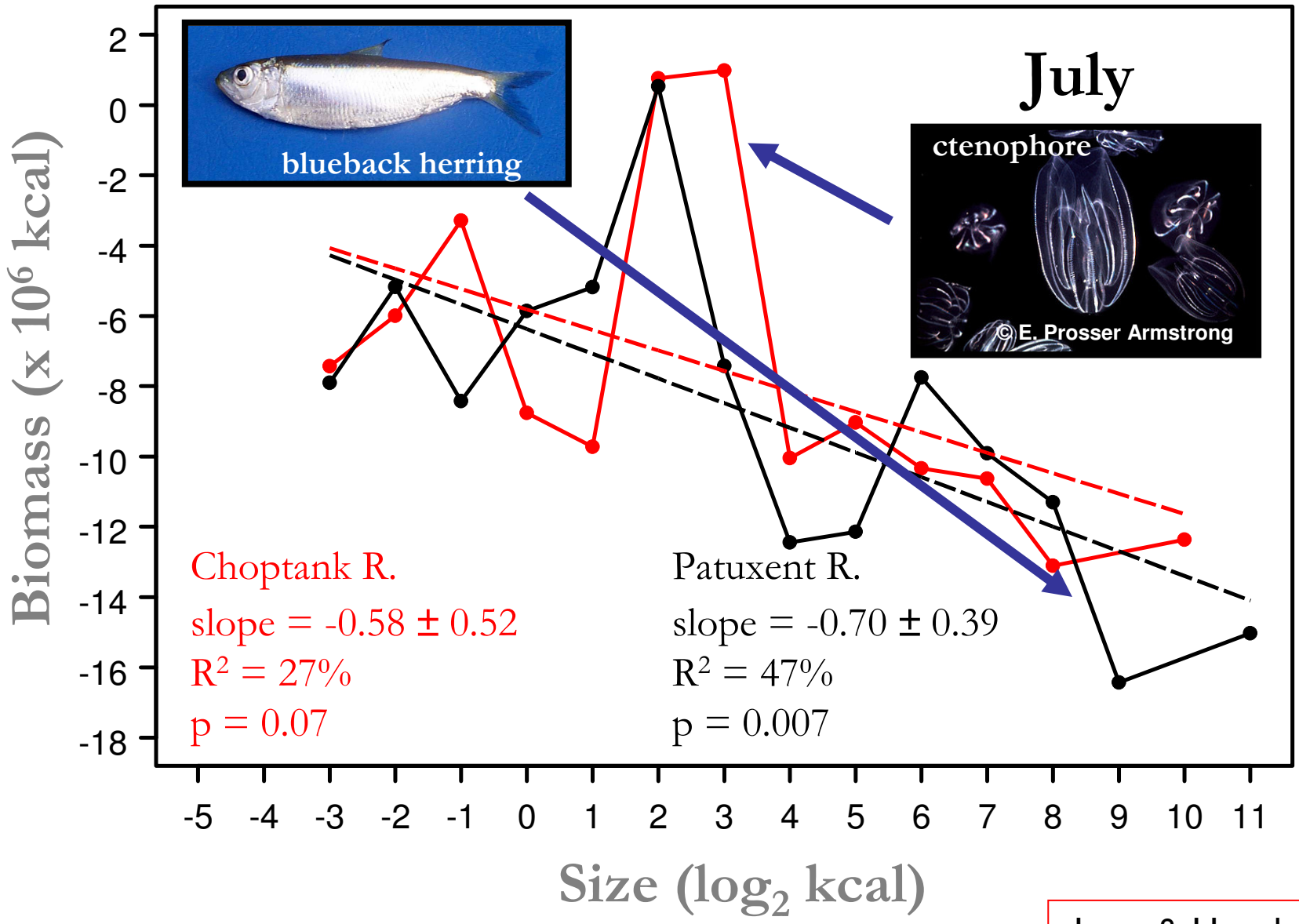
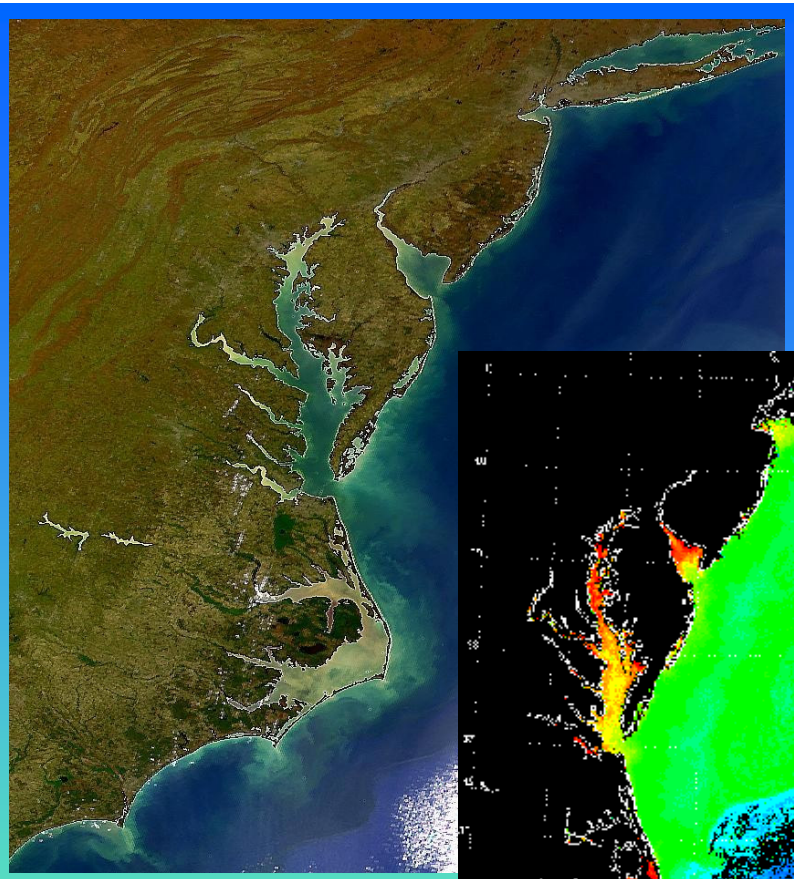
