

# Overview of the Joint Hurricane Testbed

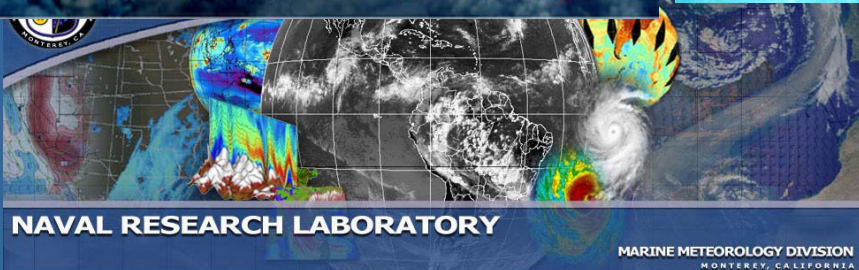
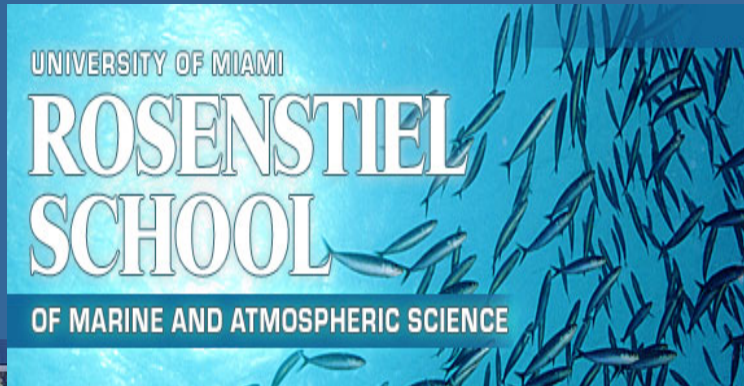
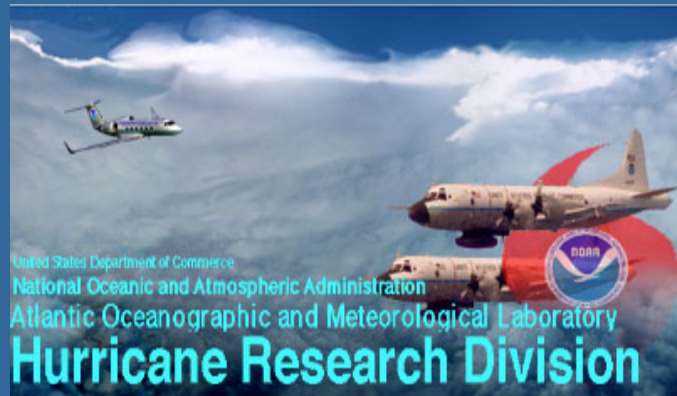
Mark DeMaria  
NESDIS/StAR RAMM Branch

Based on a presentation by  
Chris Landsea, NCEP/TPC

# The Forecasters (us):



# The Researchers (them):



How to  
bridge  
the  
“valley  
of  
death”?

# JHT Mission Statement

The mission of the Joint Hurricane Test Bed is to **transfer** more rapidly and smoothly new technology, research results, and observational advances of the United States Weather Research, its sponsoring agencies, the academic community and other groups into improved tropical cyclone analysis and prediction at operational centers.

# JHT Process

- **Principal Investigators apply for funding through NOAA (2 year projects)**
- **A seven member Steering Committee rates all proposals**
- **Funded projects are tested during one or two hurricane seasons in conjunction *with NHC/ Environmental Modeling Center points of contact***
- **At the project's end, each are evaluated by NHC/EMC staff**
- **Implementation of successful projects are then carried out by NHC/EMC staff/Pis**

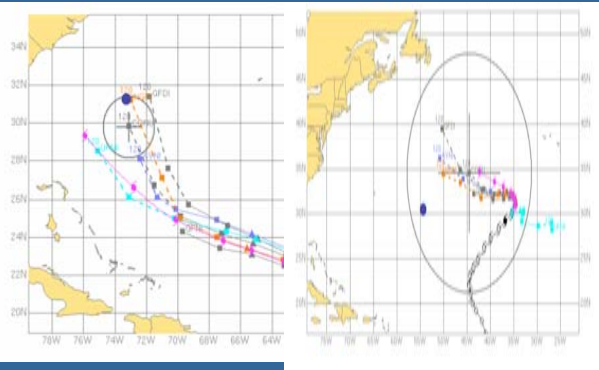
# What Have We Accomplished 2001-2008

- Total projects funded (round 1-4) – **50**
- Number of projects completed (round 1-3) – **39**
- Number of projects accepted for implementation – **28**
- Number of completed projects not accepted – **3**
- Number of completed projects pending further evaluation – **8**
- **Number of projects implemented – 21**

