

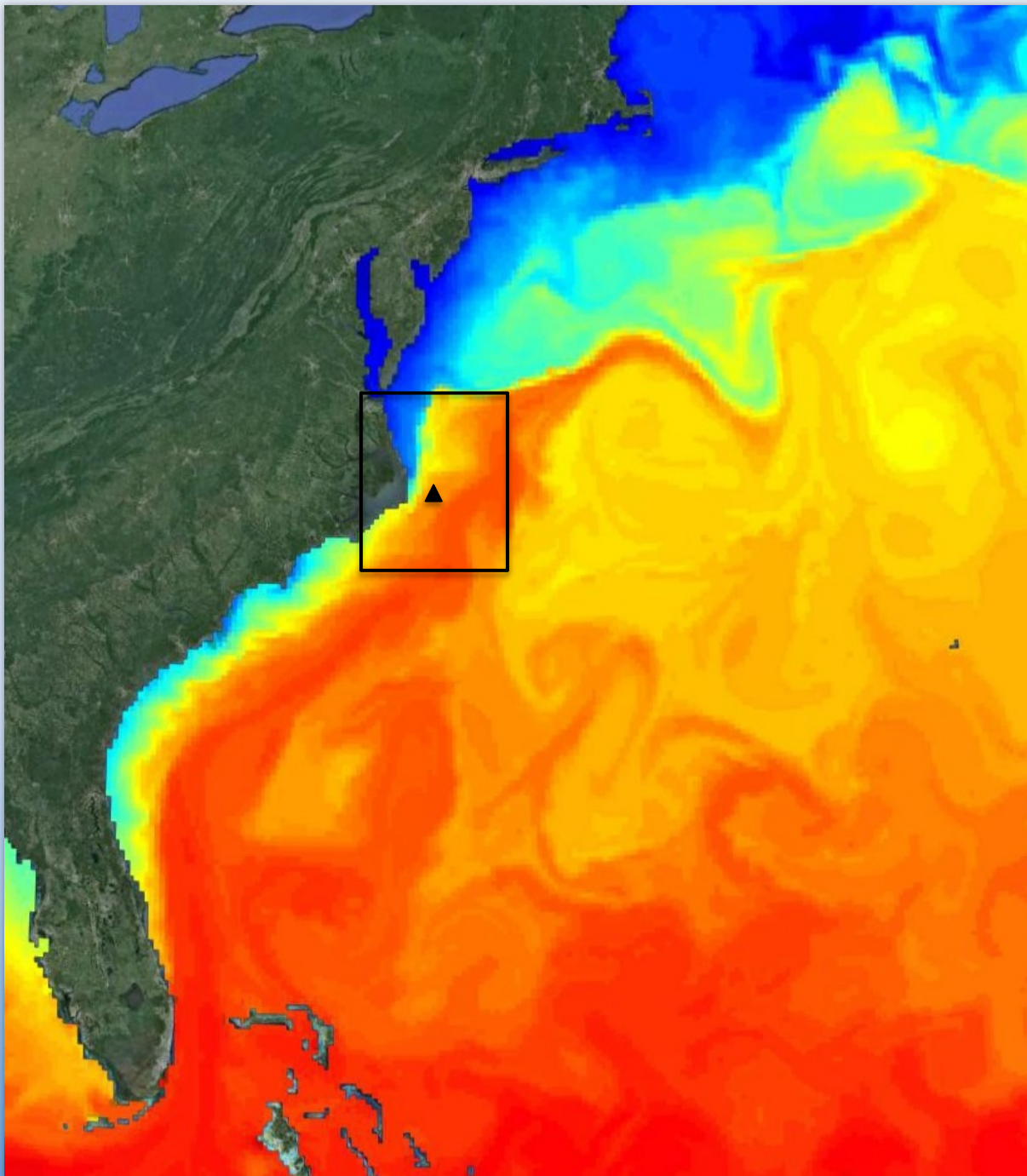
# Do foraging beaked whales and sperm whales target the Gulf Stream frontal edge off Cape Hatteras?

