

Atlantic White Cedar Site Comparisons and Implications for sustainability

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What affects sustainability of
Atlantic White cedar for
different sites in Mississippi?

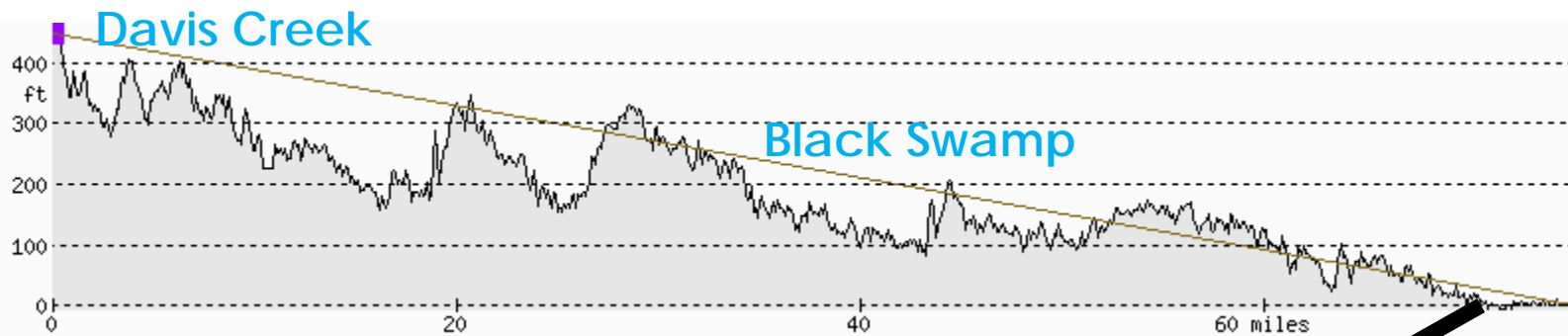
- Location
- Elevation
- Soil types
- Other Factors



Location of study sites

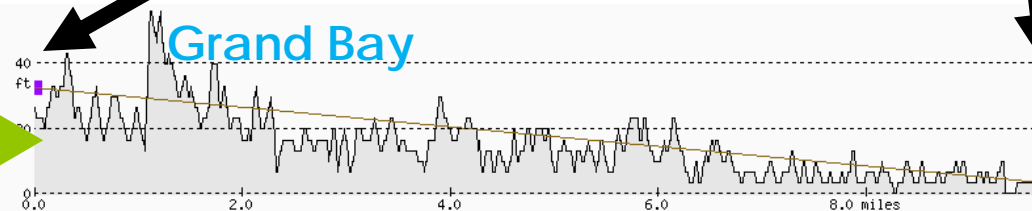


Elevation Profile



Hattiesburg to Moss Point (Gulf of Mexico)

Hurricane Katrina
Storm surge 18 feet



Gulf of Mexico

Davis Creek, Camp Shelby

Gleyed soil with oxidized root channels



Detritus over clay layer



Sediment from development



Black Swamp, Wiggens

Organic soils



Grand Bay, Escatawpa River

Sand deposits



Pine Savannah with AWC on periphery

Tupelo. AWC on hummock.



Bald cypress knees. Swampy but prone to drying out.



Davis Creek, Camp Shelby Forest Composition

Species		Max dbh (cm)
Atlantic White Cedar	17.2%	19.9
Water Oak	20.7%	25.3
Sweetbay	20.7%	27.5
Tupelo	13.8%	91.0
Loblolly Pine	10.3%	44.5

