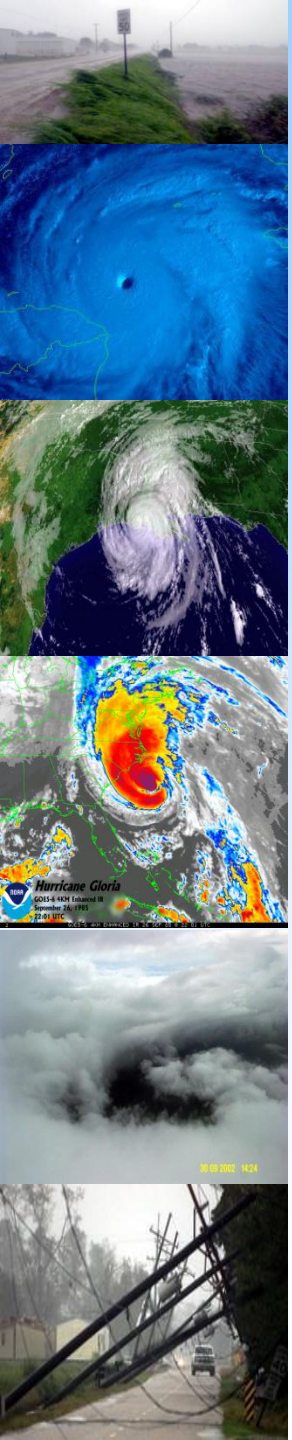


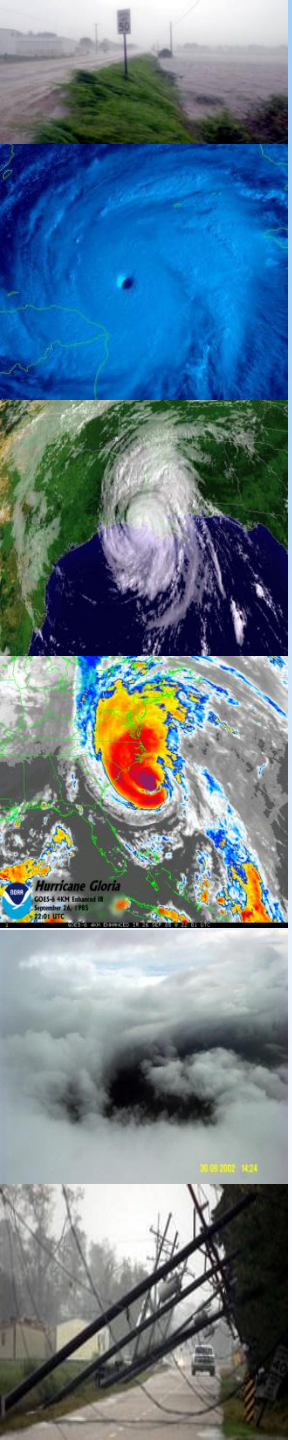
HFIP Post-Processing and Applications Development (PPAD) Report

Charge: Establish and implement processes to develop and transfer to forecast operations post-processing applications that optimize use of HFIP advances by operational forecast offices (e.g., National Hurricane Center (NHC))

Team Members (FY09): John Knaff (NESDIS/STAR), Jim Hansen (NRL), Bob Tuleya (Old Dominion University), Ligia Bernardet (ESRL), Naomi Surgi (EMC), and Ed Rappaport (NHC, Lead); Chris Sisko (NHC backup)

Mark DeMaria and Ed Rappaport

November 9, 2009



HFIP Post-Processing and Applications Development (PPAD) Report

FY09 Highlights

√ **Formed PPAD team (Q1)**

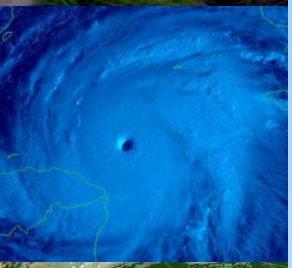
√ **Developed Team Plan with FY09 milestones (Q1):**

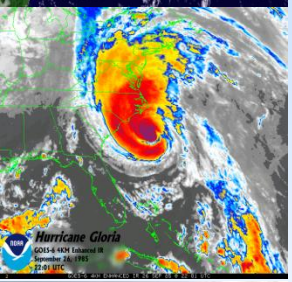
√ **Obtain preliminary product list with priorities from operational center (NHC Q1)**

