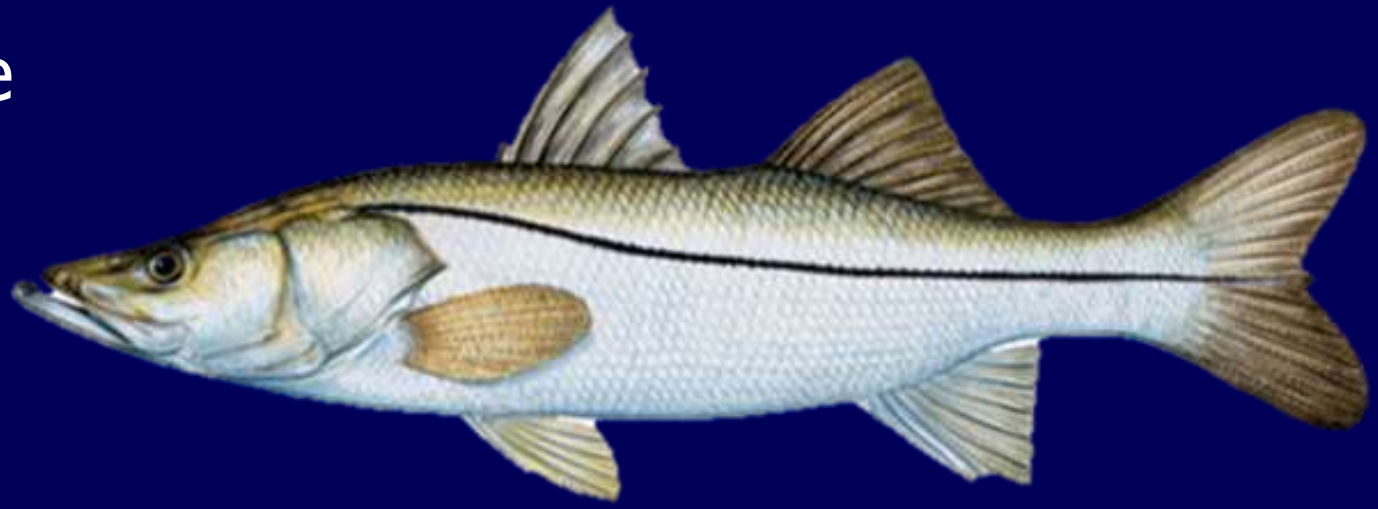
Environmental influences on snook movement in St. Lucie estuary

