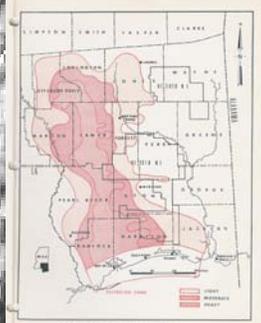


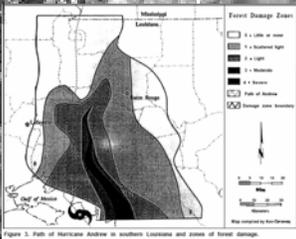
# Rapid Assessment Model for Determining Extent of Hurricane Damage

## Past Catastrophic Events Receiving a Forest Damage Assessment

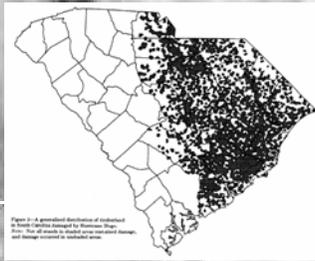
County-level volume-damage percentages were matched with severity zones from past hurricanes to develop preliminary estimates of county-level volume damages associated with recent storm data.



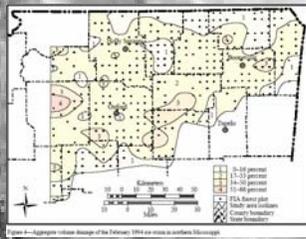
**Hurricane Camille – 1969**  
Southern Mississippi  
Loss of 290 million cubic feet



**Hurricane Andrew – 1992**  
Southern Louisiana  
Loss of 380 million cubic feet



**Hurricane Hugo – 1989**  
South Carolina  
Loss of 1,230 million cubic feet



**Southern Ice Storm – 1994**  
Northern Mississippi  
Loss of 320 million cubic feet



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Rapid Assessment Model for Determining Extent of Hurricane Damage  
Dennis M. Jacobs, USFS-SRS, Forest Inventory & Analysis

During 2004 and 2005, several catastrophic hurricanes impacted forest ecosystems along the Southern Region coastline of the United States. The entire coastline from northeast Florida to southeast Texas was affected to some degree by hurricane or tropical-force winds. In 2004, soon after Hurricanes Charley and Frances made landfall in Florida, a model was developed to map the extent and degree of hurricane damage. Modern weather data and FIA expert knowledge from past hurricane-damage inventories were combined to generate map data for estimating the effects of that damage to the most recent FIA Survey data. The map data can reach final form the day following the storm, and preliminary damage estimates within three days to one week. The resulting information at either stage is useful for determining where resources need to be deployed if policy decisions necessitate field visits for improving damage estimates and refining the final map.

Table 1-1. Wind Speeds of the Saffir-Simpson Hurricane Scale

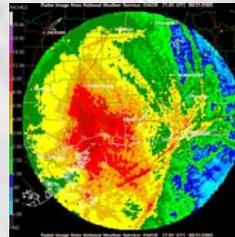
Strength	Sustained Wind Speed (mph)**	Gust Wind Speed (mph)**	Pressure (mb/min)
Category 1	74 – 95	95 – 119	>980
Category 2	96 – 110	120 – 139	965 – 979
Category 3	111 – 130	140 – 164	945 – 964
Category 4	131 – 155	165 – 194	920 – 944
Category 5	>155	>194	<920

\* 1-minute sustained over open water    \*\* 3-second peak gust over open water

Weather data gathered from the internet immediately following landfall provide layers for intersecting and drawing predicted damage-severity isolines. The damage isozones and storm severity are cross-referenced with historical storms to estimate percent damage within each county or isozone.



Wind Maps

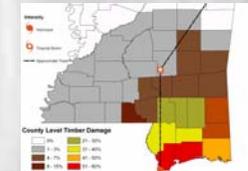


Storm Event Rainfall

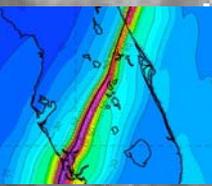


2004 Hurricane Events in Florida

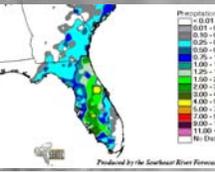
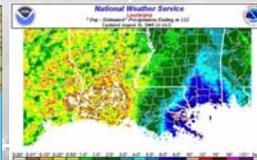
Year	Name	U.S. Landfall Date	Category	Estimated Storm Surge (ft)	Duration of CAT 1 or Higher
2004	Charley	SEP 13	4	1-2	12 hours
2004	Frances	SEP 14	3	1-2	20 hours
2004	Ivan	SEP 26	4	1-2	8 hours
2004	Rafael	SEP 26	2	1-2	12 hours



Aerial Reconnaissance Maps Provided by State Forestry Offices



Wind – Hurricane Charley



Rainfall – Hurricane Charley



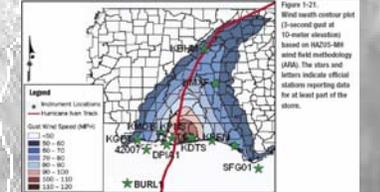
Fun things for verification like night time satellite data, 30 August 2005 – Red shows where night lights were on prior to Hurricane Katrina.



Potential Forest Damage Hurricane Ivan, September 15-16, 2004

## Post Storm Data Acquisition by NOAA National Weather Service

These reports are available several weeks after the storm.



Background satellite image of Hurricane Katrina provided by National Oceanic and Atmospheric Administration (NOAA)

GOES-FLOATER VISIBLE - AUG 29 05 21:45 UTC

McIDAS