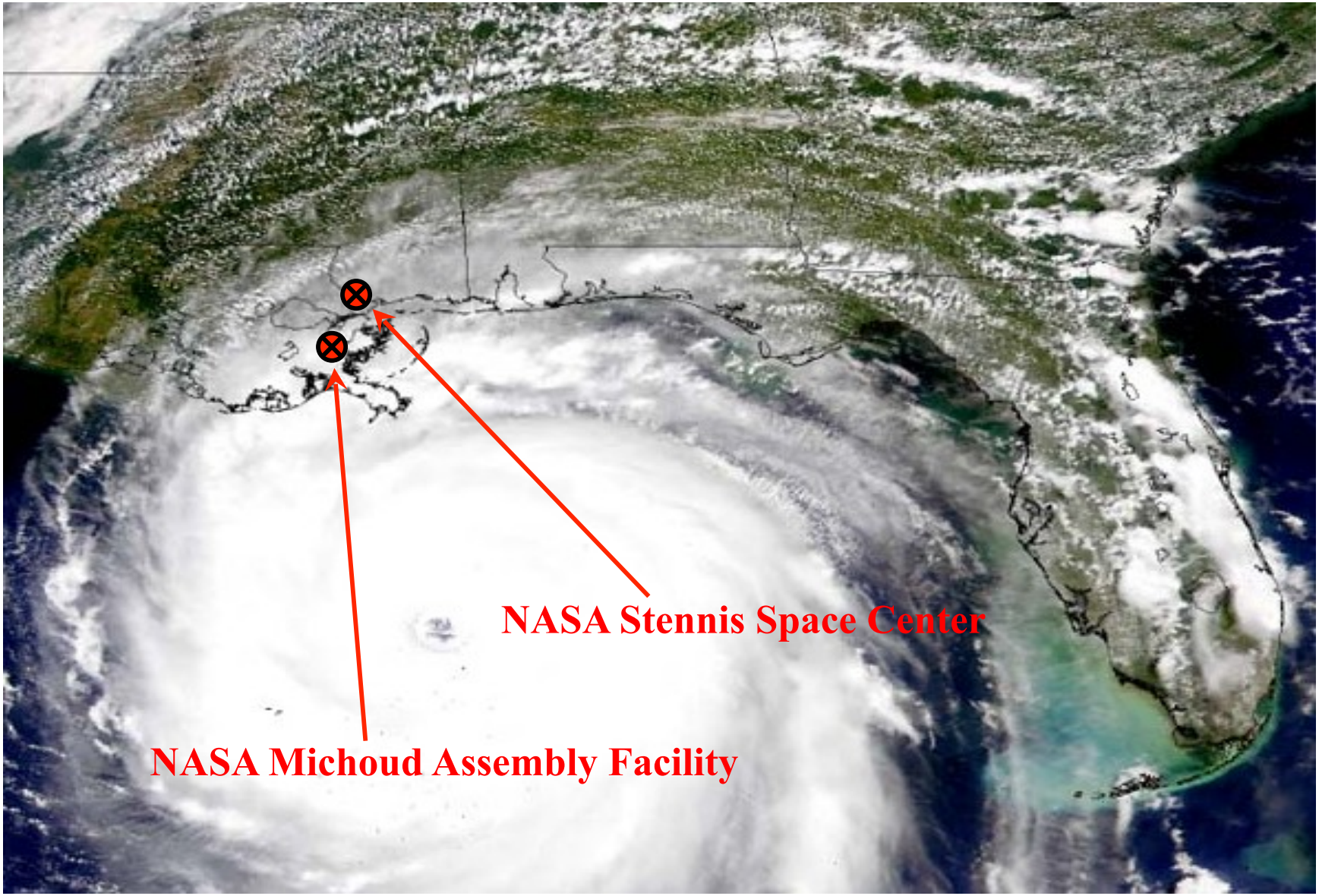
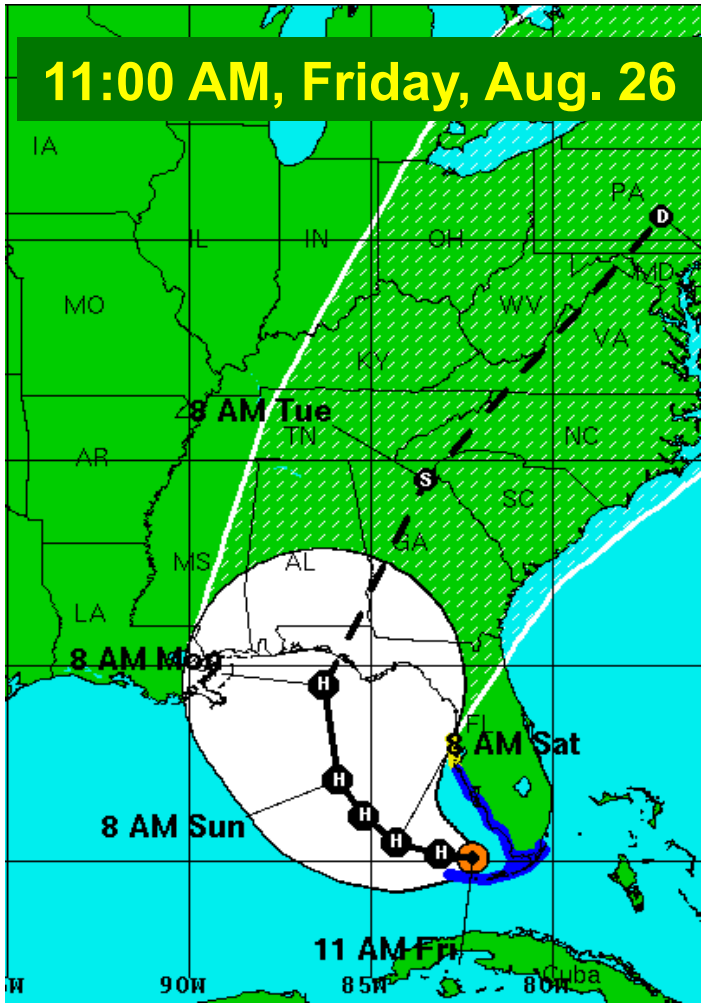