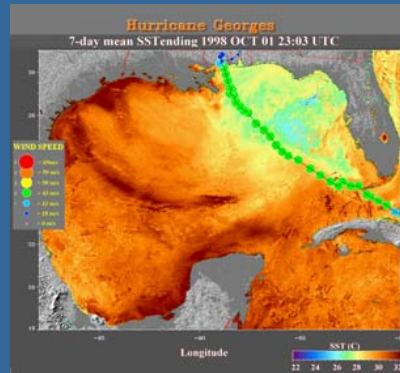
**Dedicated NHC & JHT staff, and close collaborations between the Pls, NHC forecasters and support staff is the key.**



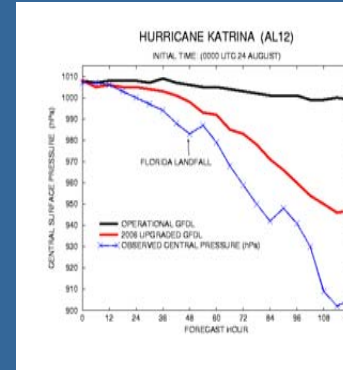
# JHT Implemented Project Examples



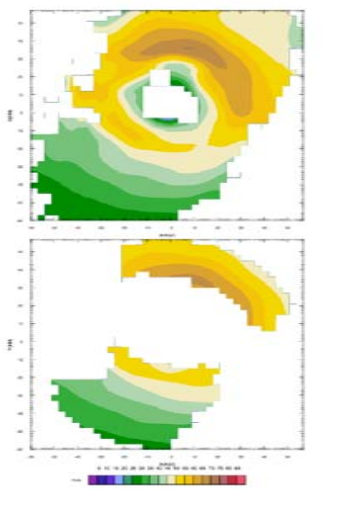
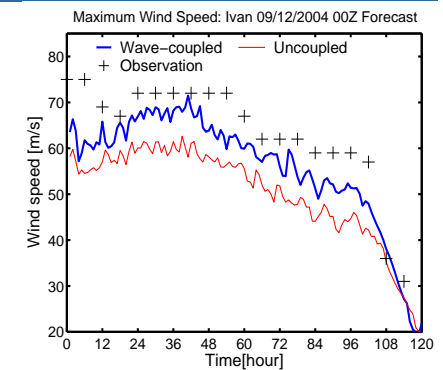
Track Uncertainty Estimates (Goerss)



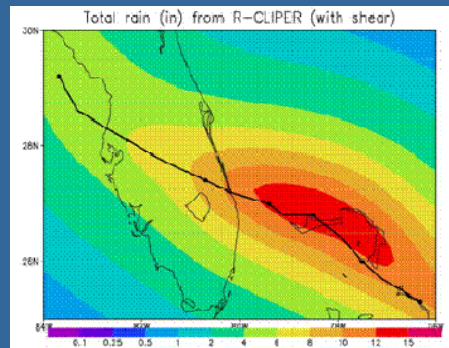
Inner Core SSTs (Cione and DeMaria)



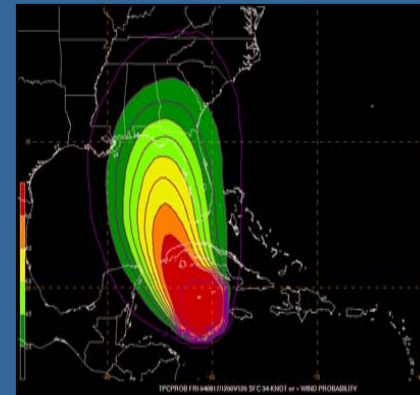
GFDL/URI Hurricane Model upgrades (Bender; Ginis)



