S-WITCH

Savannah - Water Integrated Tool for ocean, Coastal and river Hydraulics forecasting

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cmcc
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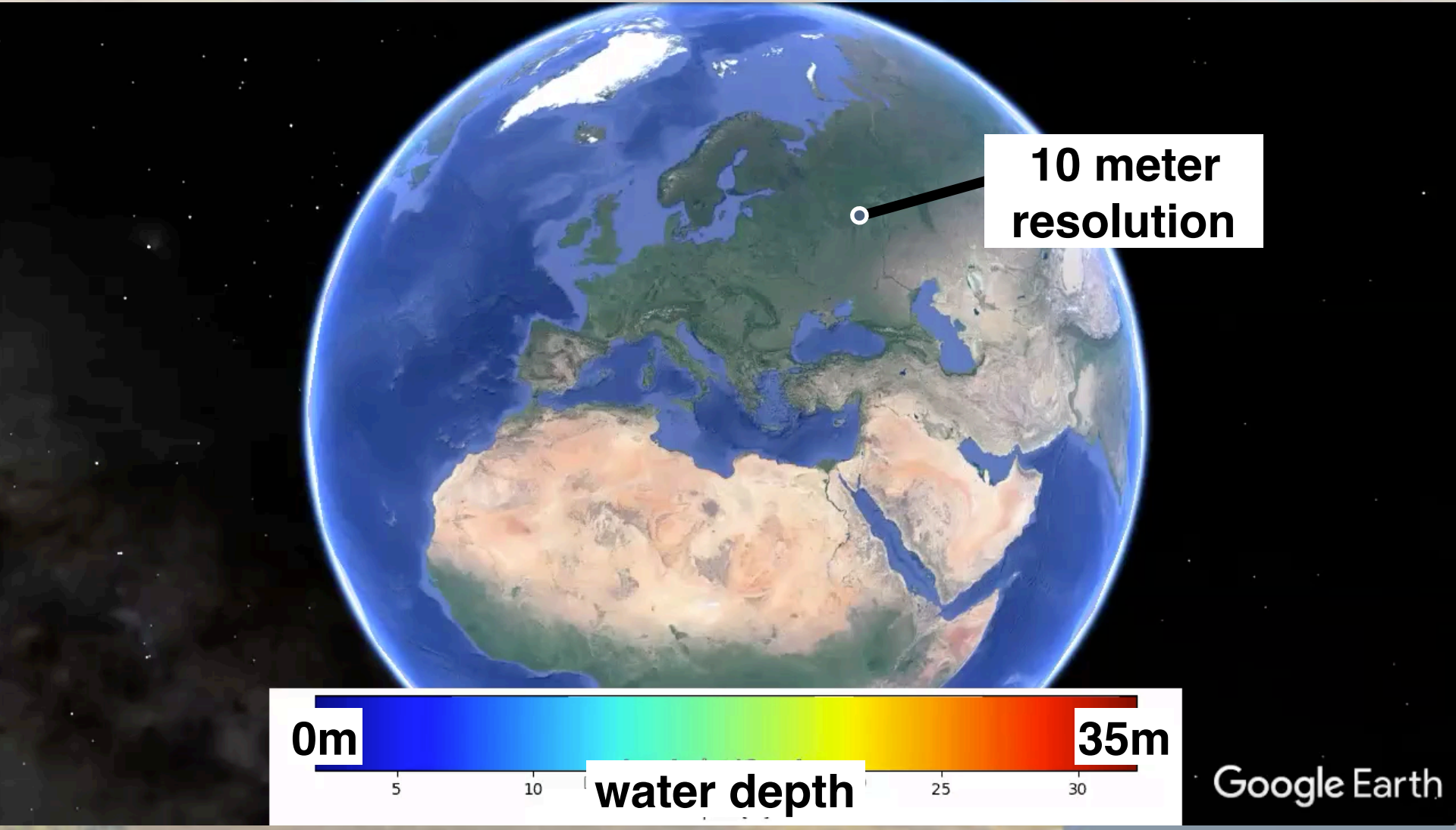
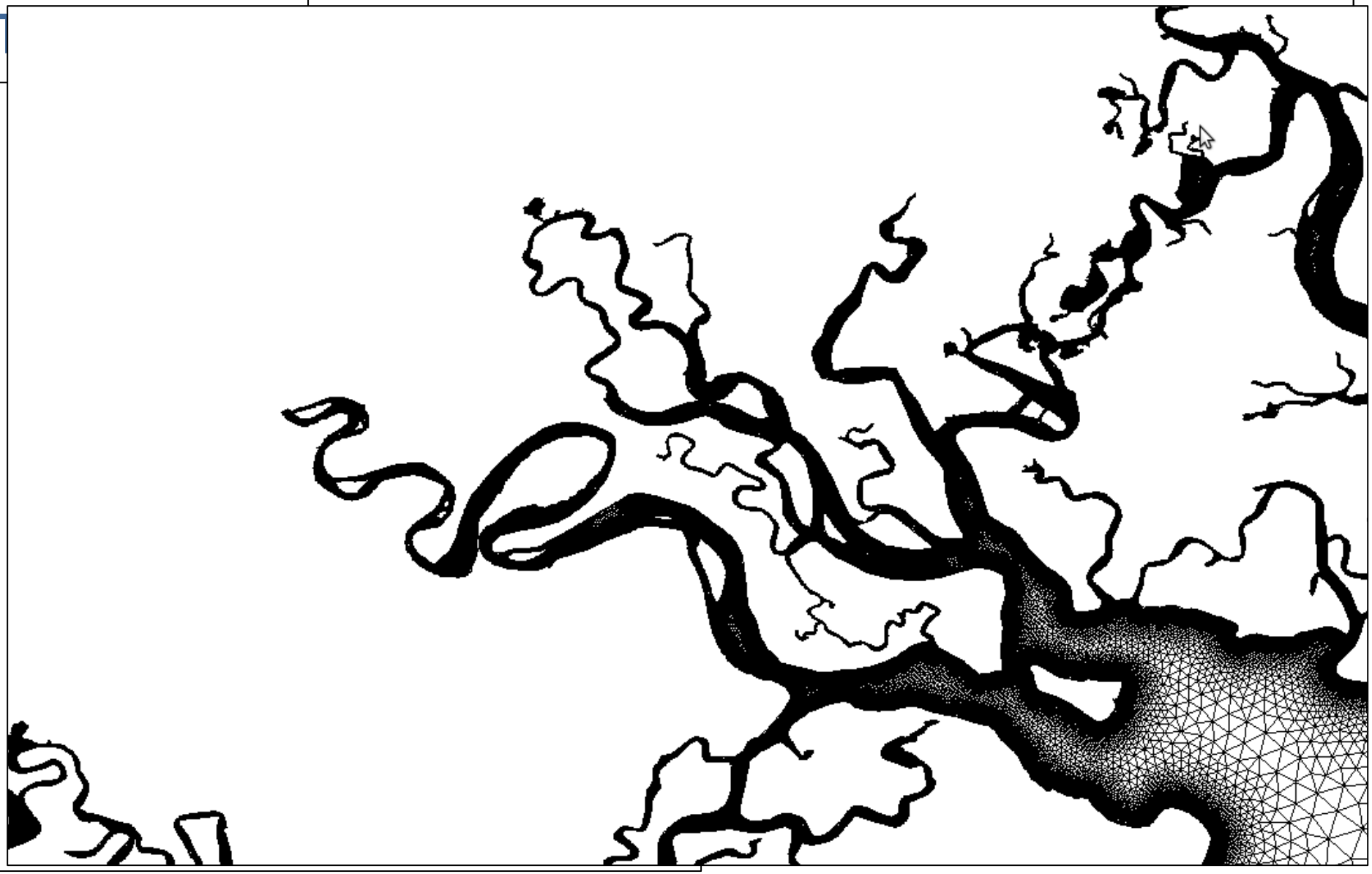
GOAL: To model and forecast water level changes at the scale where people live



