

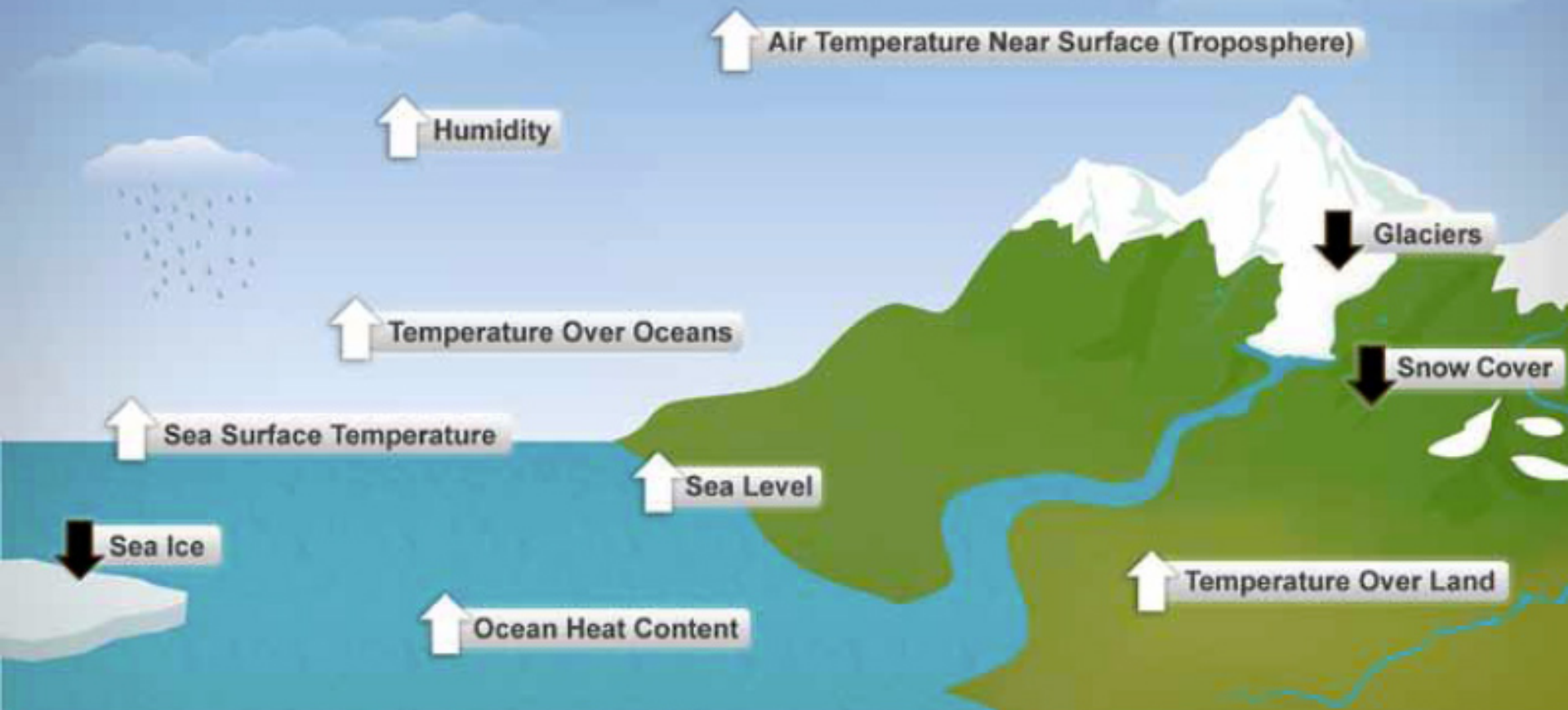
Stemming the Tide: Global Climate Change and Local Impacts in South Carolina

Liz Fly, Ph.D.

Coastal Climate Extension Specialist



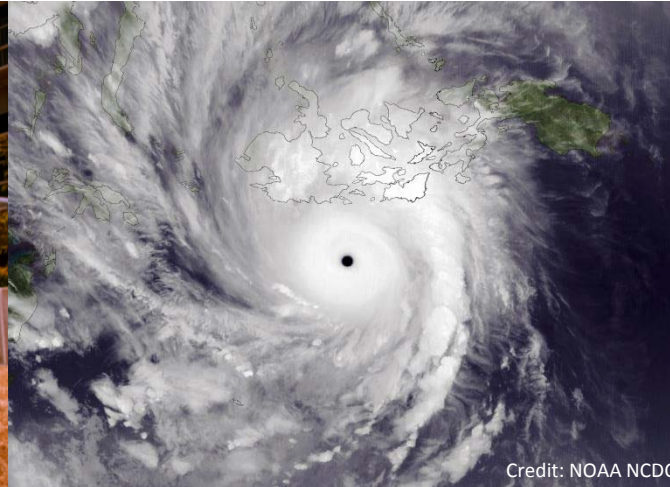
Ten Indicators of a Warming World



Seven of these indicators would be expected to increase in a warming world and observations show that they are, in fact, increasing. Three would be expected to decrease and they are, in fact, decreasing.

