Lower Mississippi River Forecast Center Operations

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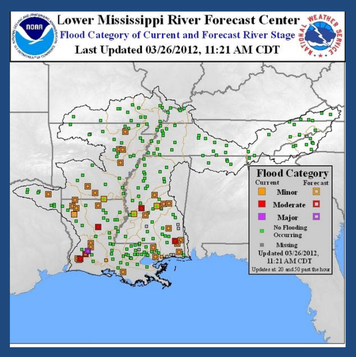
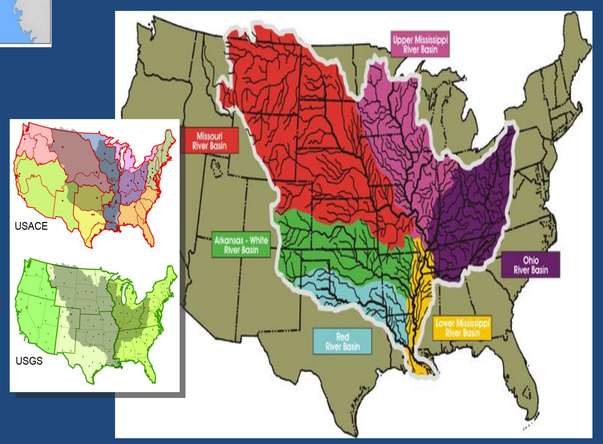
Lower Mississippi Service Area

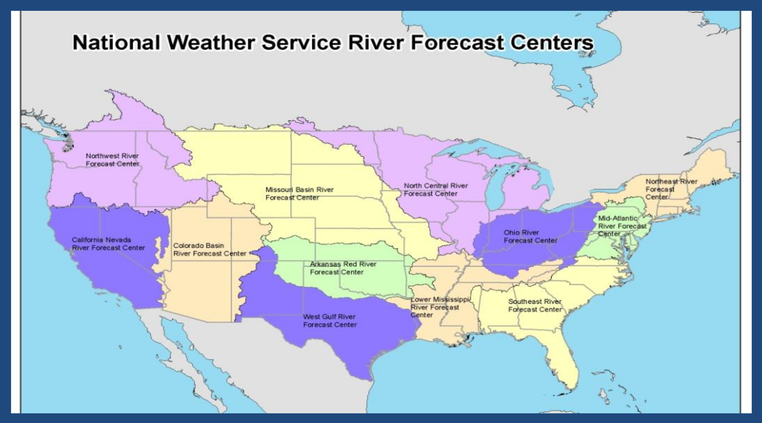


- Approx. 220,000 sq mi -- parts of 12 states
- River/Rainfall network of > 3000 gages
- 235 - Forecast Points
  - 221 daily forecast points
  - 14 - flood only points
- 18 locations with 28-day forecasts issued weekly
- 3 - NWS Regions (Central, Eastern, Southern)
- 18 – Weather Forecast Offices
- 26 - NWS WSR-88D Radars

- Agency Coordination
  - USACE - 3 Divisions and 6 Districts
  - TVA - Tennessee River
  - USGS – 12 District Offices
  - USCG – 1 District and 9 Sectors
  - FEMA - 3 Regions
  - State EMs
  - More



River Forecast Centers



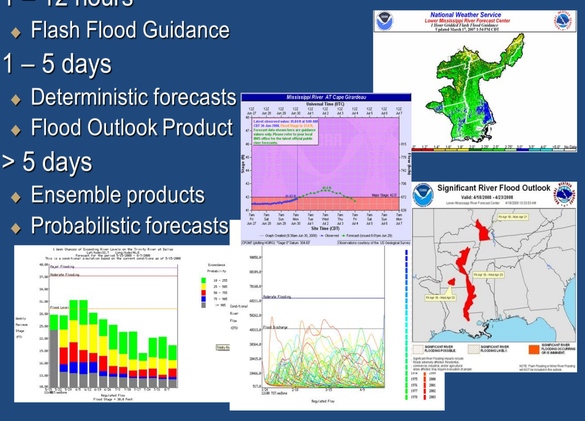
- 13 Offices (12 CONUS + 1 Alaska/Pacific)
- Hydro-geologic boundaries
- Daily Operations
  - Data collection and quality control
  - Precipitation and Hydrologic Forecasts
- Development
  - Calibration
  - New operational techniques

Weather Forecast Offices

- 122 Offices
- Provide Weather and River/Flood Forecasts to the public and media

Forecast Time Scales

- 1 – 12 hours
  - Flash Flood Guidance
- 1 – 5 days
  - Deterministic forecasts
  - Flood Outlook Product
- > 5 days
  - Ensemble products
  - Probabilistic forecasts

