



# NHC/JHT Products in ATCF

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IHC 2007

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## *Other Contributors:*

*Chris Sisko, James Franklin, James Gross and Colin Mcadie (NHC)*

*John Knaff and Mark DeMaria (NOAA/NESDIS)*

*Tim Marchok (GFDL)*

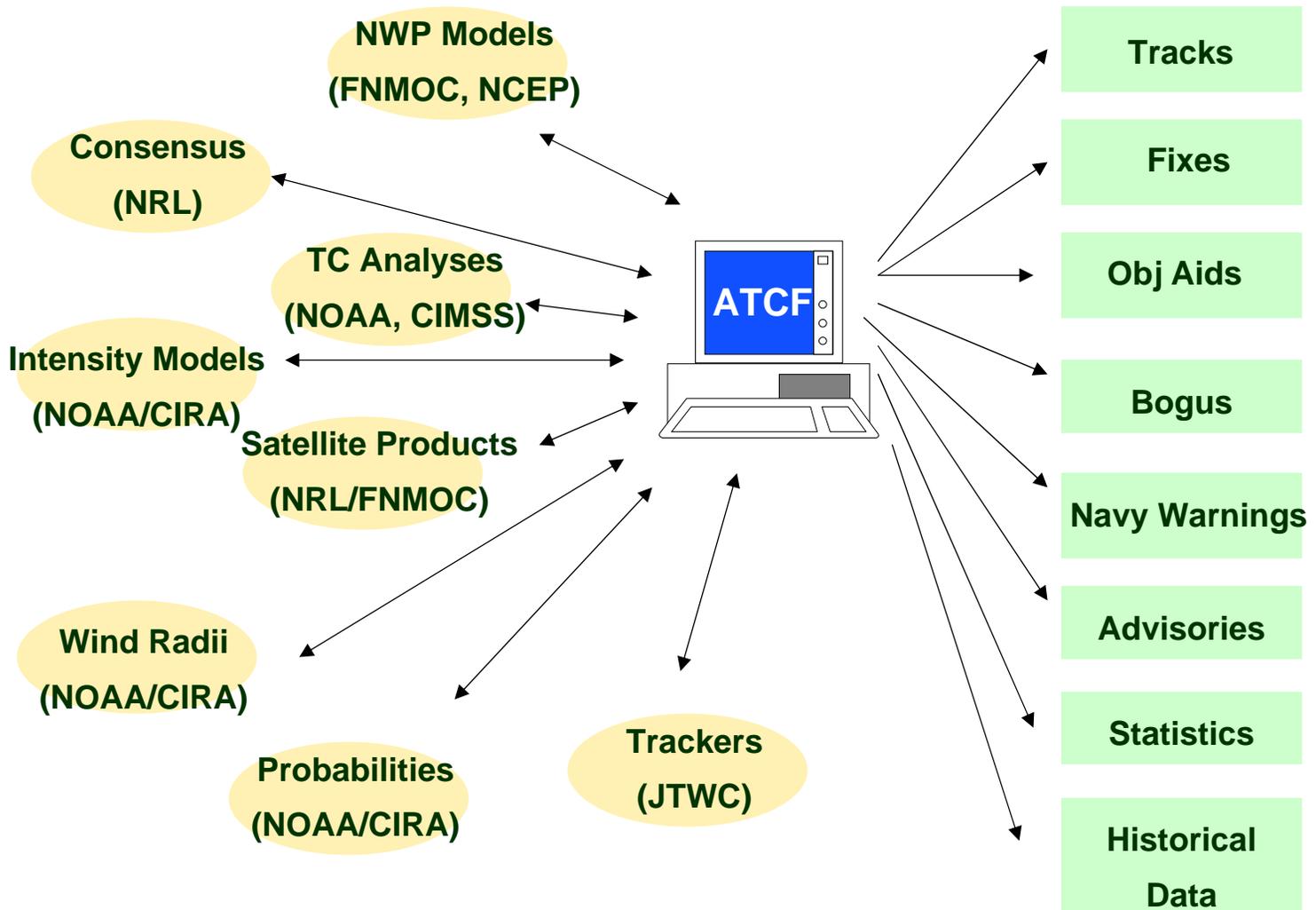
*Ed Fukada (JTWC)*

*NRL TC Page group*



# ATCF is a Multi-Agency System

... and a workstation that packages results and code from multiple sources for use in the tropical cyclone forecast process at the centers (e.g., NHC or JTWC)





# Accomplishments

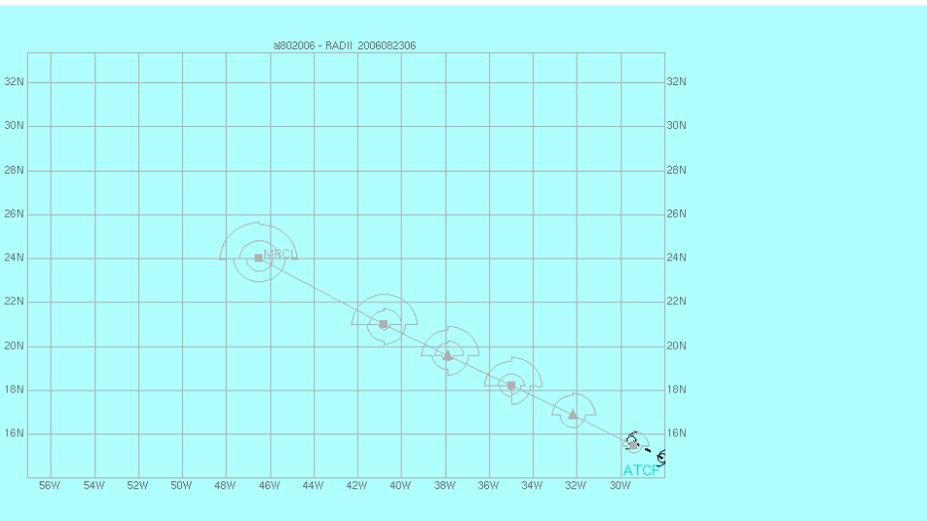
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- 1. Evaluated wind radii CLIPERs**
- 2. Implemented wind probabilities**
- 3. Implemented GPCE**
- 4. Improved satellite imagery overlay capability**
- 5. Developed intensity and wind radii objective best track**
- 6. Automated fix entry**
- 7. Addressed NHC requirements**