Credit: NOAA

What's up with that wacky weather?





Big Picture

Impacts in SC

Adaptation

HURRICANE HUGO
22 SEPTEMBER 1989
1201 AM EST



Hugo – Could it happen again?

63 0128 GOES-7 IR 08 22 SEP 89265 040100 02217 08409 04 00

Big Picture

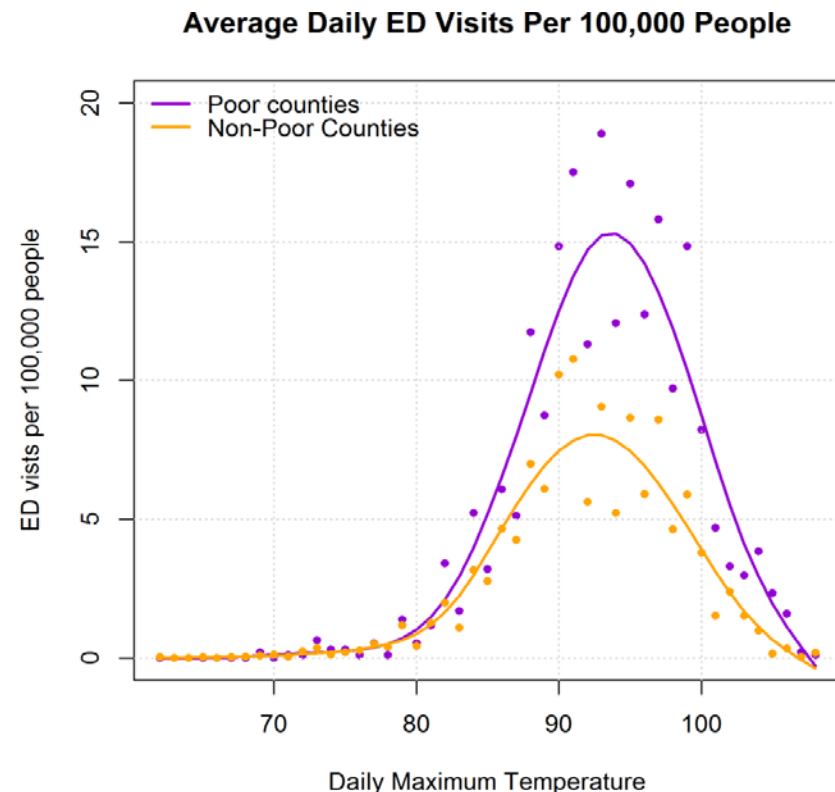
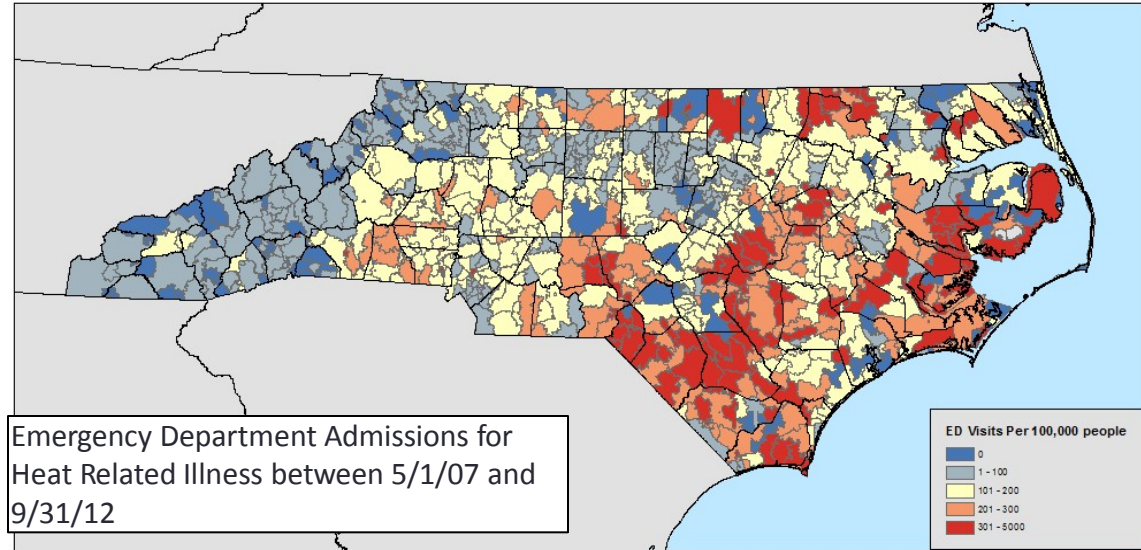
Impacts in SC

Adaptation

Increasing temperatures disproportionately impact vulnerable populations.