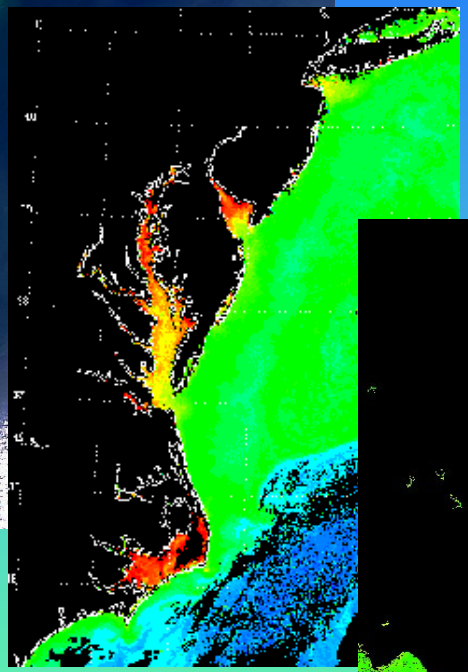
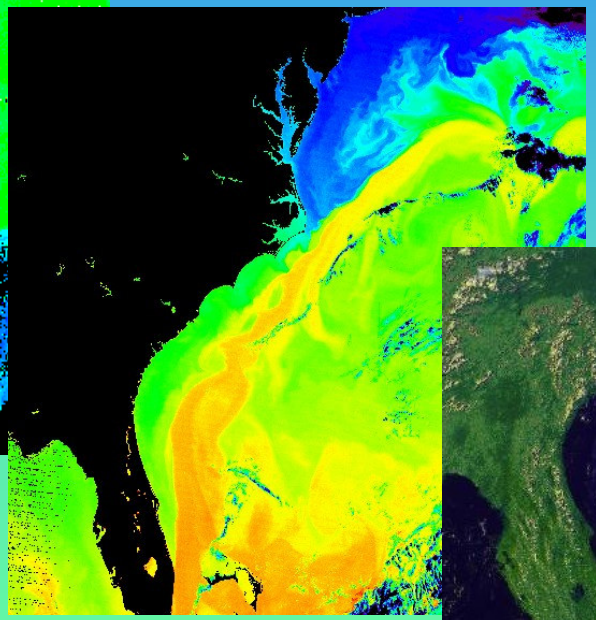