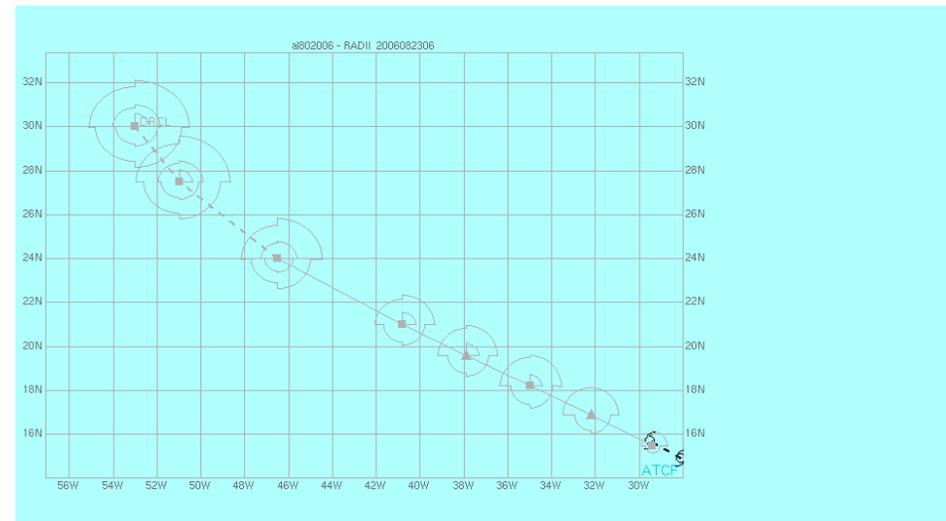


# 1. Wind Radii CLIPER Evaluation

- Results to be published in Wea. And Forecasting (Knaff, et al. 2007 )
  - MRCL superior mean average errors
  - DRCL superior with false alarm rates