Lauren Kircher, Jessica Noble, Joy Young, John Baldwin

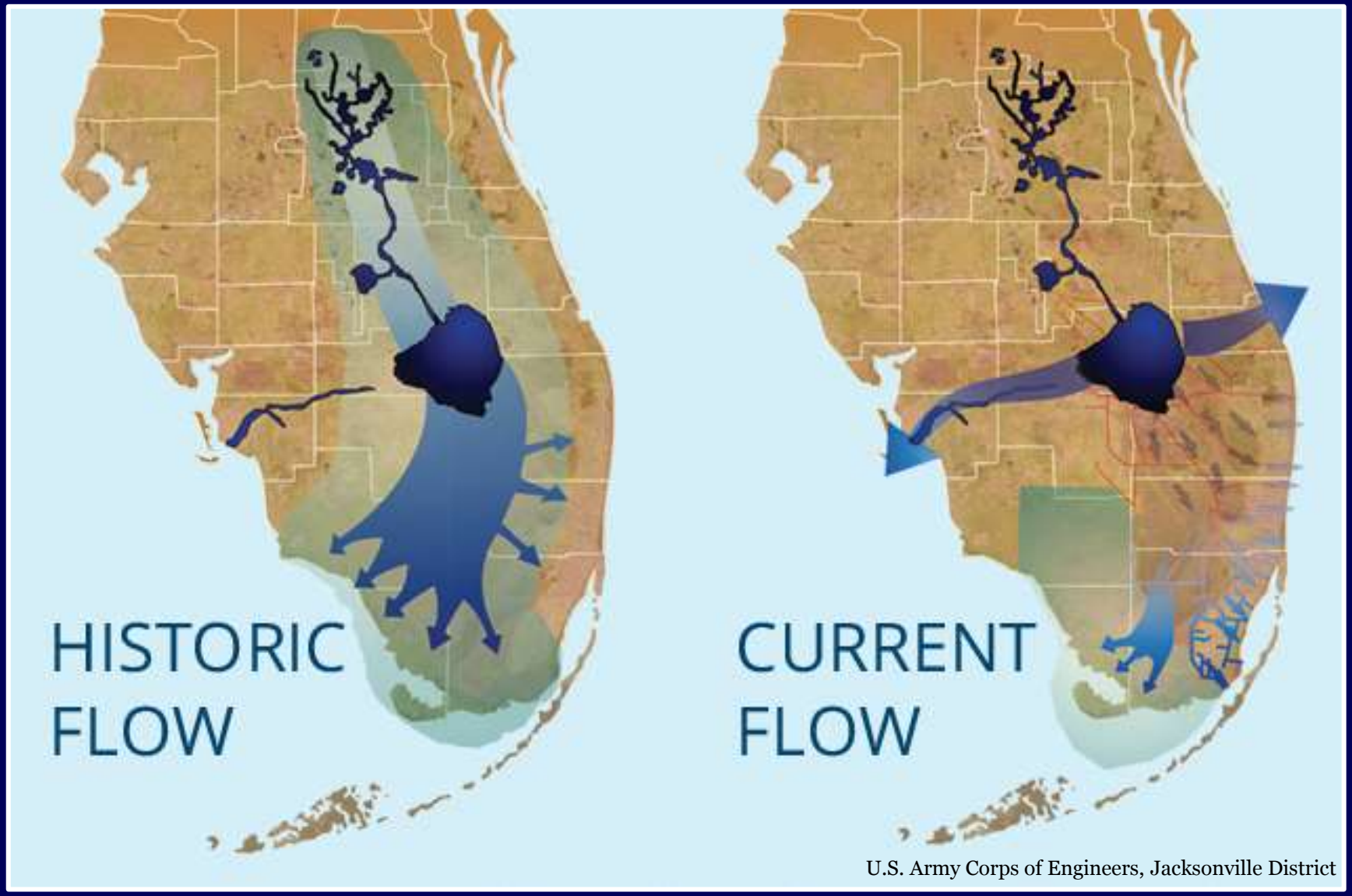
GEER 2017

Common snook (*Centropomus undecimalis*)

- Catadromous
- Sensitive to temperature
- Required salinity concentrations
- Recreational importance



Lake Okeechobee



Effects in St. Lucie

- Water quality
- Dieoff in oyster beds and submerged aquatic vegetation
- Fish disease