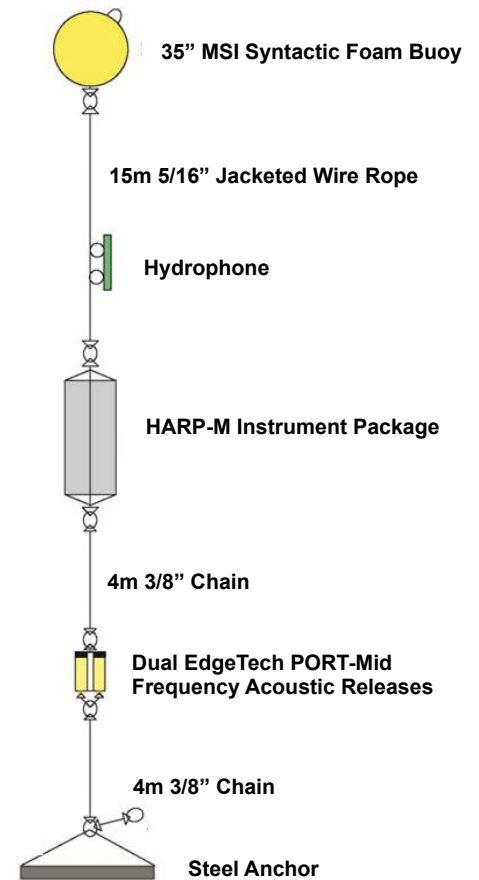
*Using long term passive acoustic monitoring to explore habitat associations*

Joy Stanistreet, Douglas Nowacek, James Hench, Lynne Hodge, Sofie Van Parijs, Joel Bell, & Andrew Read

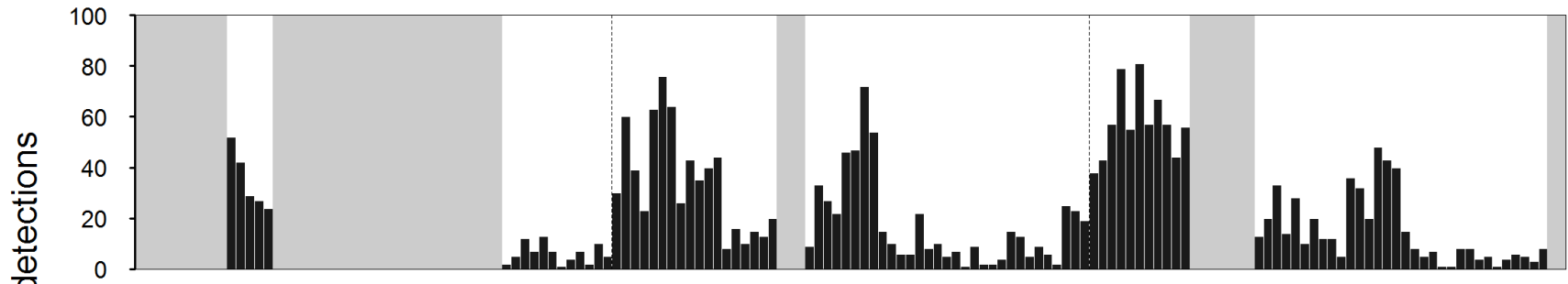
Duke | NICHOLAS SCHOOL OF THE ENVIRONMENT  
DUKE UNIVERSITY MARINE LAB