Kovach et al. 2014

Hot, hotter, hottest



Big Picture

Impacts in SC

Adaptation

Wet vs. Dry



Big Picture

Impacts in SC

Adaptation

Incremental sea level rise is visible



Charleston – East Bay St.
Photo credit: Liz Fly



Charleston – 17 and 61
Photo credit: Sean Bath



Charleston – Northbridge Park
Photo credit: Sean Bath



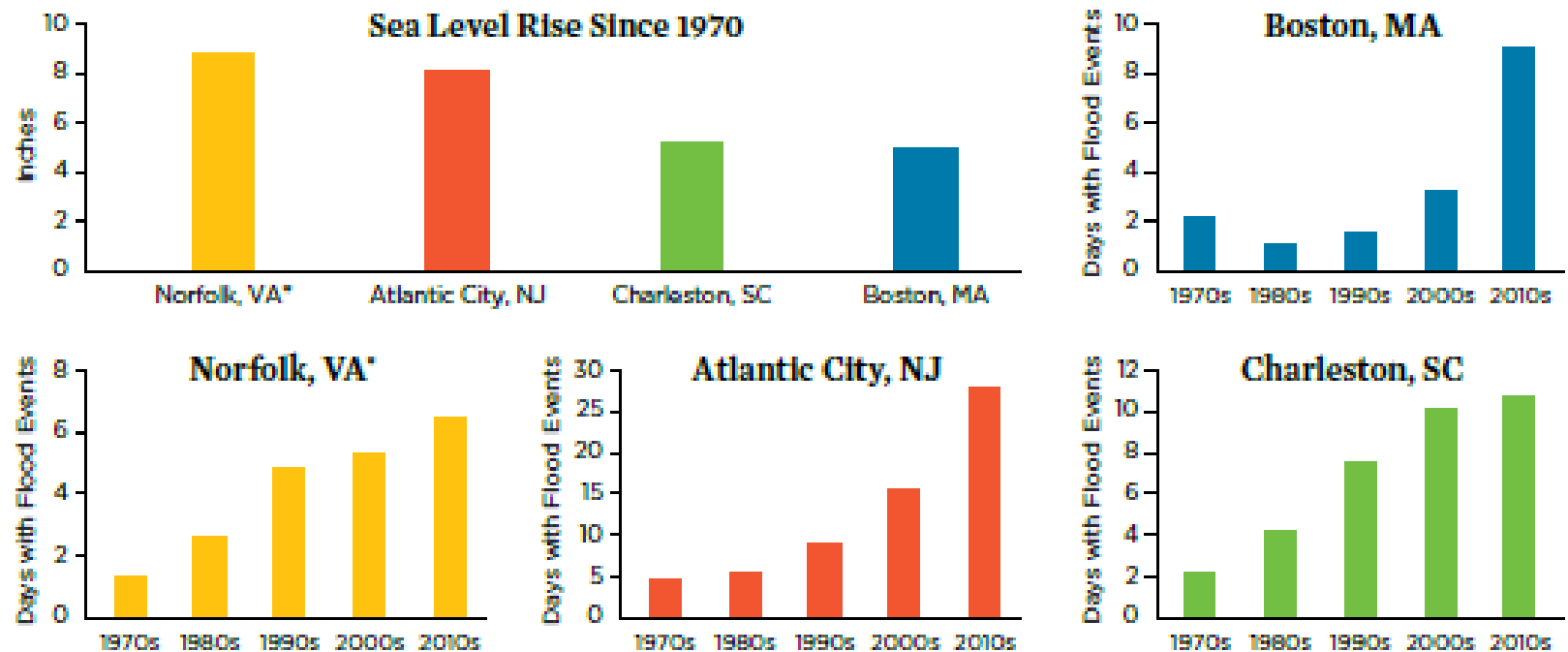
Beaufort
Photo credit: Megan Gregoire



Pawleys Island
Photo credit: Ryan Fabbri

Nuisance flooding becoming more than a nuisance

FIGURE 4. Local Sea Level Rise and Tidal Flooding, 1970–2012



Sea level has risen by about 3.5 inches globally—but more along the East Coast—since 1970. At Sewells Point, VA, for example, sea level has risen more than eight inches, and at Boston, about five inches. Rising seas mean that communities up and down the East and Gulf Coasts are seeing more days with tidal flooding. Charleston, SC, for example, faced just two to three days with tidal flooding a year in the 1970s. The city now averages 10 or more such days annually.