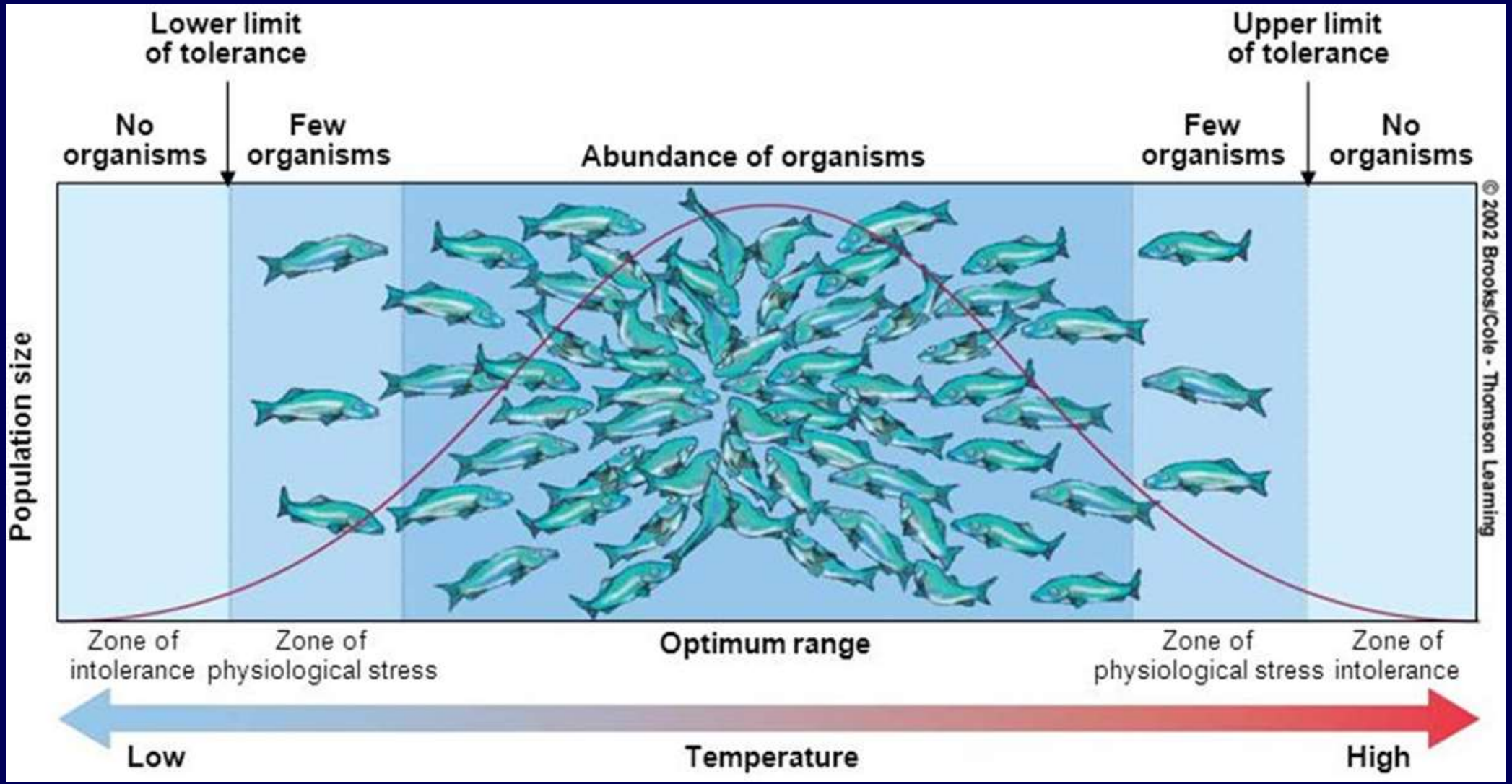
Major Cues for Movement

- Temperature
- Salinity
- Flow
- Rainfall

