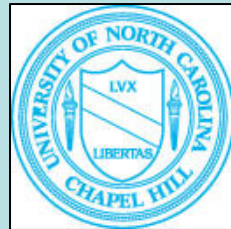


# SCOOP V2 Meeting Portland, ME 4-5 Aug, 2005

## North Carolina Progress and Status Report



**Steve Thorpe**  
**Michael Garvin**  
**Chuck Kesler**



**Brian Blanton**  
**Rick Luettich**  
**Larry Mason**

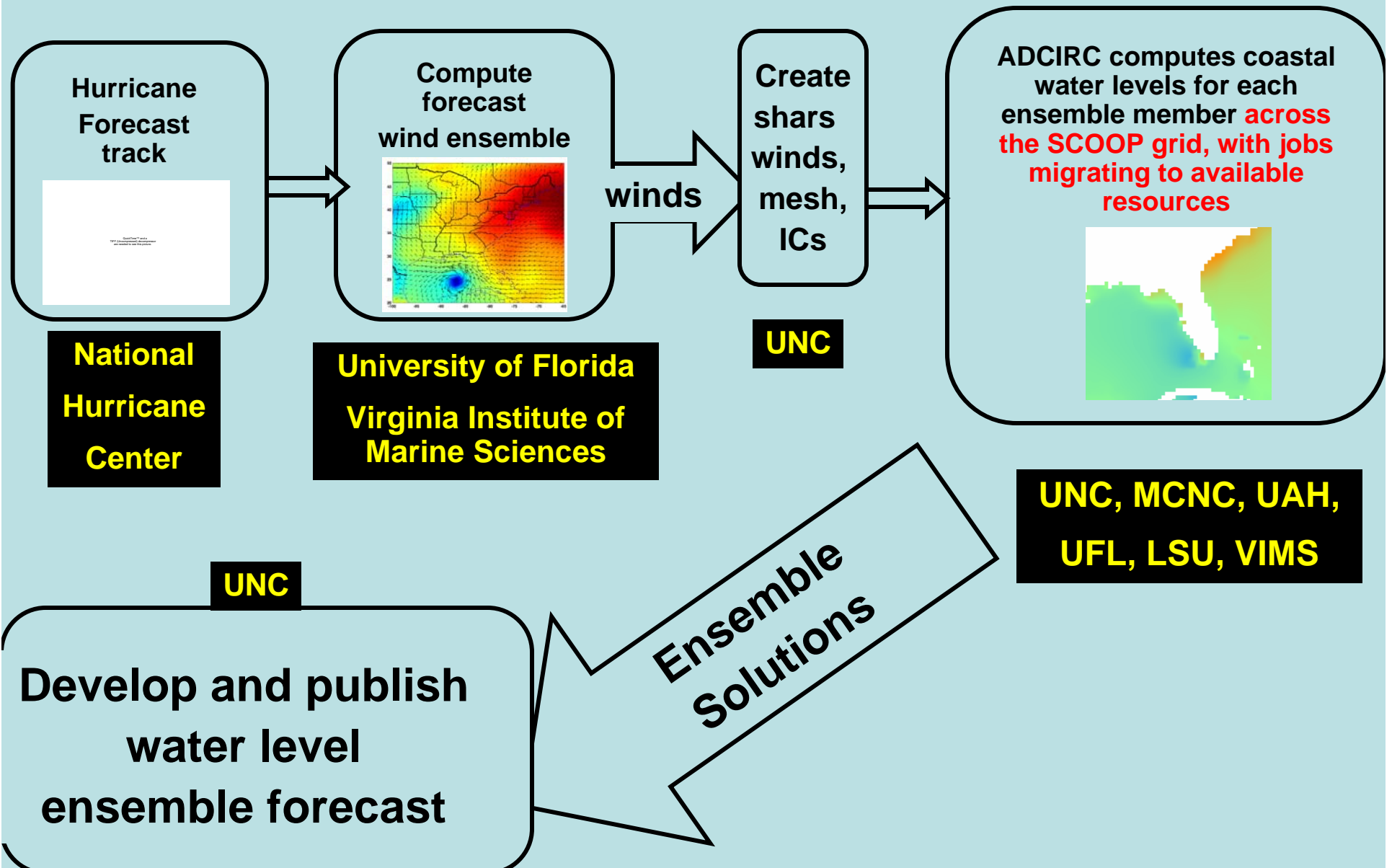


**Lavanya Ramakrishnan**  
**Howard Lander**  
**Brad Viviano**  
**Dan Reed**

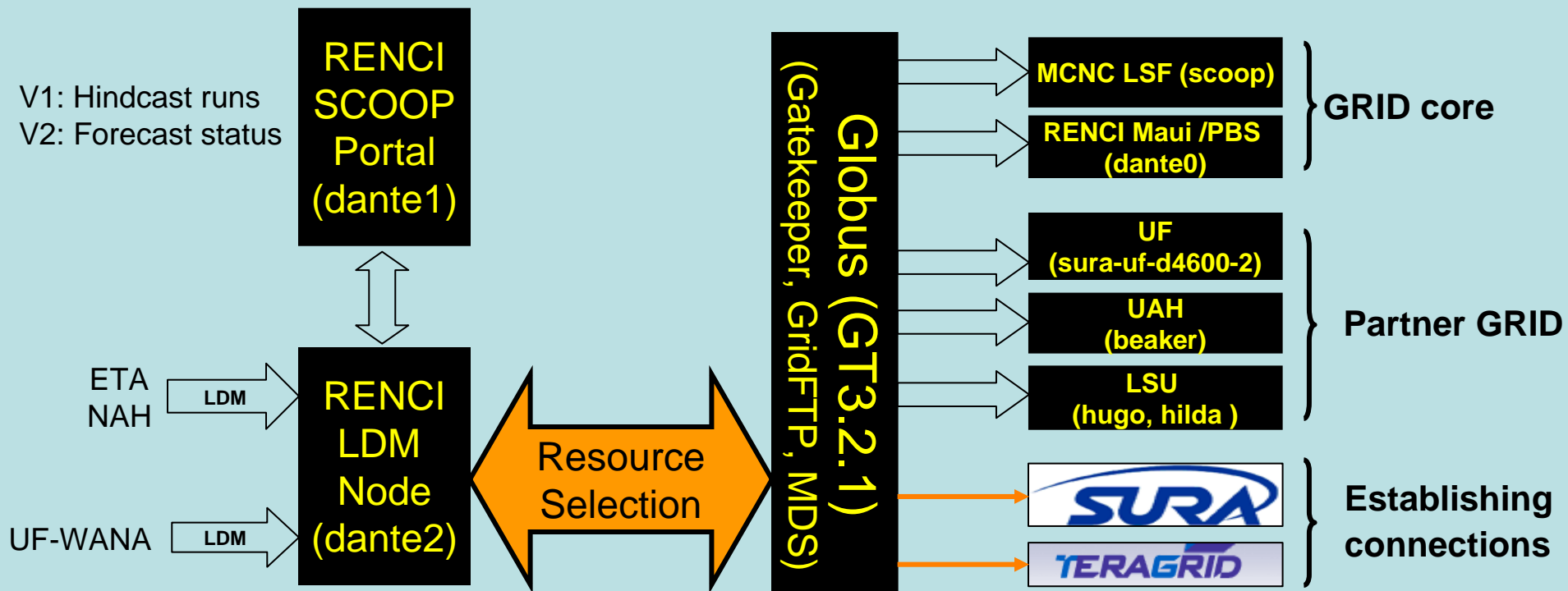
# Major Challenges

- Globus setup at compute sites
  - hours of testing, firewall problems
- Resource availability and setup
  - e.g: uudecode was not installed
- Criteria for resource selection
  - performance, reliability
- Forecast mode
  - debugging is hard
- Minor challenges?? too many to list

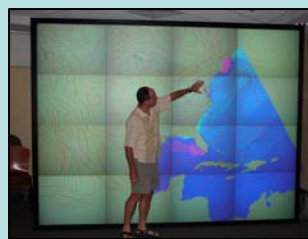
# SCOOP V2 Storm Surge Ensemble Prediction System