*Norfolk statistics recorded at the Sewells Point tide gauge.

SOURCES: UCS ANALYSIS; MORALES AND ALSHEIMER 2014; NOAA TIDES AND CURRENTS 2014; NOAA TIDES AND CURRENTS 2013B.



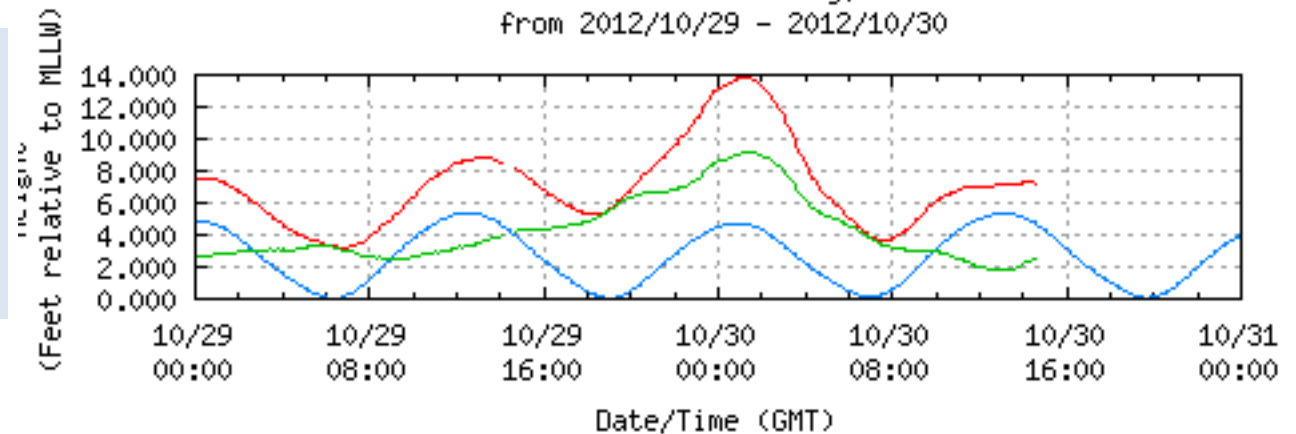
Credit: [Oliver Rich on Flickr](#)



Credit: [Wavies on Flickr](#)

Storm surge will
be exacerbated
by sea level rise

NOAA/NOS/CO-OPS
Preliminary Water Level (B1:2) vs. Predicted Plot
8518750 The Battery, NY
from 2012/10/29 - 2012/10/30