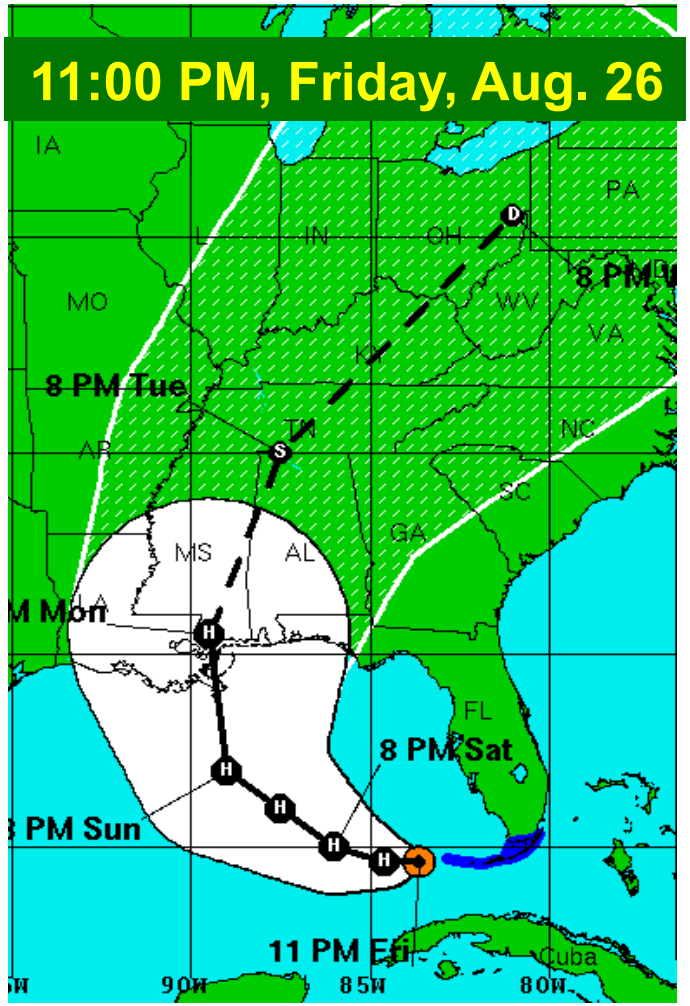
Lessons Learned from Hurricane Katrina