Jung & Houde 2005

Assessing Impacts of Human Disturbance in Coastal Ecosystems Experiencing Climatic Perturbations & Change

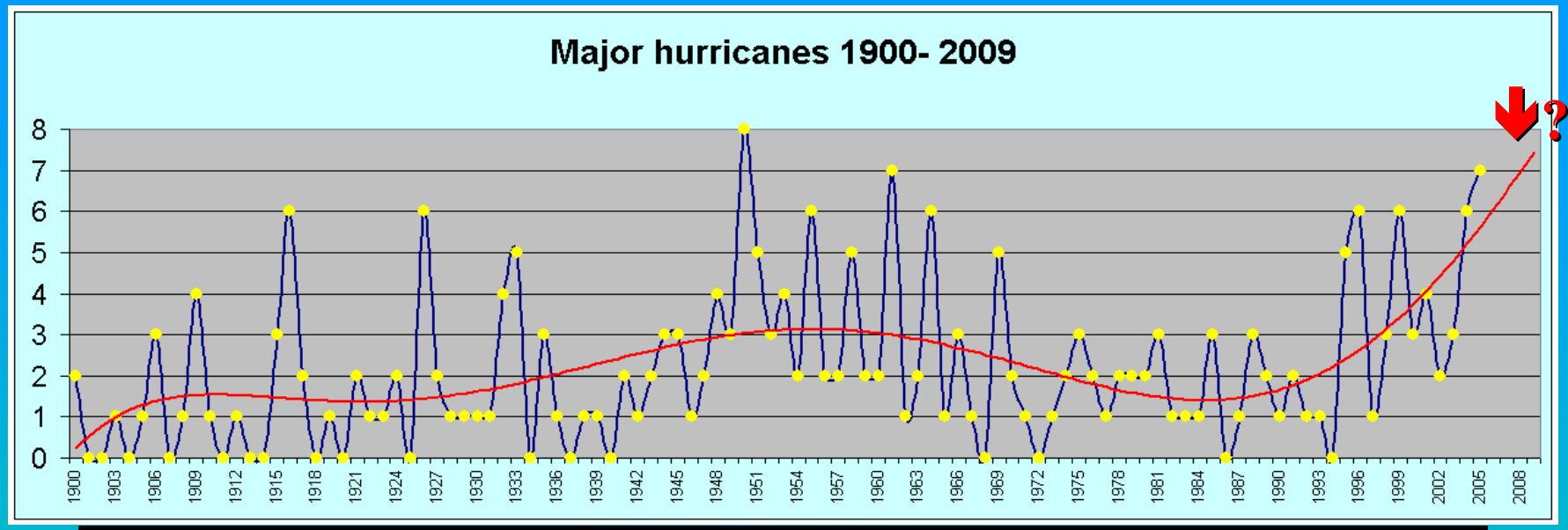




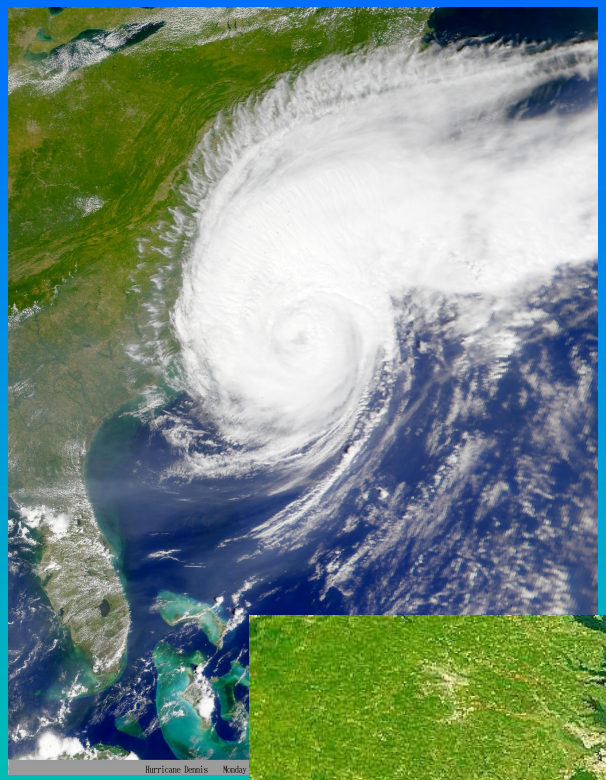


"We appear to be in a period of elevated tropical cyclone activity"

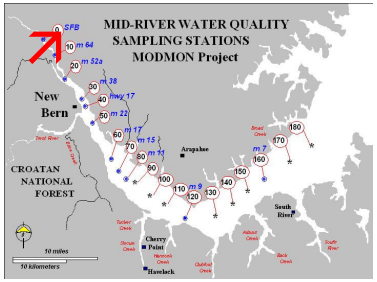
Goldenberg et al. 2001, Webster et al. 2005, Emanuel 2005