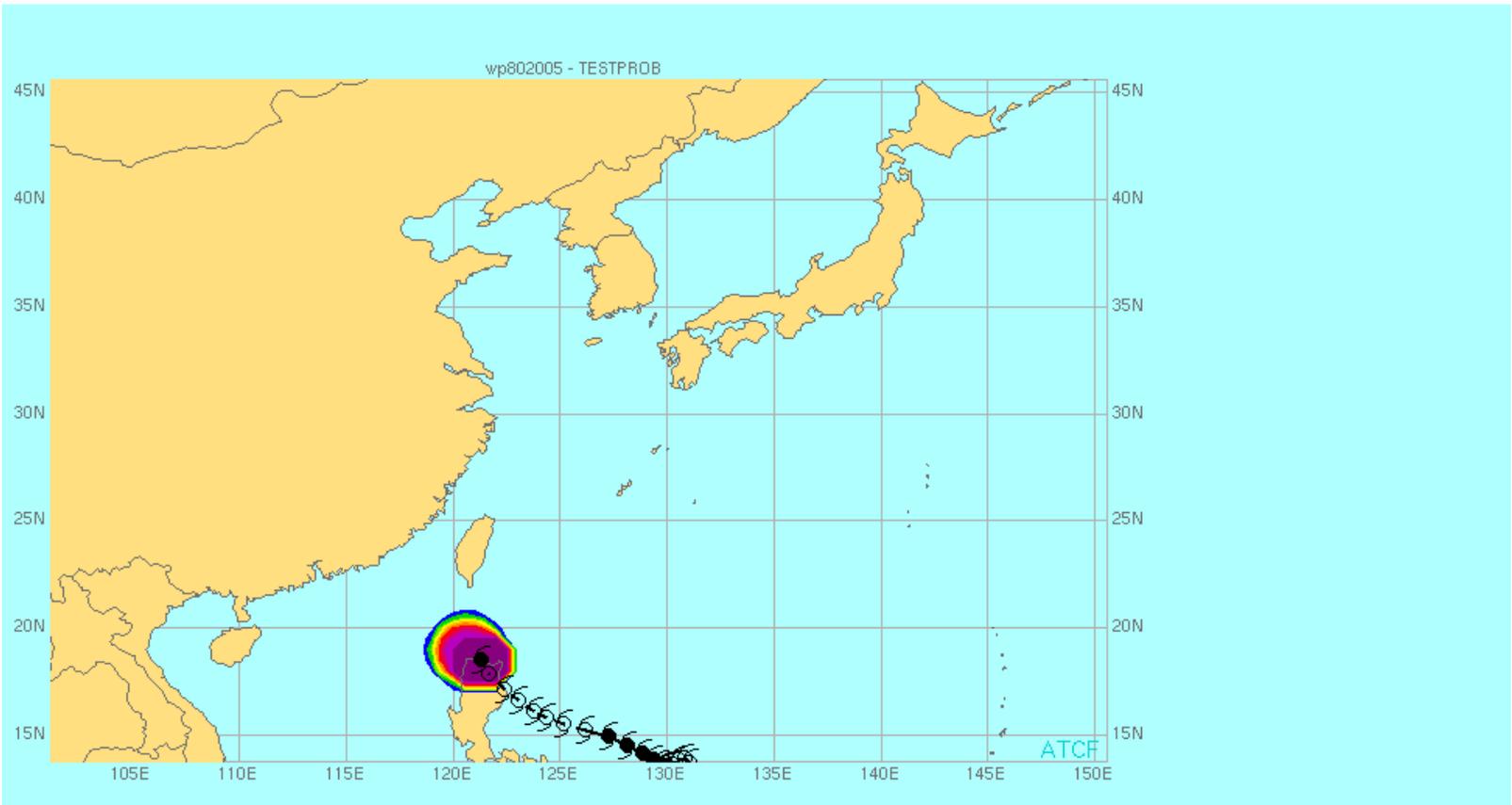
**MRCL: 0-72 h, AL ONLY**



**DRCL: 0-120 h, AL, EP and WP**



## 2. CIRA Wind Probabilities

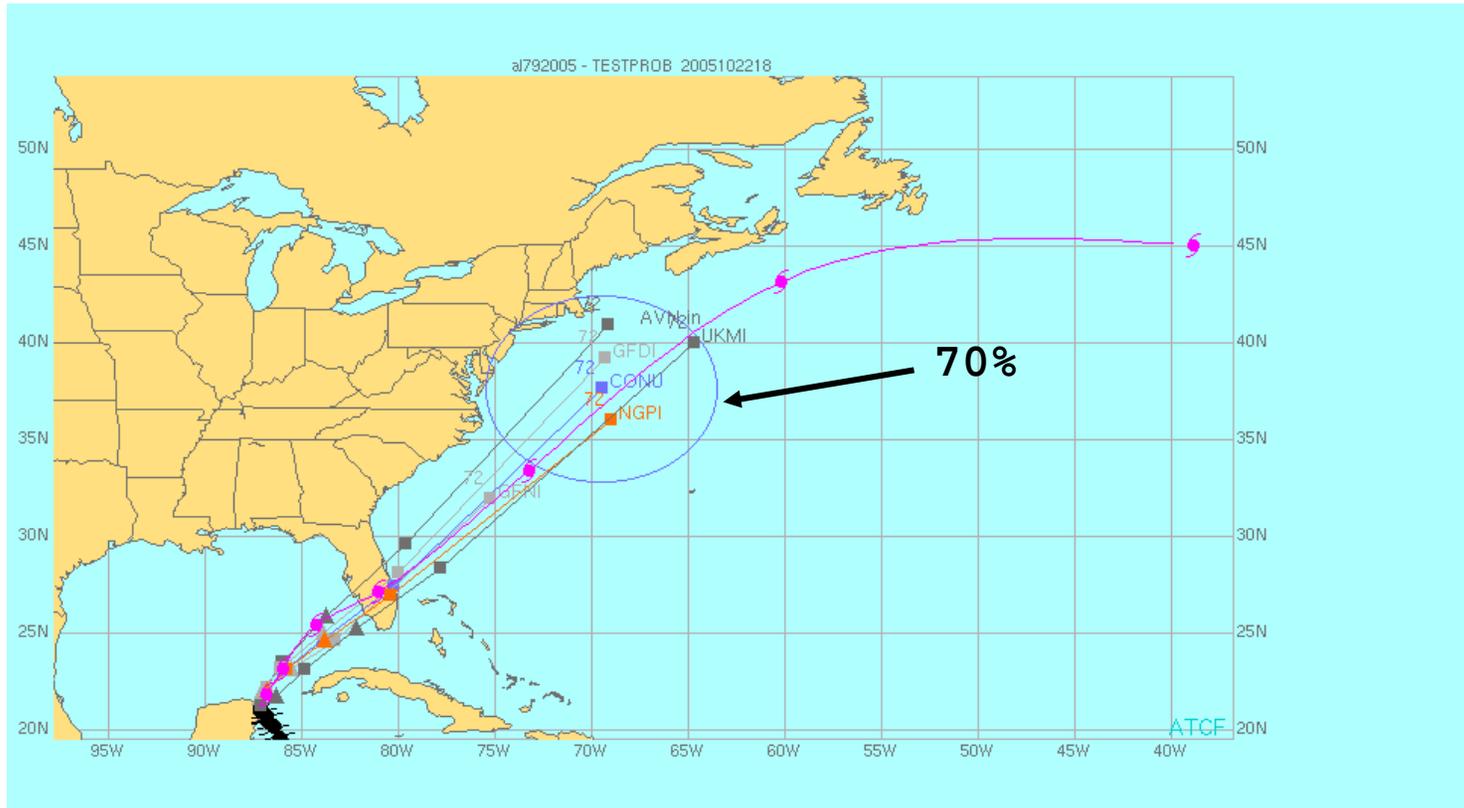


Single storm wind probabilities are computed immediately after advisory:

- 1) Available to forecasters as aid to set Watches and Warnings
- 2) Allows NHC to post probabilities as part of advisory package



### 3. Goerss Predicted Consensus Error (GPCE)



GPCE is a forecast track uncertainty algorithm which has been implemented on ATCF. Forecast radii are saved for end of season evaluation. Evaluation software has been written, but is currently labor intensive and not driven through the ATCF interface.