√ **Obtain preliminary product list with priorities from other operational centers (EMC) and internal HFIP team requirements (Q2).**

- **Most teams developing their own products**
- **Verification Team provided initial list**
- **Diagnostics Team collaboration expected**

~ **Establish and implement PPAD administrative processes (Q2-Q3)**




HFIP Post-Processing and Applications Development (PPAD) Report

FY09 Highlights

~ Conduct quarterly progress reviews (Q2, Q3, Q4)

√ Define product design criteria

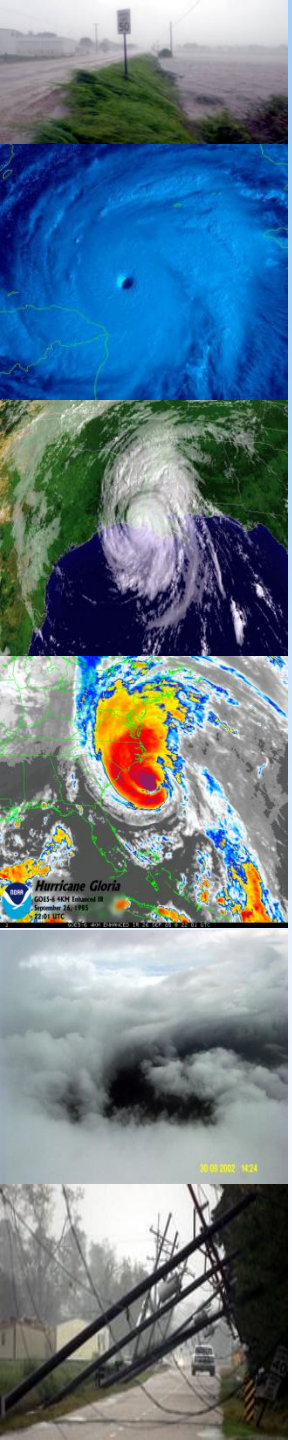
x Identify (√), develop (x) and deliver (x) first product and documentation (Q4) (hiring delay)

√ Held PPAD team meeting introducing personnel, issues and plans at Interdepartmental Hurricane Conference

√ Created list of fields produced by GFDL and HWRF, and list of all fields available at NHC.

√ Advertised for two positions:

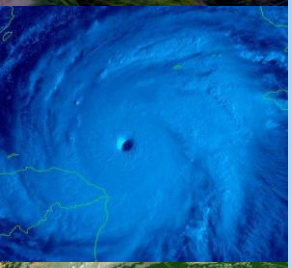
- Software Engineer
- Model Diagnostician/software programmer

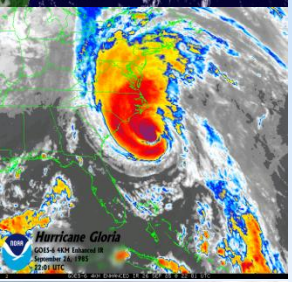


HFIP Post-Processing and Applications Development (PPAD) Report

FY10 Plans and Issues

- Software Engineer (Ann Schrader) begins…today! (Q1)
- Forecasters updated and prioritized list of ~45 requests HFIP teams to be invited to submit requests. Merge lists and consider resources to establish FY10 milestones. (Q1)
- Establish display system specs: AWIPS-II?, ATCF?, Web? (Q1)
- Some intermediate stage scientific programming necessary for several of the applications. New hire?
- Model Diagnostician recommendation made. Start Q2?
- NHC likely to spread some IT security overhead costs to soft money programs using IT (Q2)
- NHC to participate in Weather and Society Integrated Studies (WAS*IS) workshop to obtain input on public product development. (Q4)