# System Overview



LDM



Results pushed  
thru IDV to  
RENCI VizWall

# ***RESOURCE SELECTION***

**“Where is the optimal place to run this job, right **now** ?”**

---

- **Considered other meta scheduler technologies**
  - Too complex, proprietary components, non-java, etc....
  - The basics that come with GT 3.2.1 plus our simple API work for us
  - We may revisit this in future versions
- **Developed a “simple” Java API to:**
  - Answer the “best place” question
  - Use more than just MCNC and UNC resources for the ensemble runs
  - Assess current availability of compute and data resource
  - Uses Java CoG kit + the usual GT 3.2.1 tools:
    - *MDS for resource information sharing*
    - *GridFTP for file transfer*
    - *PreWS GRAM for job submission (and basic information probing, when no MDS)*

# SCOOP V2 Portal

## Ensemble Simulations

### Status Page

SCOOP Portal My Workspace: Previous ADCIRC Runs - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://dante1.renci.org:8080/scoop/portal/user/howard/js\_pane/P-f0545bae05-1022s

Getting Started Latest Headlines Dictionary.com Quickse... Wikipedia Quicksearch EvoWiki Yahoo! RENC Internal Google RENC Contacts The Quotations Page - ...

SCOOP Portal My Workspace: Previou... SCOOP Portal My Workspace: Pre...

**SCOOP Portal** Aug 03, 2005 01:4

My Workspace

Scoop Status Portlet

**Scoop Adcirc Run Status**

Color Codes [Preparing Run](#) [Running](#) [Completed Normally](#) [Failed](#) [Receiving LDM](#) [Sending To Resource](#) [Retrieving From Resource](#)

Data Arrival	Forecast Date	Cycle	Wind Field	Grid Field	Ensemble	Start Date	Finish Date	Resource	CPU Count
N.A.	20050729	00	wana	221	01	Wed Aug 03 11:36:11 EDT 2005	Wed Aug 03 11:39:25 EDT 2005	dante0.renci.org/jobmanager-pbs	18
N.A.	20050729	00	wana	221	01	Wed Aug 03 10:34:17 EDT 2005	Wed Aug 03 10:35:28 EDT 2005	scoop.ncgrid.org/jobmanager-lsf	20
N.A.	20050729	00	wana	221	01	Wed Aug 03 10:42:27 EDT 2005	Wed Aug 03 10:43:47 EDT 2005	scoop.ncgrid.org/jobmanager-lsf	20
N.A.	20050729	00	wana	221	01	Wed Aug 03 11:11:54 EDT 2005	In Progress	dante0.renci.org/jobmanager-pbs	18
N.A.	20050729	00	wana	221	01	Wed Aug 03 11:19:20 EDT 2005	Wed Aug 03 11:35:13 EDT 2005	dante0.renci.org/jobmanager-pbs	18

