

## Quantifying Florida Bay habitat suitability under climate change scenarios

Presenter: Kelly Kearney (CIMAS/AOML)

A preliminary study that used a combination of physical models (FATHOM) and habitat suitability index models (logistic generalized linear models) is used to quantify the effects of potential climate change scenarios on a variety of juvenile fish species in Florida Bay. The climate scenarios include alterations in sea level, evaporation and precipitation rates, coastal runoff, and water temperature. The results show that the changes in habitat vary in both magnitude and direction across the scenarios and species, but are on average small. Only one of the seven species investigated (*Lagodon rhomboides*, i.e. pinfish) sees a sizable decrease in optimal habitat under any of the scenarios. This suggests that the estuarine fauna of Florida Bay may not be as vulnerable to climate change as other components of the ecosystem, such as those in the marine/terrestrial ecotone. We are now in the process of expanding this study. The new habitat suitability index models will incorporate the effect of seagrass coverage, in addition to the existing temperature and salinity variables, on habitat quality, and we are expanding our physical scenarios to include Everglades Restoration effects as well as climate change effects.

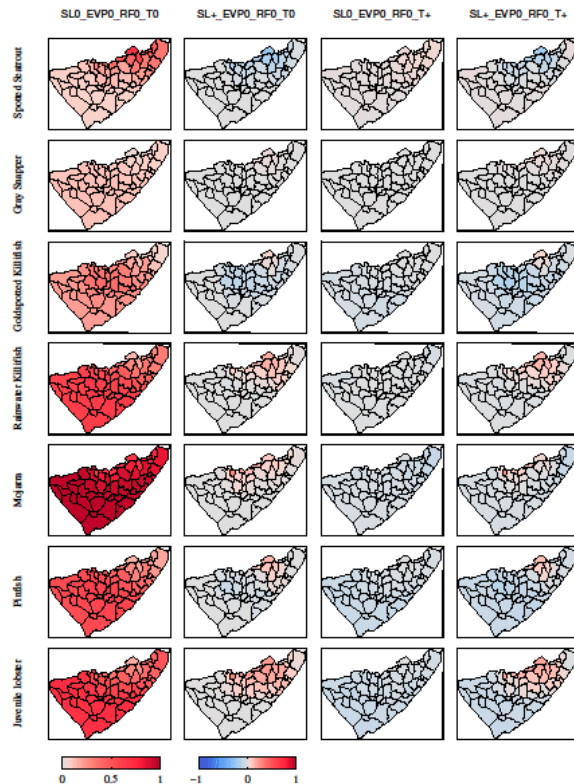


Figure: Change in spatial distribution of annual-mean HSI values for each target fish. The first column of plots shows the mean HSI values in each basin under the baseline conditions. Columns two, three, and four show the change between the baseline scenario and the increased sea level only, increased temperature only, and increased sea level and temperature scenarios, respectively.