

Quantifying Florida Bay habitat suitability for fishes under climate change scenarios

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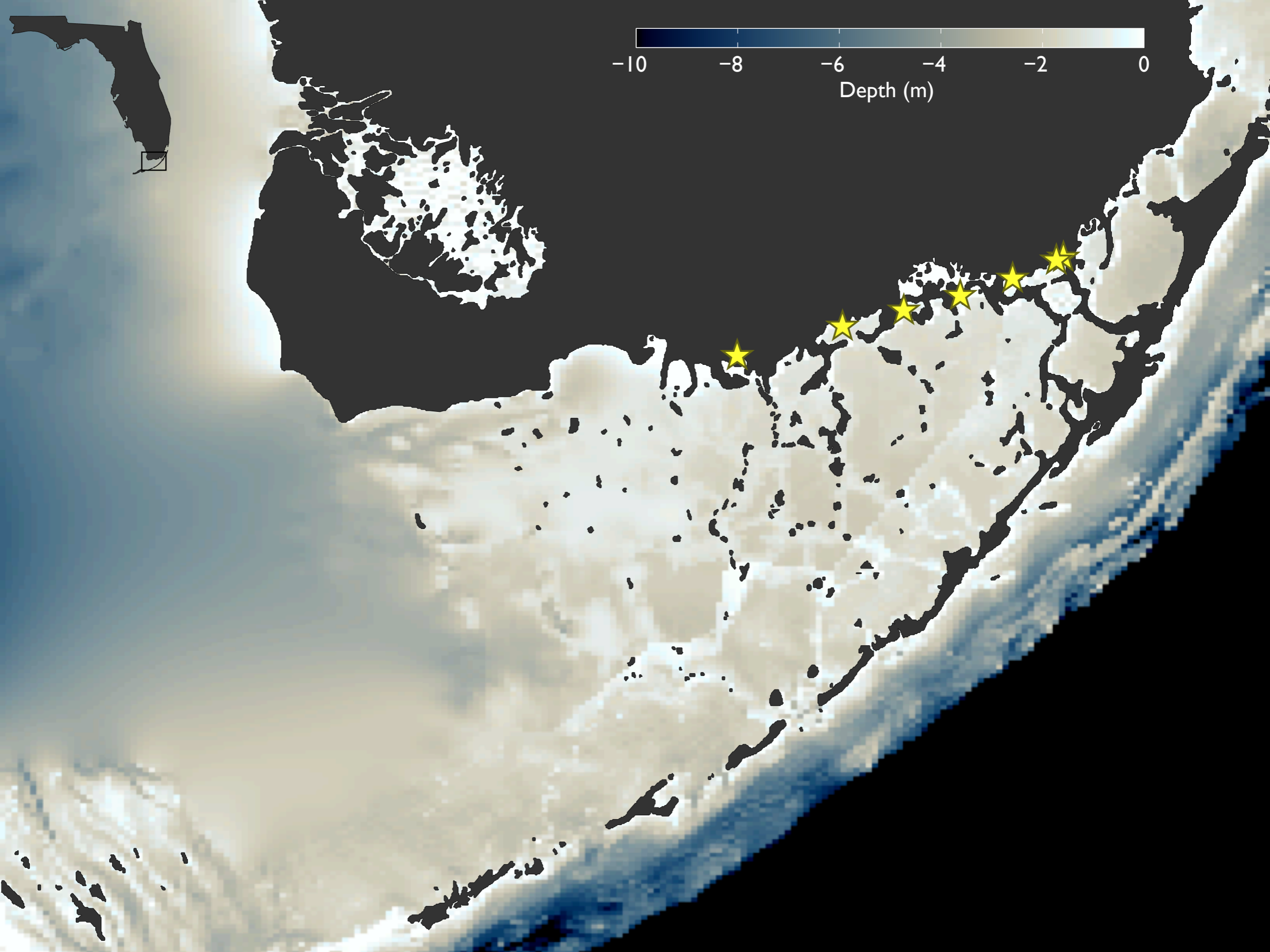
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K.A. Kearney, M. Butler, R. Glazer, C. Kelble, J. E. Serafy, and E. Stabenau, "Quantifying Florida Bay habitat suitability for fishes and invertebrates under climate change scenarios," *Environ. Manage.*