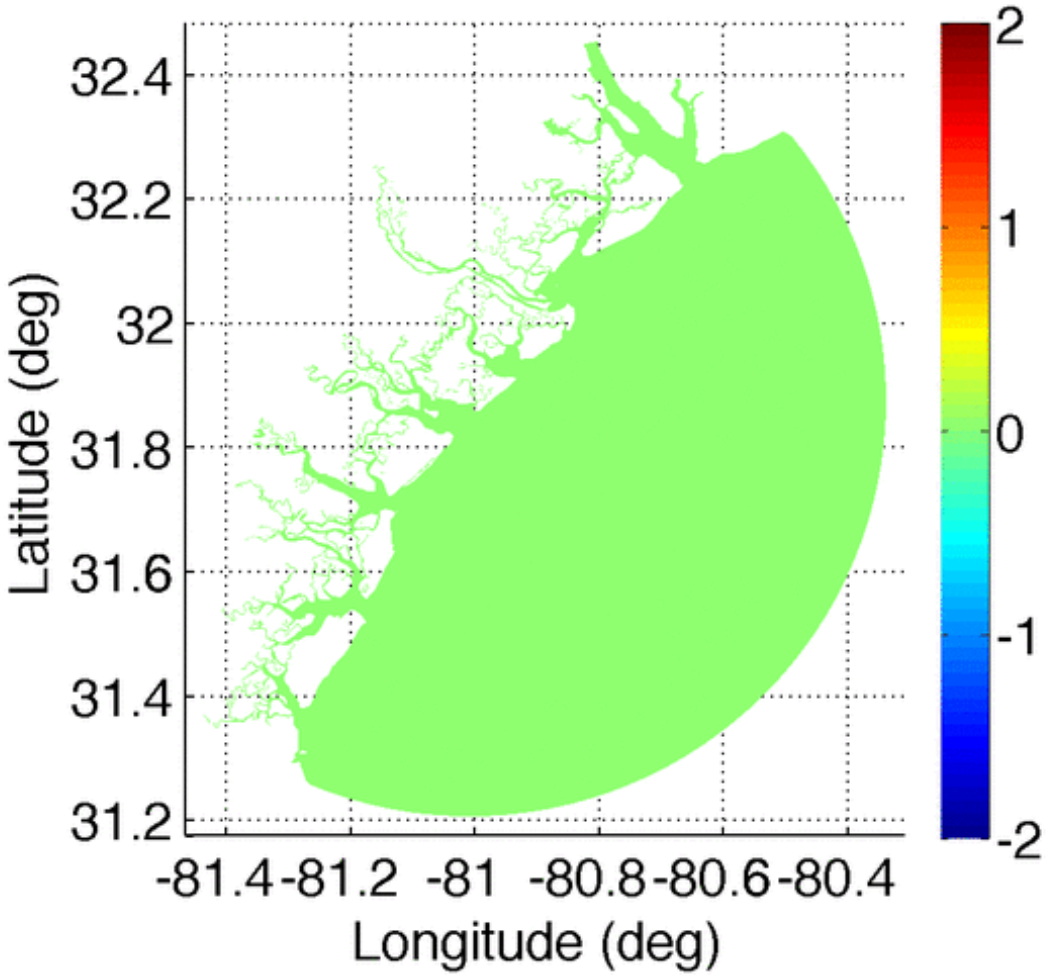
A 10m resolution co



The Daily Forecast Cycle

water level, temperature, salinity,

humidity, precipitation



water level

Meters

The Daily Forecast Cycle

water level, temperature, salinity,