# 4. Automated Fix Ingest

Manual entry takes time!

\* Center/Intensity  Center Fix  Max Wind Speed Fix

\* DTG (YYYYMMDDHHMMN) 20060823

Latitude  N S Longitude  E W

PCN CONF

PCN or CONF 6 Poorly def'd circ center/ephemeris

\* Satellite Type

Dvorak Code - Long Term Trend

Final T-Number none

CI Number none

Anticipated Intensity Change + - Blank

Past Change Developed Steady Weakened Blank

Amount of T-Num change none Hours since previous eval

## Auto Fix Ingest Types

Subjective Dvorak,  
Objective Dvorak,  
SSMI, Quikscat  
SEAW, TRMM,  
Altimeter, AMSU,  
Radar,  
Doppler Radar,  
TRMM Radar,  
Synoptic Fix,  
Aircraft,  
Analysis,  
Dropsonde

Fixes are now automatically ingested, error checked. Resulted in time saved.



# 5. Improved Imagery Access

Re-Best Track Dialog - GAMEDE sh152007

DTG of postion

- 2007022612
- 2007022618
- 2007022700
- 2007022706
- 2007022712
- 2007022718**
- 2007022800 new

Re-Best

Delete

Associated Imagery

- 20070227.1500.meteo7.x.ir1km\_k
- 20070227.1530.meteo7.x.ir1km\_k
- 20070227.1600.meteo7.x.ir1km\_k
- 20070227.1609.trmm.x.tmi\_37h.1
- 20070227.1609.trmm.x.tmi\_37v.1
- 20070227.1609.trmm.x.tmi\_85h.1

Track Options

- Wind Radli

Fix Options

- AutoLabel
- Confidence
- Wind Radli

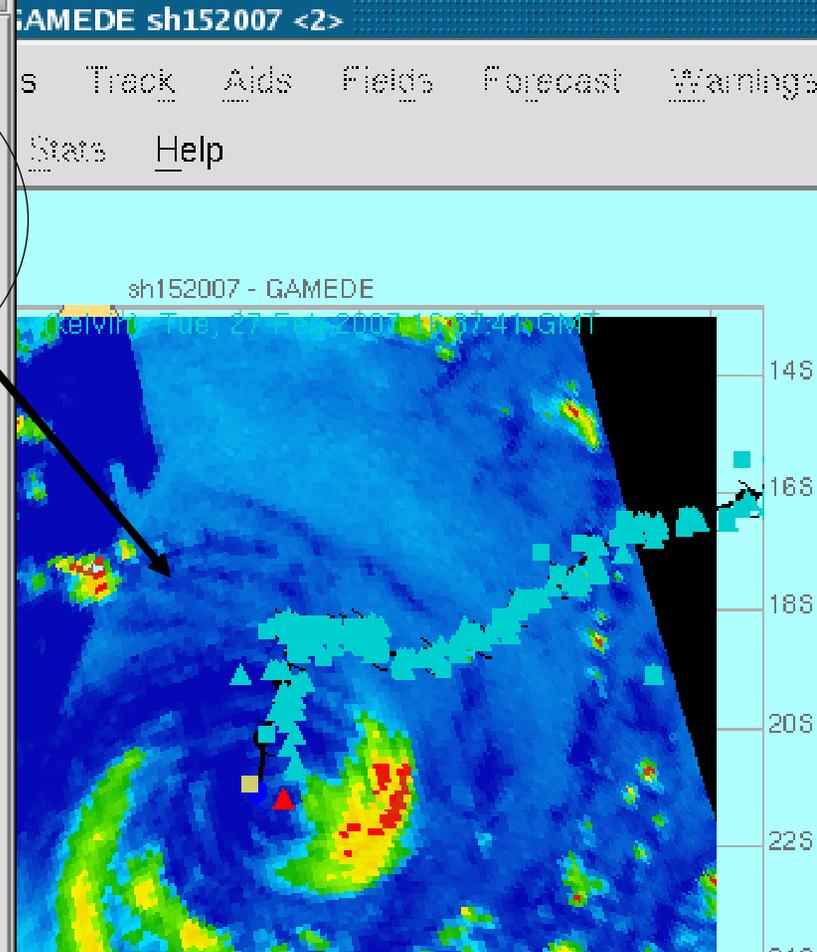
Wind Speed: 75

Development: TY - tyf

Pressure: 963

	NE	SE	SW	NW		
34 kt:	circle	quad	160	160	150	150
50 kt:	circle	quad	70	75	80	70
64 kt:	circle	quad	40	40	40	40