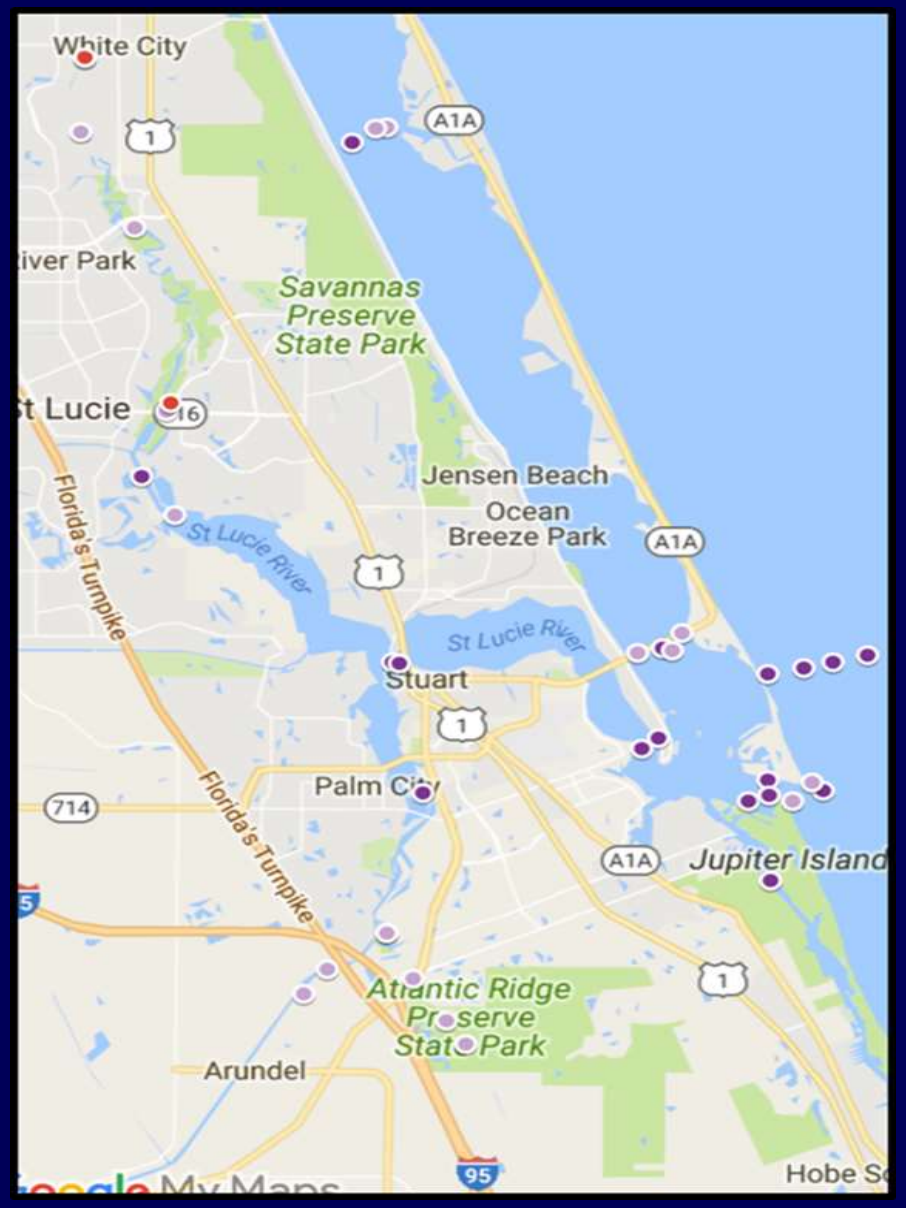
Time-Scale

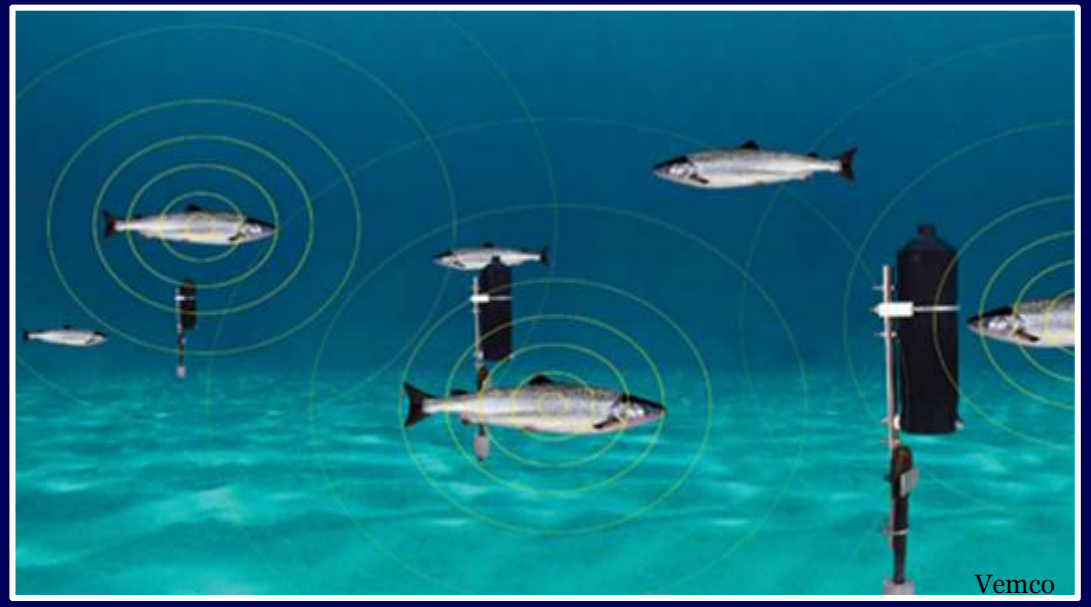
- Long-term
- Short-term
- Spawning vs. event