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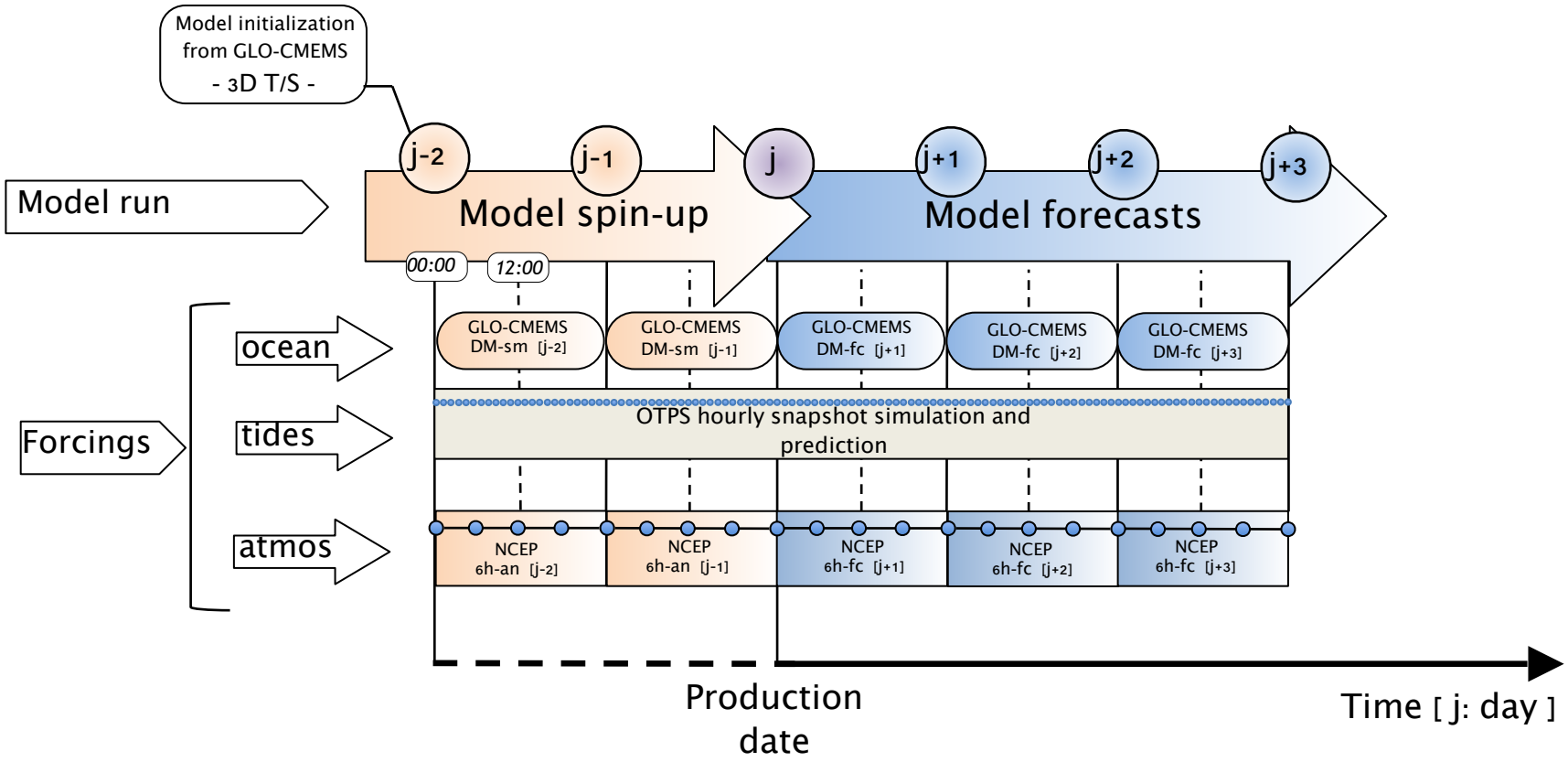
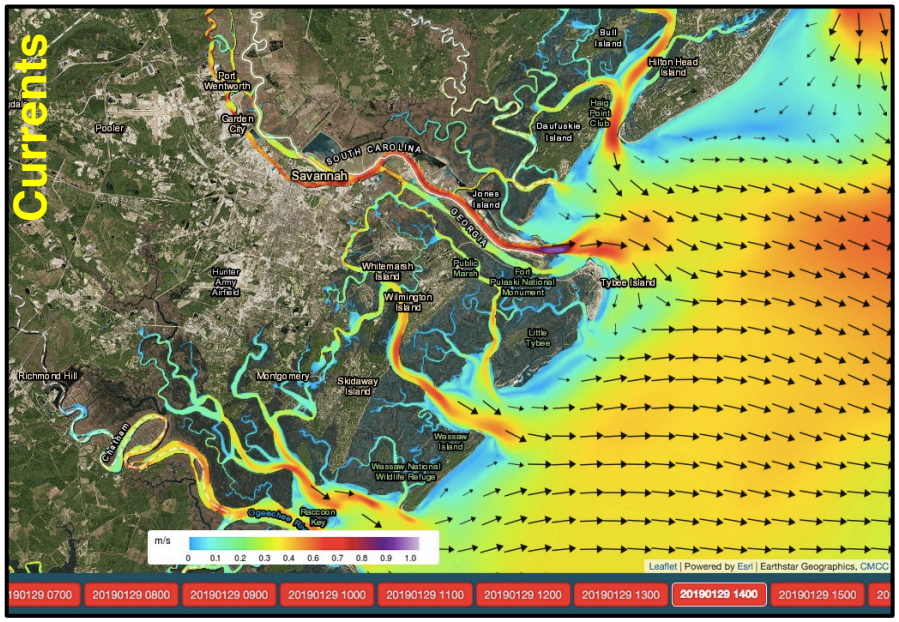
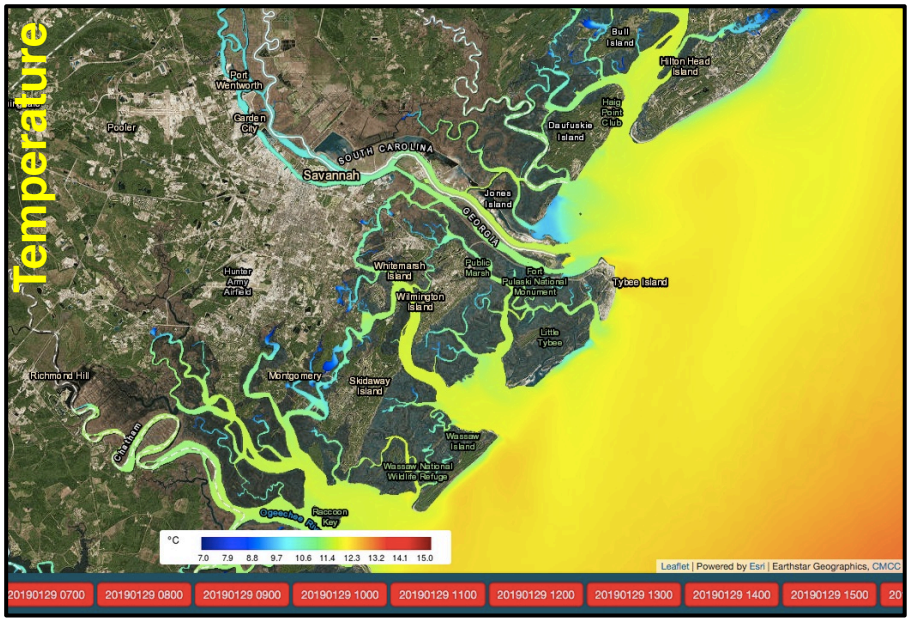
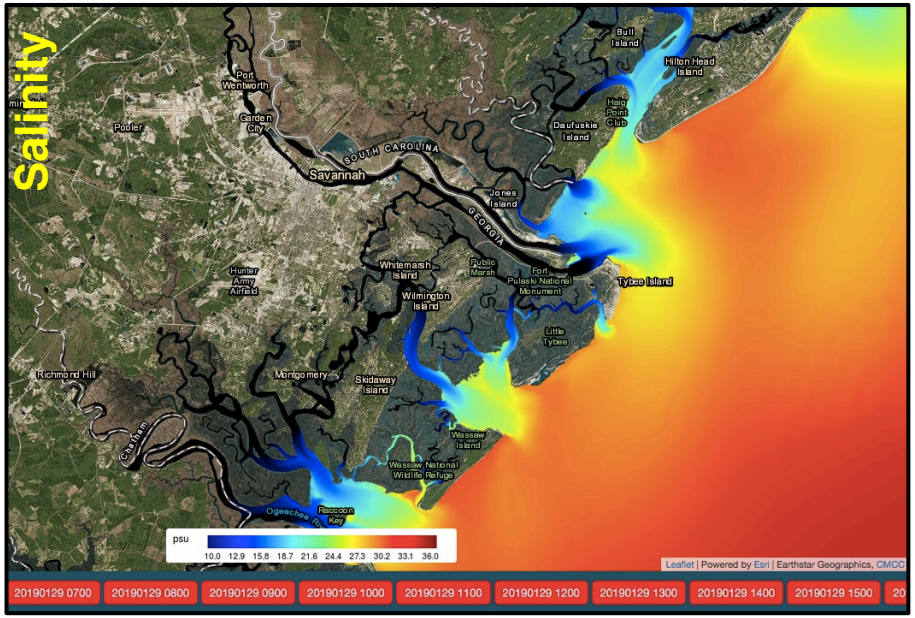