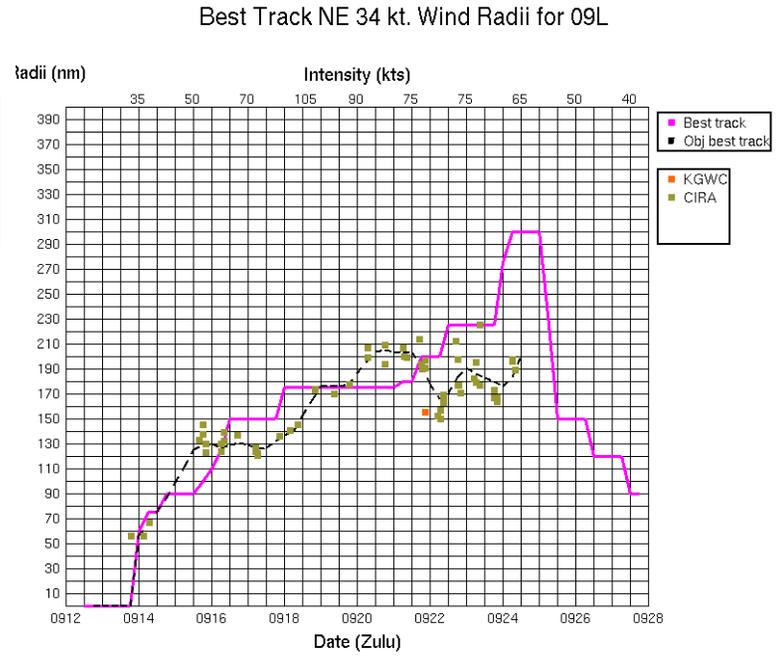
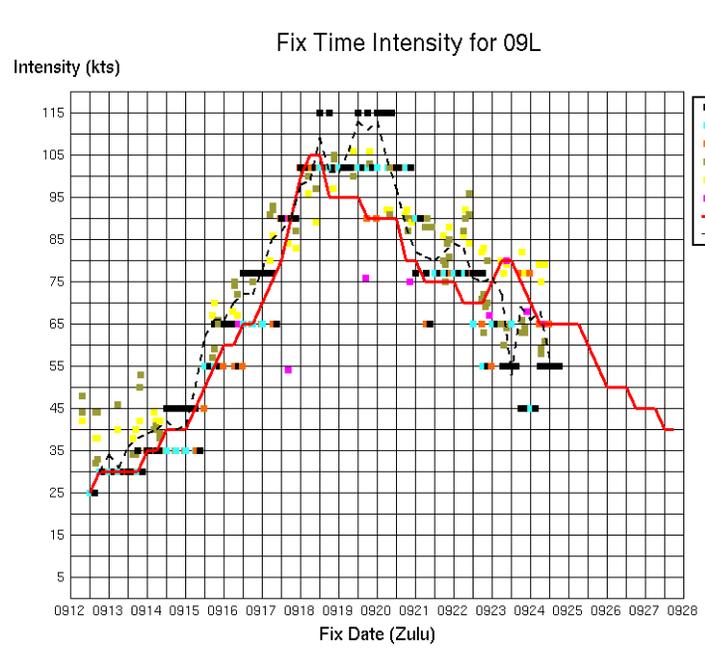
Graph/Select 34 kt radii: NE... SE... SW... NW...



Improvements for 2007 will include imagery retention on local system by storm id, improved access to imagery through dialogs. AMSU products were also added to suite.



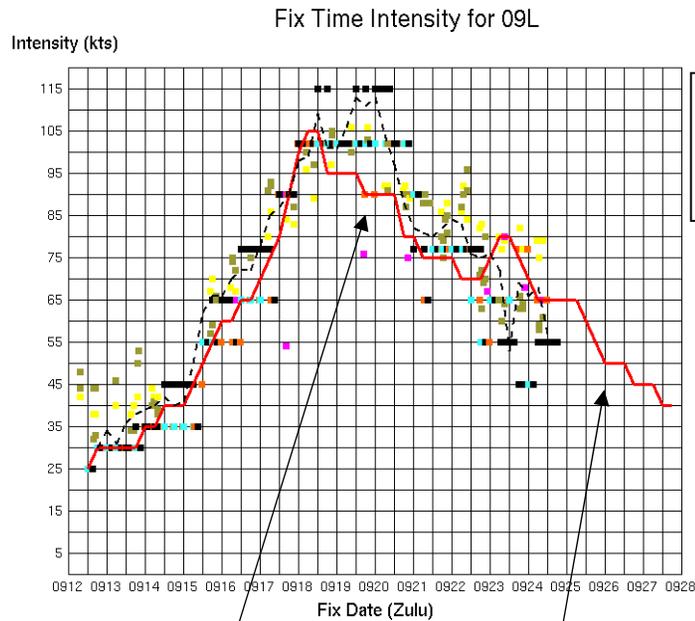
# 6. Objective Best Track



Objective best track routines can use either weighted mean or least squares fit. The weights are to be determined by the forecast agency (NHC or JTWC).