Home

Membership

Schedule

Resources

News

Chat

File Transfer

OPeNDAP Server

Results

Proxy Manager

ADCIRC

Previous ADCIRC Runs

Logout

Customize

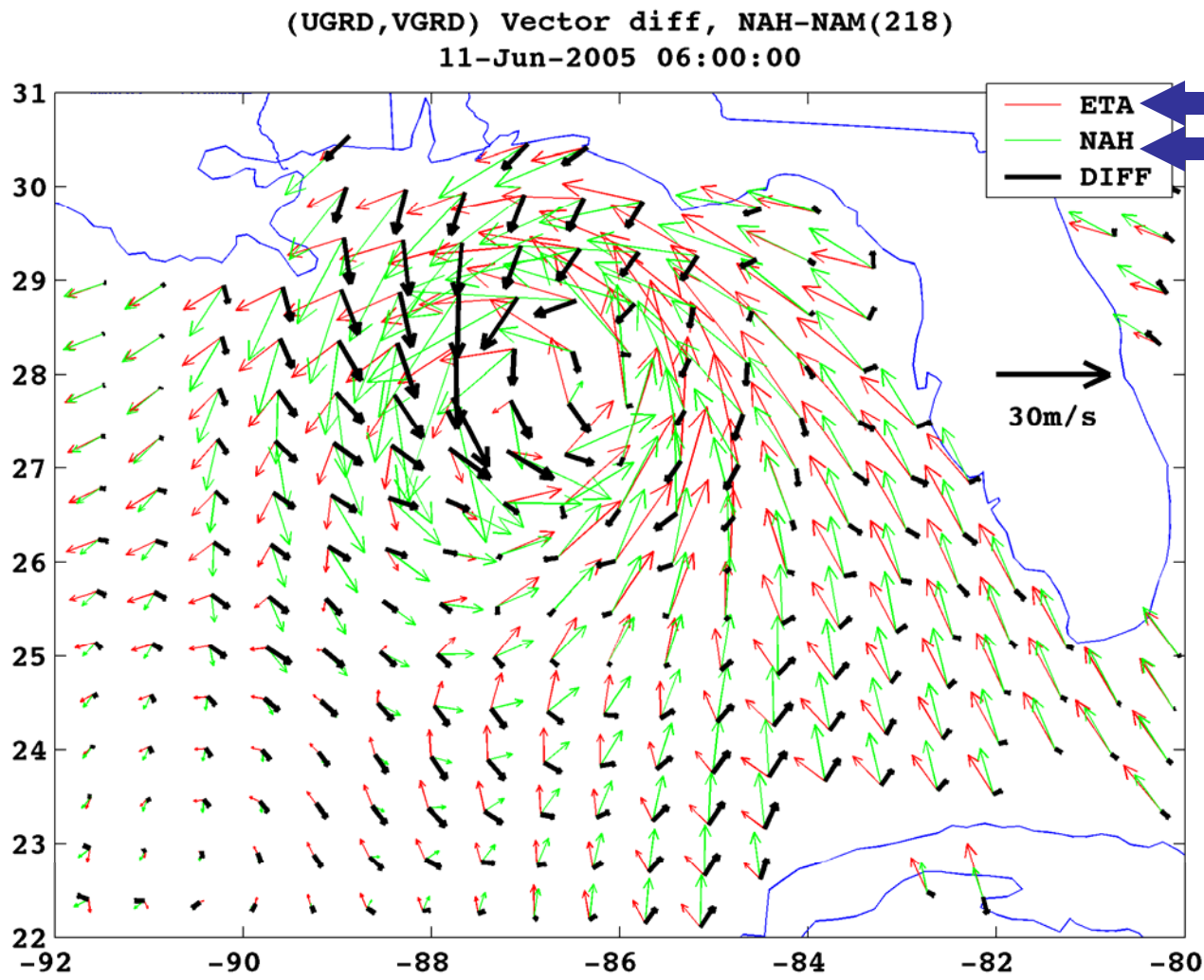
Users Present

Howard Lander

| [RENCI](#) | [MCNC](#) | [SCOOP](#) | [UNC Marine Science](#) |

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 © The Open Grid Computing Environments Collaboratory. All rights reserved. Copyright 2003.  
 CHEF v01.00.07[Build #B02141],jetspeed v1.4b2[cus08oct2002p]