Real-Time Forecasts online — http://savannah.cmcc-opa.eu/







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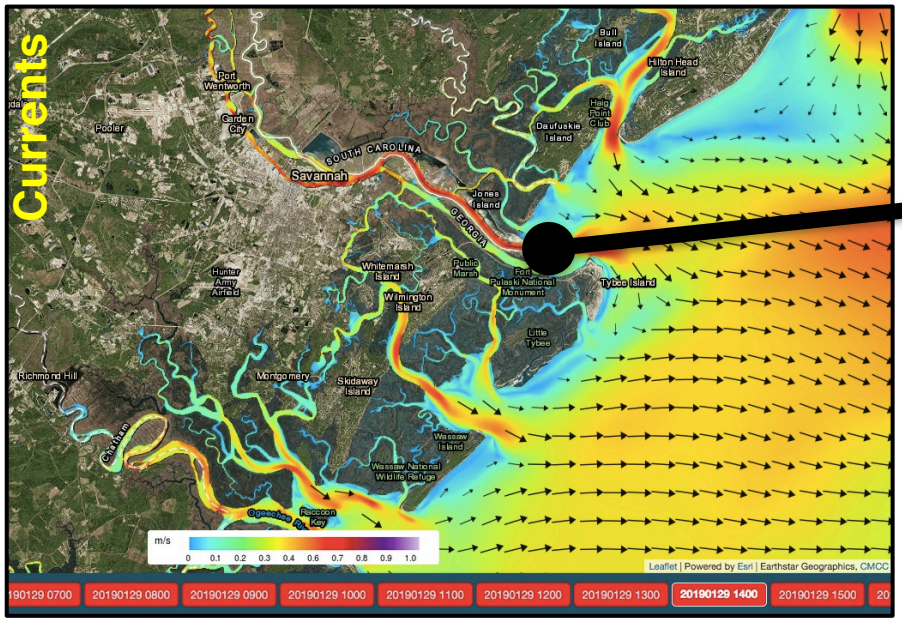
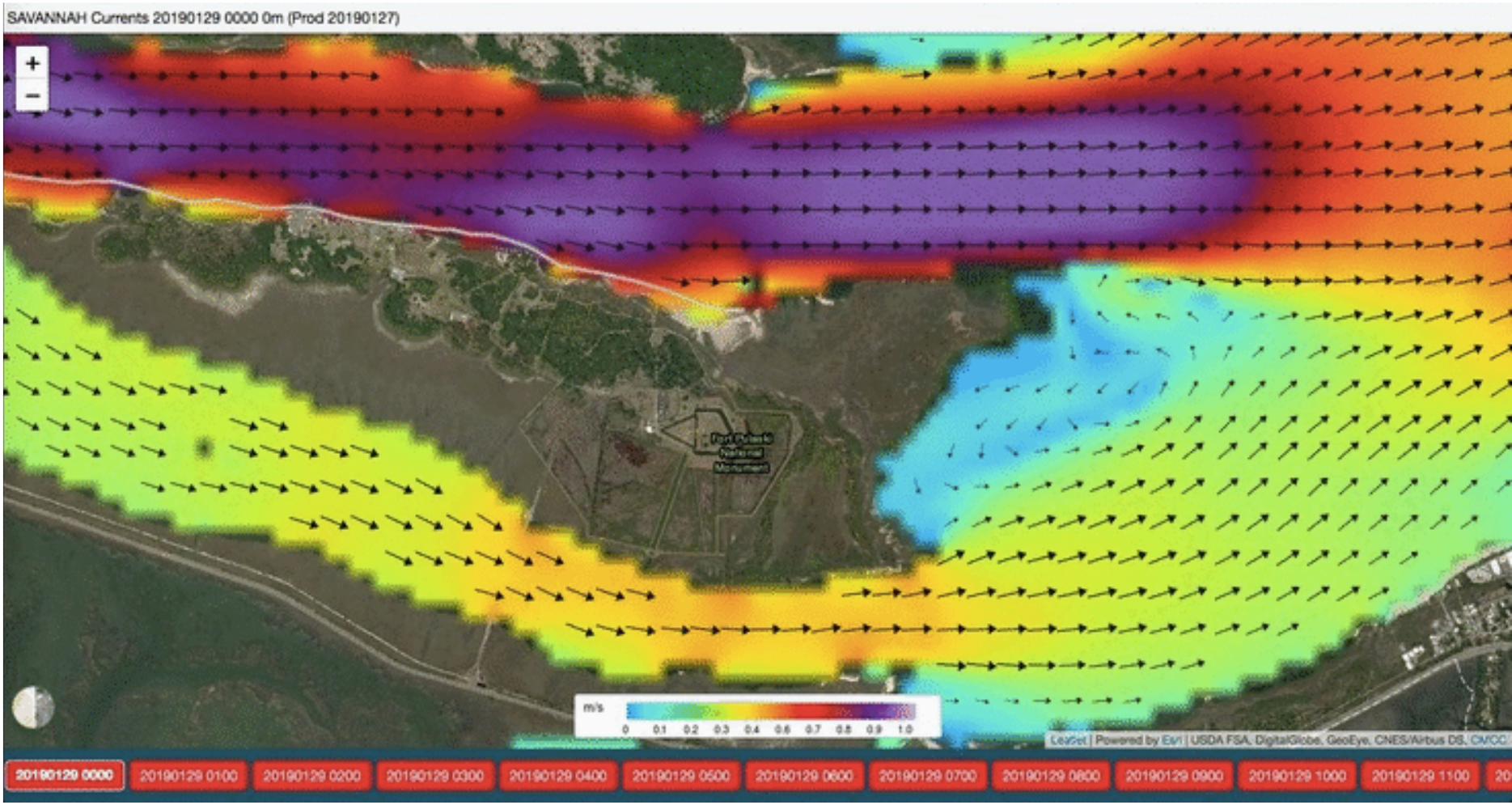


Fort Pulaski
at the mouth of the Savannah River

I was driving to Tybee Island yesterday ....

