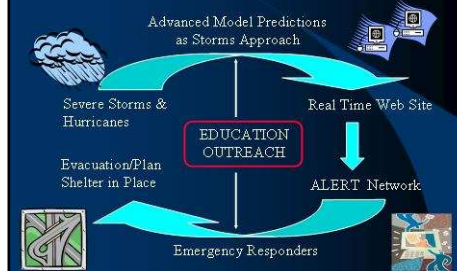# Severe Storm Prediction, Education, and Evacuation from Disaster for the Gulf Coast
(SSPEED Center)

The SSPEED Center Concept

- The suffering from Hurricanes Katrina and Rita along the Gulf Coast demonstrated the extreme and dismal condition in disaster planning and response in the GC.
- This Center will develop the necessary infrastructure to coordinate research programs at major universities, working with the private sector, to deliver innovative technologies in a timely manner to governmental agencies responsible for at-risk communities.
- The NWS cannot deliver at this scale for Gulf Coast
- A major educational outreach center (SSHEC) planned

The Universities

- **Rice University - (Lead) -** Flood prediction, infrastructure risk, and societal surveys and public impacts
- **Univ of Houston -** Infrastructure risk analysis, SSHEC for public outreach and internship training
- **LSU -** Hurricane & surge model prediction, evacuation planning
- **Univ of Texas -** Surge modeling, disaster planning, evacuation, advanced data coordination and computer systems
- **TAMU-Galveston-** coastal impact community, storm recovery
- **Texas Southern University -** transportation and evacuation
- **UT Brownsville-**coastal impact community, flood alert systems

Public and Private Groups

- **HGAC** - Houston Galveston Area Council - regional COG for hurricane preparations and evacuation
- **TMC** - Texas Medical Center - primary care and research facility, CASA member for radar deployment
- **City of Houston** - important infrastructure and security issues, evacuation and transportation concerns
- **VAI, Dodson, TCB, Walter P. Moore** - private companies involved in active flood prediction in the Houston area

New Technologies for Storm Warning and Evacuation

Advanced Model Predictions as Storms Approach

Severe Storms & Hurricanes

Real Time Web Site

EDUCATION OUTREACH

Evacuation/Plan Shelter in Place

ALERT Network

Emergency Responders

STORM SURGE MODEL - LSU
Updated every 5-6 hours during storm

HURRICANE RITA ADV. NUMBER 18
11 PM EDT WED SEP 21 2005

Model Boundary

6 ft
7-8 ft
9 ft
11 ft
4 ft
5 ft
5 ft

Surge (ft)
10.5
9.0
7.5
6.0
4.5
3.0
1.5
0.0

Flood Alert System 2

Rainfall Analysis

Real Time
HEC-1 Model
VFlo Model

NEXRAD (Radar)

Flood Protection
•Flood doors
•Flood gates
•Flood logs

Bayou Camera

Rice/TMC
•Phone
•Fax
•Pager
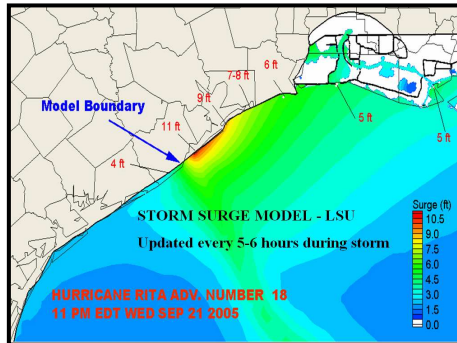•E-mail

Alert Level
Green
Yellow
Orange
Red

The Partnership Concept

- Develop customized severe storm prediction & warning ability and create major research and RFT centers for the Gulf Coast
- The Center mission:
  - (1) Severe storm research and advanced surge prediction at the coast,
  - (2) Radar-based rainfall and flood warning systems that link inland floods and coastal surge areas,
  - (3) Educational programs that link science and data to public evacuation plans, improve workforce for disaster planning
  - (4) infrastructure risks and recovery operations, and
  - (5) evacuation plans linked to the best warning systems, transportation networks, and societal needs
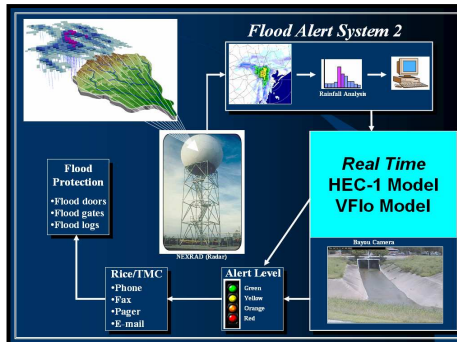
Regional Forecast Testbed

- RFT (regional forecast testbed) - incorporate storm surge; compute in real time flood inundation zones; deliver the information to emergency managers and interested parties on a website; and provide dynamic links to sheltering or evacuation plans to assist managers and the public during severe events.
- RFT1 will be initiated in Houston and will be fashioned after what we have learned thru our efforts with TMC and other agencies. Flood inundation modeling will be linked with warnings and coordinated with regional evacuation plans.
- RFT2 will then be organized and expanded down to Brownsville in Year 3 of the program based on what we learn in RFT1.

Educational Outreach & Workforce Training - SSHEC

- Students will be trained in severe storm modeling, flood warning systems, and disaster mitigation and operations thru university exchanges. No such programs exist at this time in the region - this workforce will create new opportunities.
- Graduate students from each university will intern with one or more of the private sector firms and government agencies over the summers, when most of the severe storms occur along the Gulf Coast. Exchange of research ideas to/from private sector.
- Annual SSPEED conference will be held to present findings and progress to governmental sponsors, emergency managers, and private sector.

RICE | UH | LSU | THE UNIVERSITY OF TEXAS AT AUSTIN | A&M Galveston | TSU | UTB TSC | HGAC