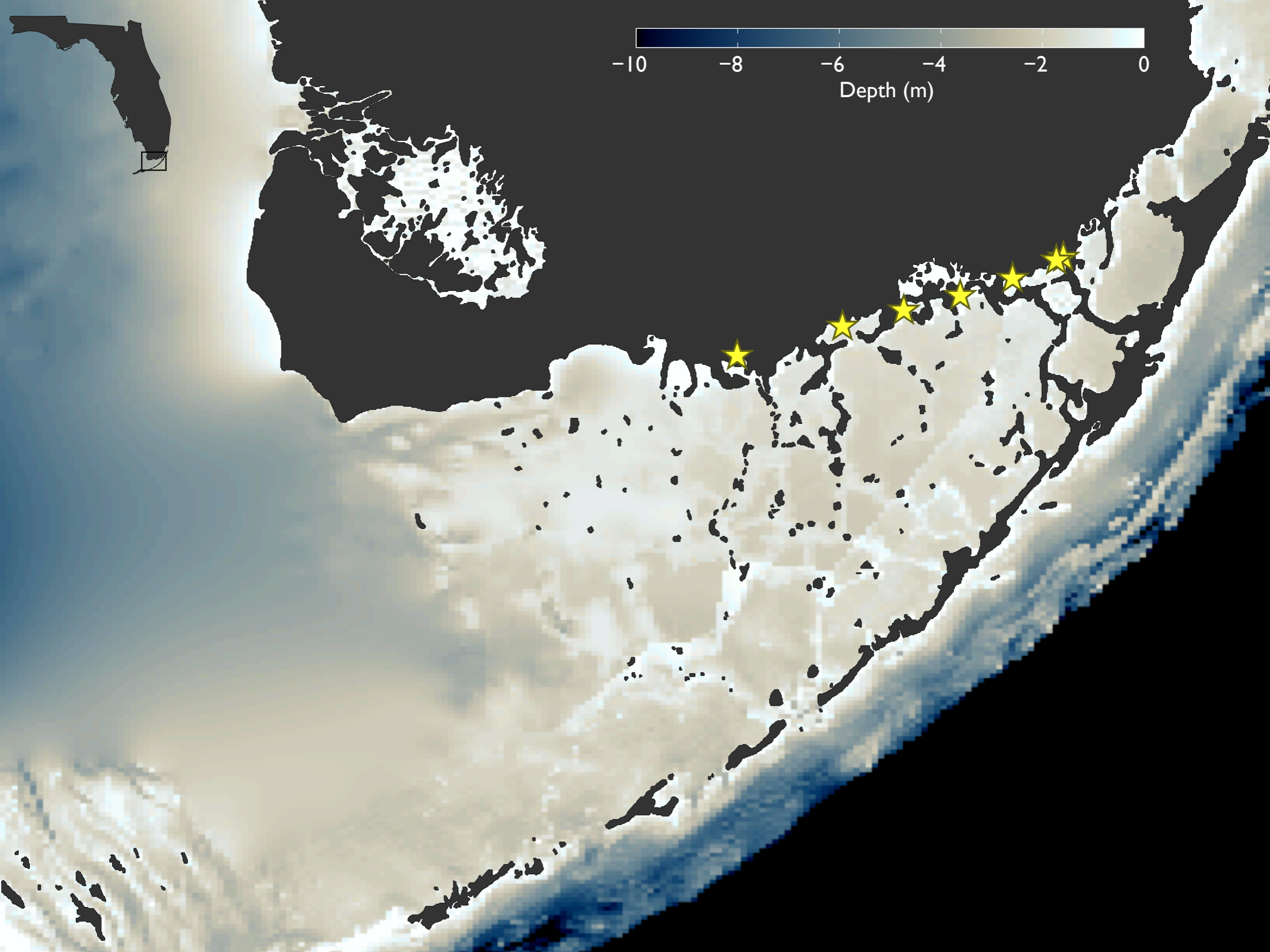


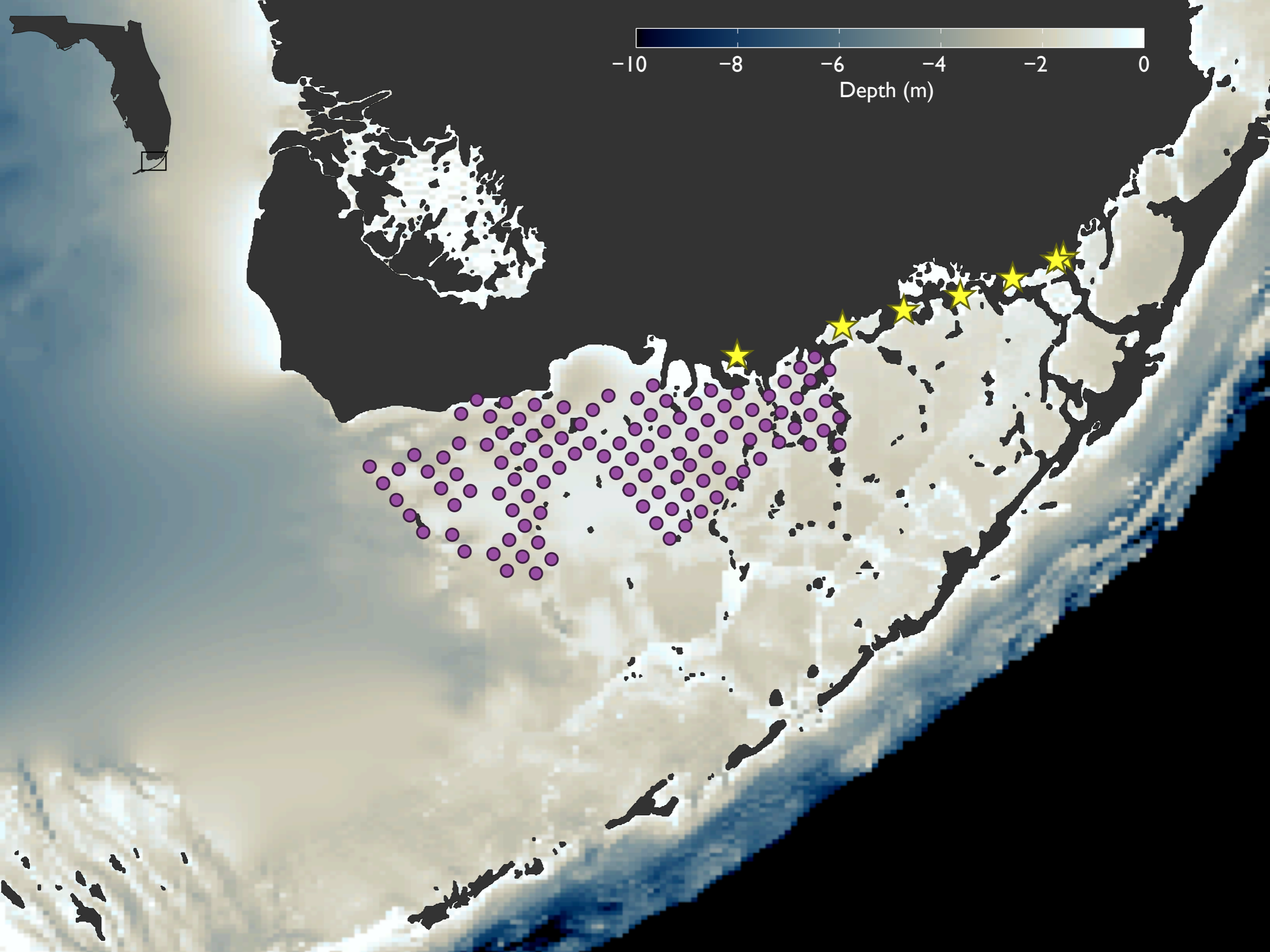
How might changes in sea level, precipitation, and temperature affect fish habitat?

1. Quantify the quality of habitat for fishes based on temperature and salinity.
2. Simulate the physical changes (temperature, salinity) on Florida Bay under each climate scenario.
3. Combine.

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Which fish?