Today Forecast (2019-01-29):

Surface Currents and Water Level



2AM **7AM** **11AM**

Today Forecast (2019-01-29):

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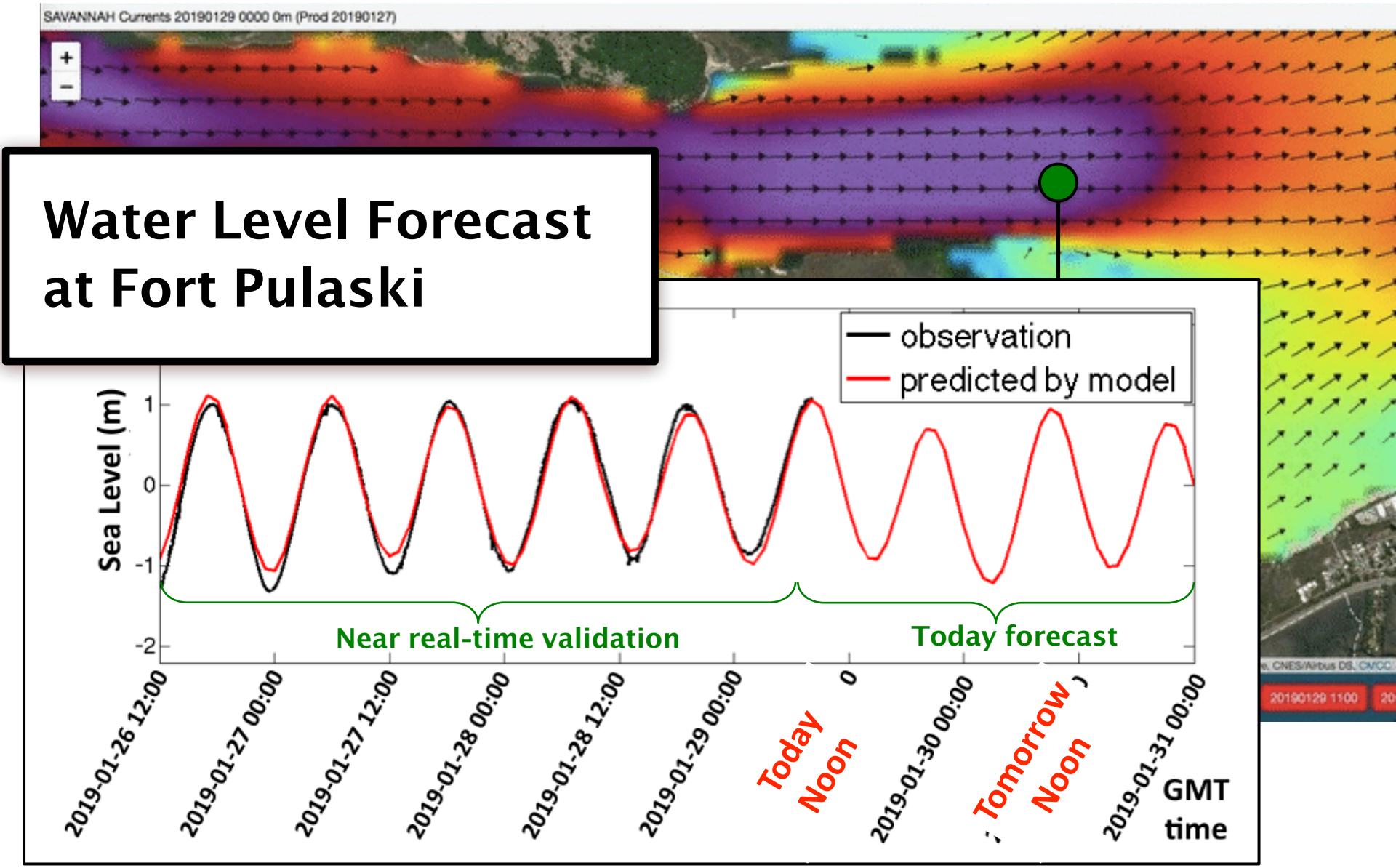
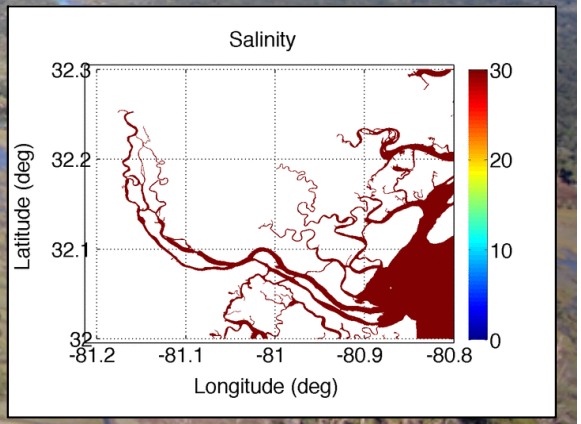


