Salt marsh dieback in Georgia

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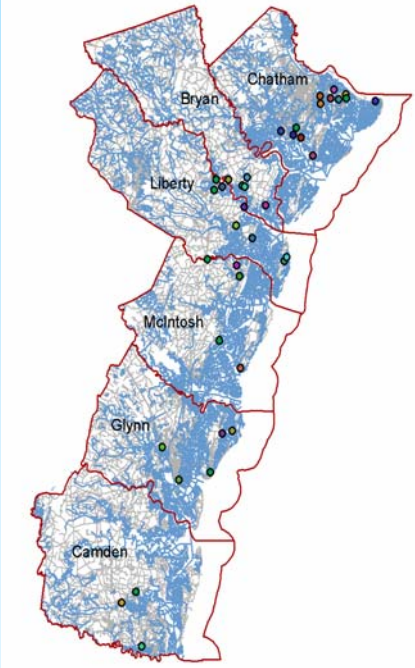


Georgia Dieback

- Began spring 2001
- Total 800 ha affected
- Approx. 40 sites

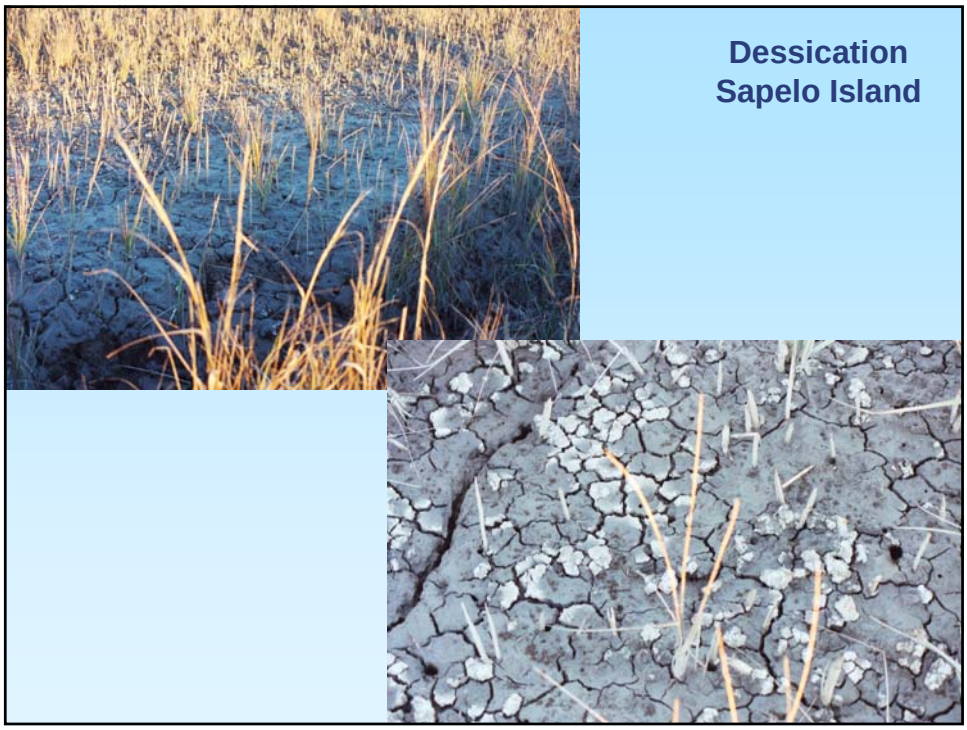

Creekbank dieback
Tivoli River


Berm dieback
Sapelo Island

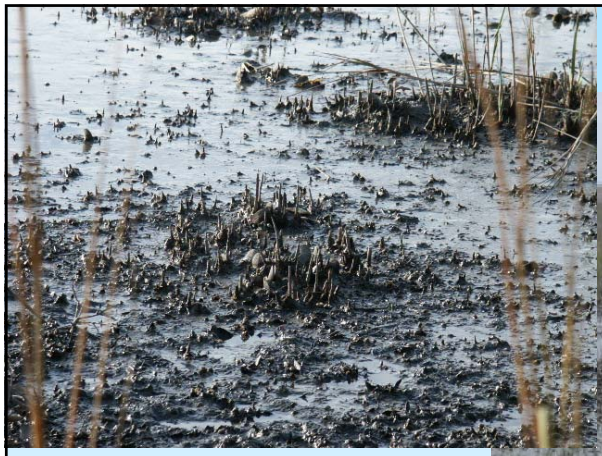

Upland and mid-marsh dieback
Melon Bluff


Complete marsh loss
Jerico River