Stress from environment

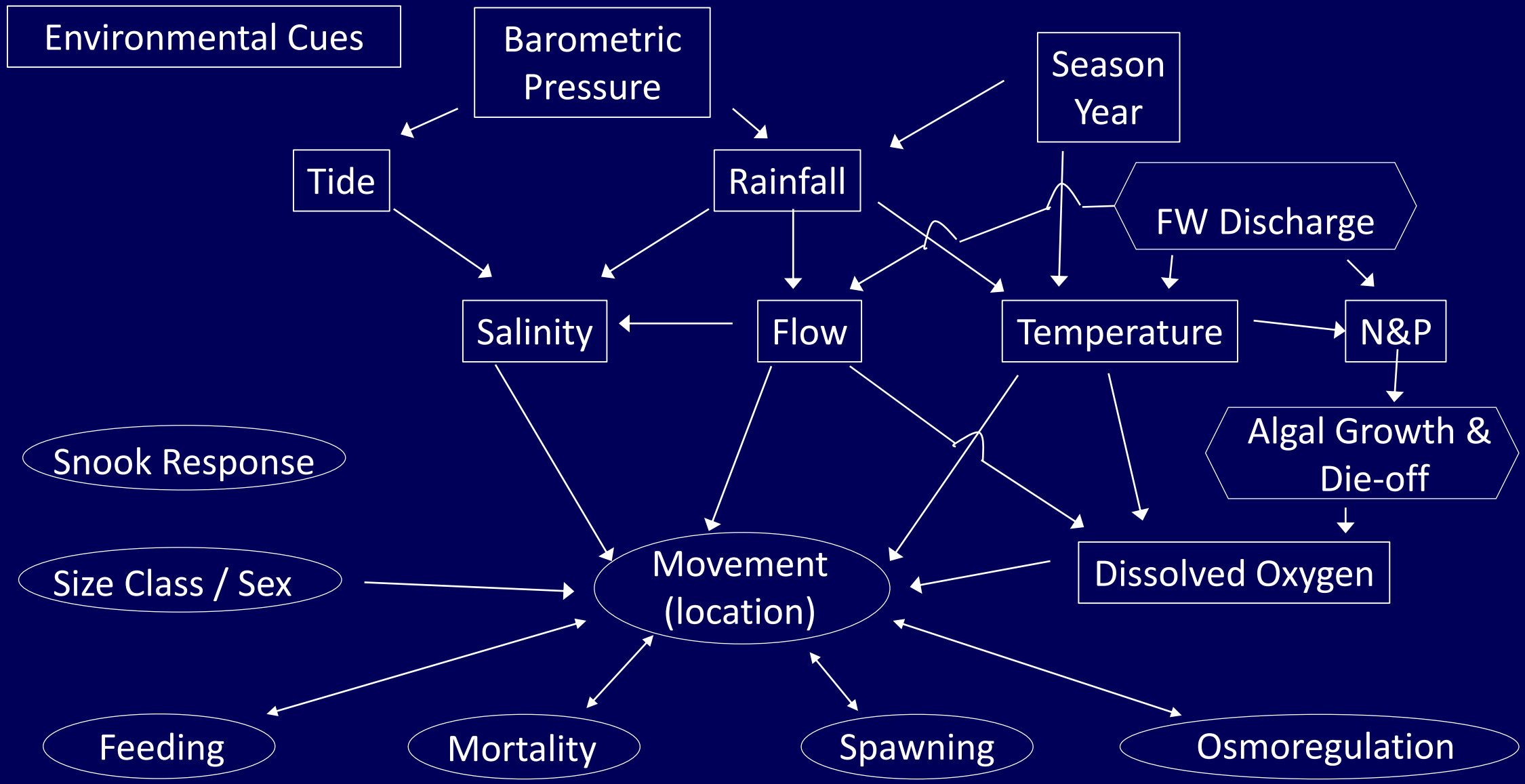


Passive acoustic telemetry

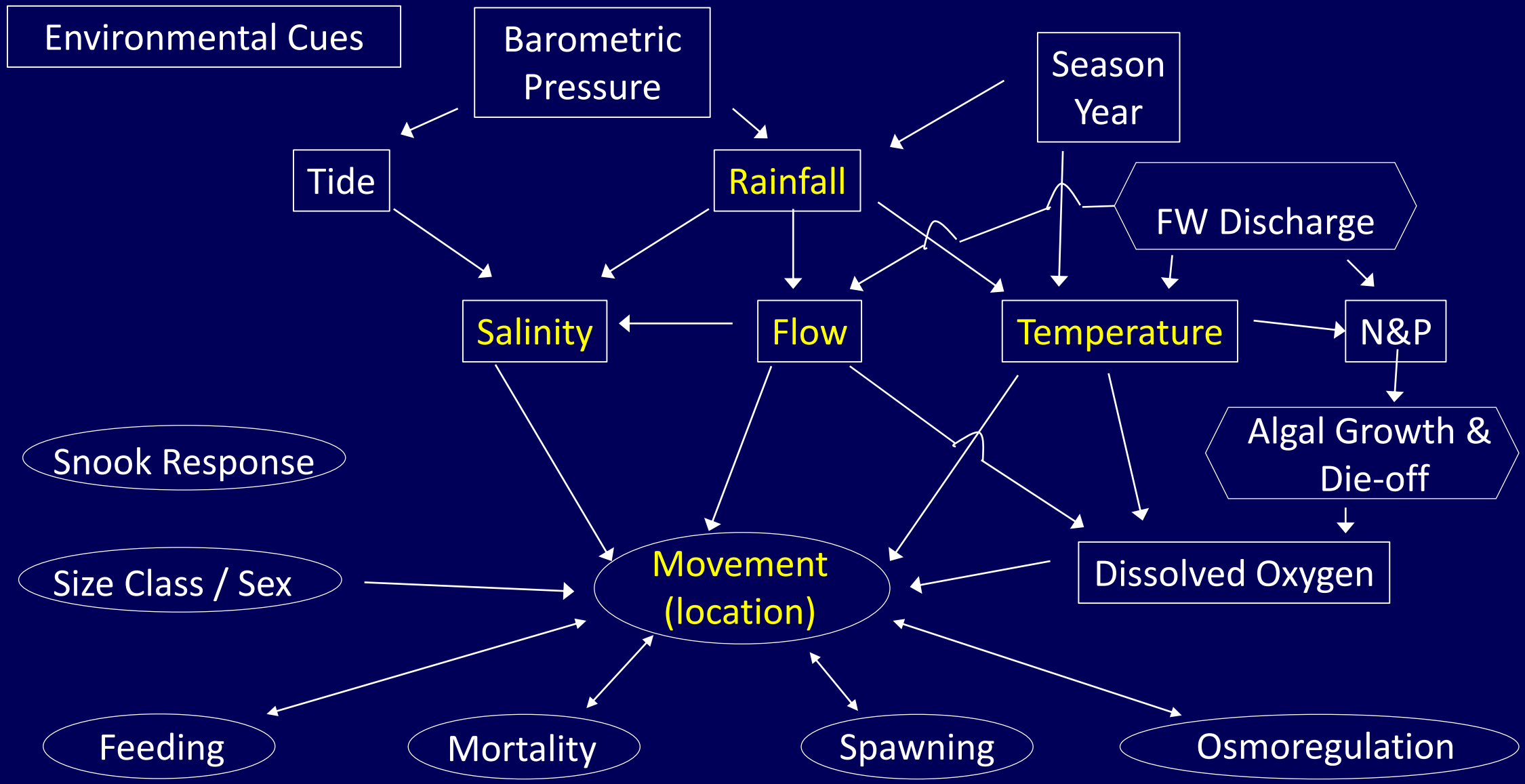




Hypotheses


Environmental Cues
Barometric Pressure
Season Year
Tide
Rainfall
FW Discharge
Salinity
Flow
Temperature
N&P
Algal Growth & Die-off
Snook Response
Size Class / Sex
Movement (location)
Dissolved Oxygen
Feeding
Mortality
Spawning
Osmoregulation

