

Impact of Climate Variability and Change on Marine Ecosystems

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PSD Support of NOAA Fisheries

- Provide climate observations and model data to users: e.g. NOAA Fisheries, Decision Makers, Stakeholders
 - Climate Change Web Portal (Jamie Scott's poster)
- Guidance on using climate change information in conservation decisions
 - Managing fisheries
 - Listing marine species as threatened or endangered
 - Methodology in: *McClure et al. 2013 and Snover et al. 2013, both in Conservation Biology*
- Research Projects:
 - Climate change impact on fish populations
 - SST Prediction in Large Marine Ecosystems

Atlantic Croaker



Cusk

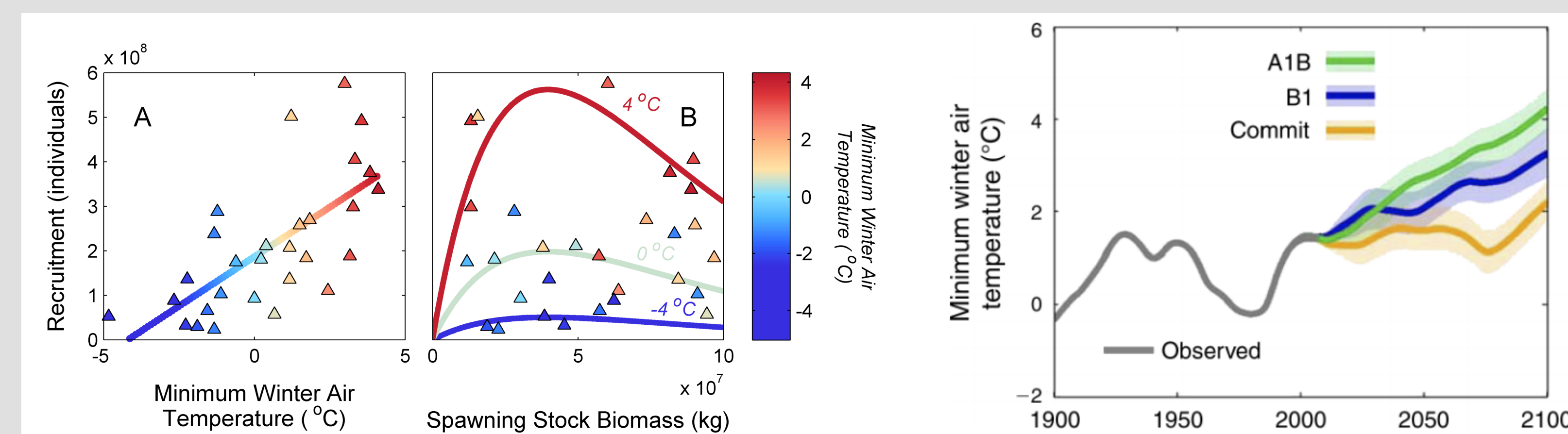


River Herring



Atlantic Croaker

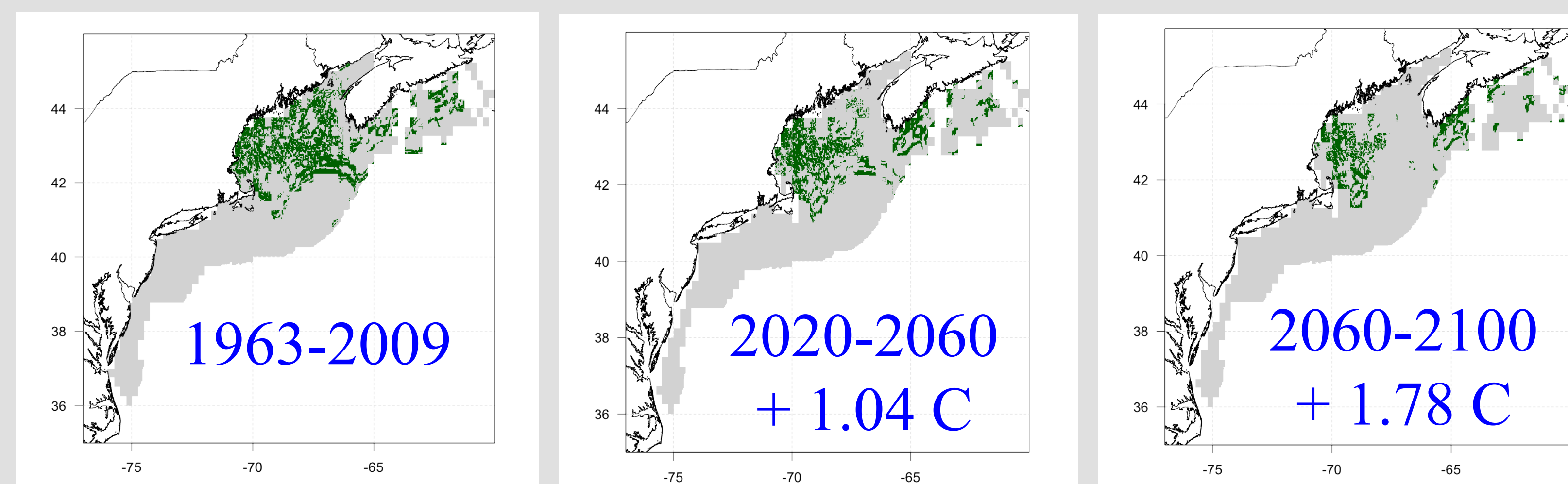
- East coast sport & commercial fishery
- Survival of juveniles increases with temperature
- Range expands north from Chesapeake Bay



Cusk

- Population decreased rapidly over the last 20 years
- Consider listing species as threatened or endangered
- Needs cold water and rocky bottom
- Warming causes habitat to shrink and fragment

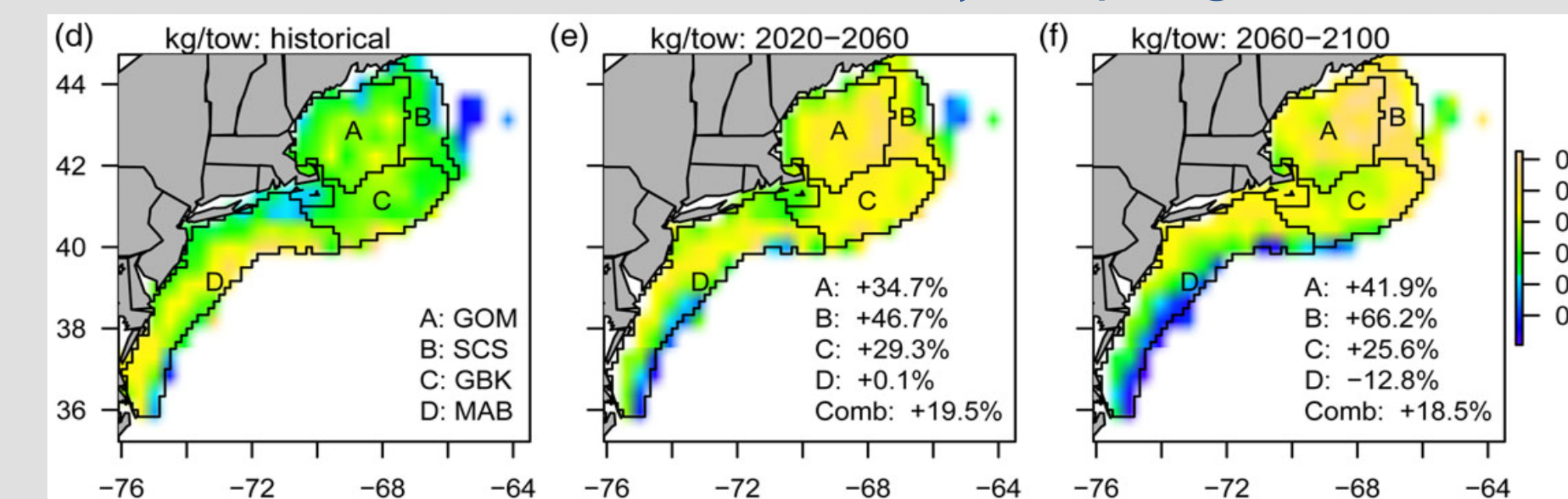
Cusk Simulated Potential Habitat Nov-Dec