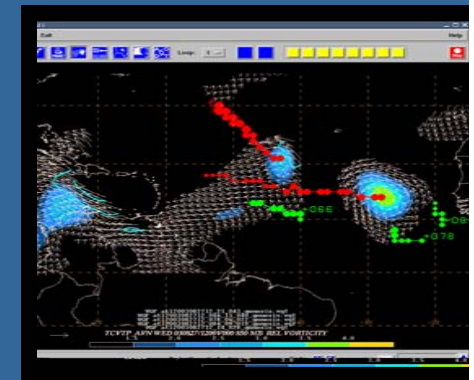
Doppler Winds (Gamache)



Rain-CLIPER & rainfall verification (Rogers)



SHIPS Improvement & Wind Probabilities (DeMaria/Knaff)



Genesis forecasting assessments (Harr)

# JHT Implemented Project Examples

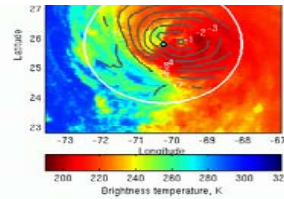
## Hurricane

### Isabel

16 Sept 2003  
00:15UTC

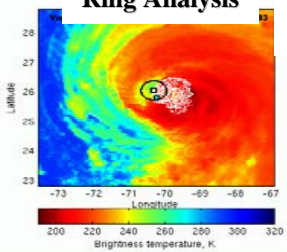


## Spiral Analysis

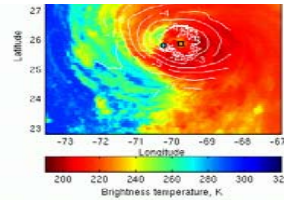


Advanced Dvorak  
Technique  
(Velden/Olander)

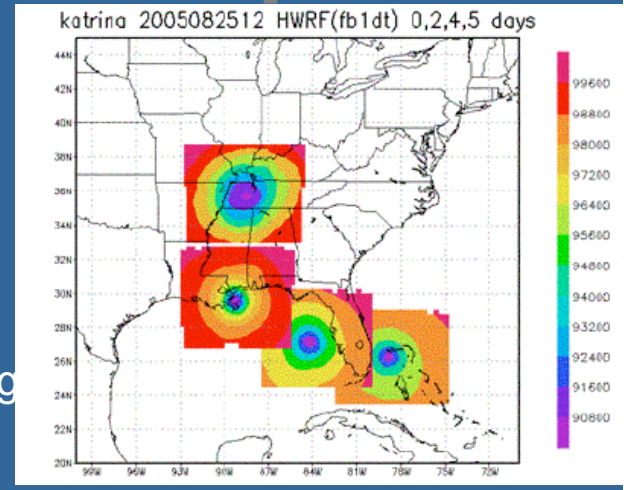
## Ring Analysis



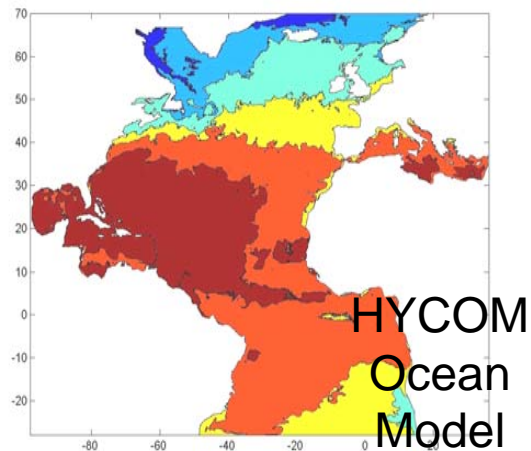
## Combo Analysis



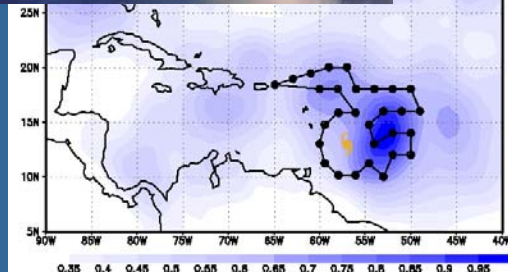
Hurricane-Weather  
Research Forecasting  
Model (Tuleya)