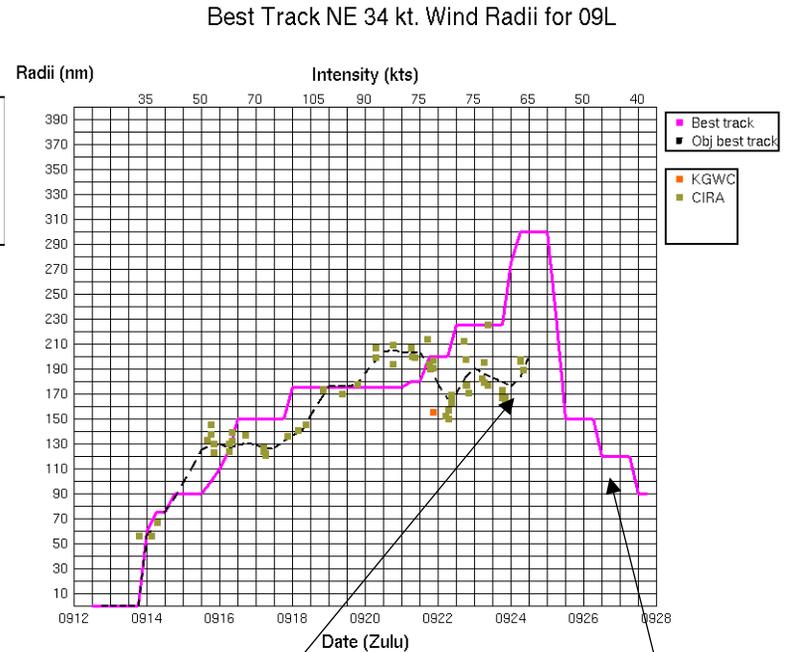


# 6. Objective Best Track



check

data?



check

data?

Objective best track can be used for error checking and insuring fix data get into system. They can also provide a first guess for the forecaster.



# Accomplishments

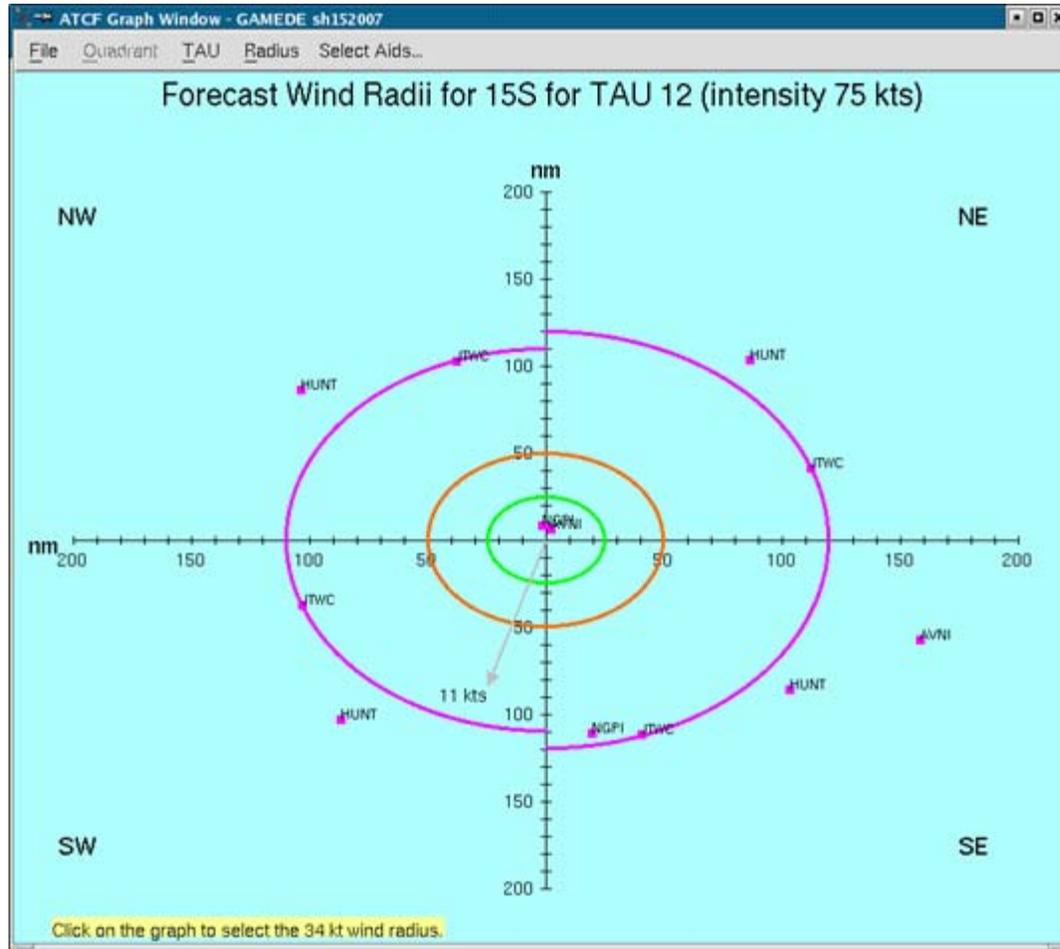
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**Two examples to follow ...**