Thinning vegetation
Sapelo Island

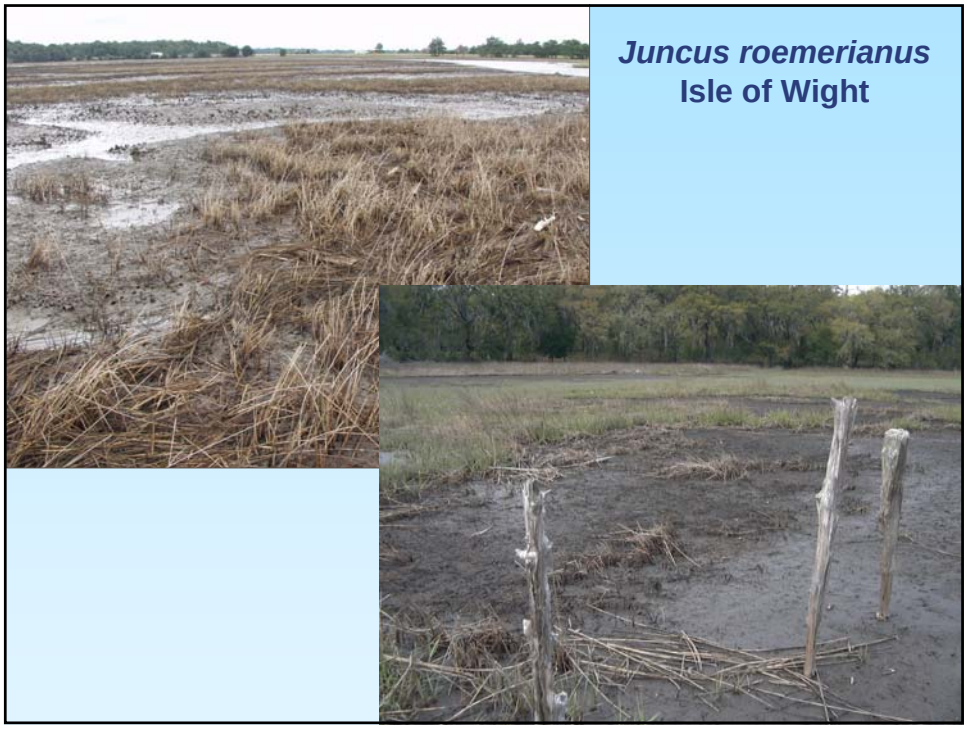


Dessication
Sapelo Island



Rhizome stubble
Jerico River

Soil Erosion
Melon Bluff



Juncus roemerianus
Isle of Wight

Characteristics of GA Dieback

- Occurred coastwide
- Affected different parts of the marsh: creekbank, berm, mid-marsh, and upland dieback
- Affected both *Spartina alterniflora* and *Juncus roemerianus*
- Rapid onset (1-2 growing seasons)