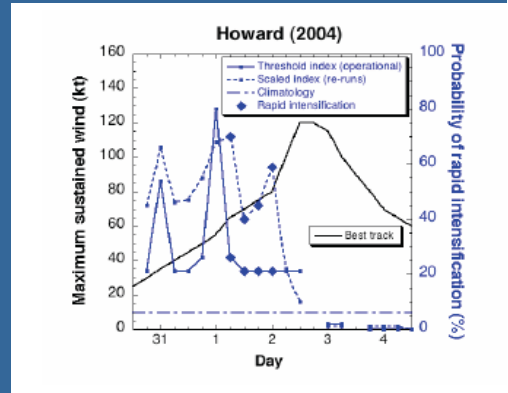
Ocean Modeling  
(Jacob)



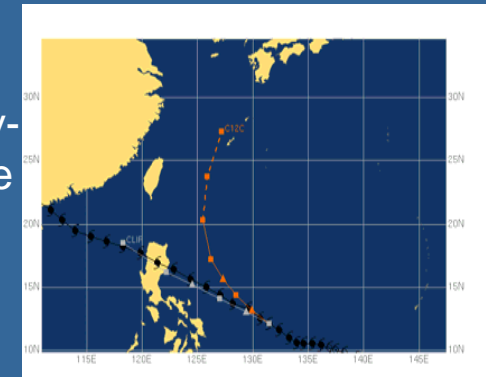
Targeted  
Observations  
(Majumdar/Aberson)



Rapid  
Intensification  
Index (Kaplan  
and DeMaria)



5 day  
Climatology-  
Persistence  
Model  
(Aberson)