River Herring (Alewife and Blueback)

- Population decreased rapidly in the 1970s
- NOAA established a recovery plan in 2013
- Warming causes northward shift spring & fall; large decrease in fall

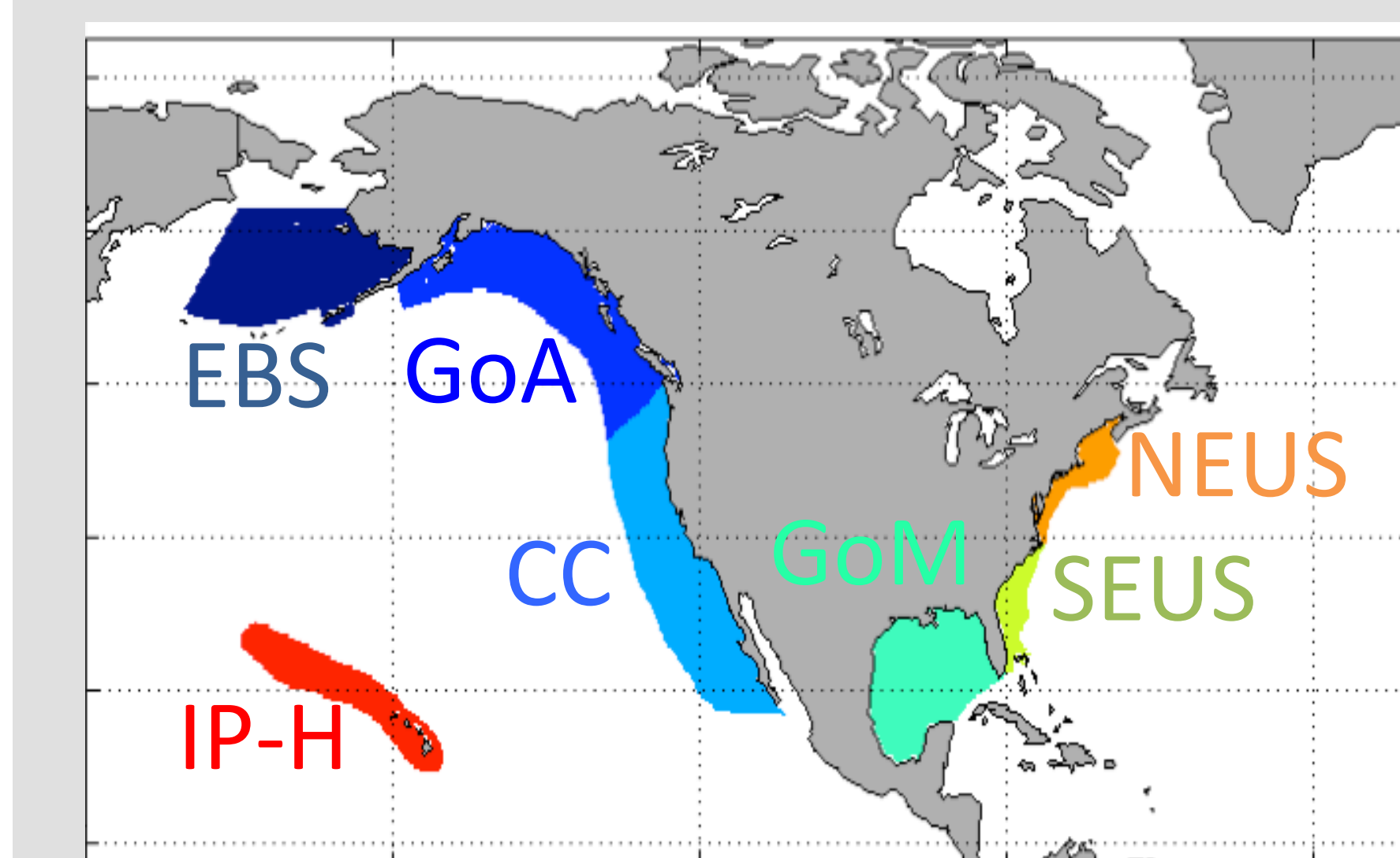