Predicted Tide —

Observed WL —

(Obs-Pred) —

Big Picture

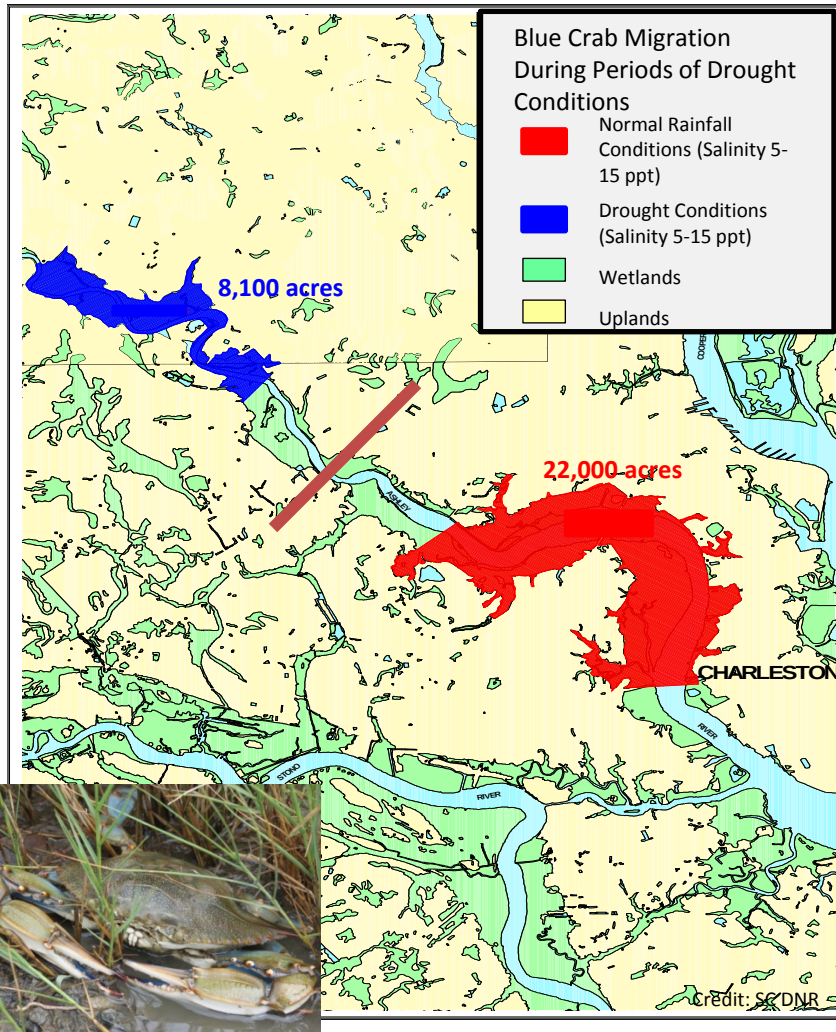
Impacts in SC

Adaptation

Saltwater Intrusion

Public Health Concerns

Ecosystem Impacts



Big Picture

Impacts in SC

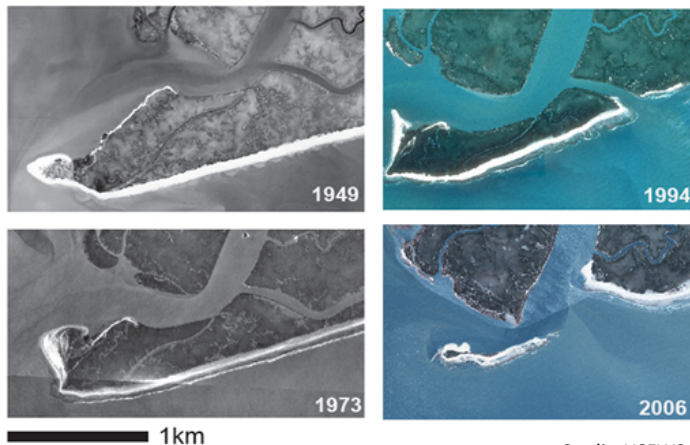
Adaptation

Land Loss

Coastal Erosion



SANDY POINT, CAPE ROMAIN, SC



Credit: USFWS

Marsh Inundation



Credit: [Kevin Oliver](#) on [Flickr](#)



Credit: [Hoan Luong](#) on [Flickr](#)