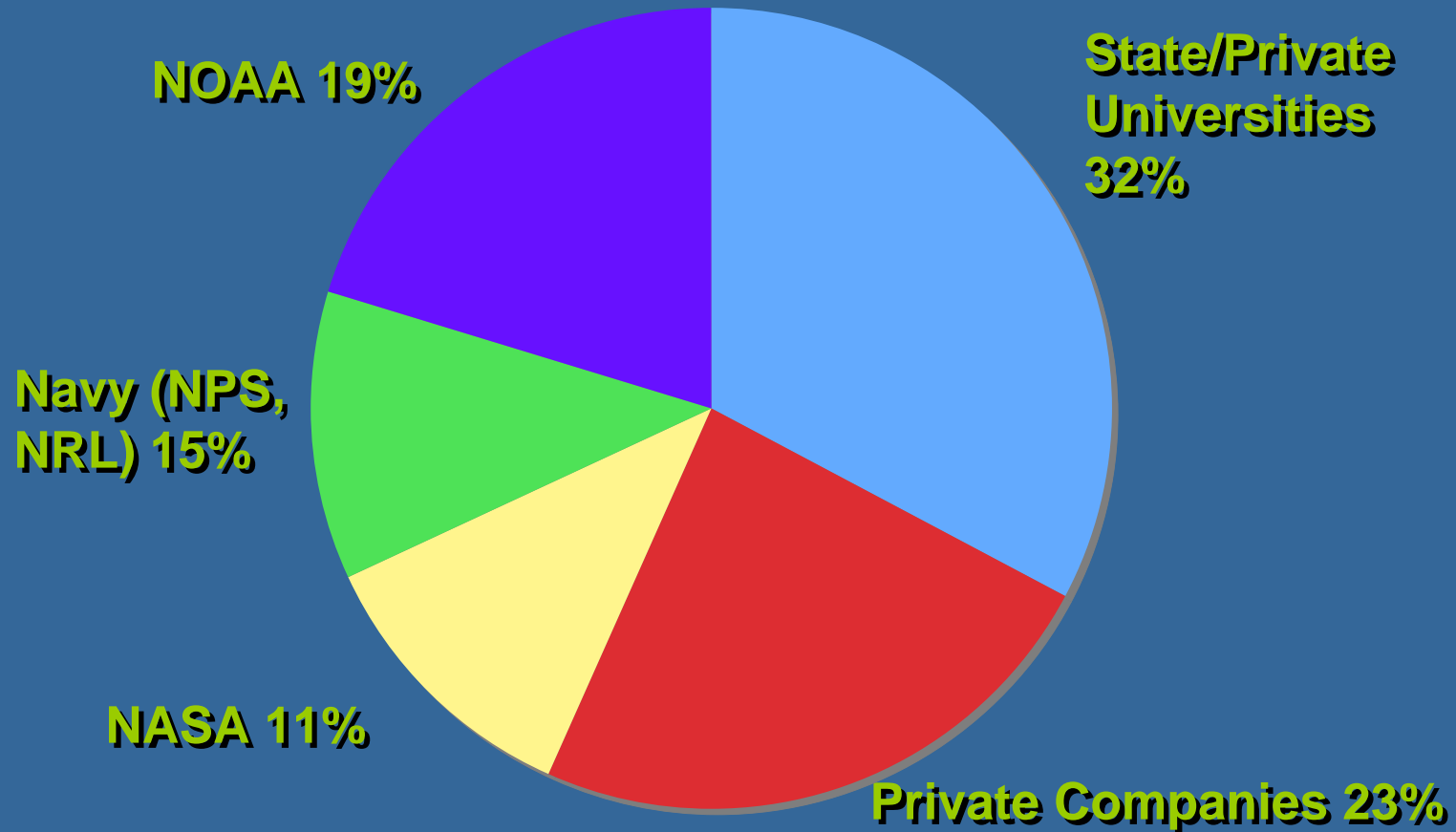
# 4th Round Project Focus Areas

<b>Primary Area of Focus</b>	<b># of Projects</b>
Improvements to dynamical models (for track, intensity, and precipitation forecasts)	5
Statistical intensity forecast guidance	1
Tropical cyclone structure/wind/wave distribution	2
Track forecast guidance	1
Enhancements to operational environment	1
<b>Total</b>	<b>10</b>



# 4th Round (FY07) Funding Distribution

Total \$1.03M



# What does it take to support the JHT?

## **JHT Staff:**

- 1. Jiann-Gwo Jiing (JHT Director)**
- 2. Alison Krautkramer/Jose Salazar (JHT IT specialist)**
- 3. Shirley Murillo (JHT Admin. Asst.)**
- 4. Chris Landsea (JHT Admin. Asst.)**

## **JHT Steering Committee:**

- 1. Ed Rappaport (NHC – Co-chair)**
- 2. Bill Frank (Penn State – Co-chair)**
- 3. John Gamache (Hurricane Research Division)**
- 4. Jeff Hawkins (Naval Research Laboratory)**
- 5. Naomi Surgi (Environmental Modeling Center)**
- 6. Ed Fukada (Joint Typhoon Warning Center)**
- 7. Hugh Willoughby (Florida International University)**

**JHT principal investigators and other funded participants**

**John Gaynor (US Weather Research Program)**

**NHC and EMC forecaster and technical points of contact**

**NHC/Technical Support Branch IT staff**

# JHT Website

[www.nhc.noaa.gov/jht/index.shtml](http://www.nhc.noaa.gov/jht/index.shtml)



- [JHT Home](#)
- [Terms of Reference \(PDF\)](#)
- [Staff](#)
- [Steering Committee](#)
- [Main Activities](#)
- [Highlights - 2001 to present](#)
- [Current Projects \(2005-2007\)](#)
- [Past Projects](#)
- [Administrative Presentations and Information](#)

## Mission Statement

The mission of the Joint (National Oceanic and Atmospheric Administration - NOAA, Navy, and National Aeronautics and Space Administration - NASA) Hurricane Test Bed is to transfer more rapidly and smoothly new technology, research results, and observational advances of the United States Weather Research Program (USWRP), its sponsoring agencies, the academic community and other groups into improved tropical cyclone analysis and prediction at operational centers.

## WHAT'S NEW

### Updated January 31, 2006:

- 2005-2007 [Projects and Goals](#)
- The 2005 Midyear Reports are available in the [Project Table](#)

### Added February 10, 2006:

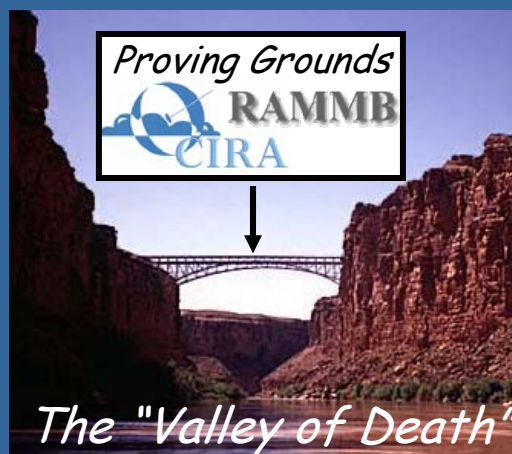
- The Joint Hurricane Testbed (JHT): Progress and Future Plans, Chris Landsea (TPC/NHC) - American Meteorological Society's Annual Meeting, February 2006 presentation. (PDF format)