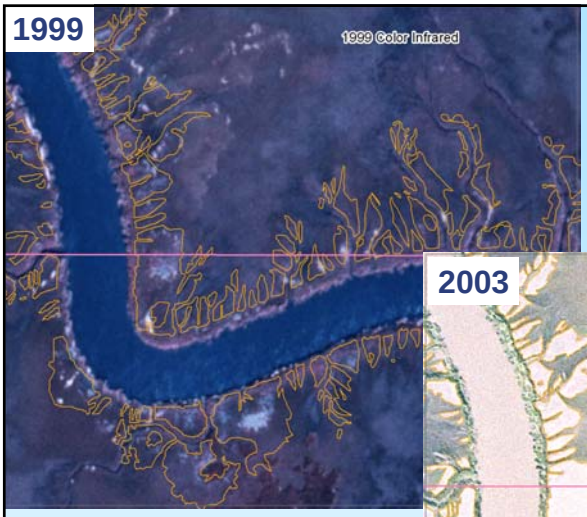
Tivoli River Comparison

1998

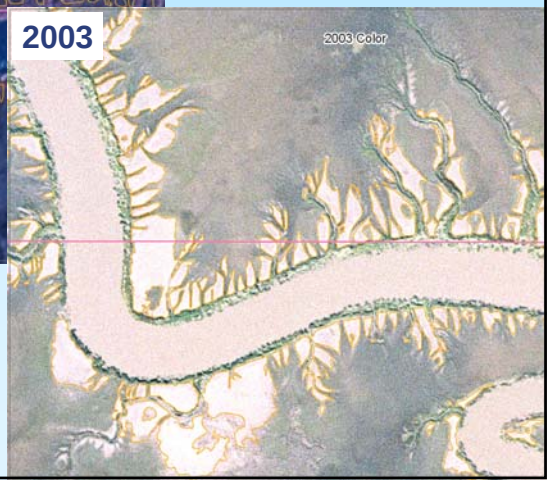
2003

Sapelo Island - SE Comparison

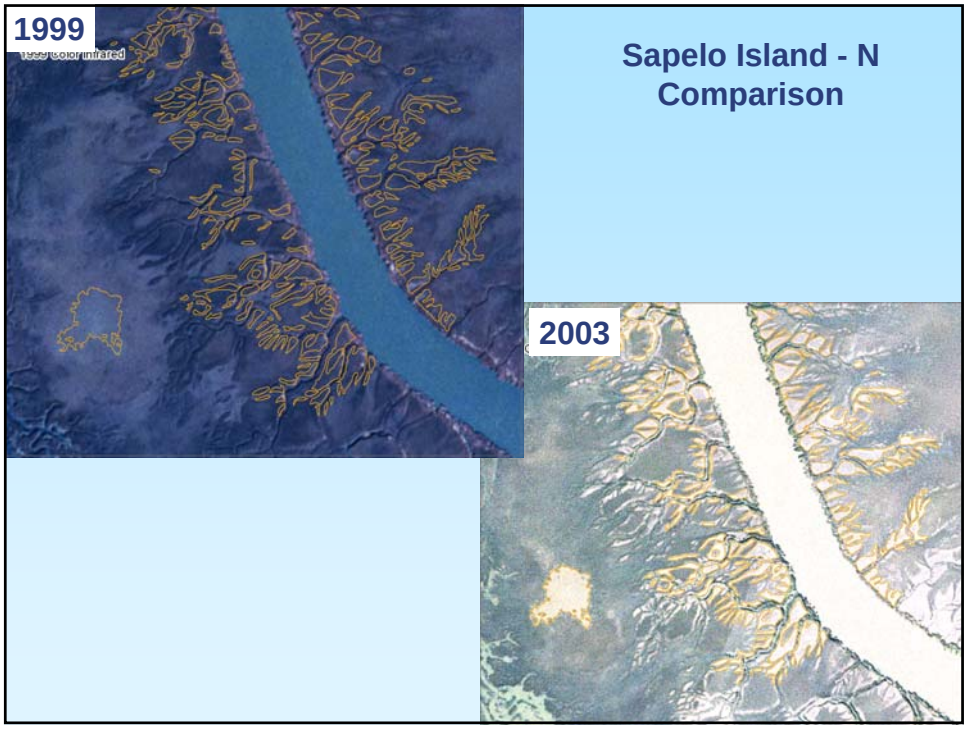
1999

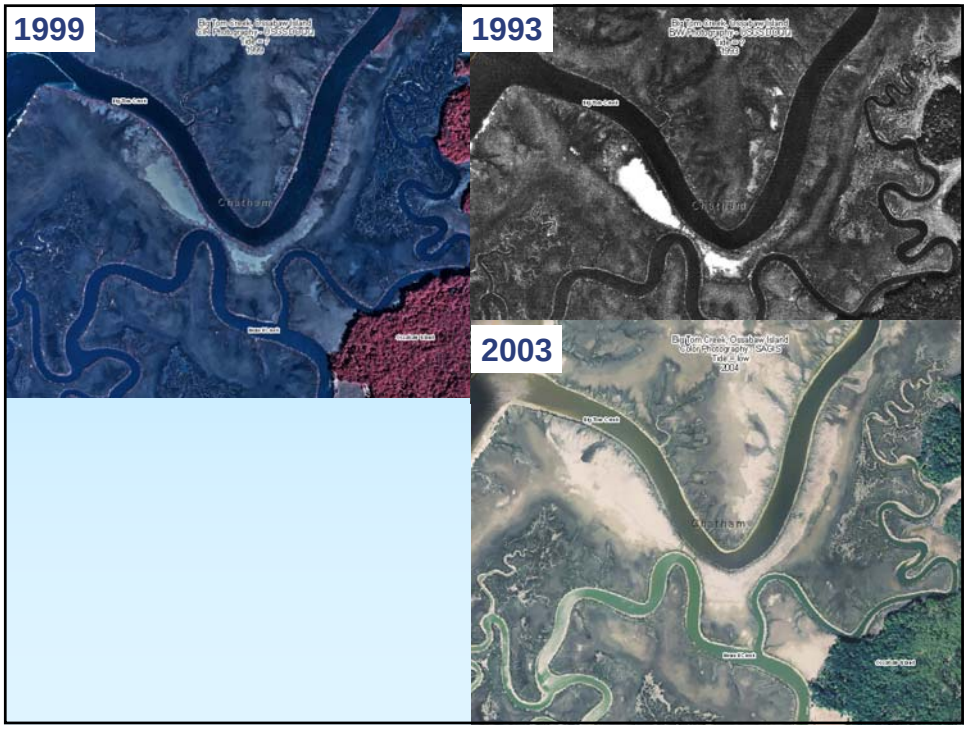


2003



Sapelo Island - N Comparison