Model Alewife Density in Spring



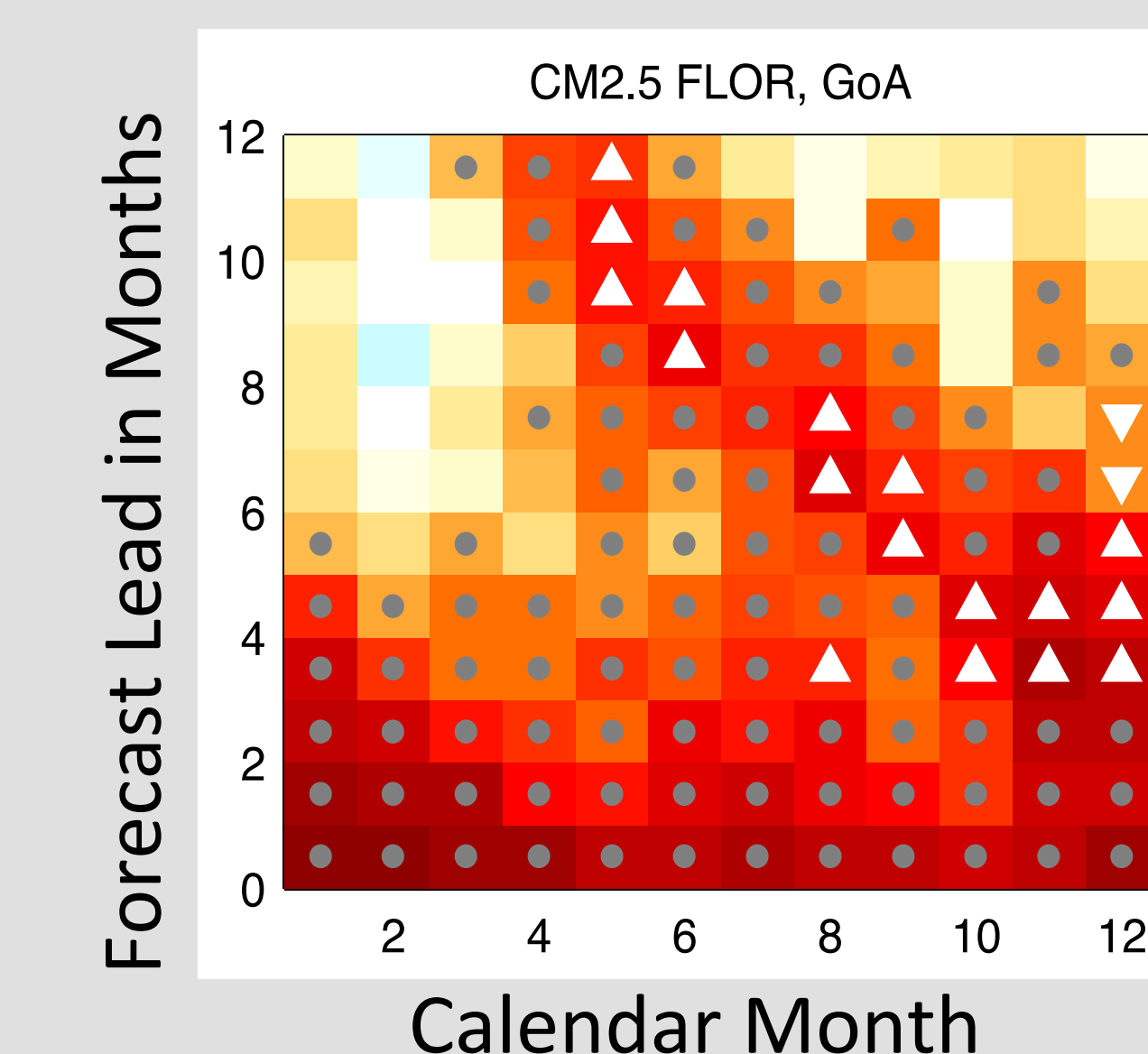
SST Prediction for Coastal Ecosystems

- Forecast skill of NOAA climate models (CFS, FLOR)

US Large Marine Ecosystems



SST LME Forecast Skill Gulf of Alaska



Anomaly correlations