# Implications for Satellite Testbed

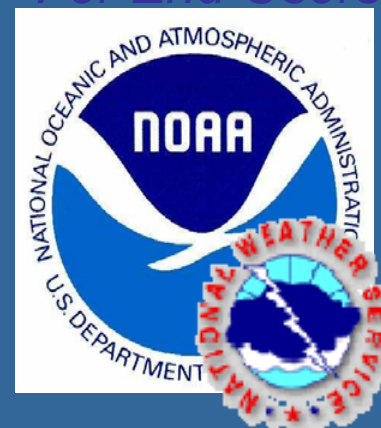
- **Structured project environment**
  - Well defined beginning, evaluation criteria and end
- **Oversight by a steering committee**
- **Users assigned from project start**
- **Parallel infrastructure and data provided for real time tests**
- **Problems**
  - Funding level declining
  - Saturation of operations
  - Little or no funding for high risk ideas

# GOES-R “Proving Grounds” Input from Steve Miller

*The “Ivory  
Towers”  
Of Research*



*Practical  
Applications  
For End-Users*



- At the last NexSat TOPIC Review, we discussed ways in which CIRA and NOAA-RAMMB might contribute to the NexSat process of near real-time demonstrations to end-users.
- The ‘Proving Grounds’ concept will provide a vehicle for ingesting NexSat and other CIRA/RAMMB developed products into AWIPS, and provide a mechanism for direct interaction with NWS staff.
- The focus will be on next generation environmental applications anticipated from GOES-R and NPOESS