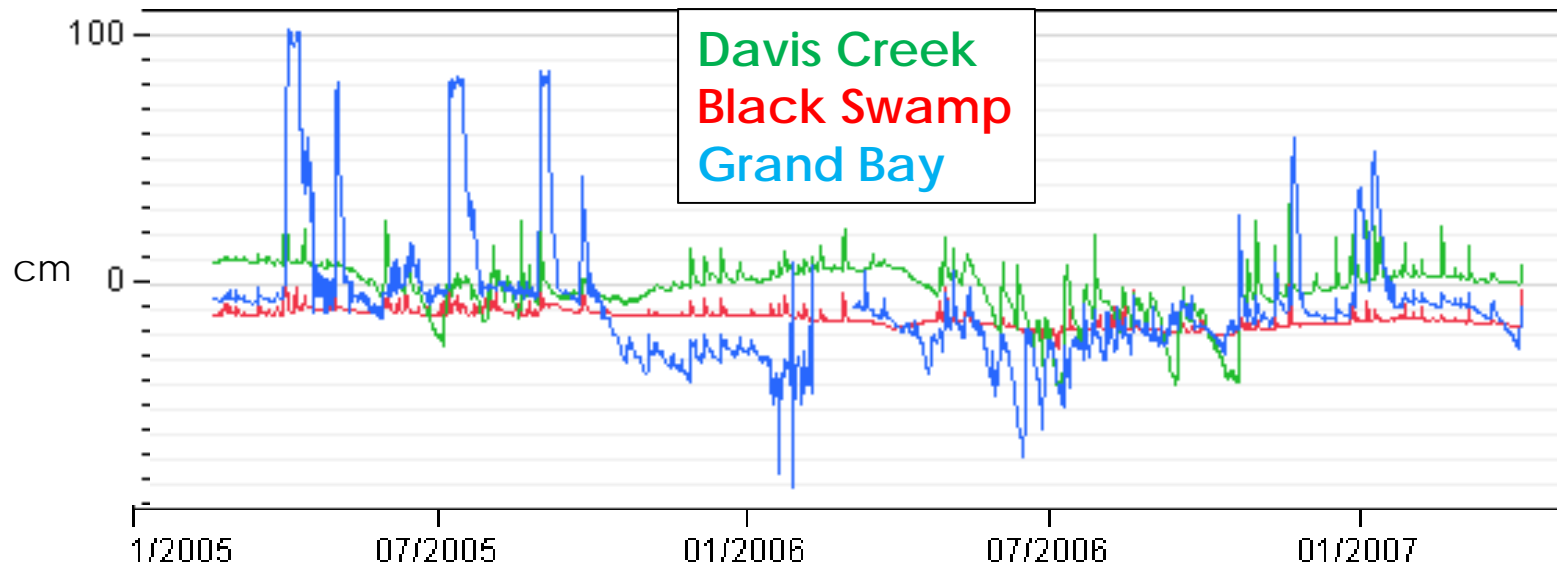
Black Swamp, Wiggens Forest Composition

Species		Max dbh (cm)
Atlantic White Cedar	5.2%	18.0
→ Black Titi	47.0%	32.6
Sweetbay	9.6%	25.3
Swamp bay	33.9%	28.7
Loblolly Pine	1.7%	43.9

Grand Bay, Escatawpa River Forest Composition

Species		Max dbh (cm)
Atlantic White Cedar	3.6%	46.5
→ Titi	38.9%	31.1
Sweetbay	7.2%	33.3
Tupelo	11.6%	48.8
Loblolly Pine	4.2%	50.7