Spotted seatrout



Gray snapper



Goldspotted killifish



Rainwater killifish



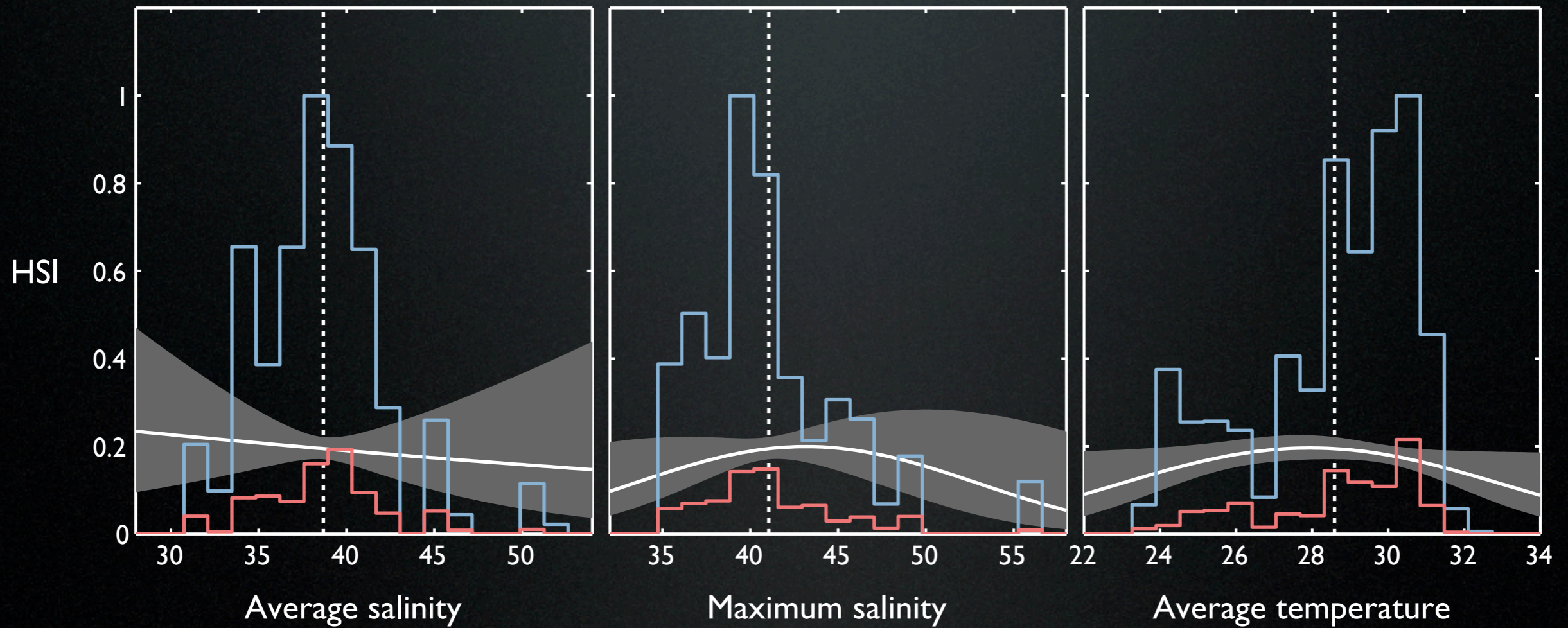
Mojarra



Pinfish

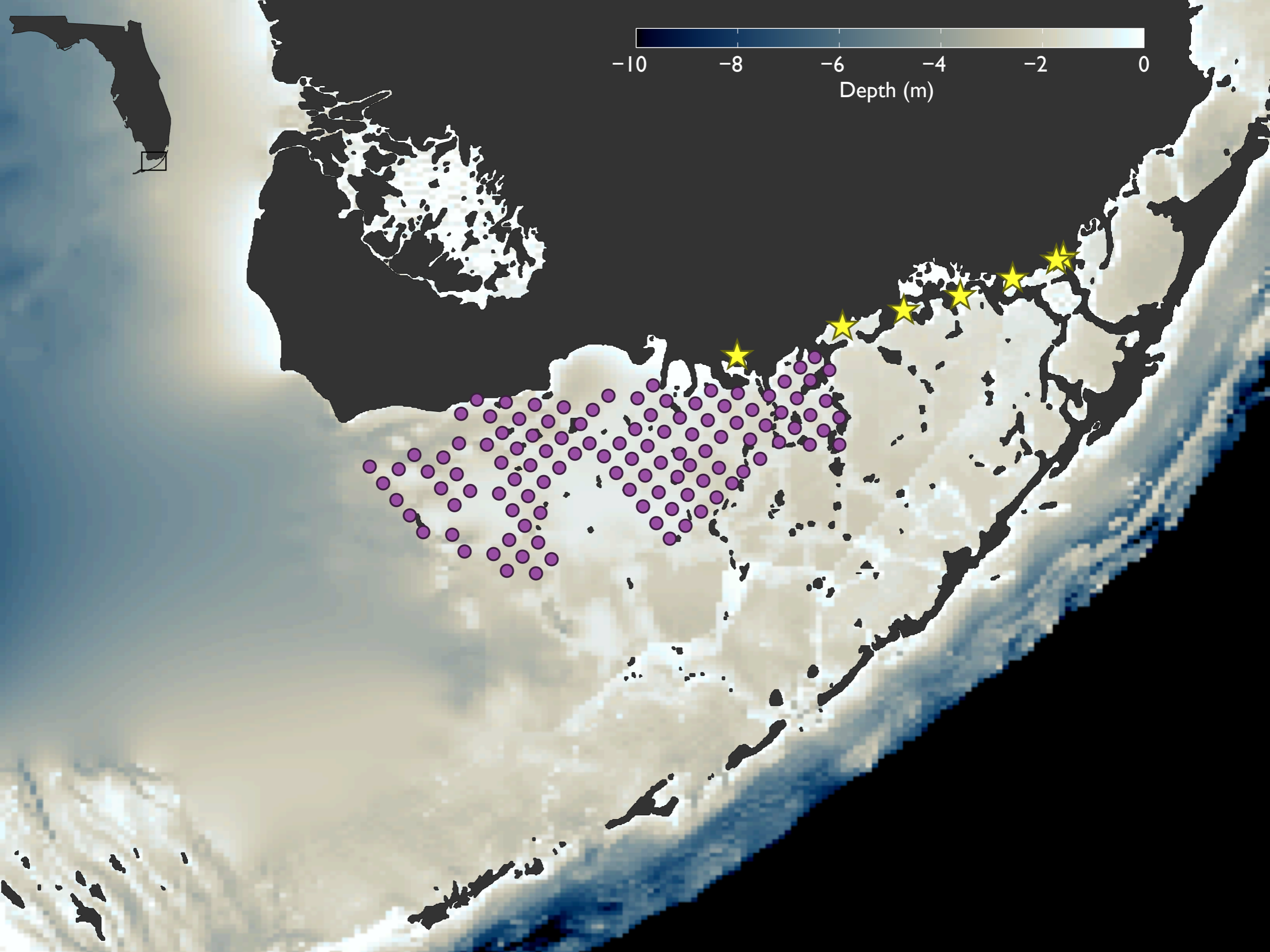


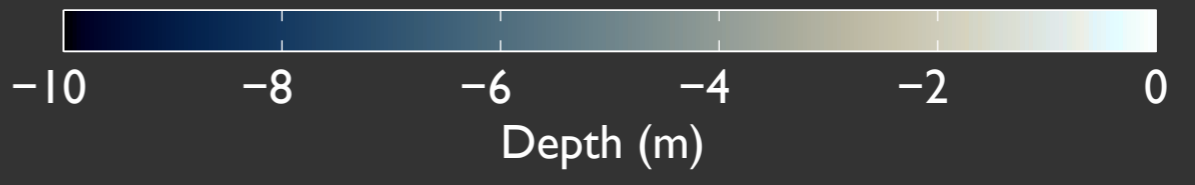
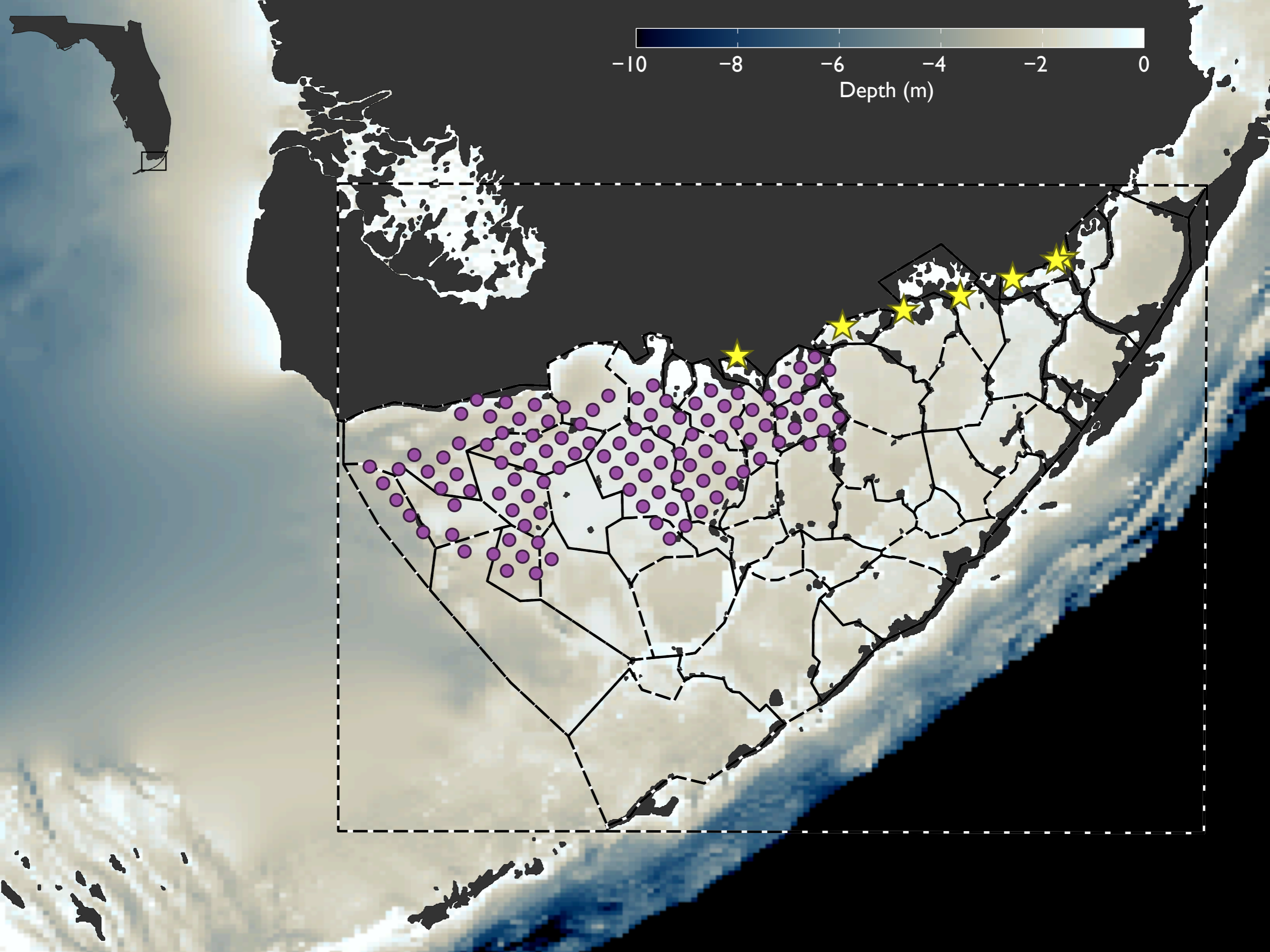
Logistic regression HSI model for gray snapper