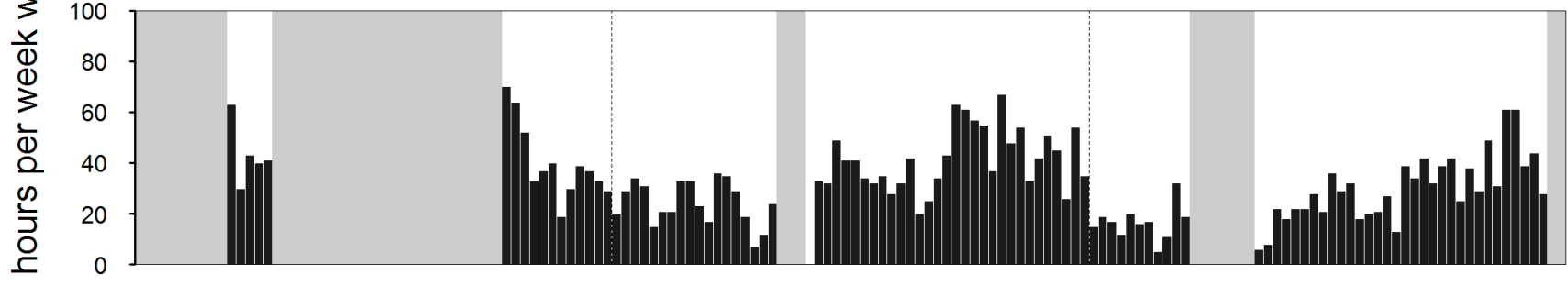




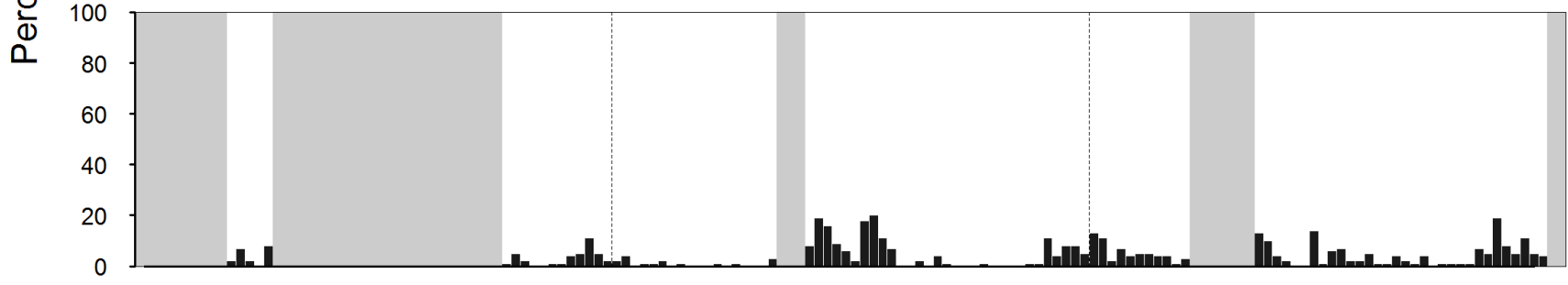
### Sperm whale



### Cuvier's beaked whale



### Gervais' beaked whale



J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D  
2012 2013 2014

# Coastal Circulation and Ecosystem Nowcast/Forecast System for the South Atlantic Bight and Gulf of Mexico

Marine Weather

Ocean Wave

Ocean Circulation

Marine Ecosystem

Model Validation

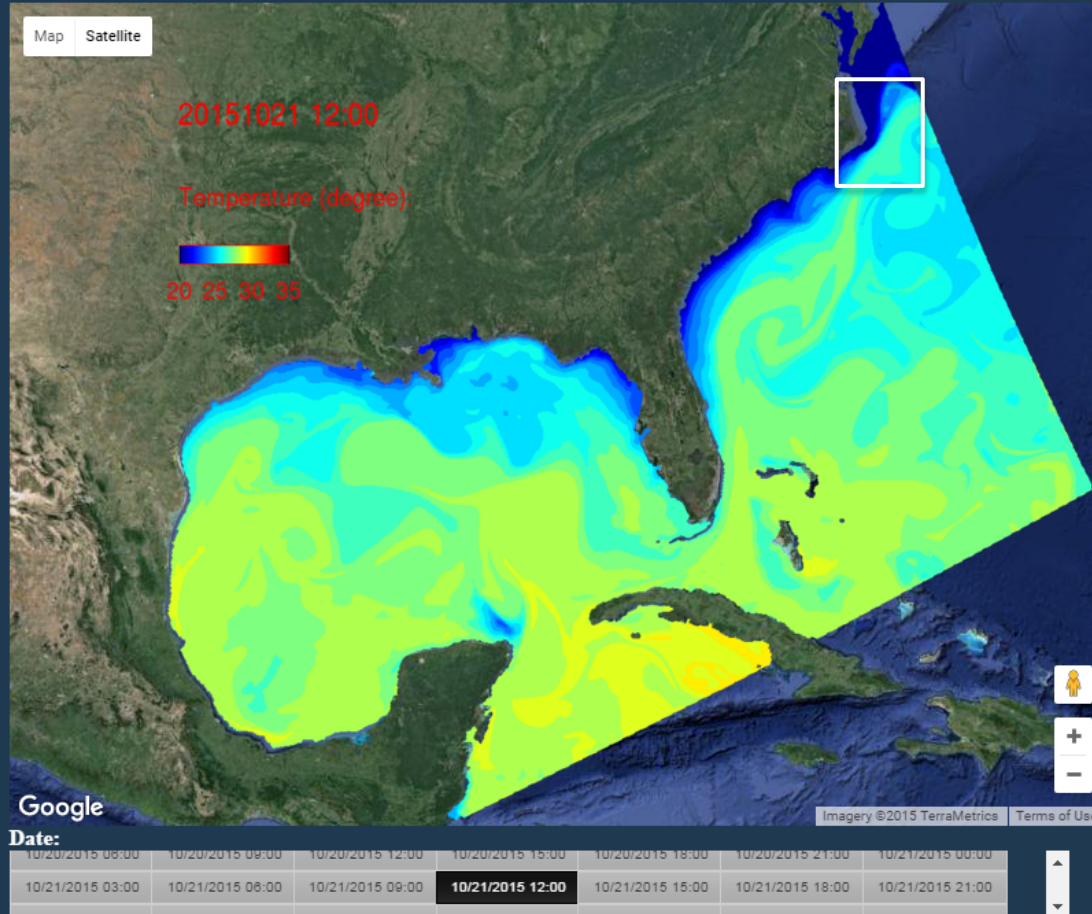
Ensemble

Tools/Data

Variables: **Temperature** Salinity Current

Depth:

- 0m
- 5m
- 10m
- 15m
- 20m
- 30m
- 40m
- 50m
- 75m
- 100m
- 125m
- 150m
- 200m
- 250m