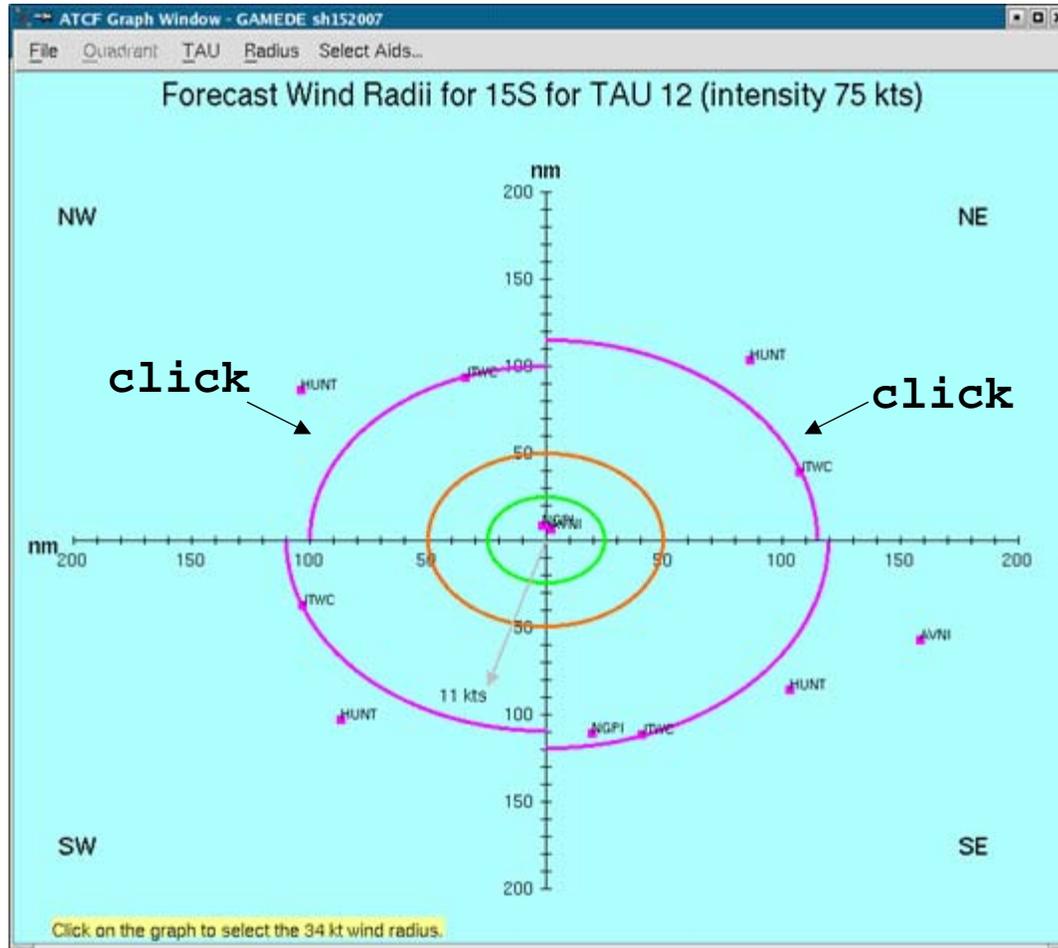
# New Wind Radii Forecast Graph



Wind radii forecasting is tedious. This new dialog frees up time for meteorology.