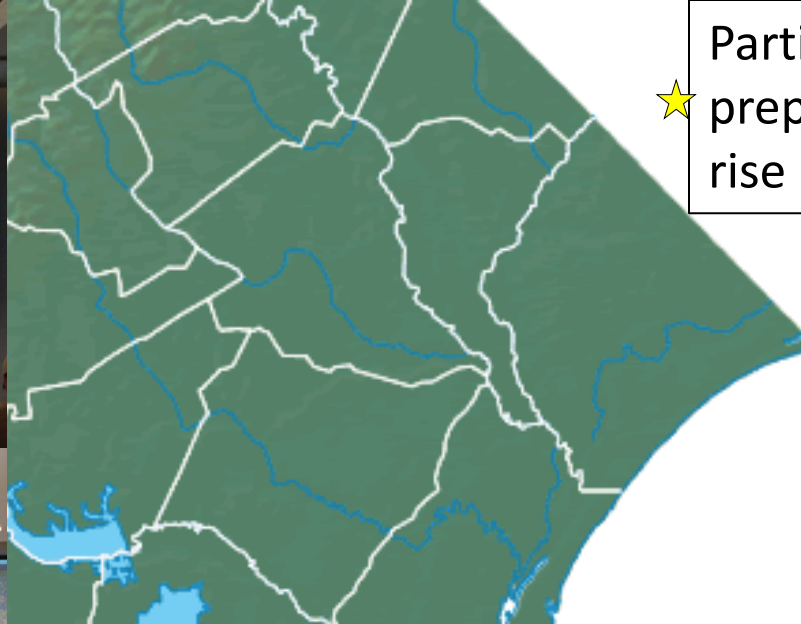
Big Picture

Impacts in SC

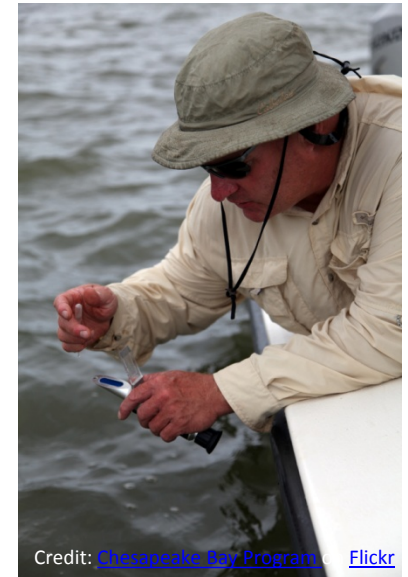
Adaptation



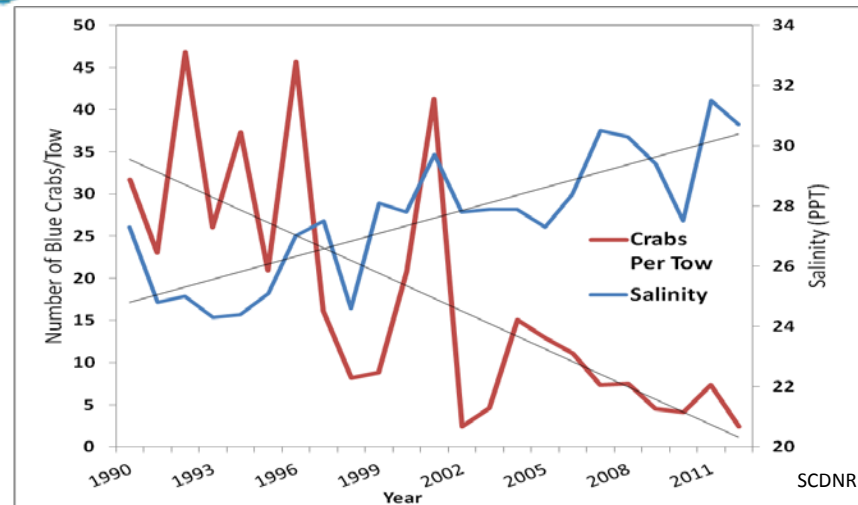
★ Participatory approach to preparing for sea level rise in Beaufort, County



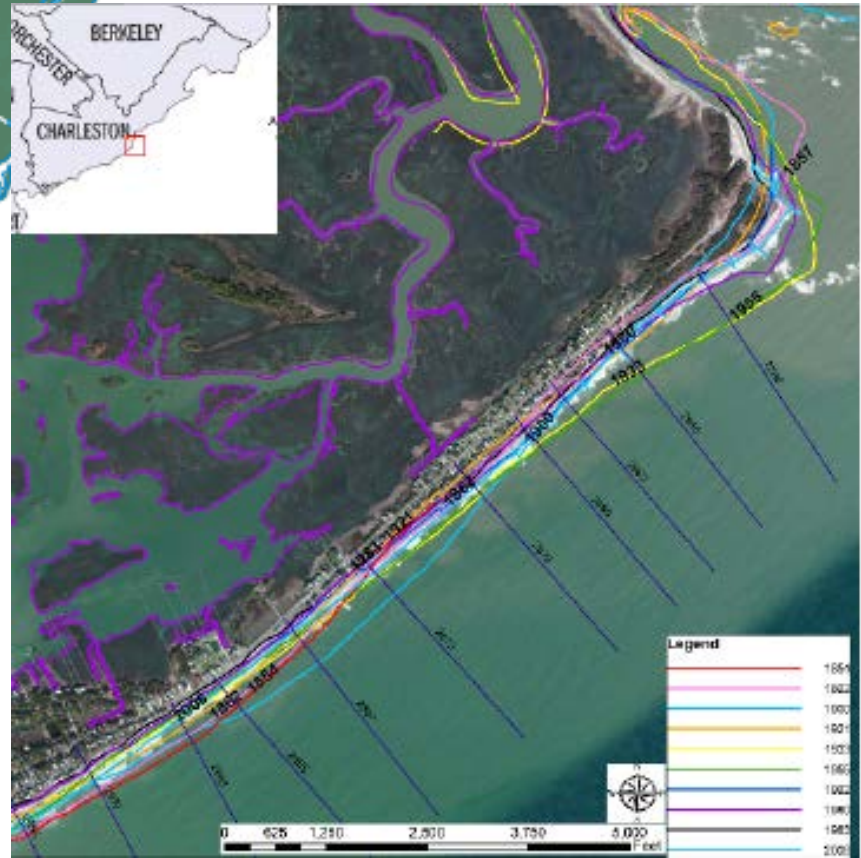
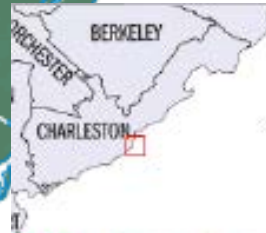
Drought impacts on the blue crab fishery – citizen science to help support a predictive tool