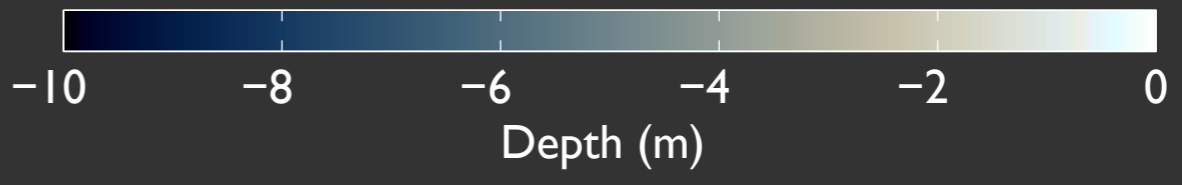
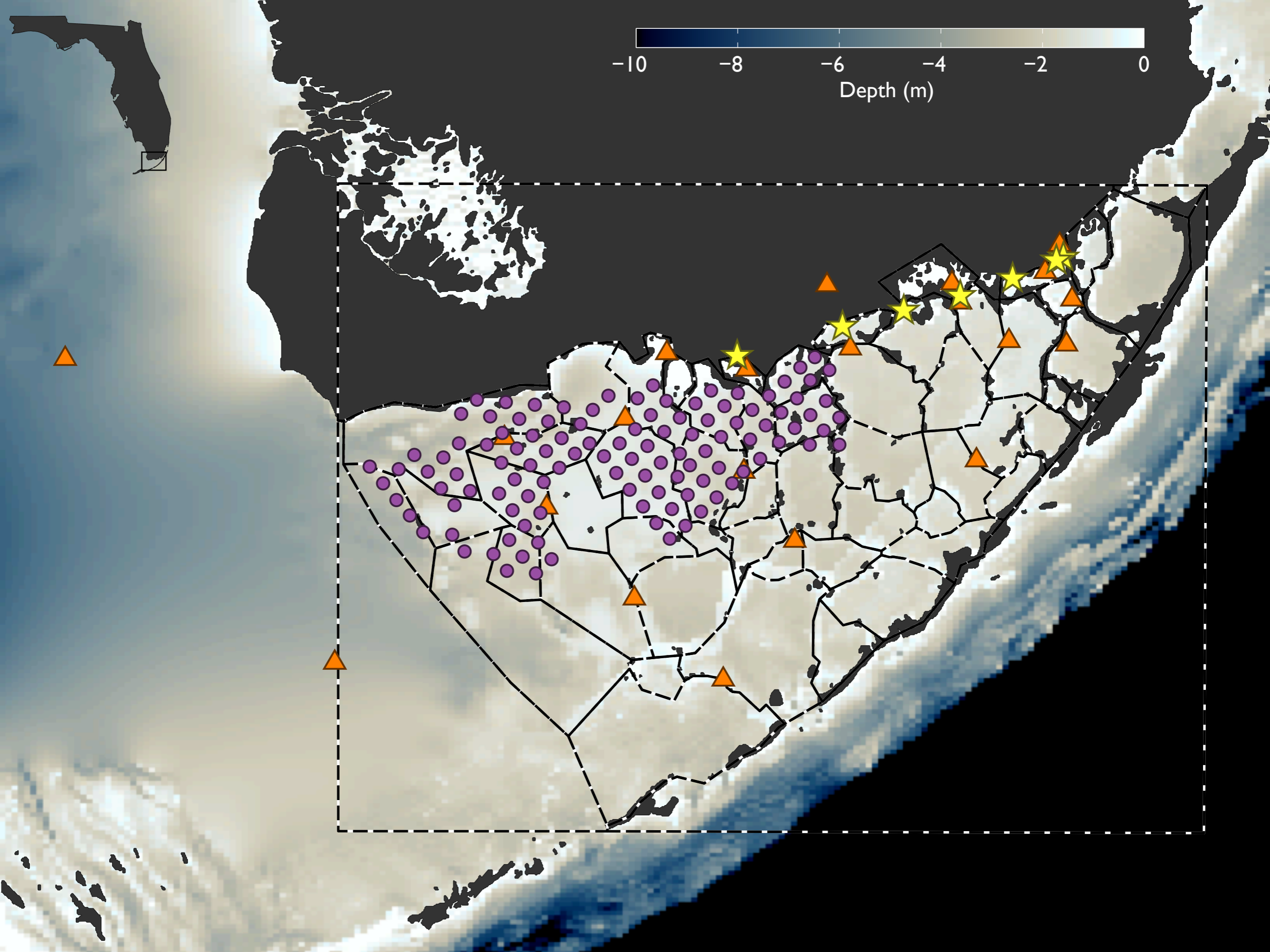


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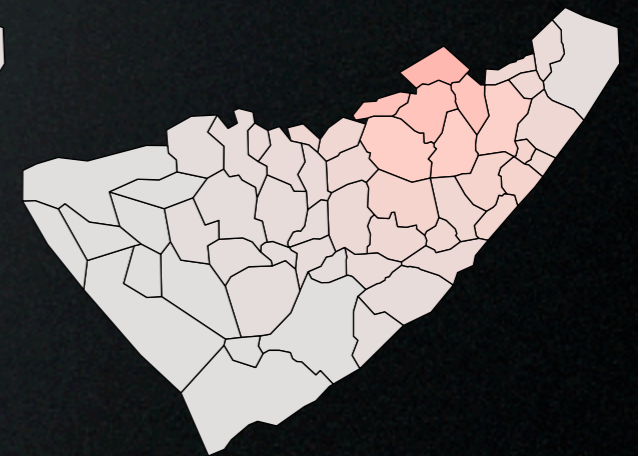
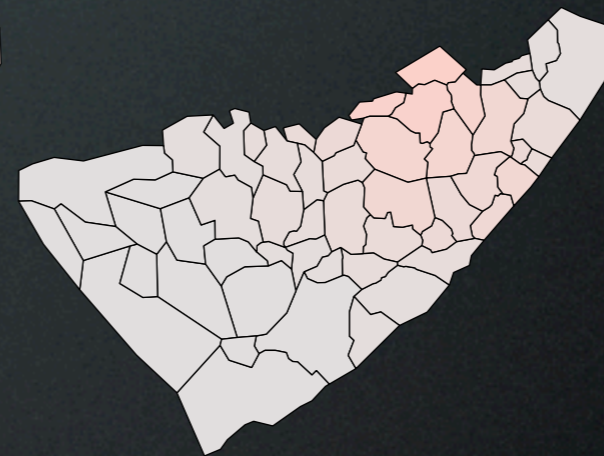
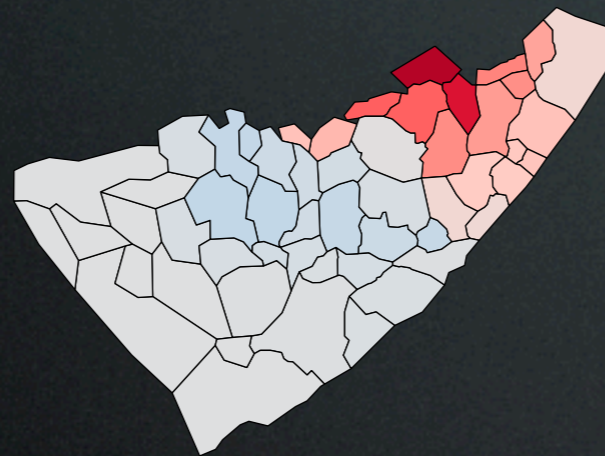
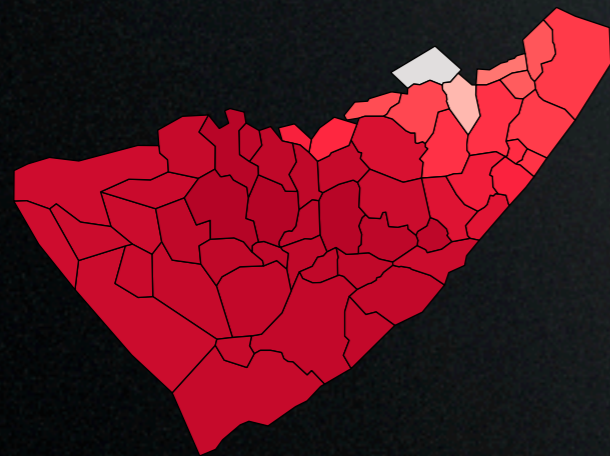
How does each scenario variable alter salinity?

Baseline

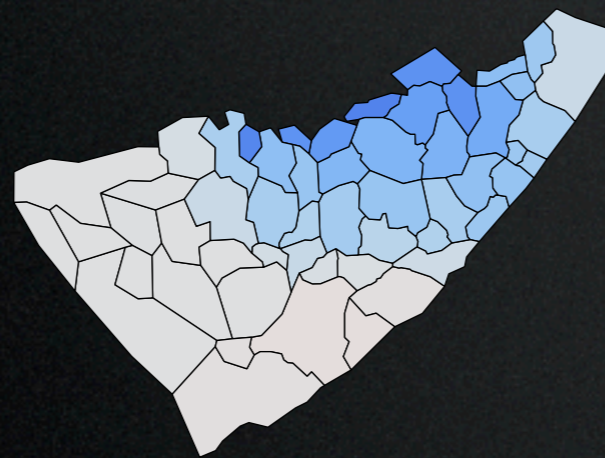
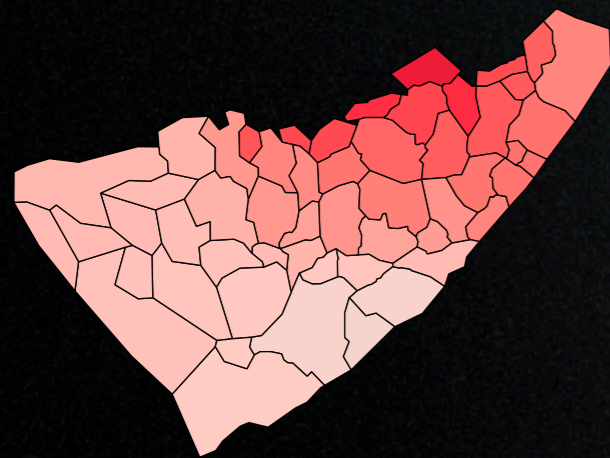
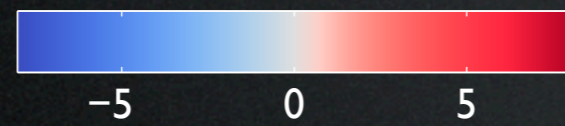
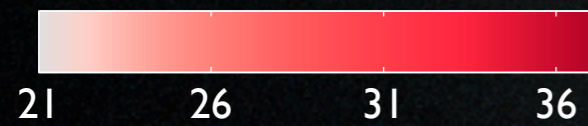
Increased sea level