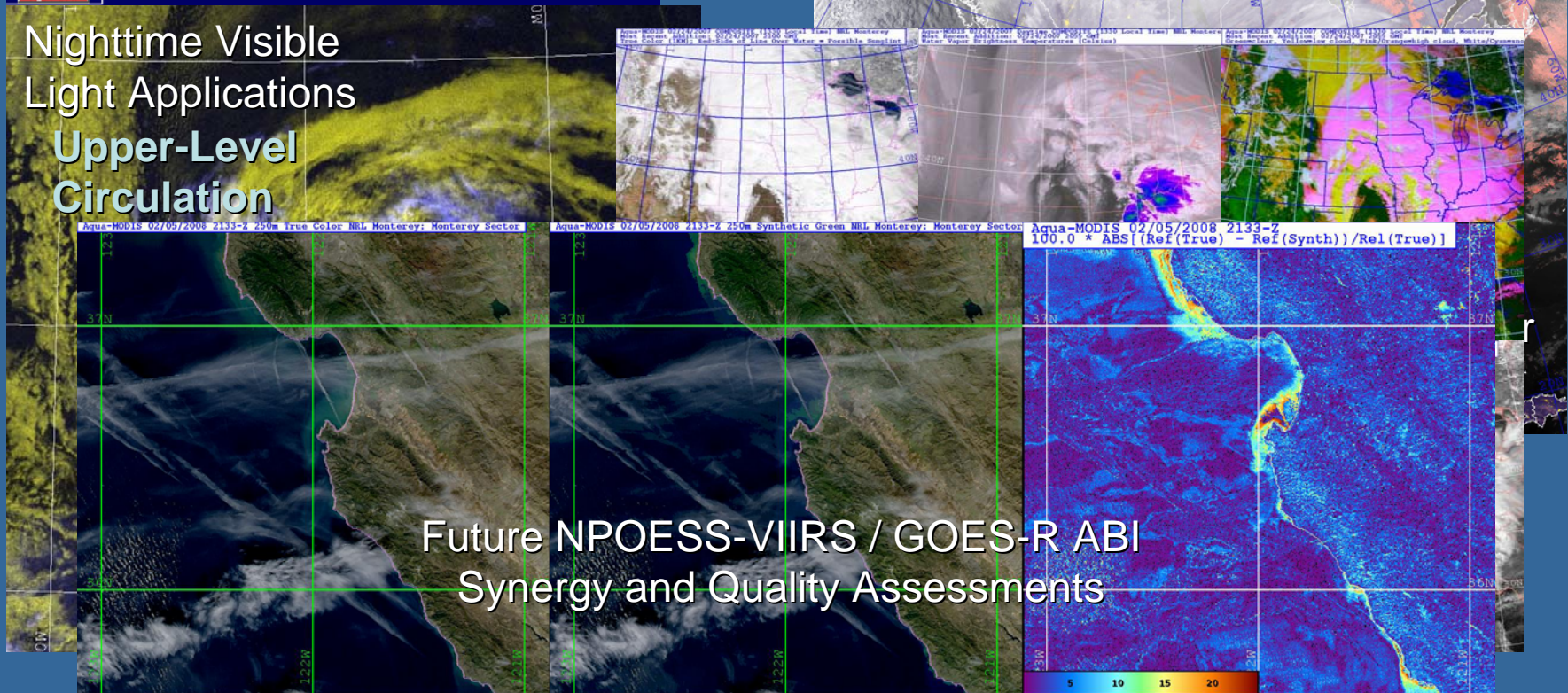


<http://www.nrlmry.navy.mil/NEXSAT.html>

The screenshot shows the NexSat web interface. At the top, there are navigation buttons for 'Region/Sector' and '/Full/Overview', along with a 'Pass Predictor' button. A 'Headlines' section mentions 'Pacific Rainstorms Archived articles'. Below this is a 'Products' menu with options like Visible, Infrared, Vapor, True Color, GLO-Color (selected), Cloud Tops, Cloud Layers, Cirrus, Snow Cover, Rain Rates, Rain Totals, Contrails, BioMass, CloudSat, Winds, Low Cloud, Model Overlays, Night Visible, and Low anomaly. The main display area shows a satellite image of the Pacific region with a grid overlay. A timestamp '23:03:58 UTC' is visible. At the bottom of the image area are buttons for 'Latest', 'Archive', 'Thumb', 'Full', 'Single', 'Thumb', 'Animate', and 'Print/Link'.

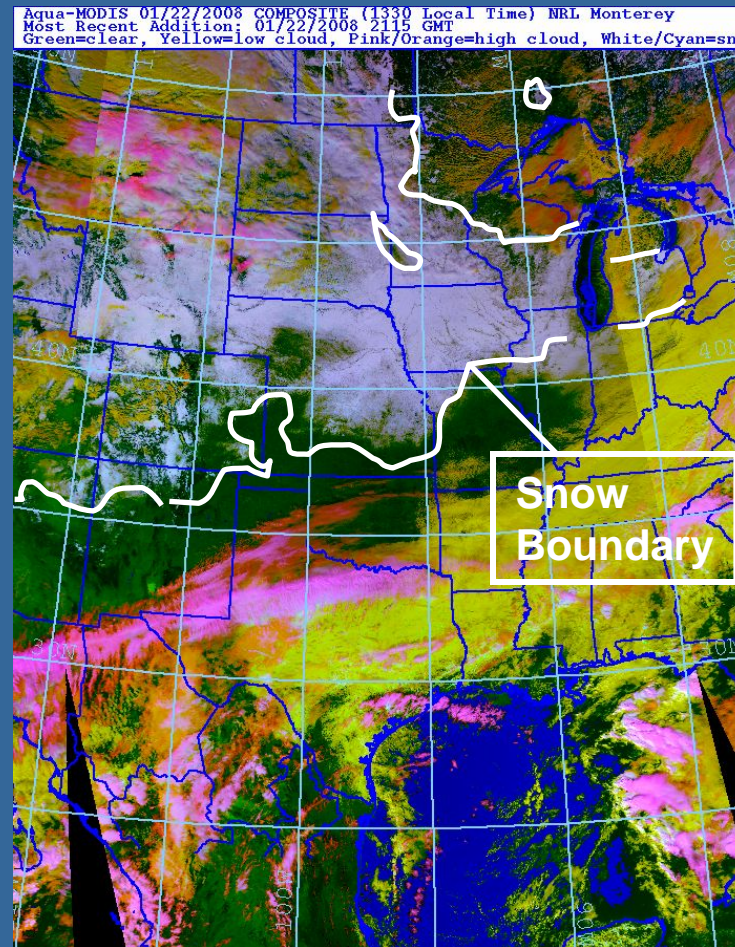
- CIRA will coordinate with RAMM-B to demonstrate an assortment of near real-time NexSat products on AWIPS systems.
- Feedback received from NWS users will be used to improve applications and training materials.
- Toward more useful and robust applications, user-readiness for GOES-R capabilities.