Characteristics of GA Dieback

- Occurred coastwide
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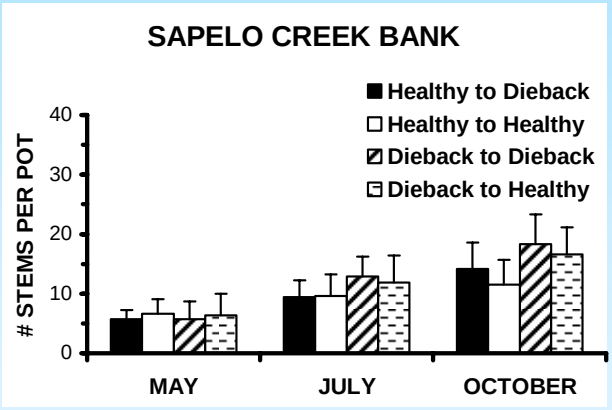
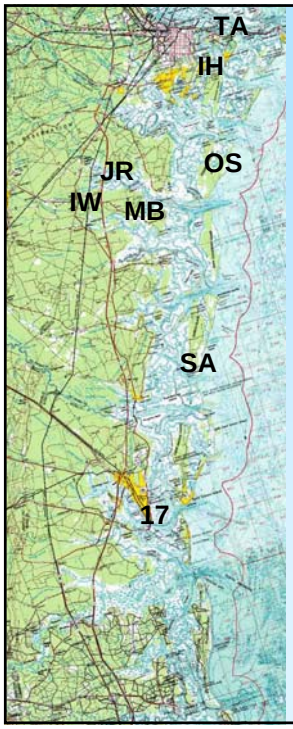
- Affected *S. alterniflora* and *J. roemerianus*
- Rapid onset (1-2 growing seasons)
- Not persistent