Increased evaporation

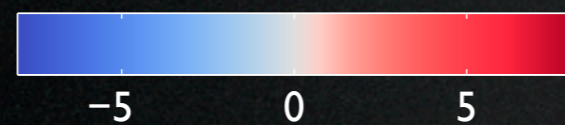
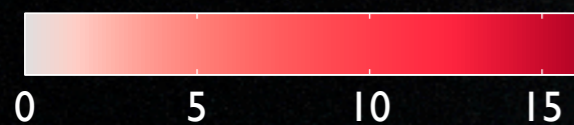
Decreased rainfall



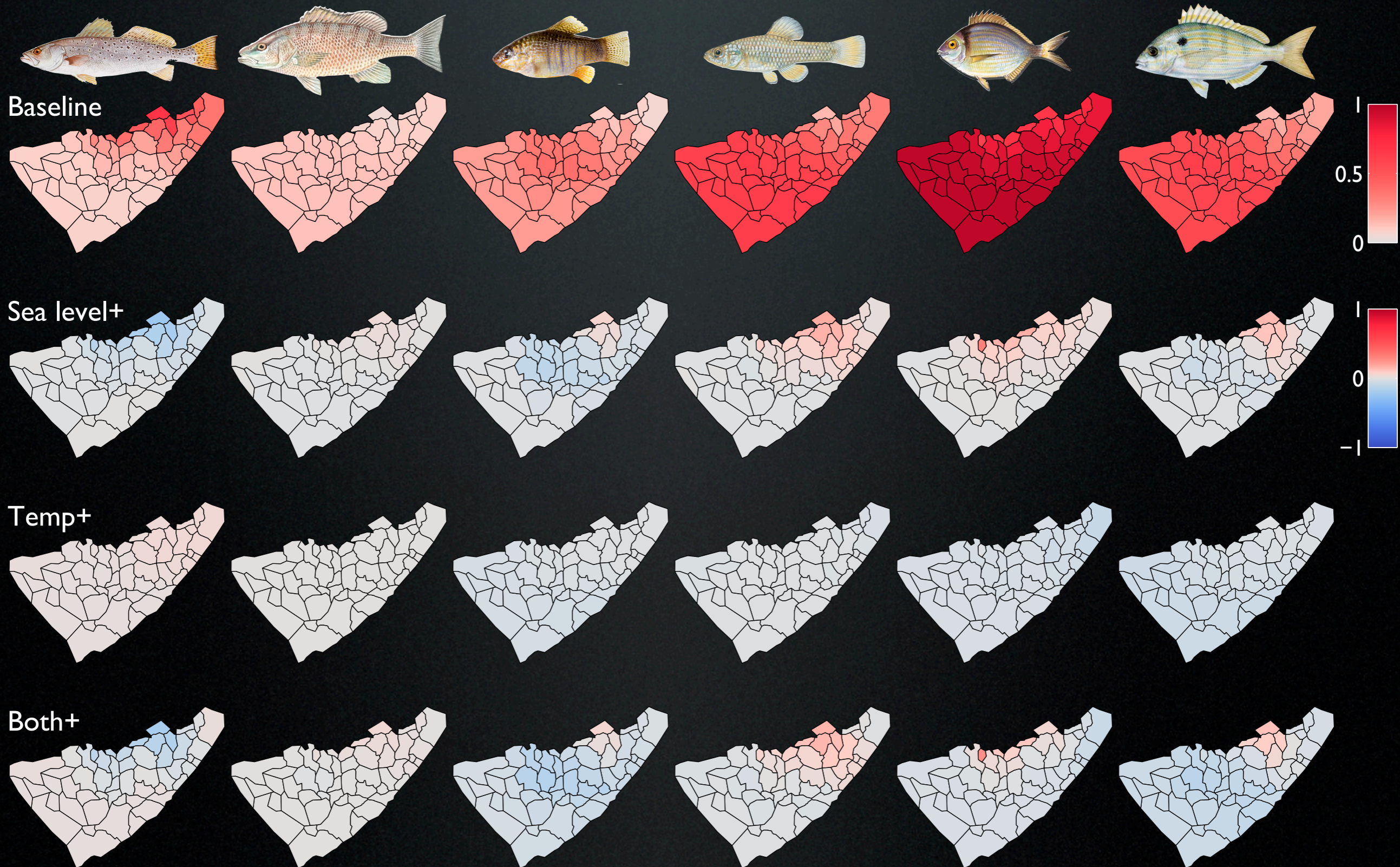
Mean



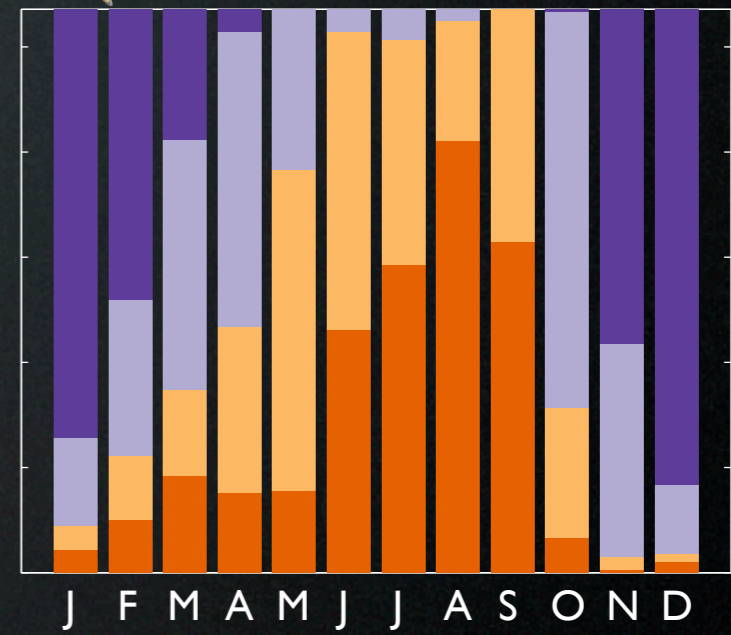
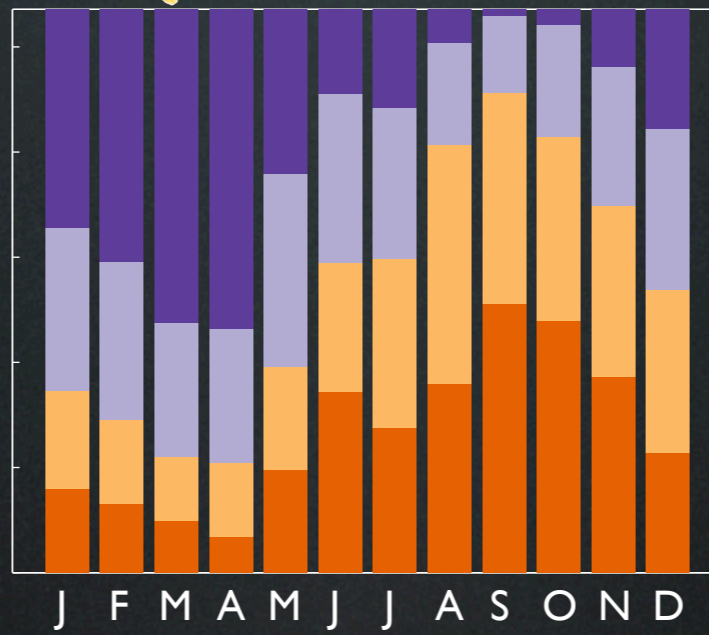
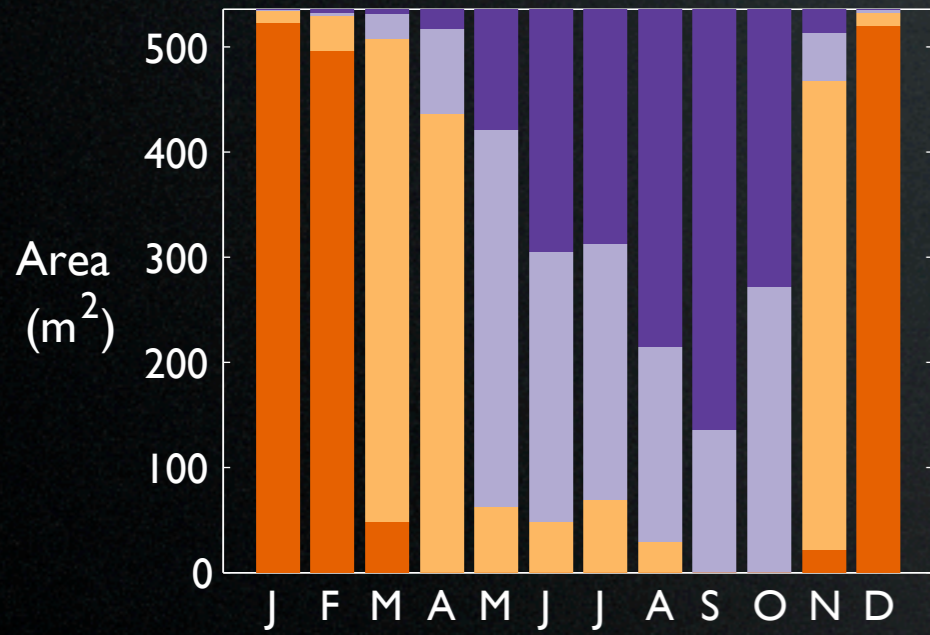
Standard deviation