Hypotheses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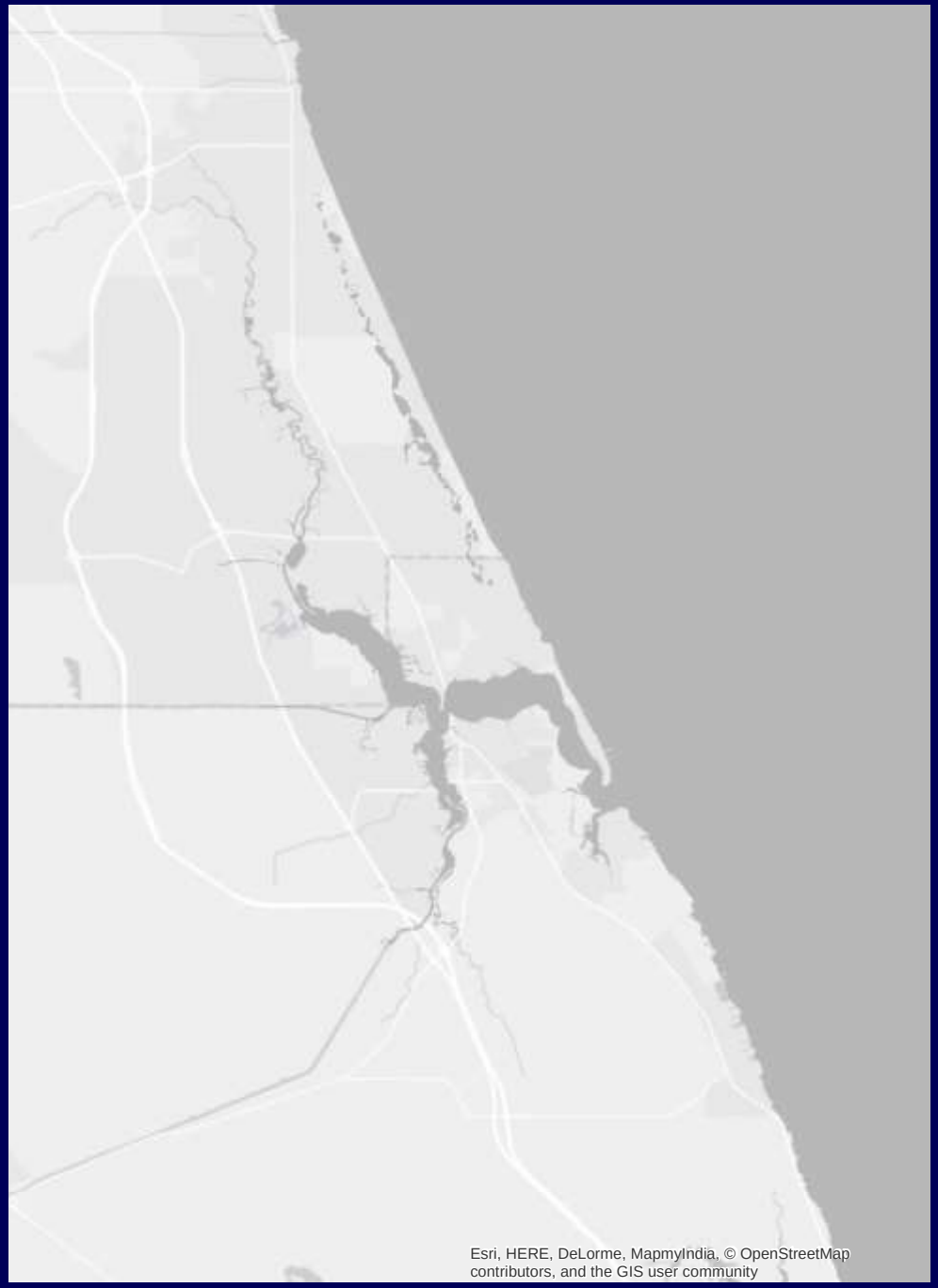
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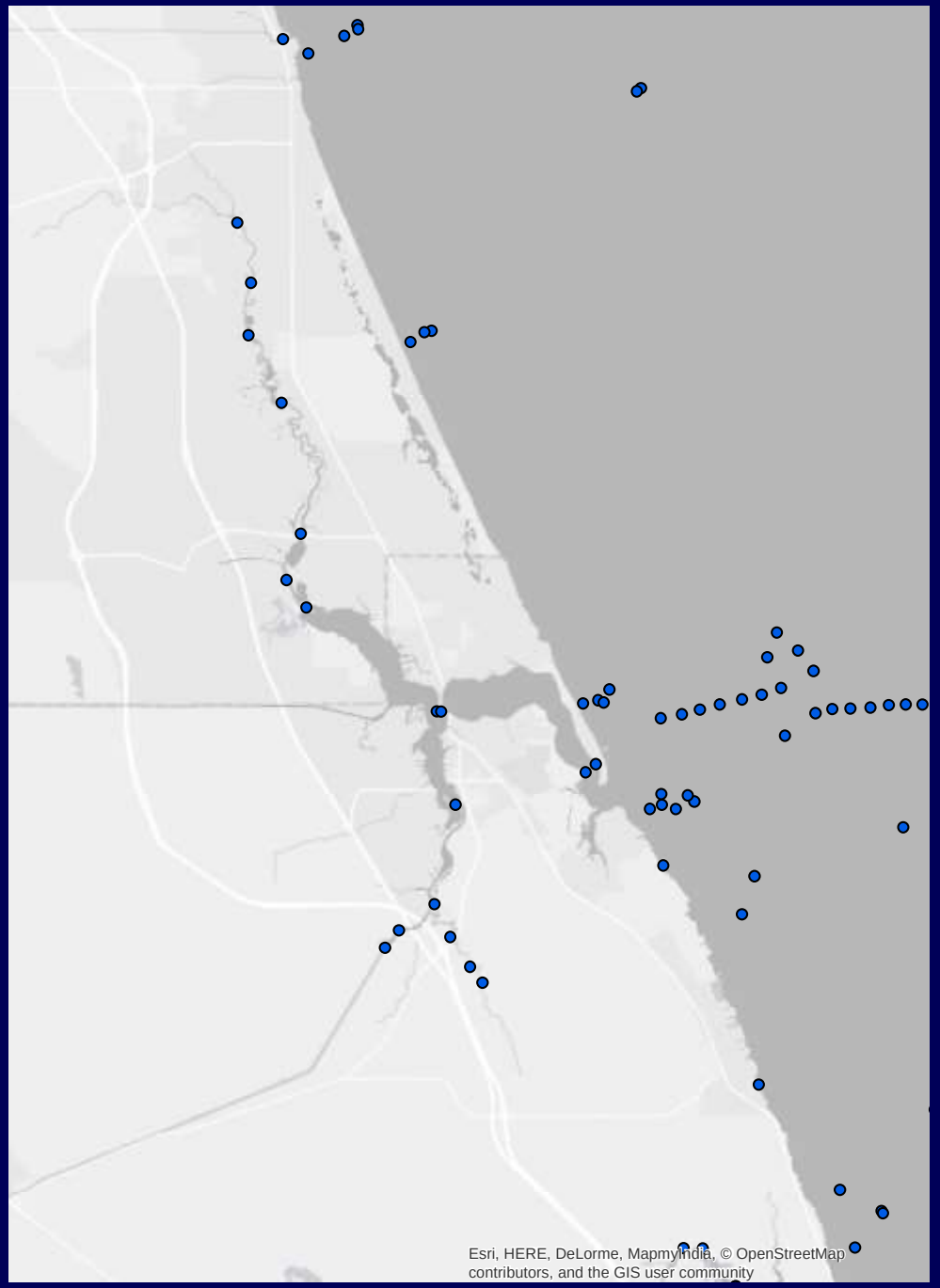