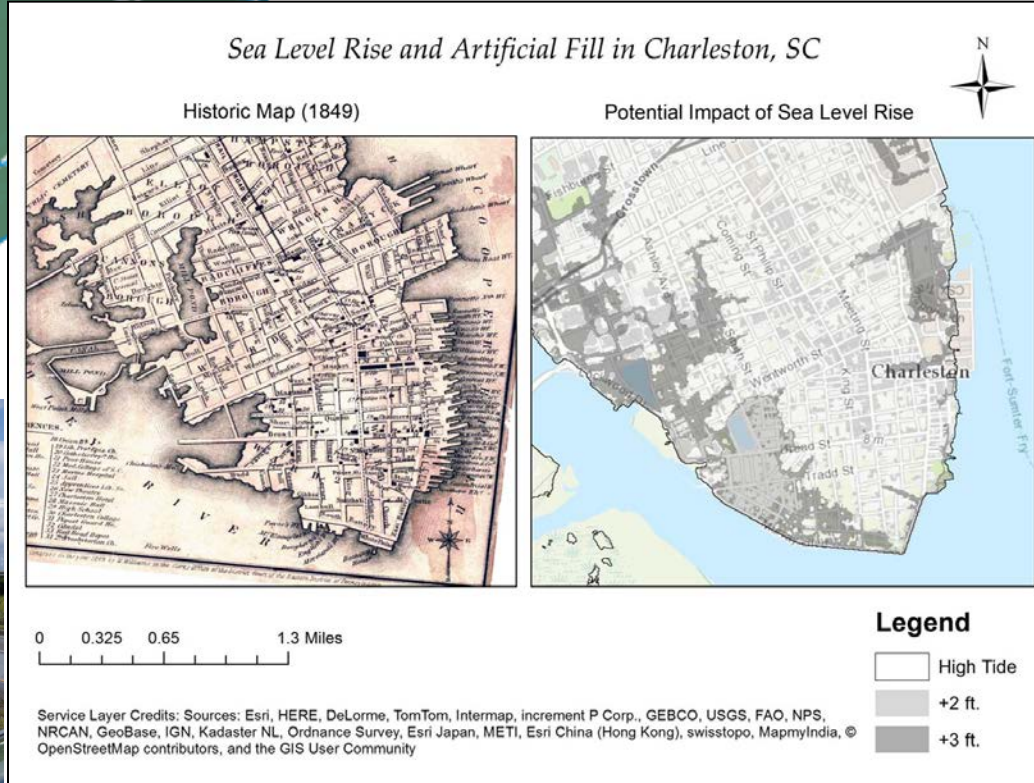
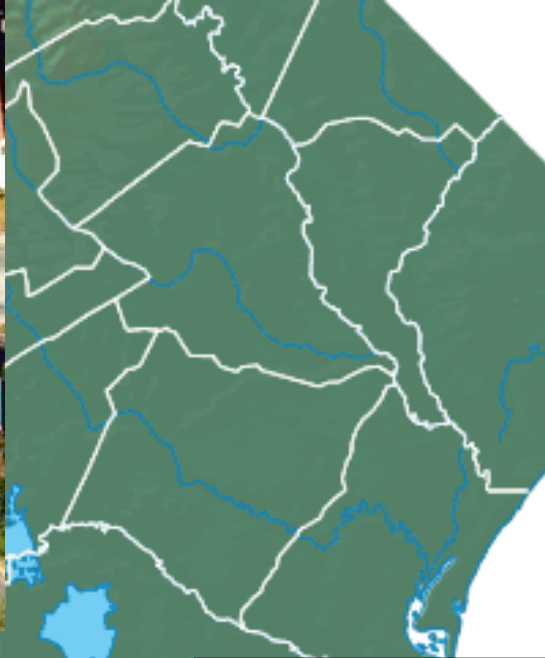
Credit: [Chesapeake Bay Program](#) [Flickr](#)

