DRIS Background

- **Funded by**
  - DHS Southeast Region Research Initiative (SERRI); Managed by Oak Ridge National Lab (ORNL)

- **Objective**
  - Provide automated decision support tools to assist first responders with commanding complex incidents
  - Focuses on providing accurate datasets and integrating reliable models
  - Mission focus: Planning, Response and Recovery
What is DRIS?

- Software Framework that integrates existing models for managing, analyzing & reporting critical incidents

- Model Integration Currently Includes:
  - SLOSH Storm Surge Model
  - ALOHA Chemical Plume Model
  - At-Risk Population Tool

- In Progress
  - River Flood Forecasting Hydraulic Model
  - RASCAL Radiological Release Model
Who Uses DRIS?

- Washington County EMA
  - Flooding, Tornados

- Yazoo County EMA
  - Flooding, Tornados

- Tensas Parish, LA EOC
  - Flooding, Radioactive Release (Grand Gulf Nuclear Station)

- DeSoto County EMA
  - Flooding, High Hazard Dams, Earthquake, Port of Memphis

- Newton County EMA
  - Flooding, Chemical Spill, Railway Incident

- Hancock County EOC
  - Hurricane, Storm Surge, Flood, Chemical Spill (epicenter of Hurricane Katrina)
Essential Datasets: Critical Infrastructure

Hancock County, MS

Newton County, MS

Desoto County, MS

Yazoo County, MS
Hurricane Tracking Tool

RSS Feeds and Advisories from National Hurricane Center
Run Storm Surge Tool

User identifies the Category of Storm (Cat I-V), Forward Motion, and Tidal Influence.

SLOSH Storm Surge Model
SLOSH Storm Surge Results
Population Count Tool

Generates on-the-fly population estimate for area of interest
Google Earth Visualization

- Residential
- Commercial
- Critical Infrastructure
Established Traffic Control Points

Critical Infrastructure

Major Highway

Emergency Vehicle Entry Control Point
Identifying At-Risk Populations
2D Hydrologic Model for River Flood Forecasting

- Automatically extract real time NOAA advisory data at upstream
- Real time model output of sub-catchment runoff
- Dynamic flood routing
- Map inundation output using GIS/Google

River Cross Sections
(Calculation nodes for flood forecasting)
Color shows the depth of flood.

Most of the flows are contained inside the Yazoo river and its complex channel system while inundating the flat flood plain.
DRIS in the Field

Outreach to Additional States (LA, TN, AL)
Summary

• DRIS integrates a variety of data and analysis tools that have practical applications for first responders

• SERRI program combines technology and university research to develop validated approaches for homeland security initiatives

• DRIS addresses local emergency response issues - integrated product with usability across the region
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