Managing through a Disaster and Post Disaster Recover


NASA Stennis Space Center
NASA Michoud Assembly Facility

Projected Path of Hurricane Katrina





Landfall August 29, 2005
Wind speed 170 mph
Eye passing over SSC at 9:45 a.m.

NASA Stennis Space Center

Bldg. 1100
Main Administration Area

SSME/RS-68 Facility
Bldg. 9101

I-10 Bridge from New Orleans to Slidell, LA

Bridge Over the Bay of St. Louis

Many Home Sites Looked Just Like This

Beach Front, Downtown Bay St. Louis

People Had To Be Located

Employee Call Center

For Many There Was No Home To Return To!!

3,000 Meals Served
3 Times a Day

On Top of Everything Else: The Federal Government Needed Stennis Space Center As a Base for Its Response to Community

- FEMA/MEMA were the lead agencies
- All operated under a Unified Command
- Primary responders:
  - The Mississippi Emergency Management Agency (MEMA)
  - Florida Division of Forestry IMT
  - USDA Forest Service California IMT3
  - Military


Trucks carrying hurricane relief supplies await distribution instructions


Thru Day 15 --
More than 1,850 Truckloads of
Supplies Distributed from Stennis
Space Center to 6-County Area
of Mississippi.

Thru Day 15 -- Distributed:

- 3.9 Million Gallons of Water

- 27.8 Million Pounds of Ice

- 2.4 Million MREs

Impacts

- Approximately 25% of SSC employees had uninhabitable homes or no homes.
- Approximately 2500 employees and family members sheltered at SSC.
- No common system to account for personnel.
- Center lost internet, electricity, and phones
- Local Schools and daycares were closed.
- Lack of fuel and fuel management.
- Procurement and Financial issues.
- Availability of vital records (hardcopy only)

Resolutions

- North electrical and communication feeds in place.
- Portable satellite internet and communication systems in place
- Satellite phones in place.
- Portable generators are pre-positioned.
- Acquired fuel company on retainer and store higher levels of fuel during hurricane season.
- Fortified a building to serve as a Document Storage Facility.
- Building designs now at 128 mph wind load versus 97 mph pre-Katrina.
- Retrofitted roofs to a pitch metal.
- Design elevation considerations based on storm surge (still being developed).

Resolutions (cont)

- Employee notification & accountability system in place. Employees update contact information once a year.
- Sheltered personnel go home following the storm or move to Red Cross shelters within 4-8 hours.
- Keep hard copies of important procurement and financial documents, e.g., CO warrants, FAR, purchase requisitions, etc.
- Established process for handling payroll.
- Data is backed-up monthly in north Alabama.
- Established “fail over” of critical applications in Texas.
- Established COOP alternate location to house drawings and other critical information for recovery.

Recommendations

- Establish a before, during and after disaster preparedness team
- Make sure the workforce understands what to do concerning accountability
- Establish a lean and efficient ride-out crew (it can get expensive)
- Consideration at design for higher elevations of critical equipment such as generators, electrical, HVAC, controls, etc.
- Fuel plan
- Communicate and partner with internal and external agencies
- Continuous review of plans and procedures
- High and dry corridors in Master Plan

In Summary

- We learned how to be better prepared during disasters the hard way.
- After almost six years of COOP planning
  - We are more prepared now than before.
  - There will always be opportunities for improvement.

- Improved climate/weather information is allowing for better planning in the days/hours before a storm and to assist with overall master planning.