# 2 NCEP Wind Predictions for TS Arlene



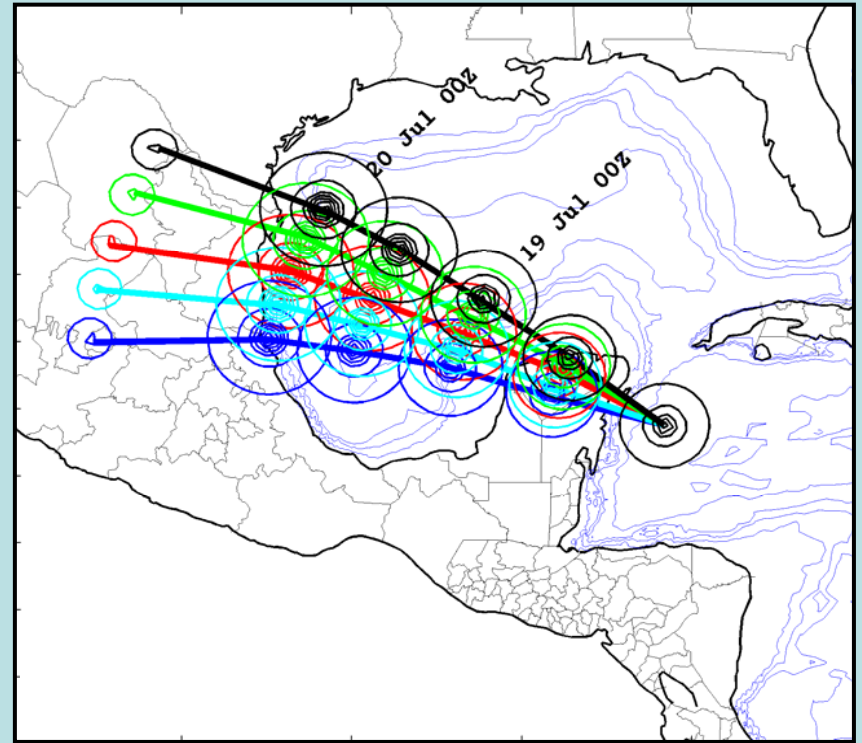
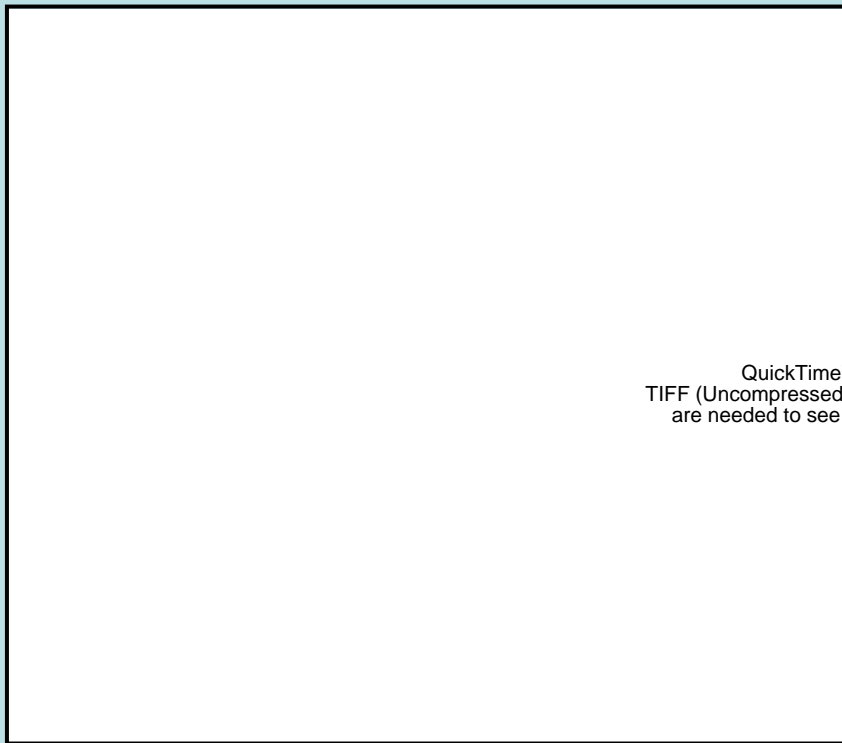
Standard  
NCEP NAM  
model