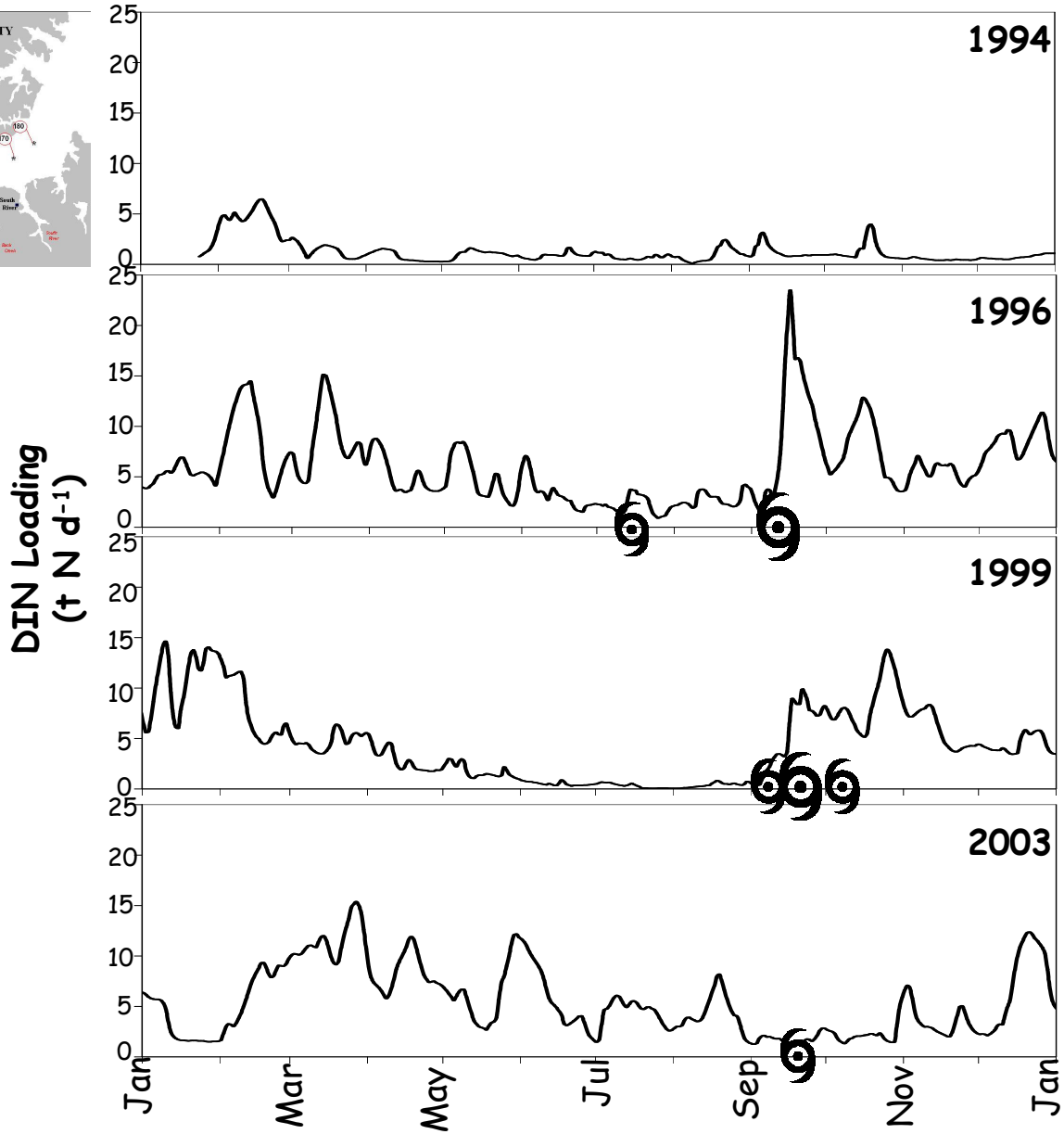


Assessing Anthropogenic and Climatic Impacts on Estuarine Water Quality: the Hurricanes of 1999