Nighttime Visible  
Light Applications  
Upper-Level  
Circulation



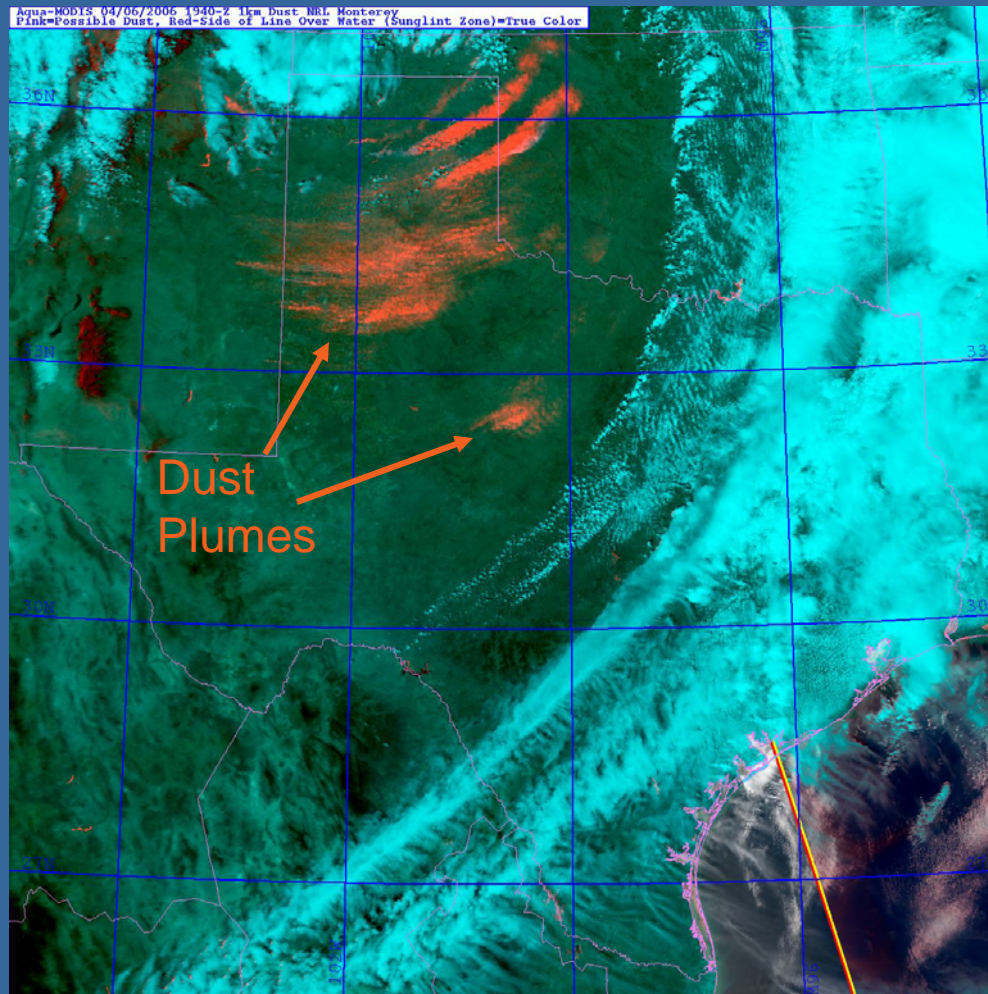


# Nighttime Snow Cover Detection



Will couple information from LEO (DMSP) and GEO (GOES) to enable a preview to NPOESS-VIIRS. We are now testing an automated routine on these cases in preparation for 'live demos' on NexSat.

# Dust Storm Detection



GOES-R will enable new multi-spectral techniques for detecting and enhancing airborne dust over the U.S. desert southwest.