NAH, NCEP's  
Hurricane  
model

# NCEP and WANAF Ensemble

**NCEP Ensemble Perturbation Forecast  
Storm Tracks for Forecast with  
Initial time = 2005071800**

**UFL-SCOOP Analytic Forecast  
Storm Tracks for Forecast  
with Initial time = 2005071800**

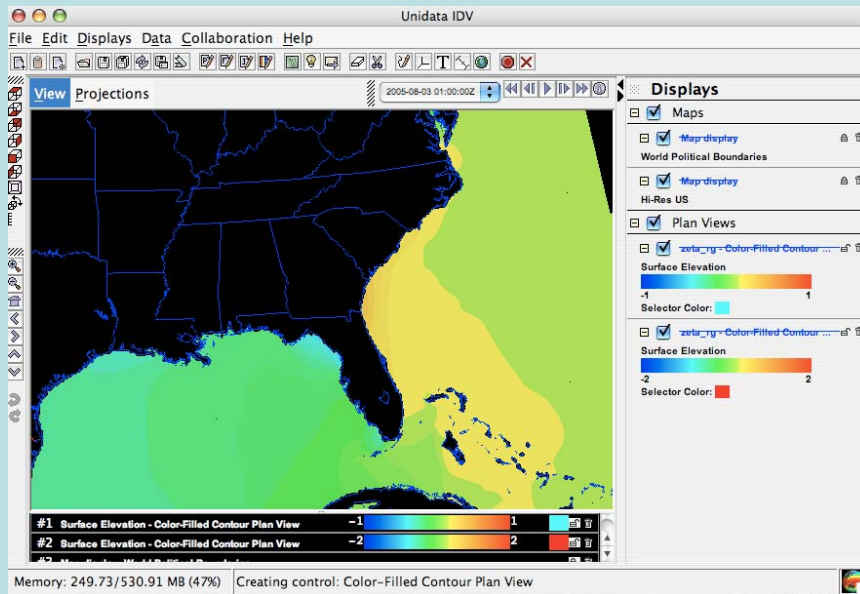


**Hurricane Emily**

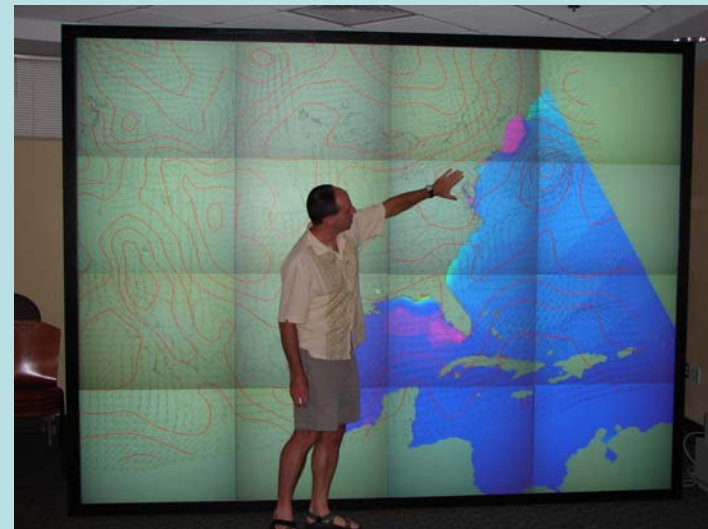


# System Visualization

## 1) Automated IDV



## 2) RENCI VizWall



## 3) WWW.OPENIOOS.ORG

# Beyond V2 ...

- Scientific Impacts of System:
  - Useful ONLY IF
    - Skill assessment (better than prior estimates!!)
    - Requires respected/established ensemble processing methods
    - Atmospheric Pressure!!!
- GT4 ???
- Fault tolerance
  - e.g: if the job dies, needs manual intervention
- Dynamic resource policies
  - e.g: hurricane season, priority for SCOOP jobs

# Other ongoing activities

- SURAGrid
  - use resources from SURAGrid for daily ADCIRC ensemble runs
  - ongoing conversation re: proposal to Sun Higher Education Grant Program
- Leverage from Linked Environments for Atmospheric Discovery (LEAD)
  - adaptive/dynamic workflows/sched, resource mgnt
  - Integrated Data Viewer (IDV), WRF
  - Use of LEAD/WRF simulations for regional storm-surge modeling
  - Hurricane Emily test case under way
- RENCI's TeraGrid involvement
  - portal, resources

# Concluding Thoughts

- **Time consuming to establish grid connectivity among organizations...**
  - Configuration of firewalls, NAT, GlobusToolkit, Certificate Authorities, job scheduler adapters
  - Systems administrative anxieties
- **...but it's worth it!**
  - SCOOP partners are creating a distributed, scalable, modular resource that empowers scientists at multiple institutions
  - This will advance the science of prediction of surge & wave impacts during storms, and other environmental hazards