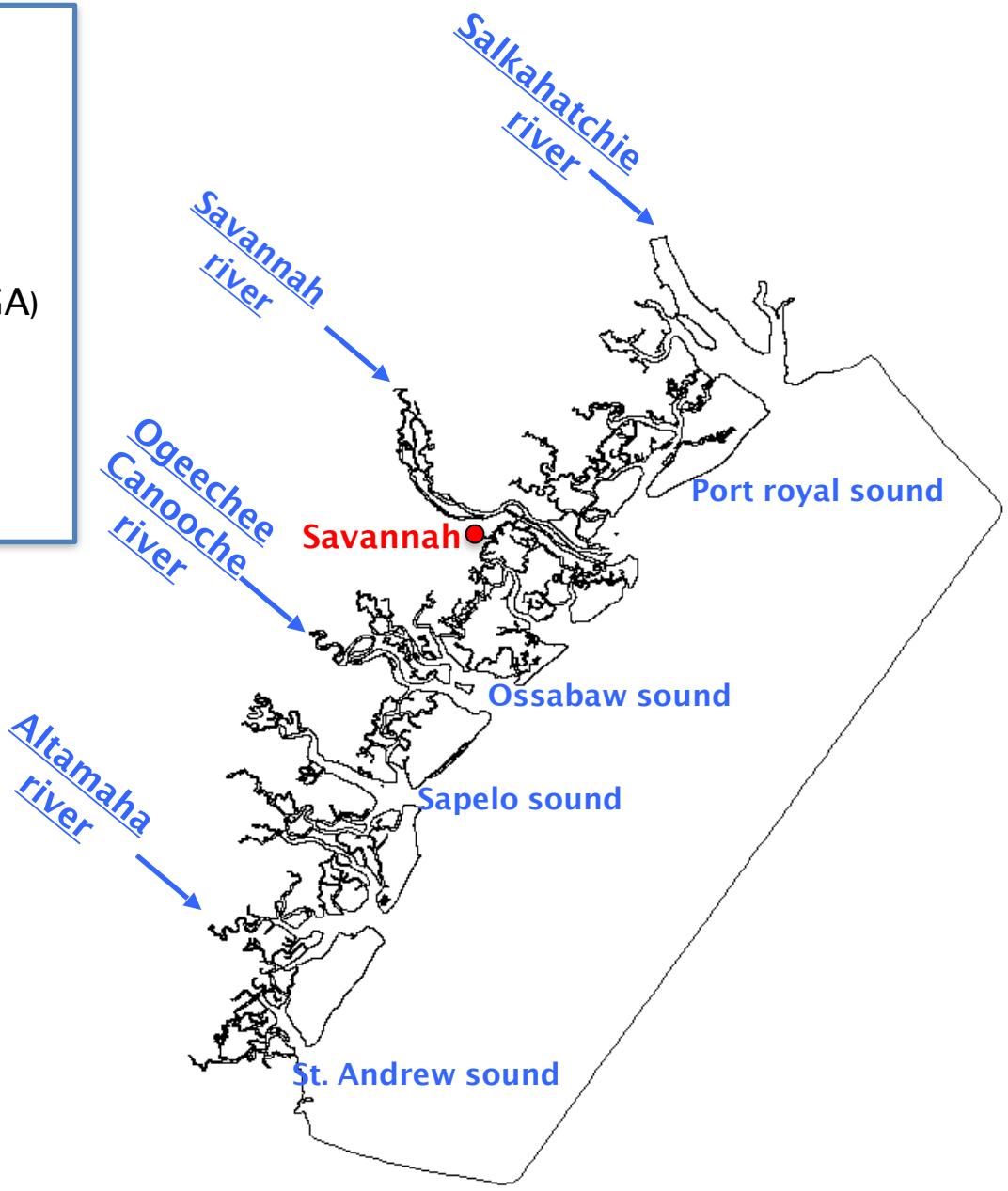
Rivers and Stream Flows

The GA coast looks like a big heart!



Rivers and Stream Flows included in the Model

- Salkahatchie river (SC)
- Port royal sound (SC)
- Savannah river (GA)
- Ossabaw sound (GA)
- Ogeechee & Canooche rivers (GA)
- Sapelo sound (GA)
- Altamaha river (GA)
- St. Andrew sound (GA)



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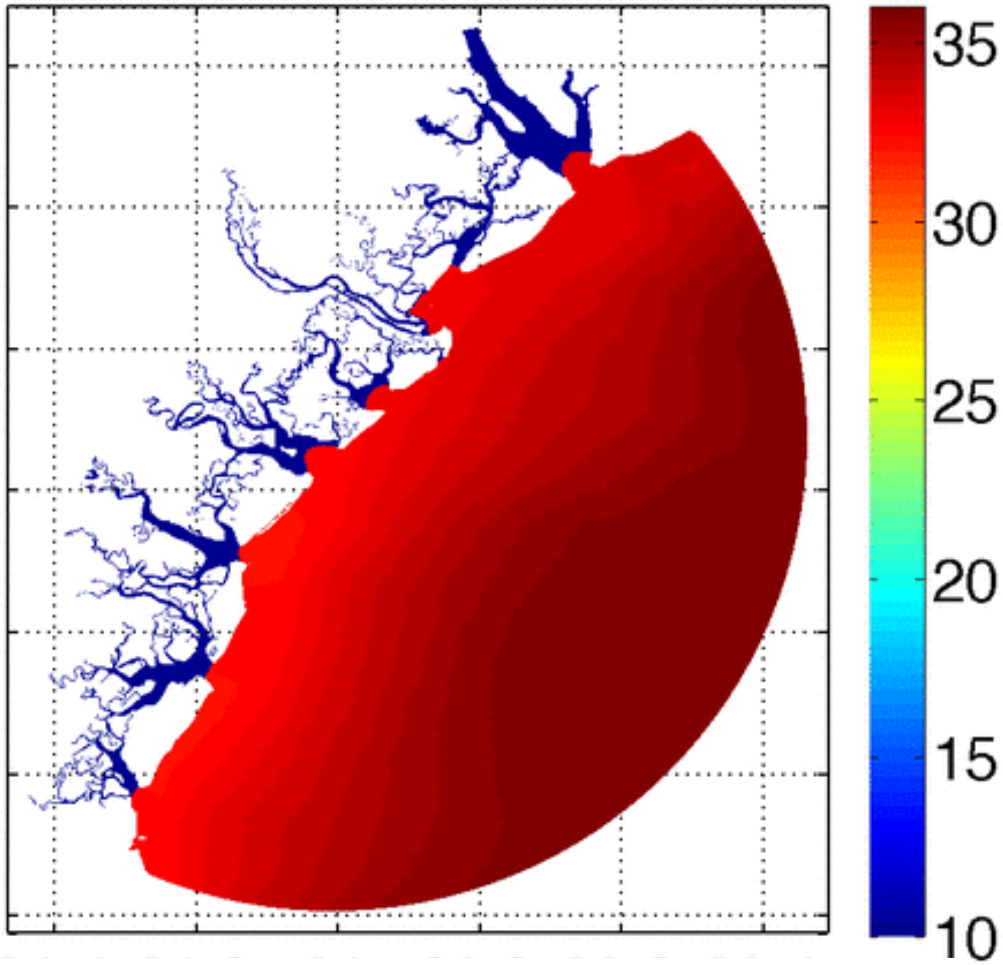
National Water Model Operational Forecasts

NWM Streamflow Output Points (~2.7 mil)

Fresh Water (Salinity)



National Water Model Operational Forecasts

NWM Streamflow Output Points (~2.7 mil)