Field Transplants

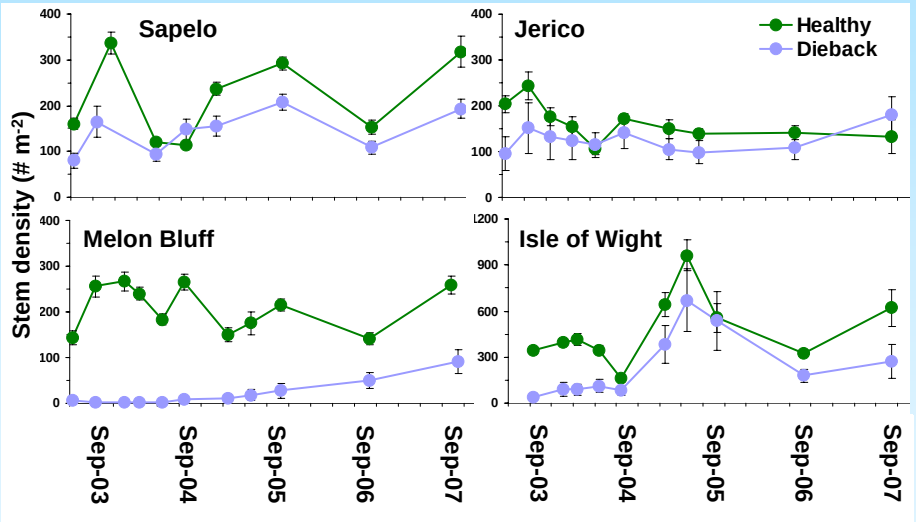


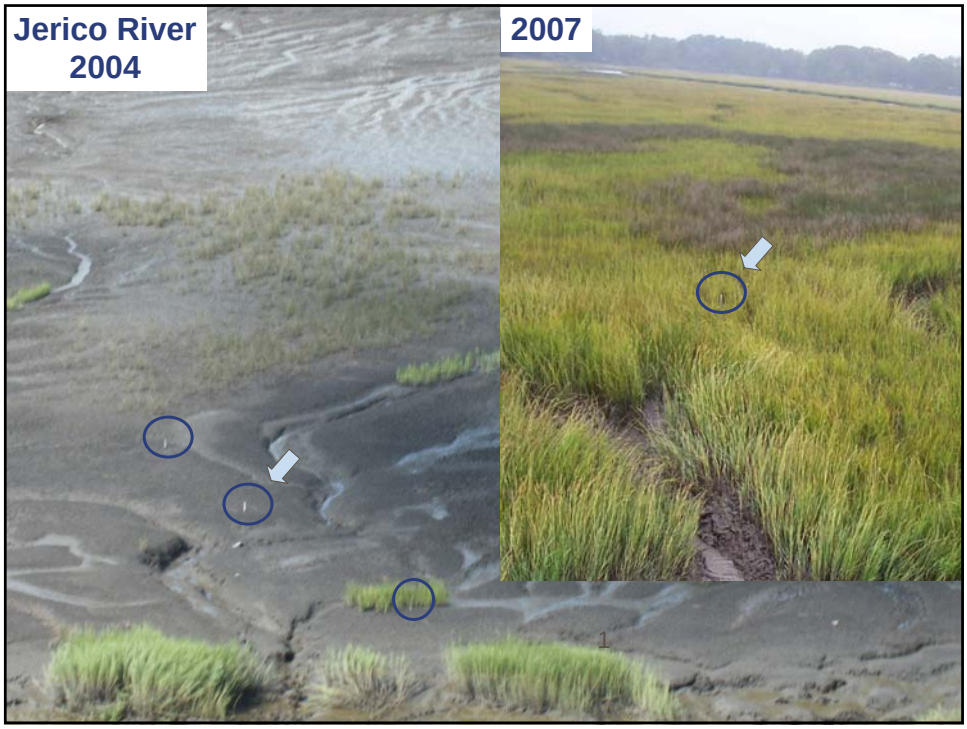
Ogburn and Alber 2006



Monitoring program

Stem density





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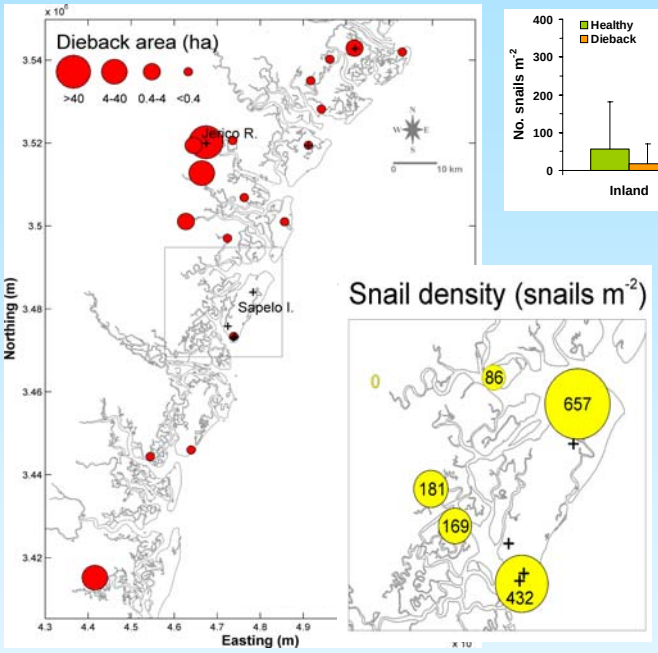
Potential Causes of Dieback

- Seasonal removal (wrack, ice damage)
- Subsidence/Sea level rise
- Point source pollution
- Hydrologic alteration
- Biotic factors
  - Fungal pathogen
  - Herbivory