- 300m
- 400m
- 500m
- 600m
- 800m
- 1000m
- 1200m
- 1500m
- 2000m

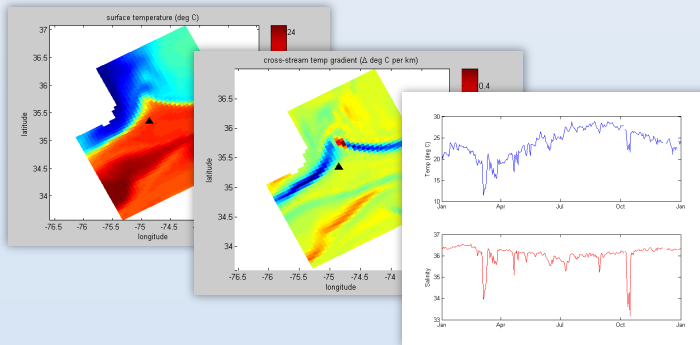


Xue et al. 2015. An integrated ocean circulation, wave, atmosphere, and marine ecosystem prediction system for the South Atlantic Bight and Gulf of Mexico. *Journal of Operational Oceanography* 8(1).

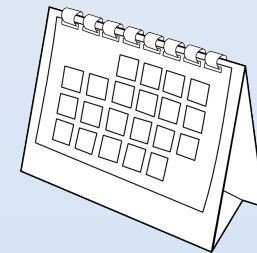
## Environmental covariates

Gulf Stream position relative to HARP

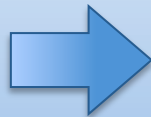
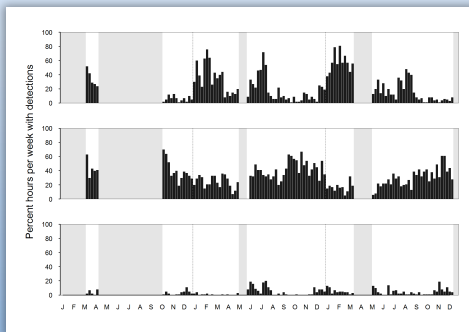
Distance to front



Temporal index  
Month (factor)



Species occurrence  
Acoustic detections



GEE – GAM Model

Work in progress...