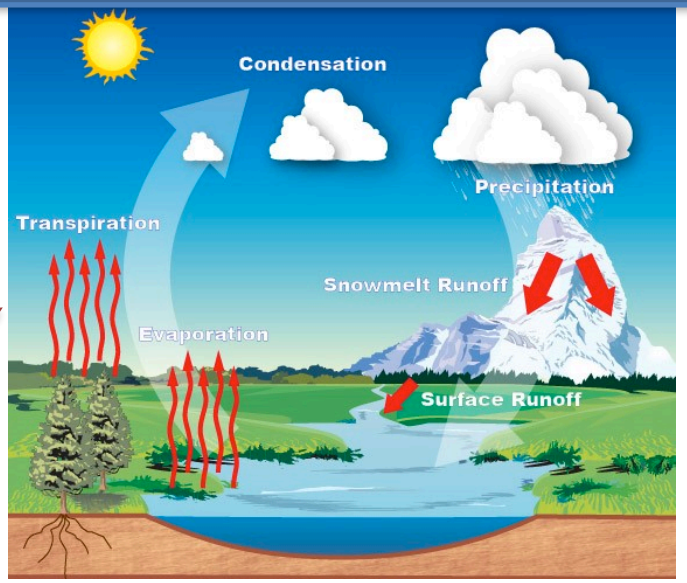
National Water Model Operational Forecasts

NWM Streamflow Output Points (~2.7 mil)

+

Current River Forecast Points (~3,600)

Regional Atmosphere & Land Hydrology Model



In development …

National Water Model Operational Forecasts

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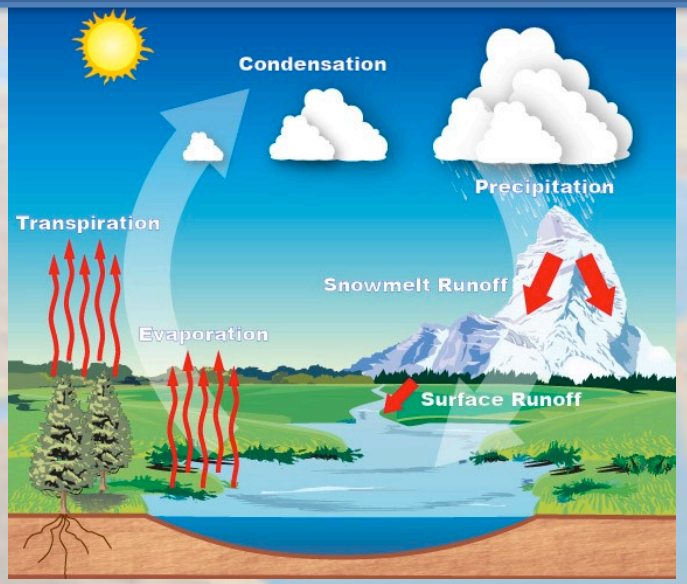
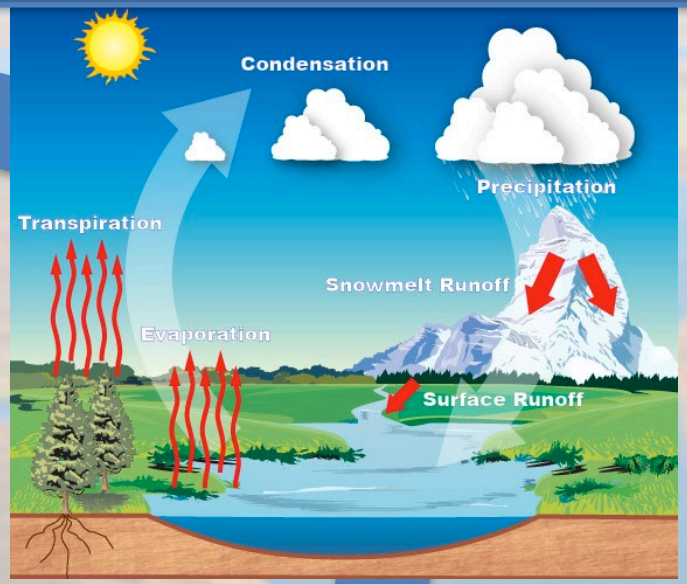
Regional Atmosphere & Land Hydrology Model