Snail damage
Sapelo Island



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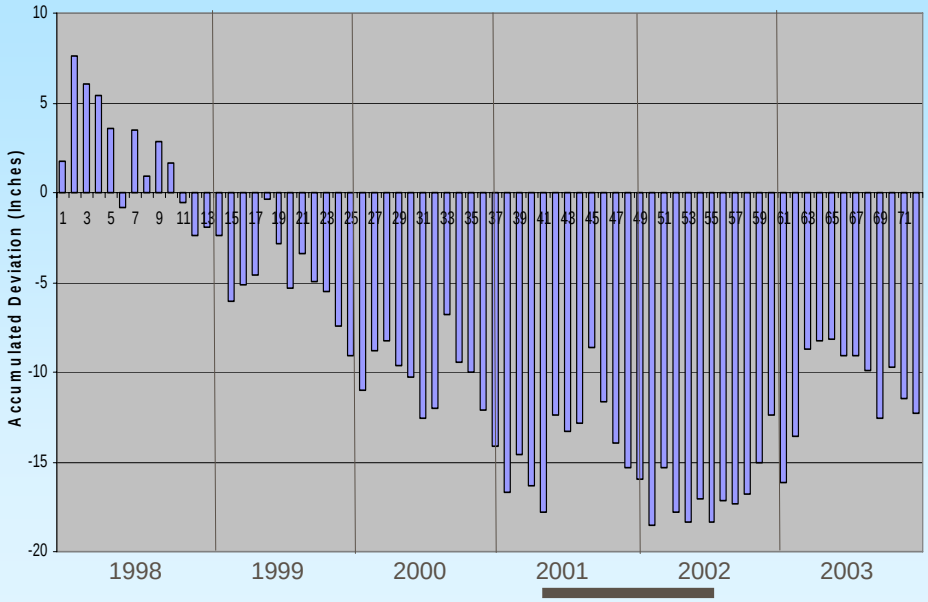
