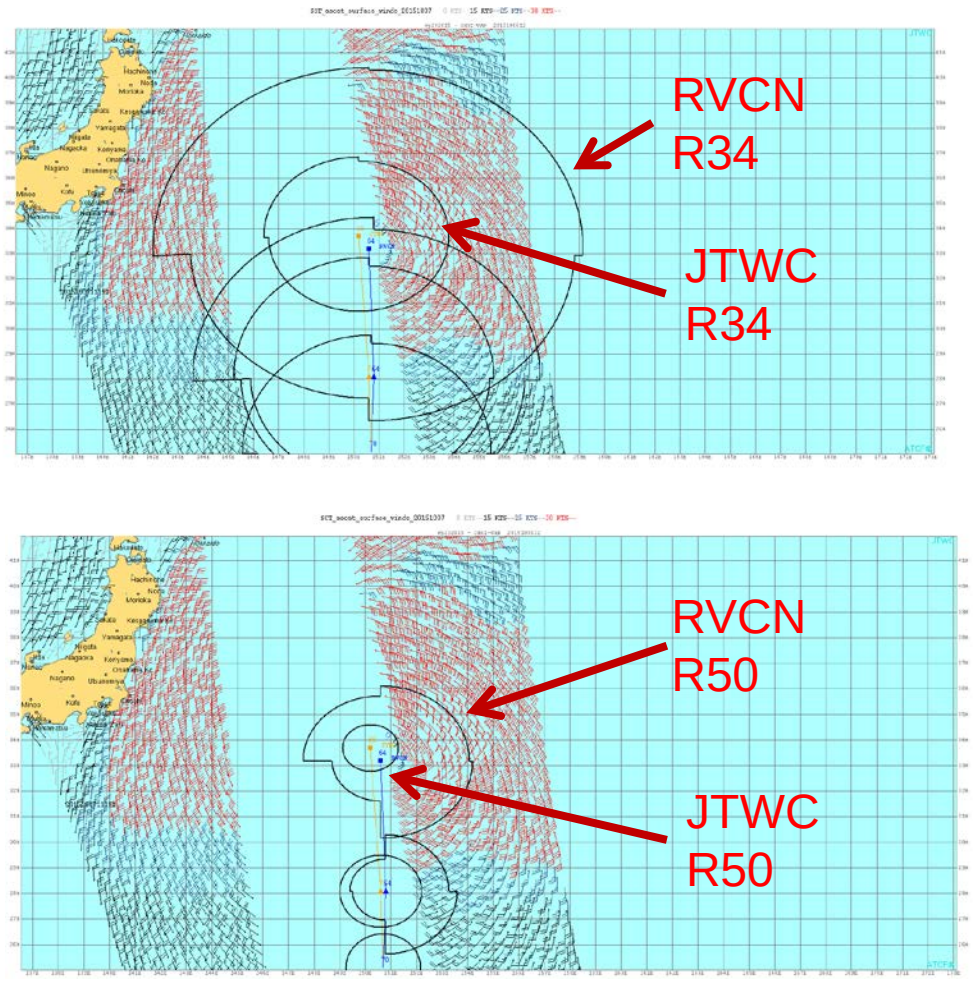
R50= -54.1 + 0.50*vmax + 0.63 * (R34 +58.5 -0.71*vmax)





R50 for CHAN-HOM (WP092015). Real-time estimates (lower left) rely on scat passes and observations, but what if there aren't any? Objective radii rely on estimates from AMSU, Dvorak (Knaff et al. 2015) and NWP models.

Wind Radii Consensus (RVCN) Example



R34 and R50 forecasts for CHOI-WAN (WP232015) from Oct 6 12Z and verifying Oct 7 12Z. The JTWC forecast is based on Wind Radii CLIPER (DRCL), which is low biased with large TCs.

Future ATCF (Dispelling Rumors)

- ATCF is funded at its current (low) level for the foreseeable future
- Rumors of loss of coders is unfounded. We have 4 on staff!
- Requests for upgrades continue from all centers
- NRL has no plans for replacement for ATCF at this time

More Information

- ATCF Requirements Meeting Agenda October 2015
- ATCF Requirements Document for FY16
- ATCF Closed Tickets (November 2014- Oct 2015)
- NHC ATCF Genesis Process
- ATCF Document Repository