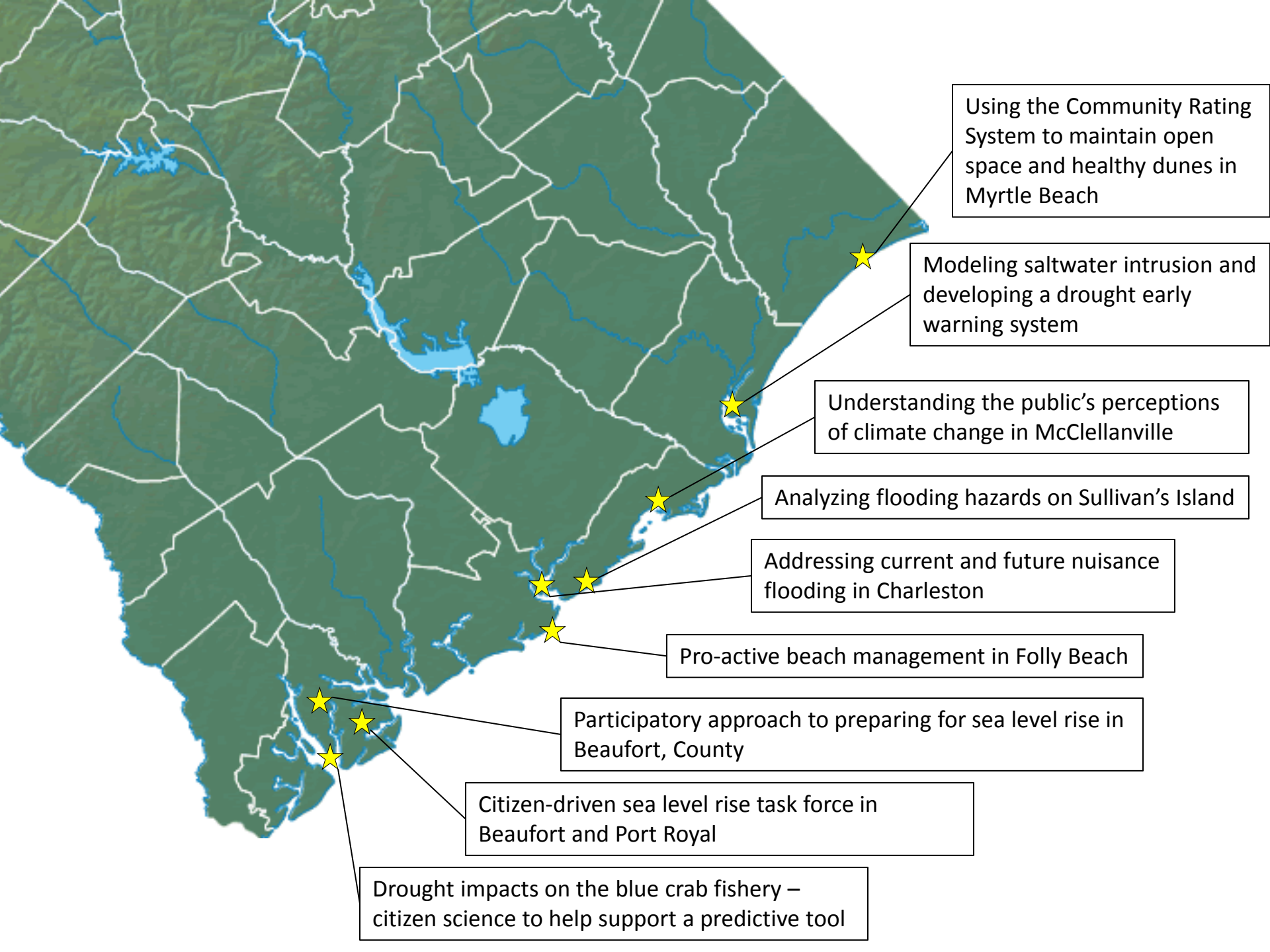


★ Pro-active beach management on Folly Beach



★ Addressing current and future nuisance flooding in Charleston





Using the Community Rating System to maintain open space and healthy dunes in Myrtle Beach

Modeling saltwater intrusion and developing a drought early warning system

Understanding the public's perceptions of climate change in McClellanville

Analyzing flooding hazards on Sullivan's Island

Addressing current and future nuisance flooding in Charleston

Pro-active beach management in Folly Beach

Participatory approach to preparing for sea level rise in Beaufort, County

Citizen-driven sea level rise task force in Beaufort and Port Royal

Drought impacts on the blue crab fishery – citizen science to help support a predictive tool

Thank you!

AT
HIGH TIDE
HEAVY RAINS
THIS AREA
FLOODS

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S.C. Sea Grant Consortium: www.scseagrant.org

Carolinas Integrated Sciences and Assessments: www.cisa.sc.edu

Big Picture

Impacts in SC

Adaptation