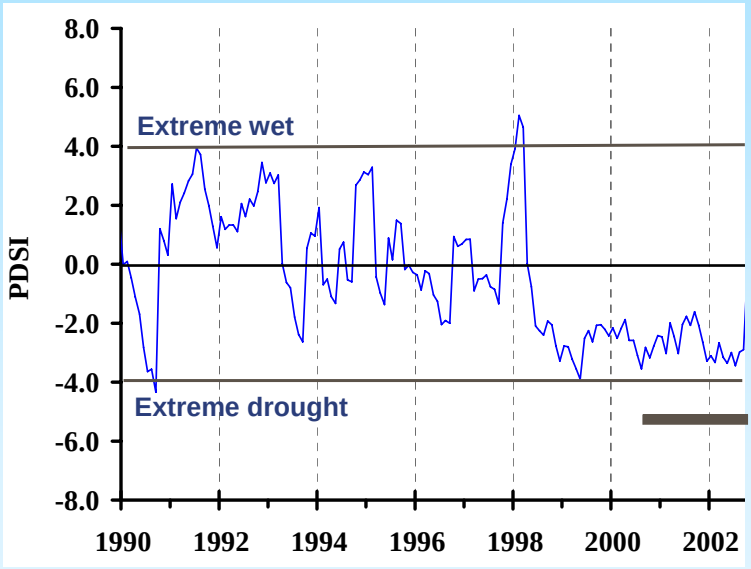
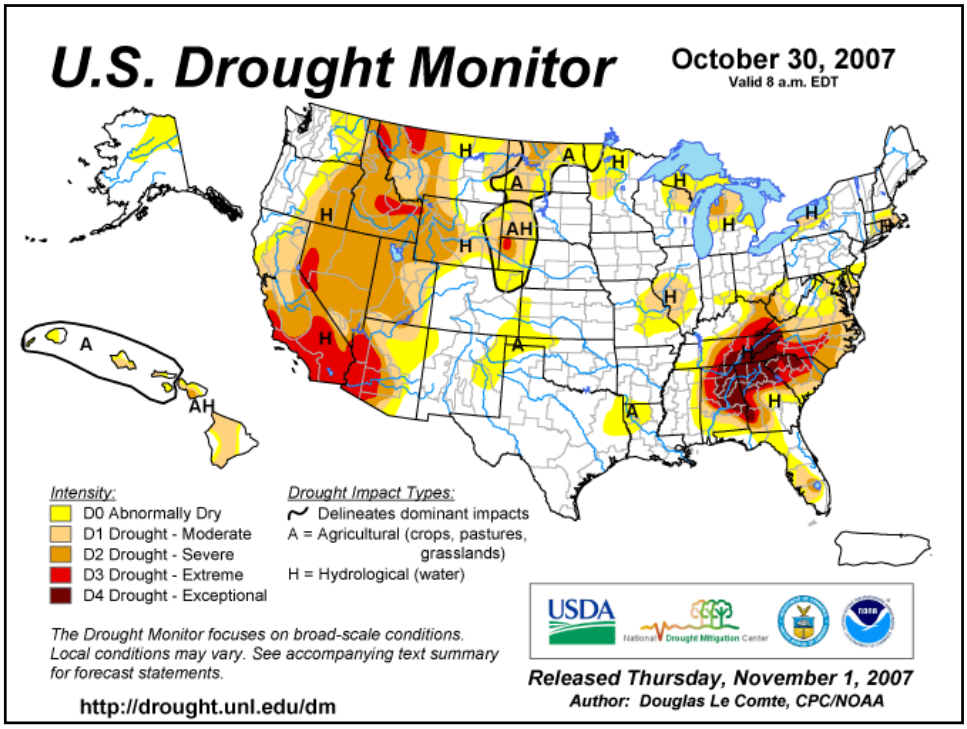
Cumulative rainfall deviation