Nitrogen Loading to the Neuse R. Estuary, NC





Drought year

Bertha
Fran

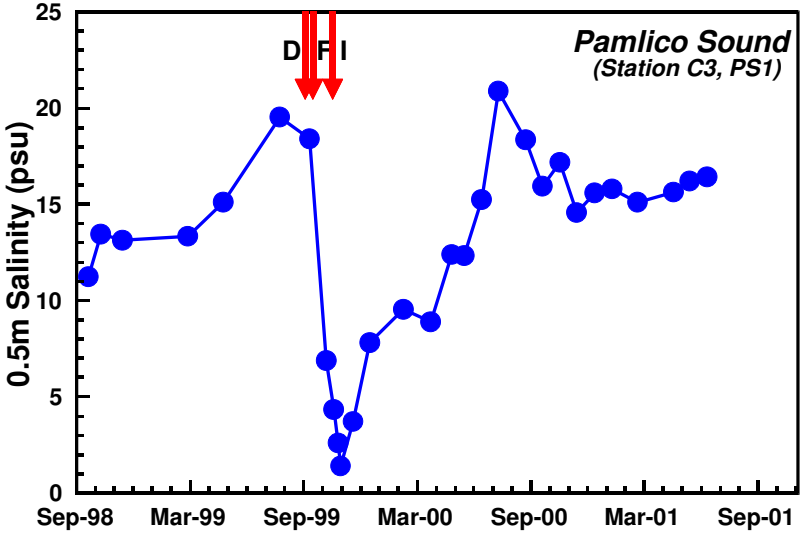
Dennis
Floyd
Irene

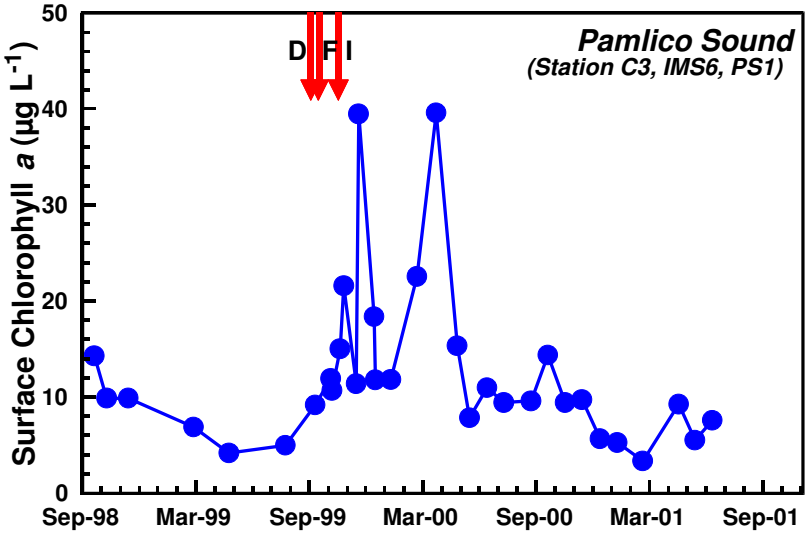
Isabel