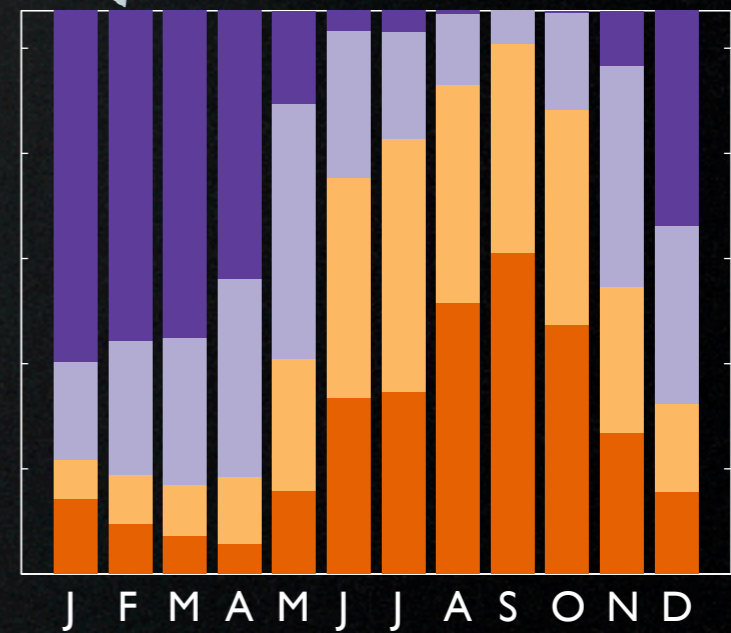
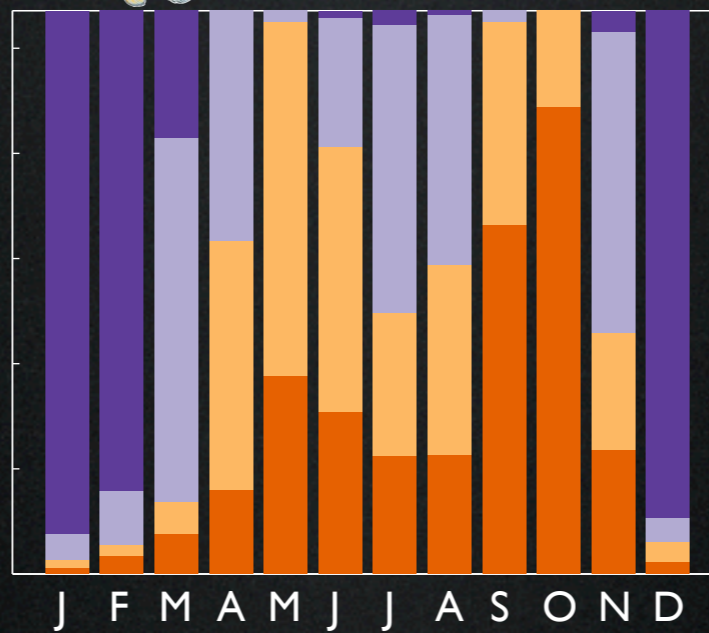
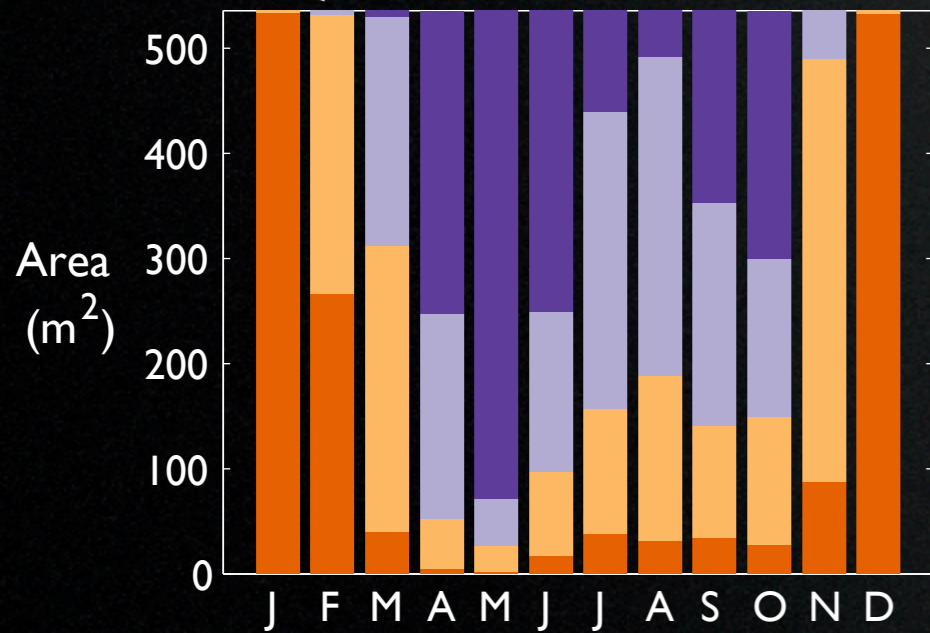
How do HSIs change under each scenario?



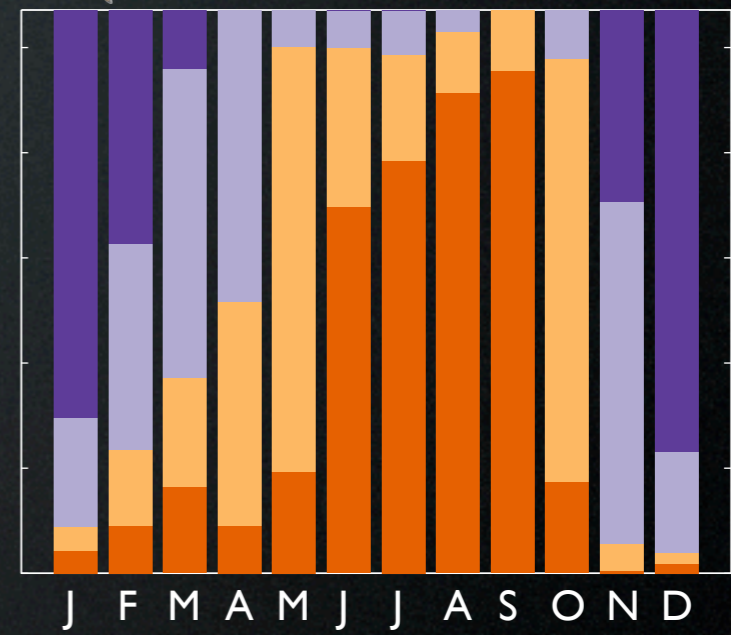
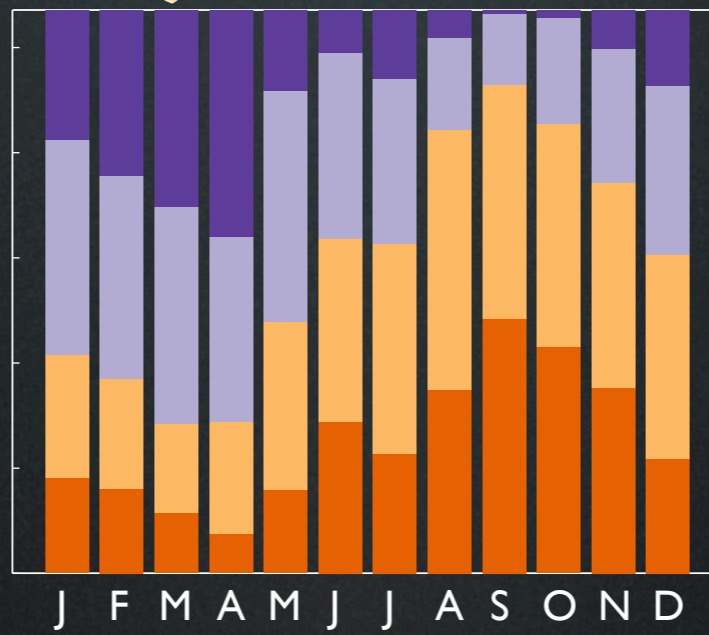
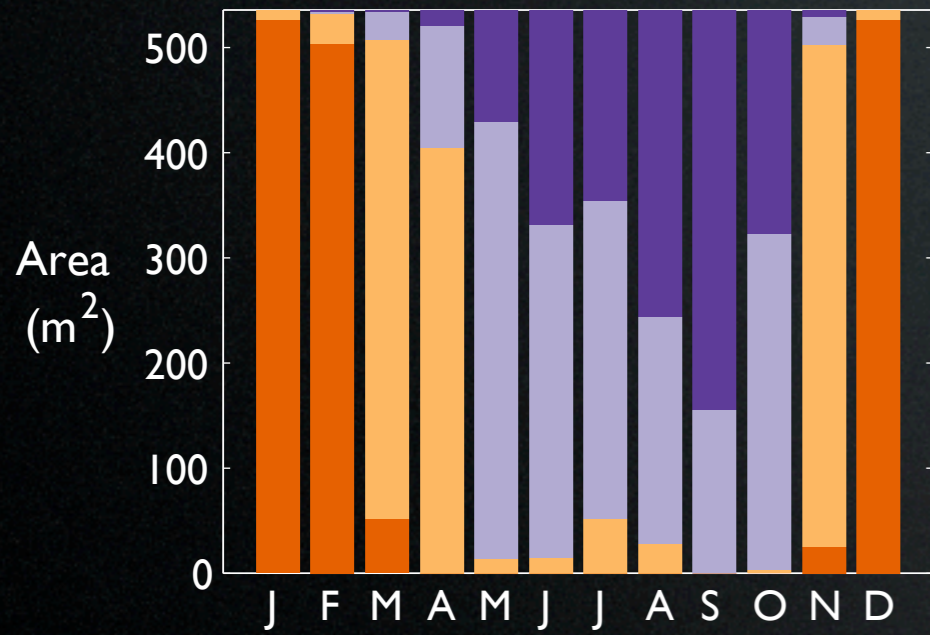
Are there seasonal changes in habitat quality?