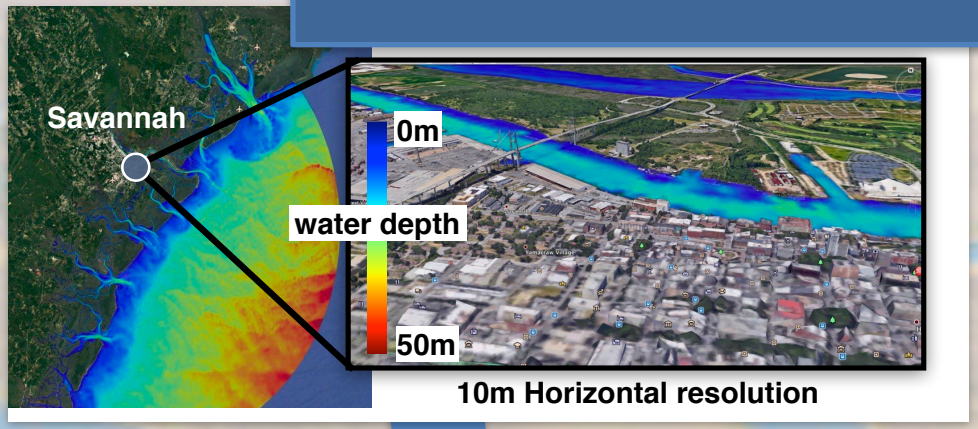


Regional Earth System Model

Regional Atmosphere & Land Hydrology Model



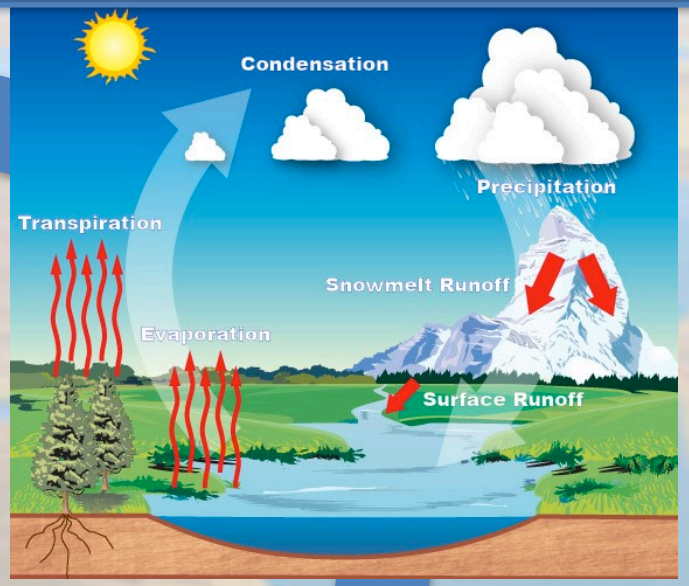
Coastal Water and Ocean Model



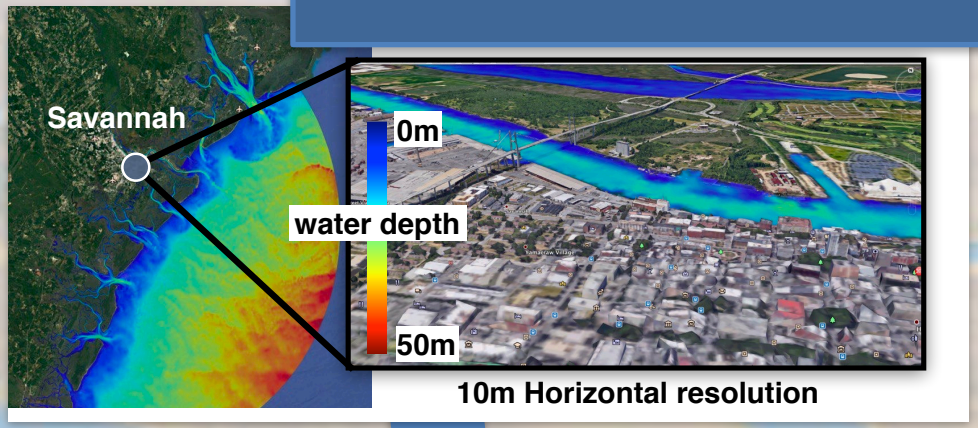
10m Horizontal resolution

Regional Earth System Model

Regional Atmosphere & Land Hydrology Model



Coastal Water and Ocean Model



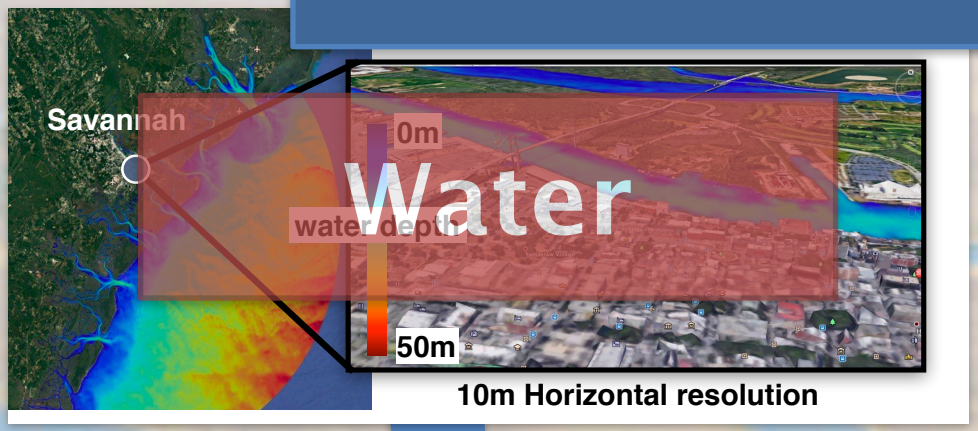
10m Horizontal resolution

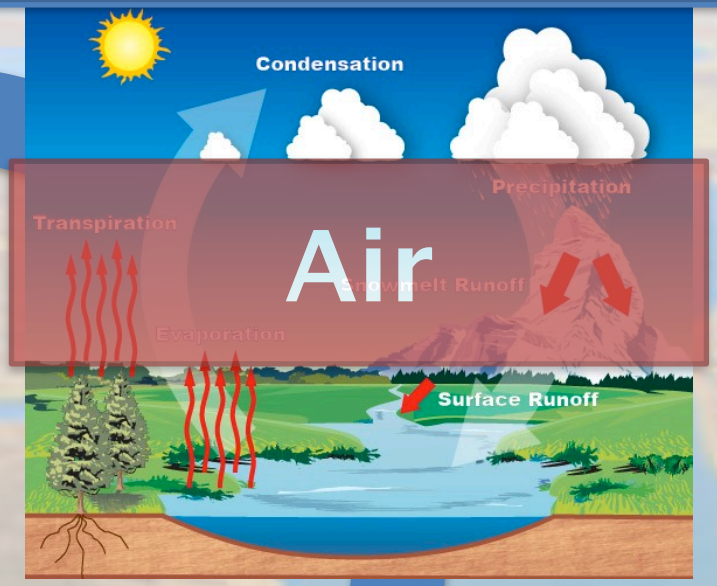
Urban Flooding Models with Infrastructure

Regional Earth System Model

Regional Atmosphere & Land Hydrology Model

Coastal Water and Ocean Model





Urban Flooding Models with Infrastructure

Regional Earth System Model

Regional Atmosphere & Land Hydrology Model

Coastal Wat

Condensation

Precipitation

Savannah

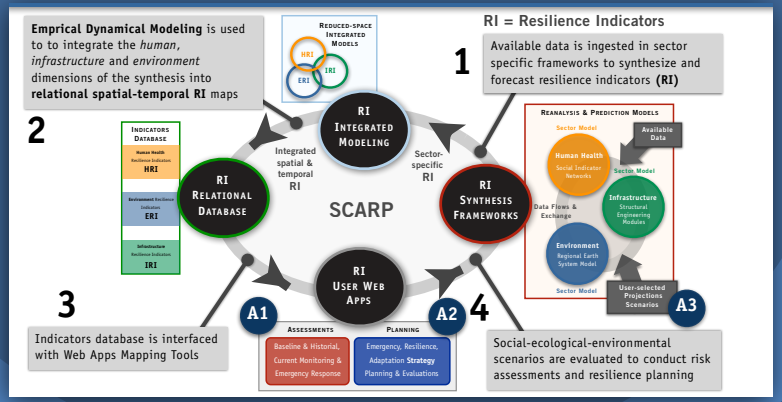
Surface Runoff

Urban Fl

with Infrastructure

People

Smart Coastal Area Resilience Planning (SCARP) Tool



www.OceanVisions.org

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"Bringing scientists and engineers *together to discuss research in the context of ocean solutions through engagement with stakeholders and decision-makers"*

OceanVisions

science and engineering
to enable solutions

Georgia Tech
Ocean Science & Engineering

Smithsonian Ocean Portal

Stanford
Center for
Ocean Solutions

center for Climate Change Impacts and Adaptation
SCRIPPS INSTITUTION OF OCEANOGRAPHY

Stanford WOODS INSTITUTE for the ENVIRONMENT

Georgia Tech

April 1-4, 2019

OceanVisions2019 - Climate

Successes in resilience, adaptation, mitigation and sustainability

United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

Ocean Conservancy

Workshop
Sea Level Hotspots from Florida to Maine

GOAL: Map the landscape of coastal resilience efforts and establish a network of science/ engineers/stakeholder that share experiences and methods.