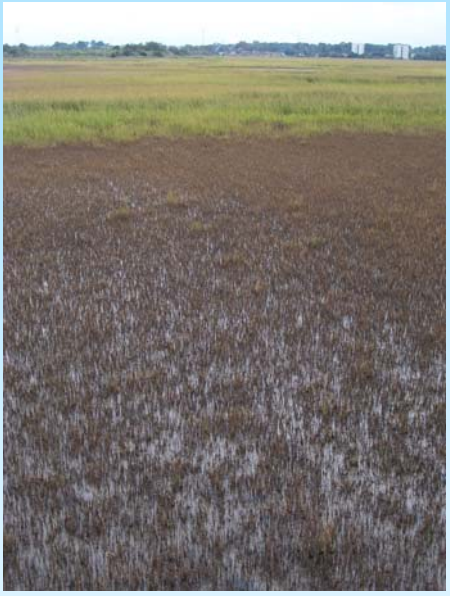
Palmer Drought Severity Index



National Climate Data Center, GA Climate Division 9

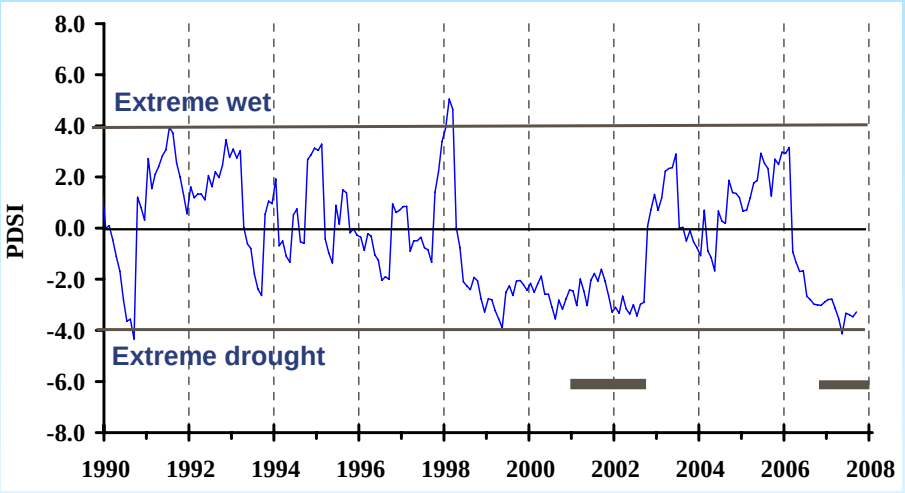

U.S. Drought Monitor
October 30, 2007
Valid 8 a.m. EDT
Intensity:
D0 Abnormally Dry
D1 Drought - Moderate
D2 Drought - Severe
D3 Drought - Extreme
D4 Drought - Exceptional
Drought Impact Types:
Delineates dominant impacts
A = Agricultural (crops, pastures, grasslands)
H = Hydrological (water)
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.
http://drought.unl.edu/dm
USDA
National Drought Mitigation Center
Released Thursday, November 1, 2007
Author: Douglas Le Comte, CPC/NOAA


New dieback
2006-2007



New dieback
2006-2007

Palmer Drought Severity Index



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Challenges

- Need for clear diagnostic traits and a consistent methodology for evaluating marsh dieback
  - Sample early
  - Look backwards
- Investigation of “drought-associated dieback”
  - Cross-site comparison
  - Mechanism?


Sapelo Island
2006