Hurricanes can have huge ecosystem impacts

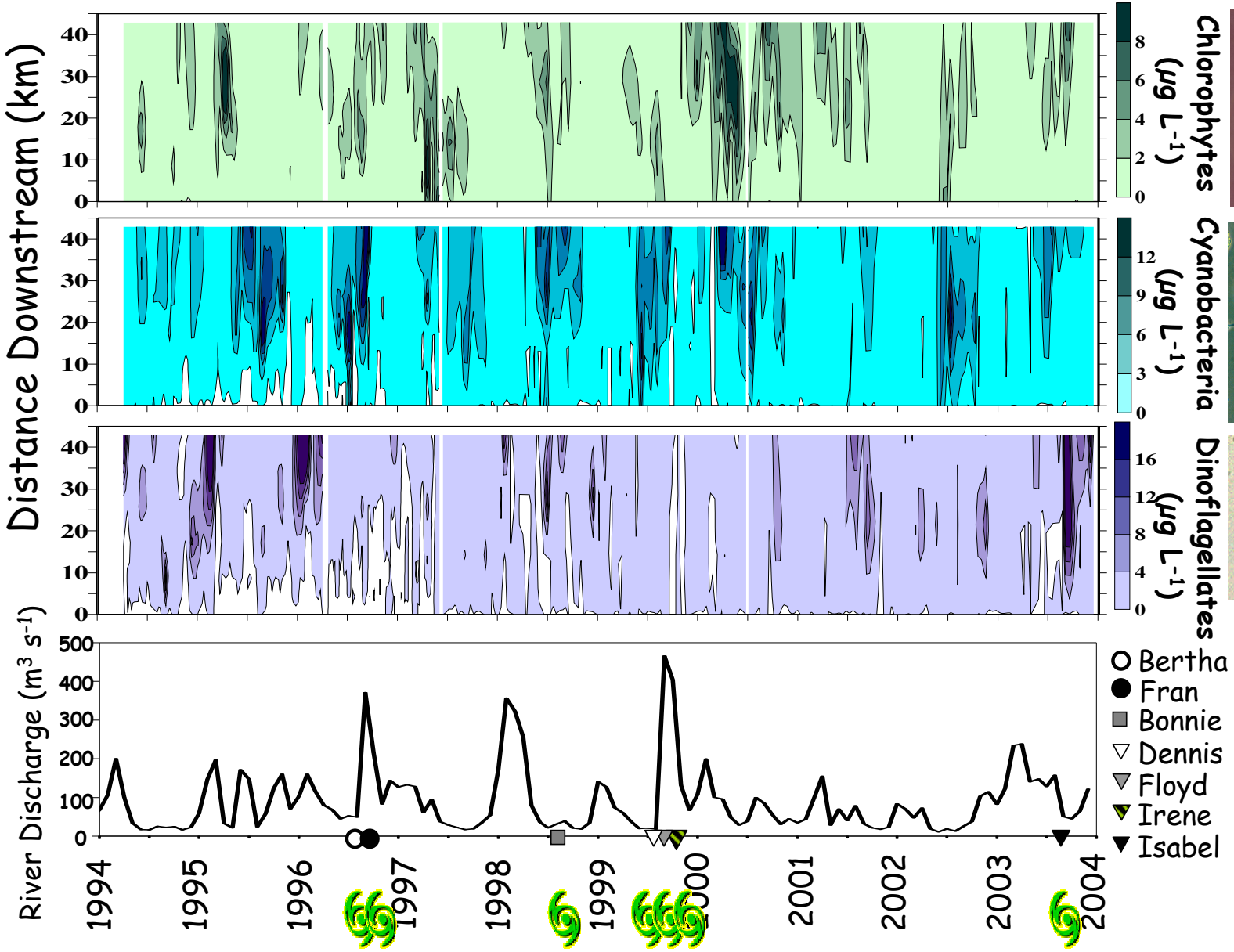
Paerl et al. 2005, 2006

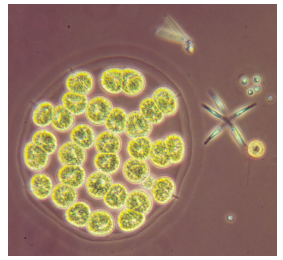
Salinity and Chlorophyll *a* responses to the floodwaters in Pamlico Sound