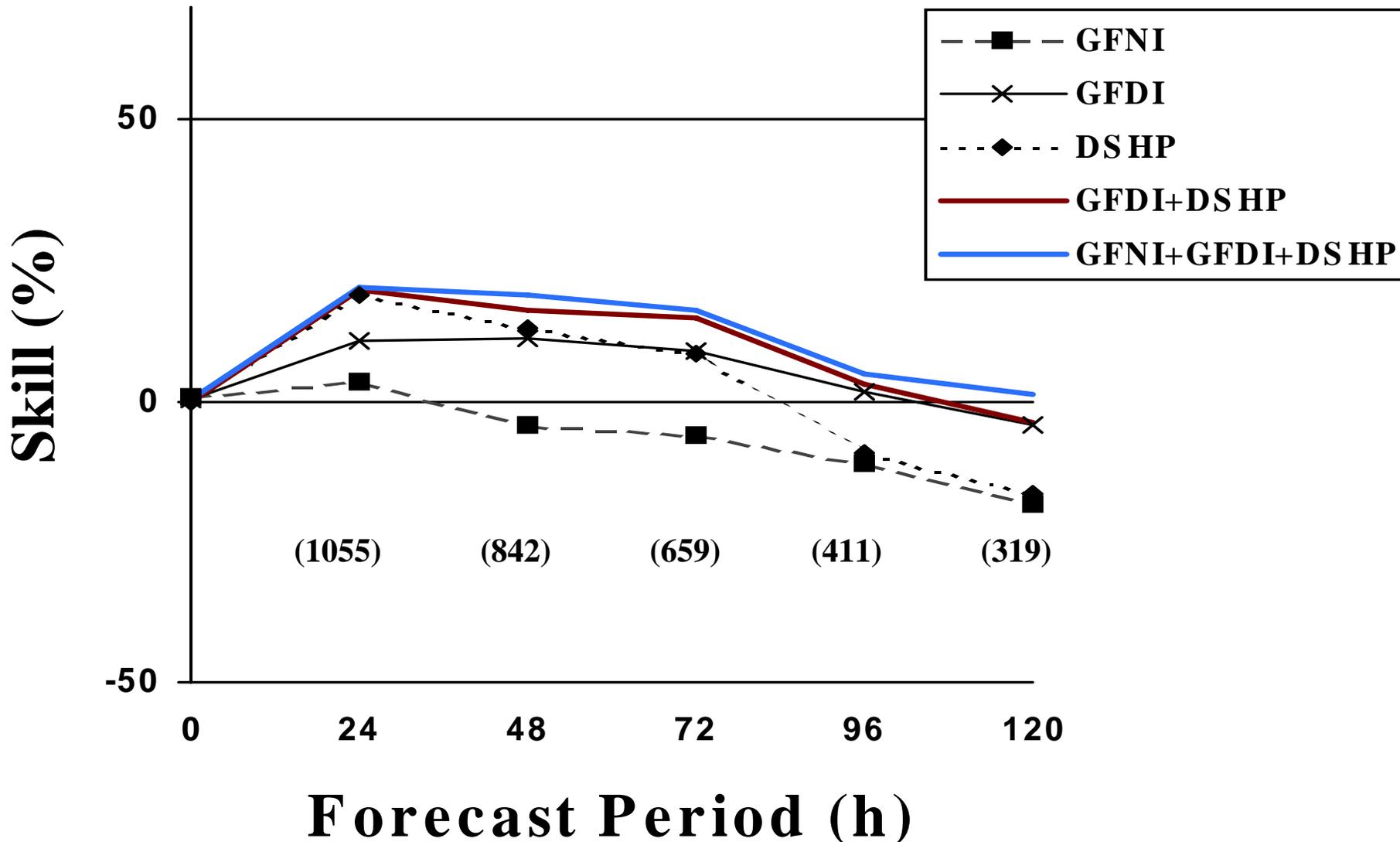
# New Wind Radii Forecast Graph



Click on the graph to get new wind radii for each quadrant.  
Forecast period (12-72 h) and radius (34, 50, 64 kt) selectable at top



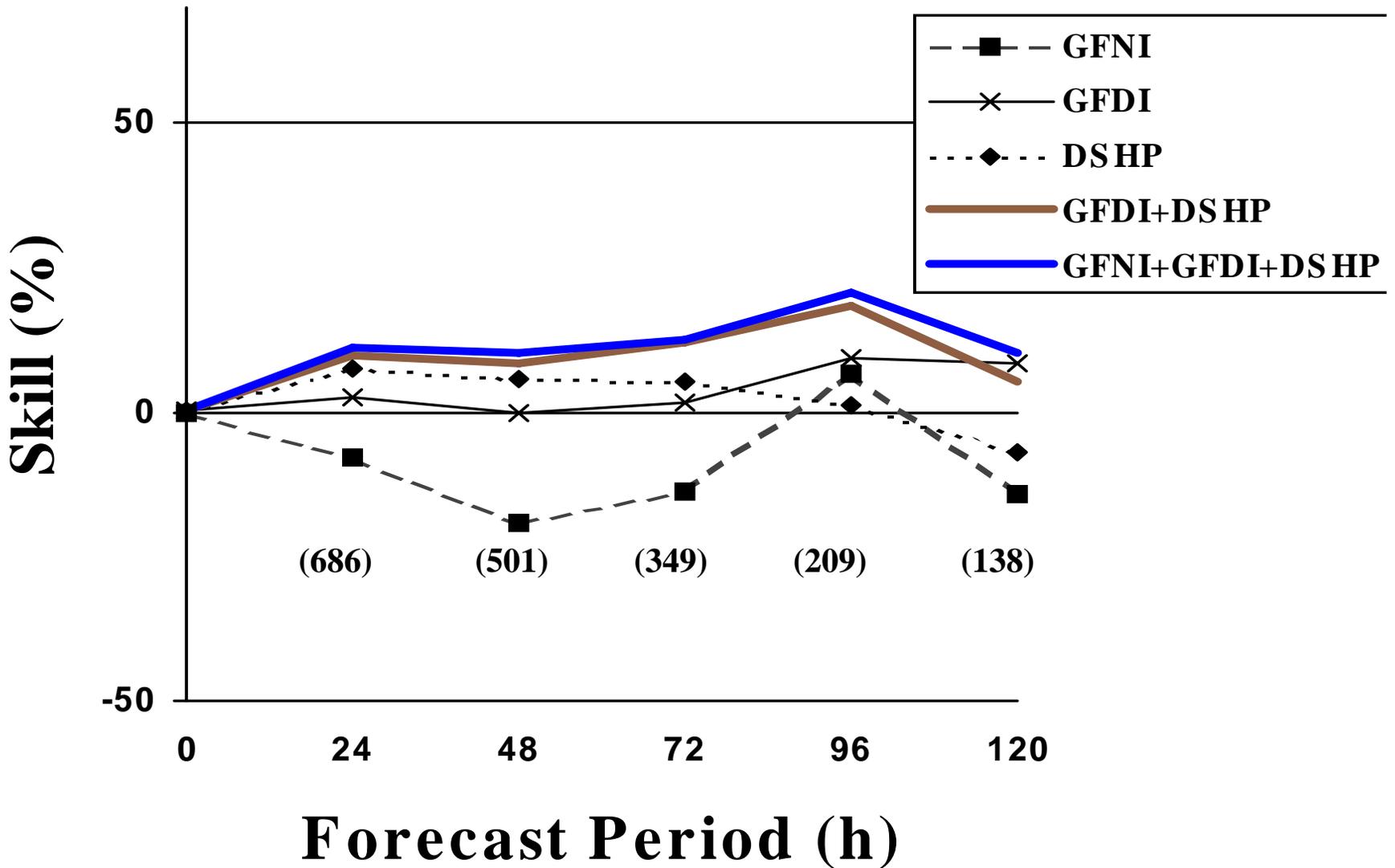
# Atlantic Intensity Consensus Skill



Simple intensity consensus can be used as skill baseline for other techniques and as starting point for forecast. (2003-2006 seasons)



# EP Intensity Consensus Skill



Similar results for eastern North Pacific (2003-2006 seasons)



# Summary

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- **Seven JHT tasks addressed over two years**
  - Much of JHT development also used at JTWC, CPHC
- **Interagency cooperation has its benefits**
  - Shared development costs
  - Shared data
  - Shared ideas
- **Thanks to contributors**
  - NHC, JTWC, CPHC, CIRA, JHT, JHT Participants, GFDL ...