

Web-ATCF, User Requirements and Intensity Consensus Final Report for First Year (2008)

Buck Sampson, PI
Naval Research Laboratory
7 Grace Hopper Ave.
Monterey, CA 93943-5502
buck.sampson@nrlmry.navy.mil

Ann Schrader, Performer
Science Applications International Corporation
550 Camino El Estero, Suite 205
Monterey, CA 93940
schradera@saic.com

Sep 16, 2008

Introduction

This report describes progress for the first year of a two-year project addressing development of a web-ATCF, addressing NHC user requirements as discussed at our yearly requirements meeting and levied throughout the year, and updating the intensity consensus for both the Atlantic and eastern North Pacific basins. An estimate of the progress for each goal is included in the progress report.

Web-ATCF

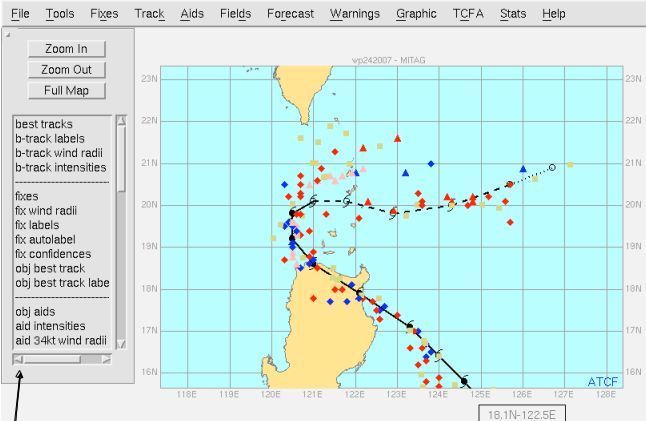
The Web-ATCF is intended to extend NHC's capability to use ATCF outside the few workstations at NHC, NCEP and CPHC. For example, it should save time for setting up yearly training of NHC customers (e.g., WMO sites) and provide an avenue for dissemination of forecast information to its core users (NWS and warning coordinators) during conference calls. The solution is approximately 50% complete, and a server is currently set up at NRL Monterey to demonstrate its current capability. This solution uses standard web protocols (SSL, port 443) and has been tested through stringent Navy firewalls. Although the solution is not intended for day-to-day forecasting since there is some slowdown due to sending data over networks, it could probably serve as a remote site backup capability. This capability has not been fully implemented, but could be explored if funding permits. NRL can allow JHT and NHC to run the demonstration if there is interest.

User Requirements

NRL addressed approximately 30 requirements in the first year. The highlights are a sidebar (Fig. 1a) that allows quick display and removal of objects on the map, a mouse-over information box on the bottom border of the map (Fig. 1b) and a capability to "Run Your Own Consensus" to aid track forecasting. The other requirements addressed are included in Appendix A. All these have been implemented in operations. The user requirements work is approximately 50% complete.



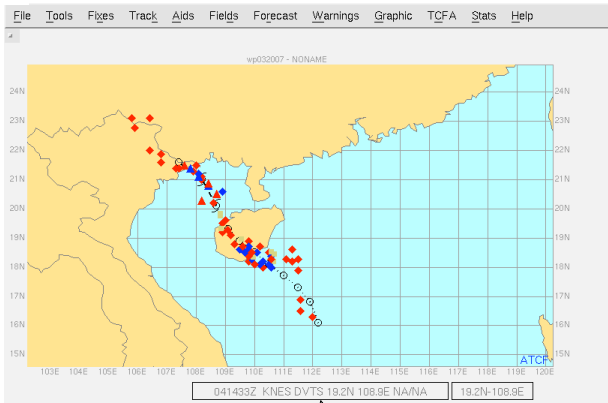
ATCF Sidebar



This sidebar menu allows quick display or removal of fields, aids, fixes, labels. Ideal for a web application, but also has merit in the current ATCF.



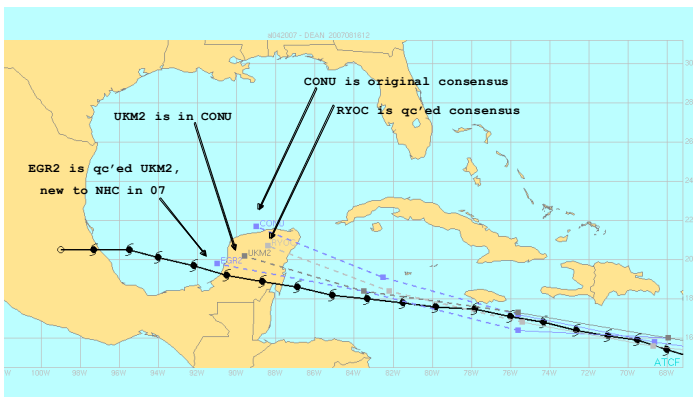
Mouse-over Information



Click on a fix to get an instant display of the fix metadata. Also implemented for the best track, objective best track, objective aids and forecast.



Run Your Own Consensus (RYOC)



Ability to construct consensus on the fly. Used for 12% of all advisories in 2007 (45 and 12 cases at 12 and 120 h). HWRP and ECMWF frequent additions to consensus.

Figure 1. (a) New sidebar menu, (b) Mouse-over information, and (c) Run your own consensus dialog. Arrows indicate the new functionality in each case.

Intensity Consensus

NRL and NHC collaborated on updating intensity consensus aids running operationally. For the intensity, we evaluated and installed a two-or-more aid consensus (IVCN), which consists of GFNI, HWFI, GHMI, DSHP and LGEM. Figure 2 shows the skill of the individual members and the consensus. The consensus is generally one of the top performing aids at all forecast times out to 72 h. In independent tests with 2008 data, the results indicate similar performance for the consensus aid.