Best
Base
Worst



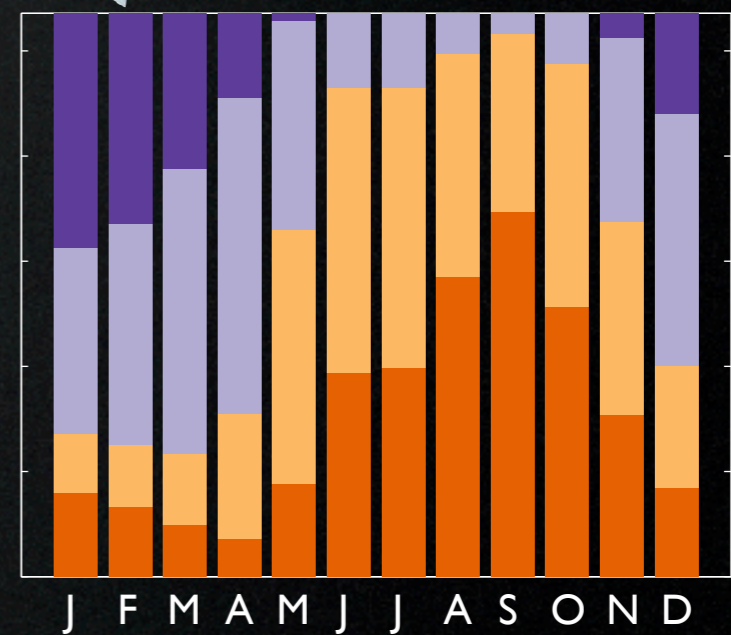
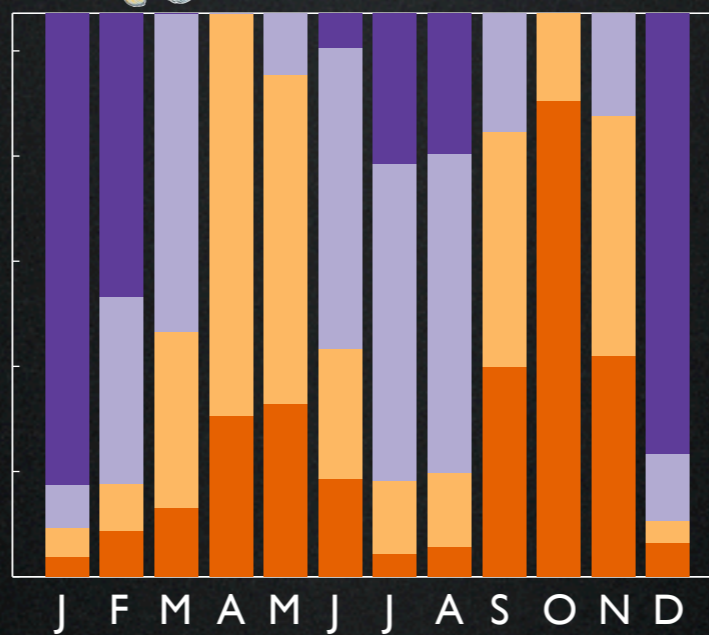
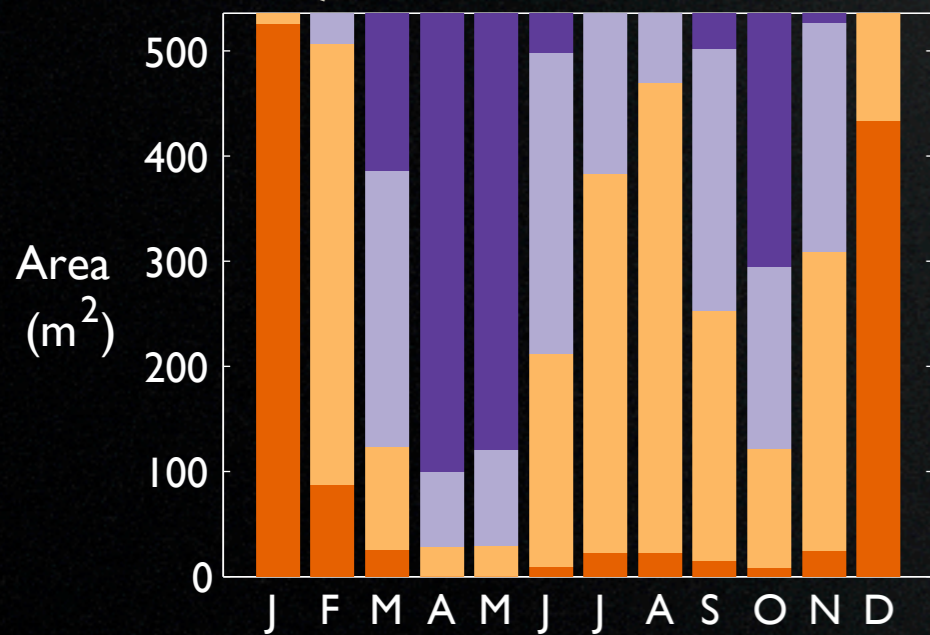
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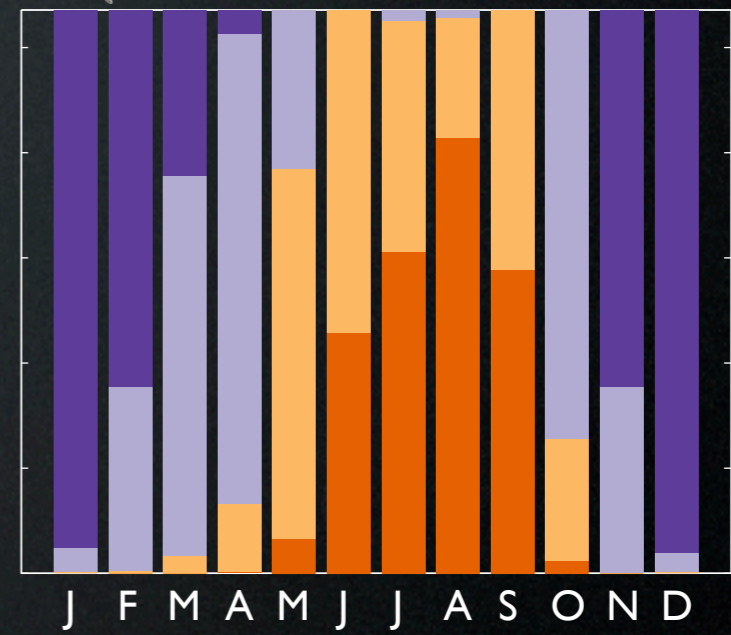
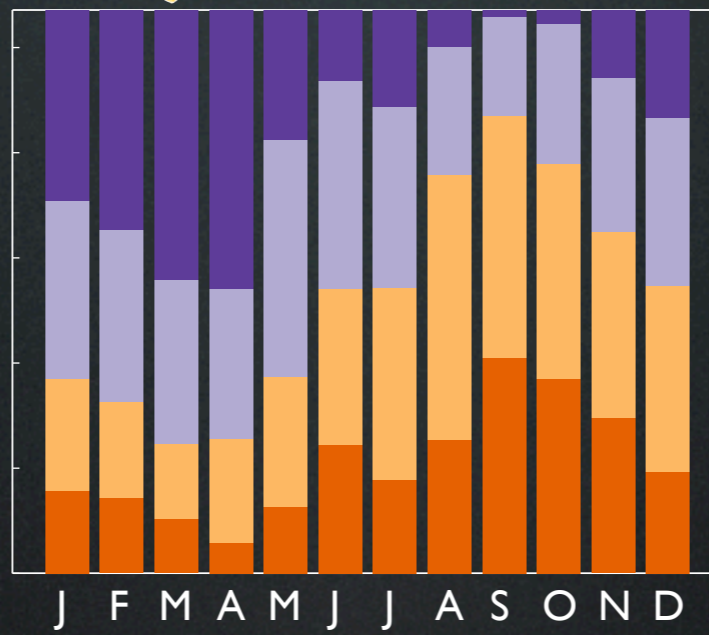
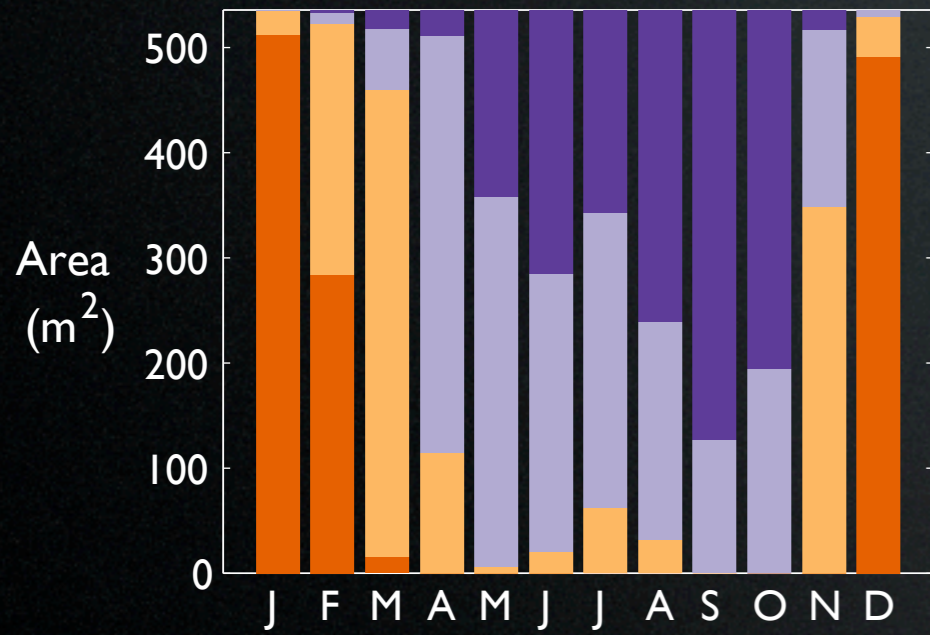
Best