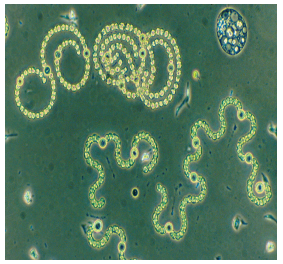


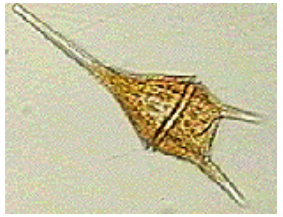


Phytoplankton functional group responses



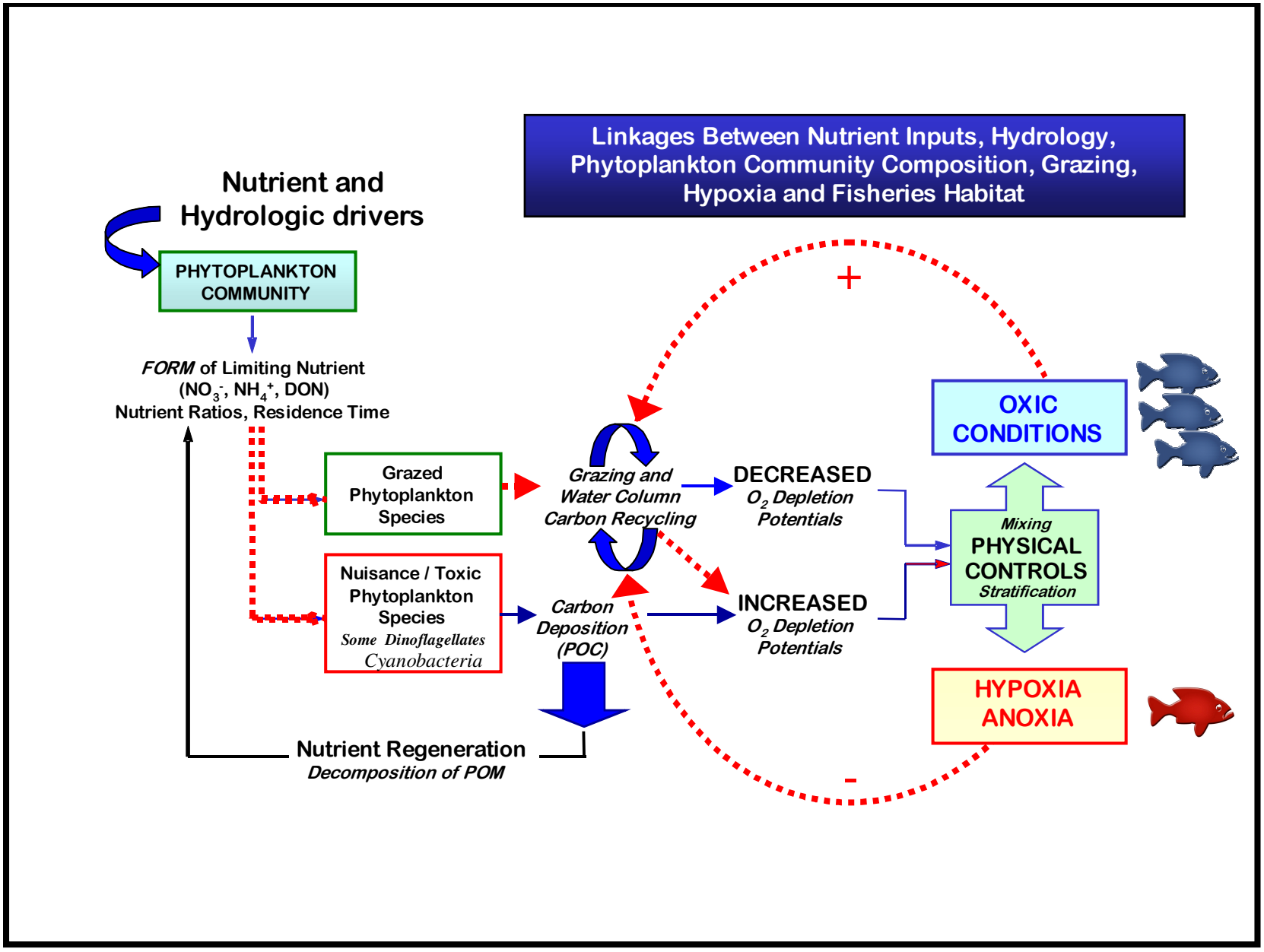




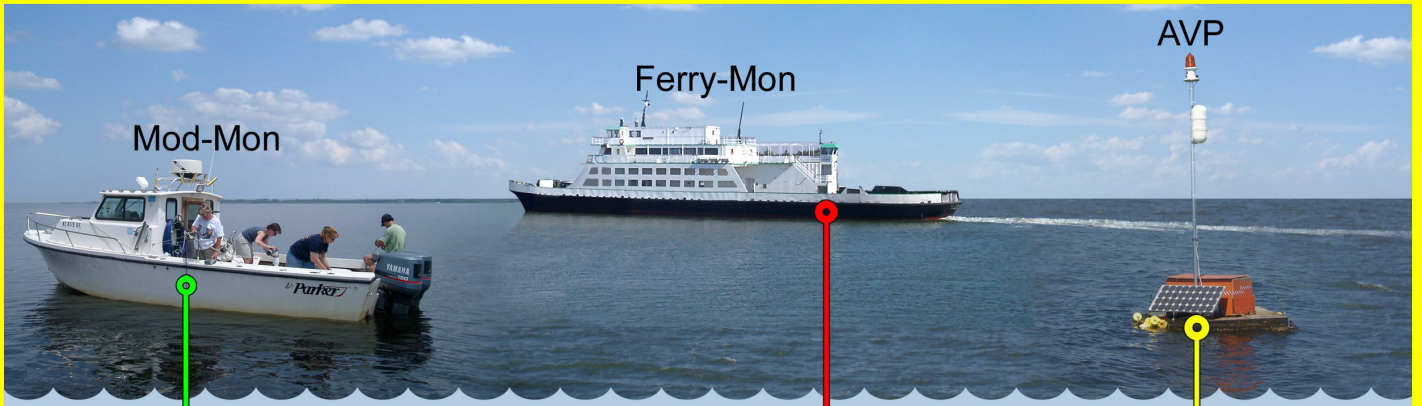


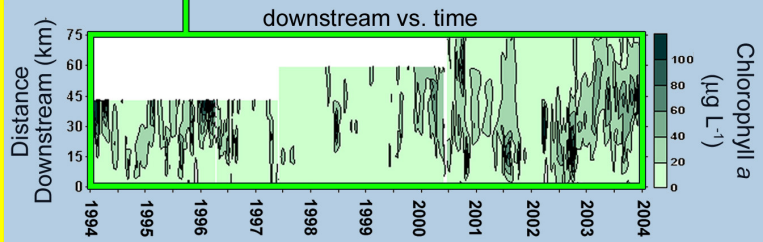
Valdes et al. 2006

Ecosystem Ramifications

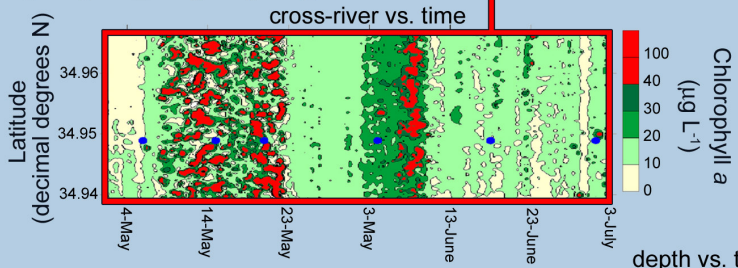


Scaling up indicators to the ecosystem

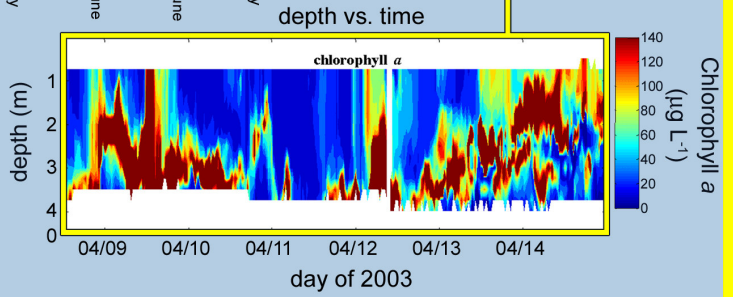




- ~ 5km spatial res.
- biweekly

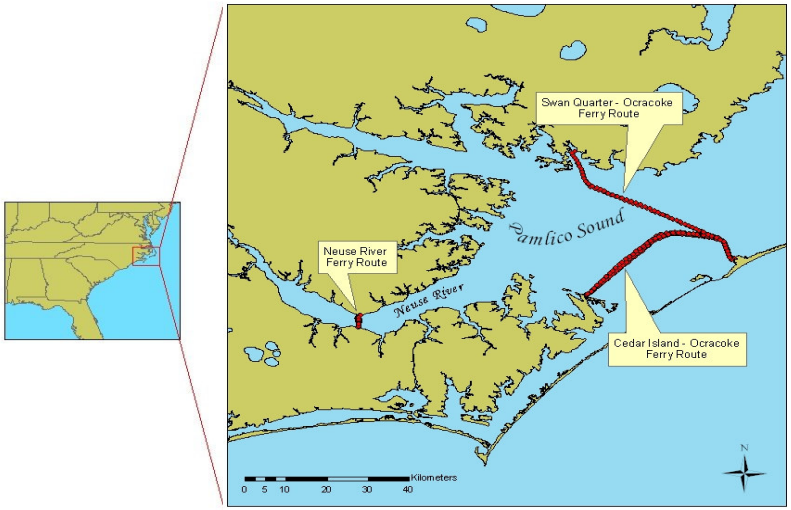


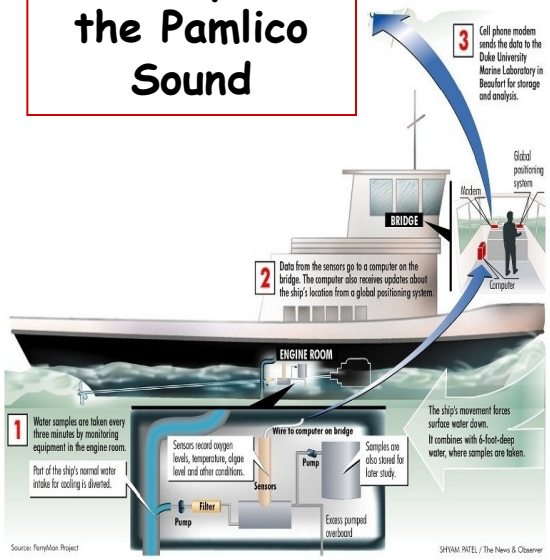
- ~ 0.25km spatial res.
- bihourly



- ~ 0.1km spatial res.
- bihourly

Using FerryMon to develop a WQ data base and scale up for the Pamlico Sound





Raw Data Sent via Modem to Duke Marine Lab
Raw Data Stored at DUML
Raw Data Text Files QA/QC'ed
QA/QC'ed Data added to Microsoft Access Database

Ferry Bridge Equipt
Date/Time
DGPS Latitude / Longitude
Data Modem / Data Logger

YSI sonde
in-situ Chla
Salinity
Temperature
Turbidity
pH, DO
Date/Time

ISCO discrete sampler
in-vivo Chla
Diagnostic Pigments
Nutrients
E. Coli / viruses
Date/Time