Water levels compared



Davis Creek, Camp Shelby



Black Swamp, Wiggins



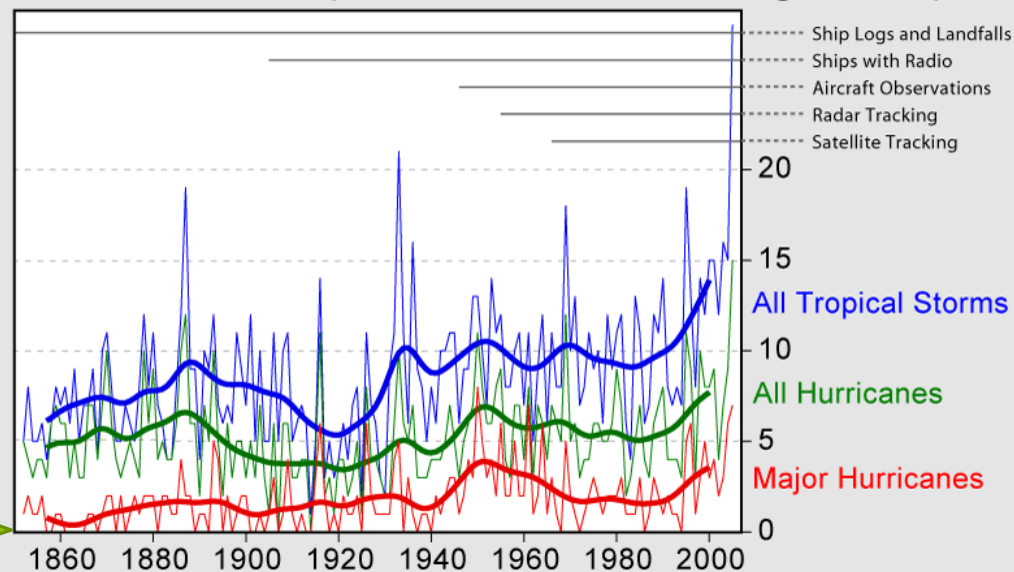
Grand Bay, Escatawpa River

Altered Hydrology



Hurricane effects on Atlantic White Cedar, Frequency

North Atlantic Tropical Storms and Observing Techniques

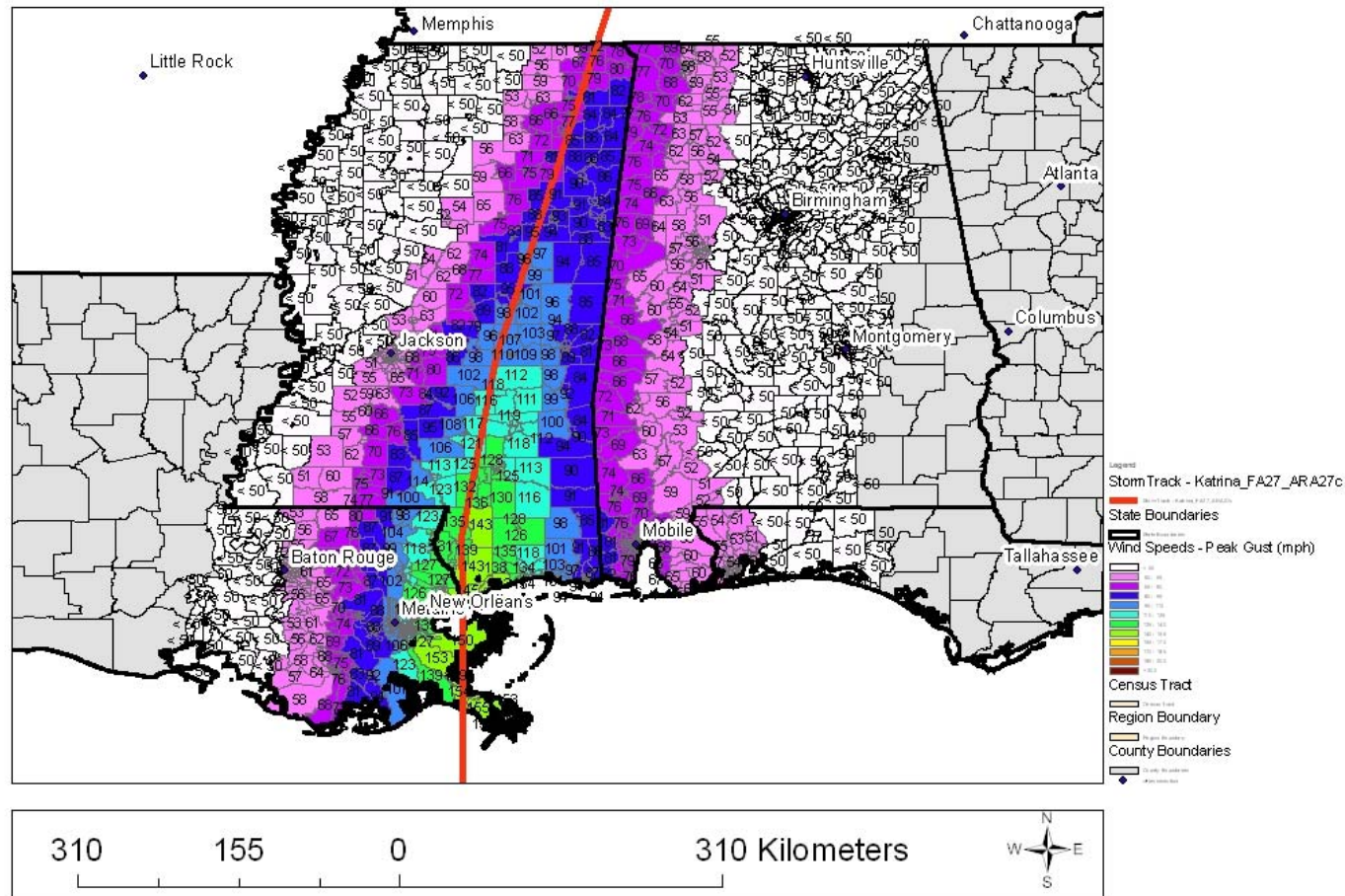


~End of Little Ice Age

In the North Atlantic there has been a clear increase in the frequency of tropical storms and major hurricanes. From 1850-1990, the long-term average number of tropical storms was about 10, including about 5 hurricanes. For the period of 1998-2007, the average is about 15 tropical storms per year, including about 8 hurricanes. This increase in frequency correlates strongly with the rise in North Atlantic sea surface temperature...

Hurricane effects on Atlantic White Cedar, Intensity

Katrina_FA27_ARA27c



Urban development



Timber Harvest



Regeneration



Disease, Witches Broom



Summary

- Location, Elevation, Soil types do not seem to be as important for the survival of cedar stands at these sites.
- Forest Composition
 - Aggressive species are crowding the cedar out.
 - Low numbers of cedar.
 - Cedar are not the largest trees in the forest.
- Hydrology
 - Water level effects are variable.
- Hurricanes
 - More frequent hurricanes increase wind damage.
 - Cedar stands are above storm surge levels.
- Urban development
- Timber harvest
- Regeneration
 - Sufficient numbers are present.
 - Predation by deer is minimal.
- Disease
 - Witch's broom is an invasive species that seems to affect the cedar species only.