Similar results are found for an intensity consensus requiring all models be available (ICON). The models required for this are HWFI, GHMI, DSHP and LGEM. The GFNI is left out both because it is the worst performer of the five in the aid IVCN and it has the lowest forecast availability. ICON performance to date has been on par with IVCN. Both serve as baselines for more complex intensity forecast techniques such as weighted averages. ICON and IVCN will be evaluated and updated at the end of season in collaboration with NHC. This work is approximately 50% done.

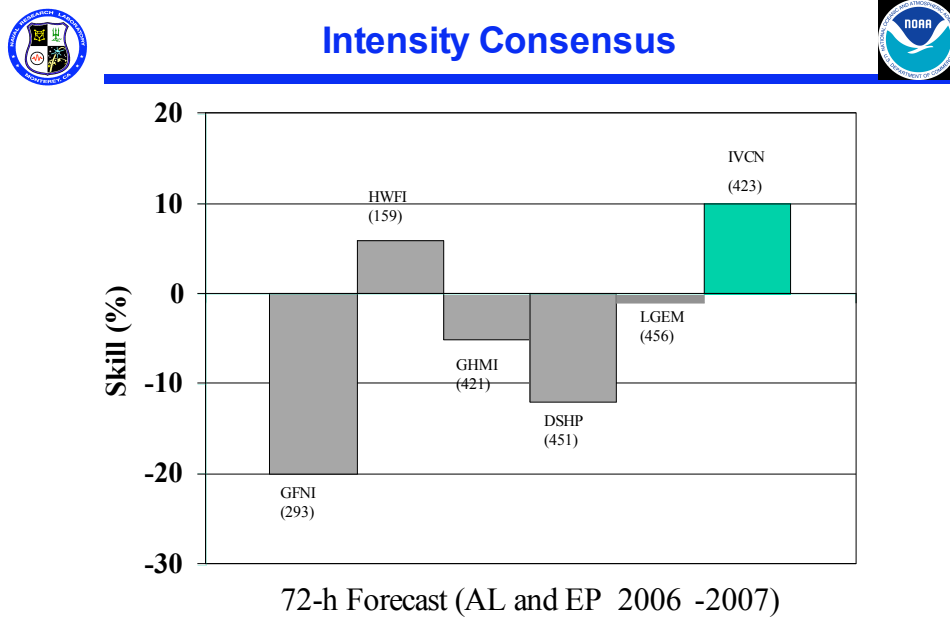


Figure 2. Skill of five top-performing intensity objective aids and consensus of the five. The consensus (IVCN) generally outperforms the members.

Conclusions

Tasks in the original proposal are on target for completion in 2009. Here is a summary of the tasks and their completion percentages.

- Develop a Web-ATCF capability to reduce maintenance associated with training and increase interaction with NWS and warning coordinators (50%)
- Address requirements levied during ATCF Requirements Meeting and during season (50%),
- Update and evaluate intensity consensus (50%)

Acknowledgements

We wish to acknowledge the efforts of Chris Sisko, James Franklin, Alison Krautkramer and Chris Lauer (NHC), John Knaff and Mark DeMaria (NOAA/NESDIS). We also wish to thank the members of the Joint Hurricane Testbed for allowing us to do this work.

Appendix A

List of NHC Requirements Addressed

Guidance Related Items:

- GPCE update for 2007 seasons.
- Probability data update for 2007, optimized code.
- Add corrected consensus (CCON, CGUN) for 2007 season.
- Evaluated/updated intensity consensus aids (ICON and IVCN).
- Evaluated/updated track consensus aids (TCON and TVCN)
- Added corrected consensus for new track aids (TCCN for TCON and TVCC for TVCN).
- Add “Run Your Own Consensus” (RYOC) to interpolator code. Evaluated results after 2007 season.
- Add GHMI to generalized interpolator.

User Interface Related Items:

- Menu changes.
- Wind radii graph modifications:
 - Don't want the wind radii plot to jump when toggling taus or radii.
 - -Add menu options for scaling the graph axes.
 - Add mouse readout of radii like lat/lon readout storm display
- Add mouse-over label for fixes, track, aids, and forecast track
- Generate CPA from best track.
- Allow off-synoptic hour best track points in best track dialogs.
- Differentiate off-synoptic hour on storm display.
- Add "make 12 ft seas forecast" to forecast menu forecast wind radii.
- Modified "list latest forecast" so it lists the 12 ft seas radii.
- Add capability to highlight a select objective aid (toggle).
- ATCF trigger to run wind probabilities for specials.
- Retain 12-foot seas from special advisories for use in next advisory.
- Prevent setting of advisory wind intensity from modifying synoptic time (best track) wind intensity.
- Modify distance tool to display as you roam over the map
- Add Saffir-Simpson color scheme legend (cat 1, cat2...).
- Allow edit of bogus/compute parameters in edit best track.
- Label Objective best track position.
- Capability to display certain segments or ranges of the track.
- Add a zoom out function rather than toggle back and forth in “unzoom”.
- Add capability to handle multiple techlists for viewing purposes,
- Remove "do you want to save" alert from text edit window.
- Suppress wind radii pop-up error dialogs beyond 72h.
- Add “Run Your Own Consensus” (RYOC) dialog.
- Show list of compute parameters for previous 24 hours.
- Trigger ATCF wind speed probabilities push for prelim graphic.