HFIP Post-Processing and Applications Development (PPAD) Report

FY10 Plans and Issues

Hurricane Specialists' Top 14 Product Development Requests and Priorities

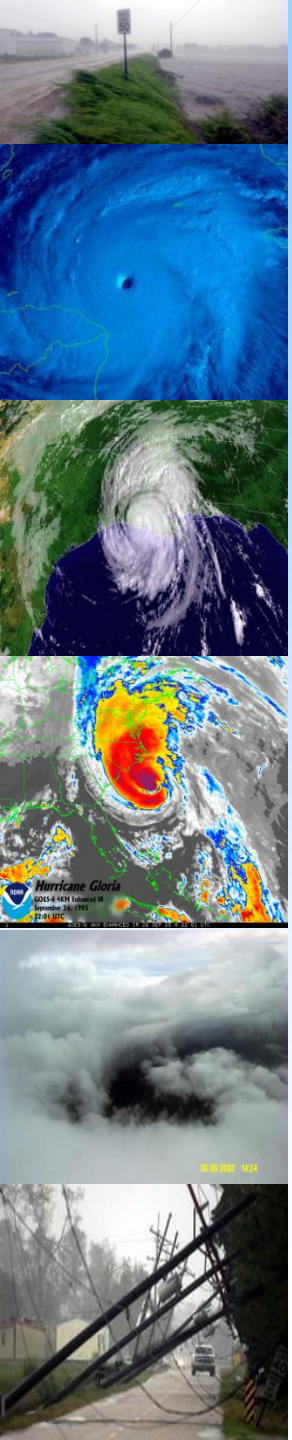
1. Shear analysis for user-specified layers

2. User-selectable (e.g., point and click) vertical cross sections of any field or combination of fields

3. Genesis probabilities derived from global model ensembles and possibly high resolution pre-TC models. S

4. Magnitude and location of maximum 1-minute sustained surface (10 m) wind speed for each minute of integration (for operations and diagnostics); full surface wind field at hour intervals; maximum radius of 34, 50 and 64 kt surface winds in each quadrant at hourly intervals.

S Scientific development required



HFIP Post-Processing and Applications Development (PPAD) Report

FY10 Plans and Issues

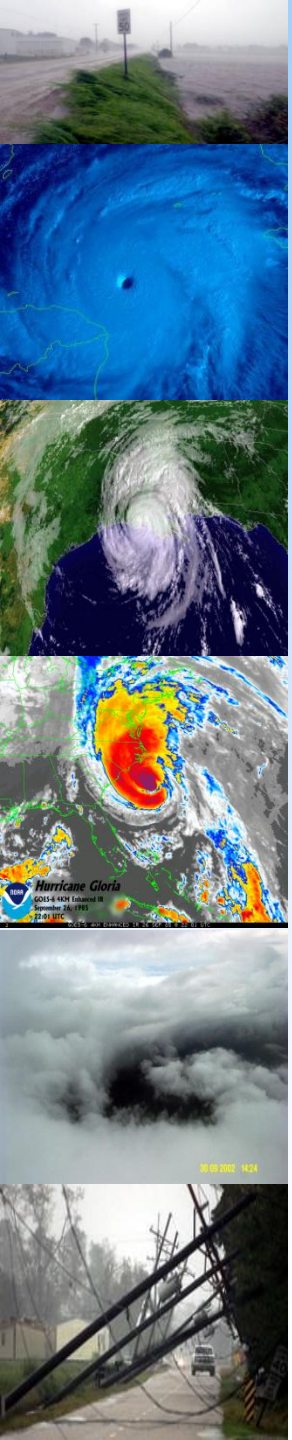
Hurricane Specialists' Top 14 Product Development Requests and Priorities

5. Probability distribution of intensity change (including RI) S

6. Guidance on the best locations for additional observations, e.g., supplemental soundings, G-IV dropsondes, C-130 data. S

7. Ensemble-based probabilistic guidance for track, intensity, wind structure, storm surge, rainfall, as well as support for existing products (e.g., watch/warning information, "cone" graphic; wind speed probabilities, and new products identified during the HFIP process). S

8. Structural analyses using the mass and motion forecast fields to help diagnose tropical, subtropical and extratropical stages (e.g., phase space) S



HFIP Post-Processing and Applications Development (PPAD) Report

FY10 Plans and Issues

Hurricane Specialists' Top 14 Product Development Requests and Priorities

9. Capability to make model comparisons (contemporary and sequential runs of any combination of models)

10. Global model tropical cyclone (TC) formation index/indicator and verification methods. S

11. Model originated simulated radar/microwave imagery. S

12. Center locations at multiple vertical levels and depiction of vertical coherence

13. Ensemble mean track (presumed)

14. Surface map of accumulated forecast rainfall