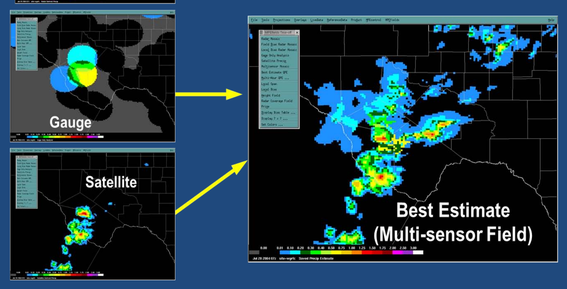


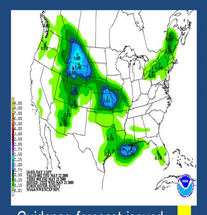
Spectrum of Flood Hazards

Tropical systems
Snowmelt
Dam/Levee failures
Flash Floods

Precipitation Processing

- 4km x 4km spatial resolution
- 1 hour temporal resolution
- Quality control of data inputs

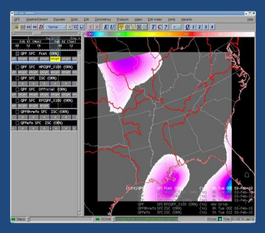




Guidance forecast issued by Hydrologic Prediction Center

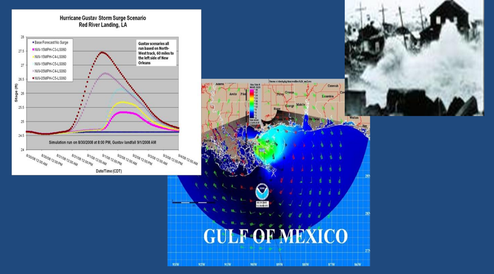
- 4 km x 4 km spatial resolution
- 6 hour temporal resolution
- 72 hours (12 periods) processed
  - LMRFC ingests 12 to 24 hours operationally in hydrologic models
  - Additional periods ingested based on confidence in forecast or What If's

Forecaster at RFC makes adjustments based on local expertise

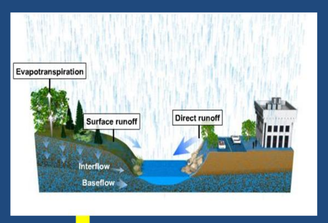


Storm Surge

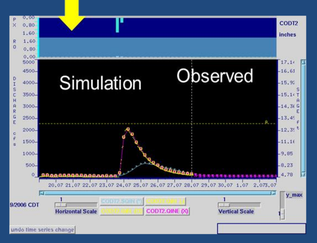
- Use output from Hurricane Center (Sea Lake Overland Surge Heights) SLOSH and Extratropical Model (GFS Weather Model) to make Mississippi River forecasts



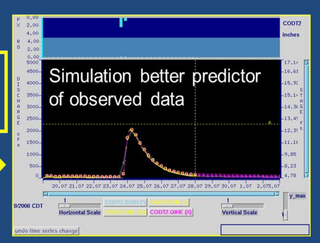
River Forecasts



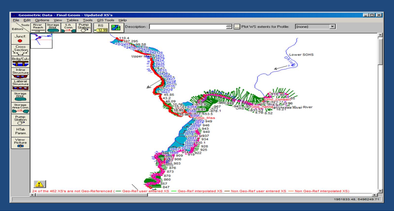
- Conceptual hydrologic models used to simulate physical processes on soil column (SAC-SMA)
- Extensive initial calibration of model parameters
- Forecasters use interactive program to adjust model parameters in real time



Forecasters adjust model parameters in real time

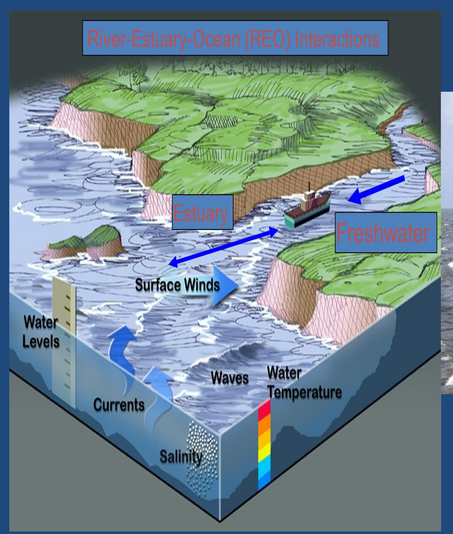


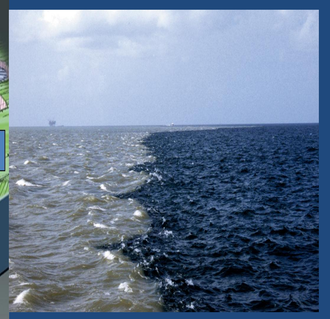
Hydraulic Models



DWOPER	HEC-RAS
Dynamic Wave Operational Model	Community Model by NWS/USACE
Legacy Hydraulic Model	Started running locally during Spring 2011
Developed by NWS	Birds Point New Madrid Floodway modeled
Run for over 20 years	
No modeled floodways	

Future Capabilities





The Mississippi River turbidity plume entering the blue water of the Gulf of Mexico. *Photo by N. Rabalais.*