Base

Worst



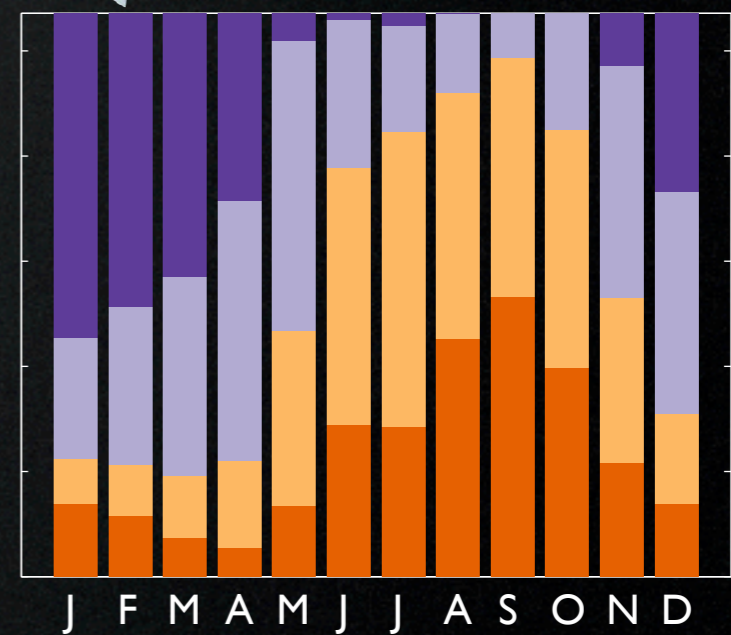
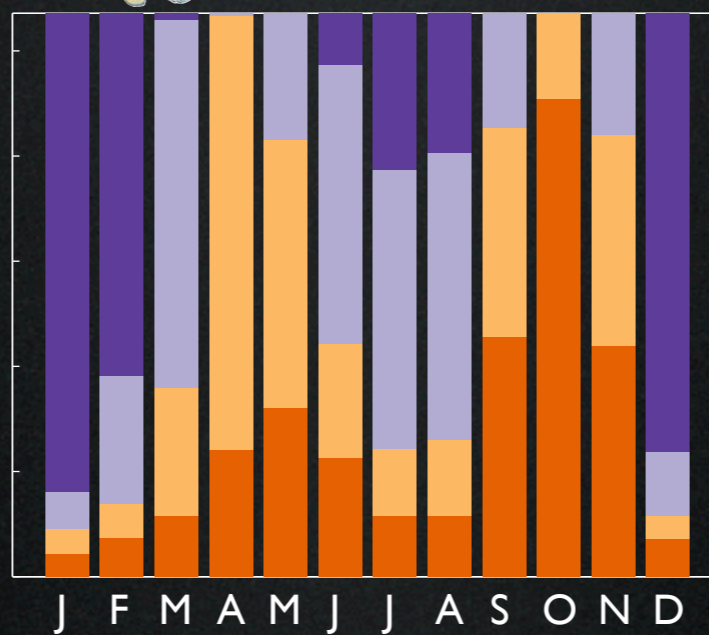
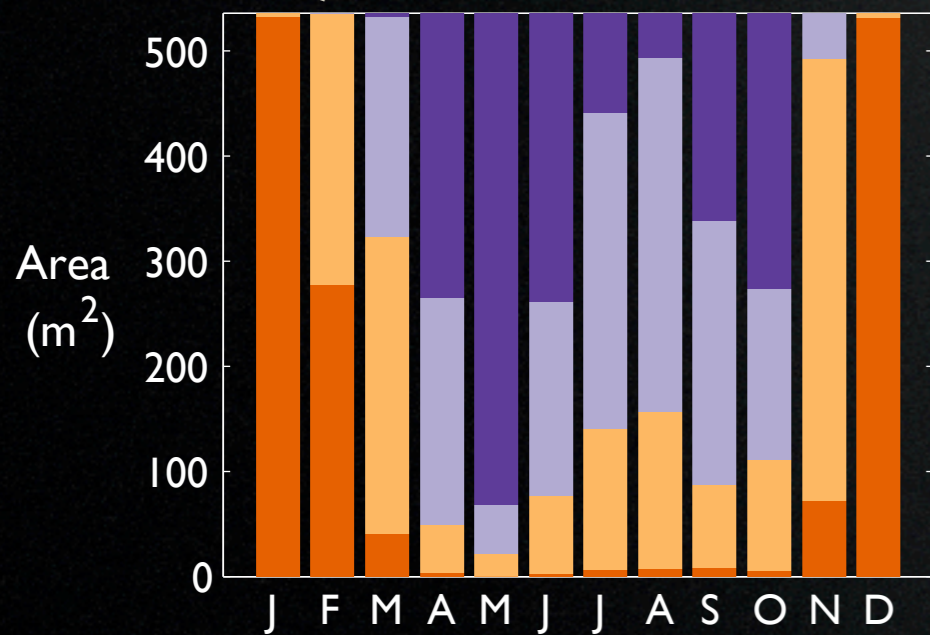
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Best

Base

Worst



Conclusions and future work

- The primary affect of these climate scenarios is to decrease both spatial and temporal salinity variability throughout the bay.
- The changes is the western bay are relatively small.
- Juvenile sportfish see little change in yearly-averaged habitat quality.
- The small changes may expand recruitment periods for some fishes.

- Add seagrass cover to HSI models
- Expand scenarios to include Everglades Restoration.