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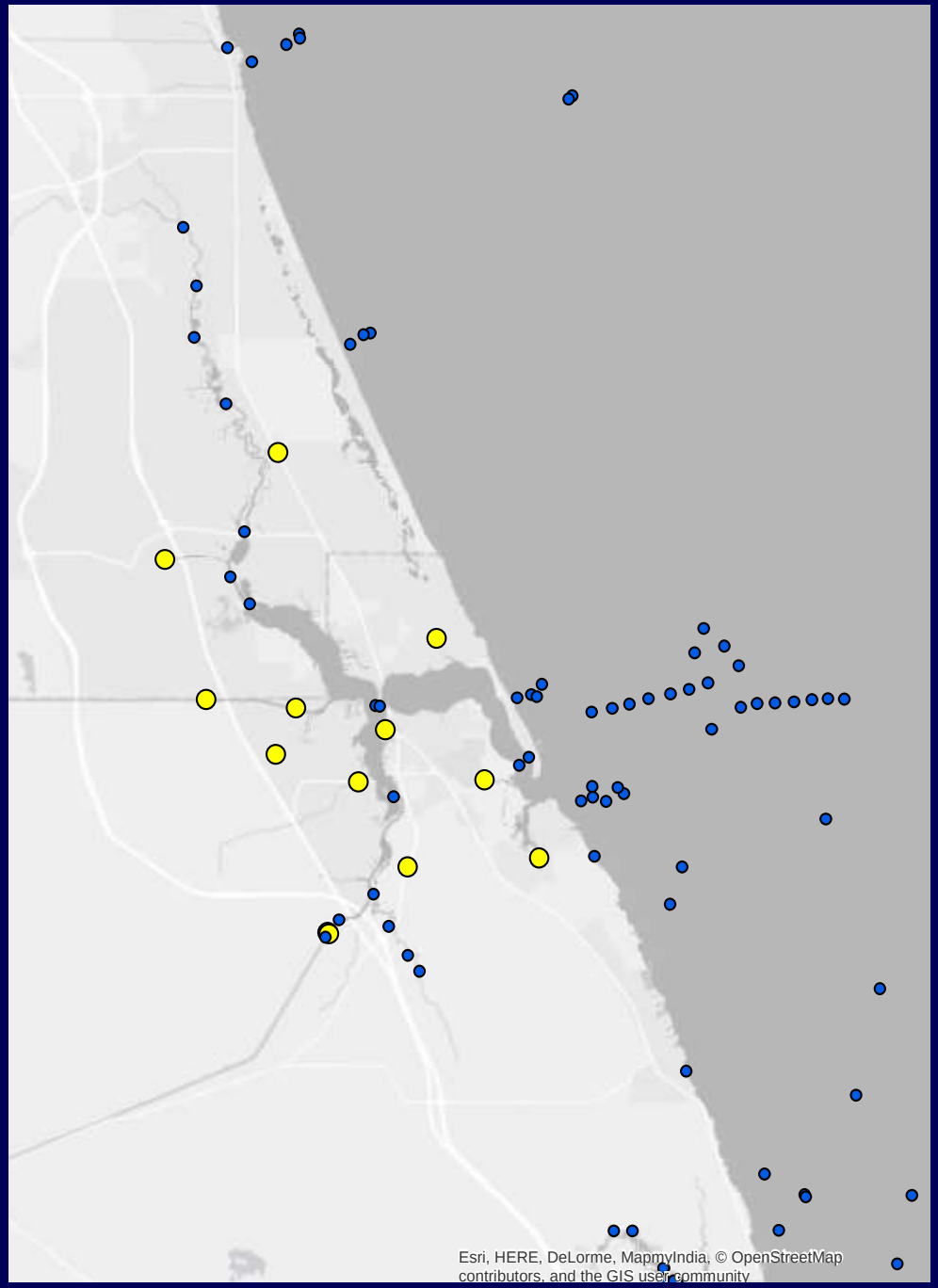
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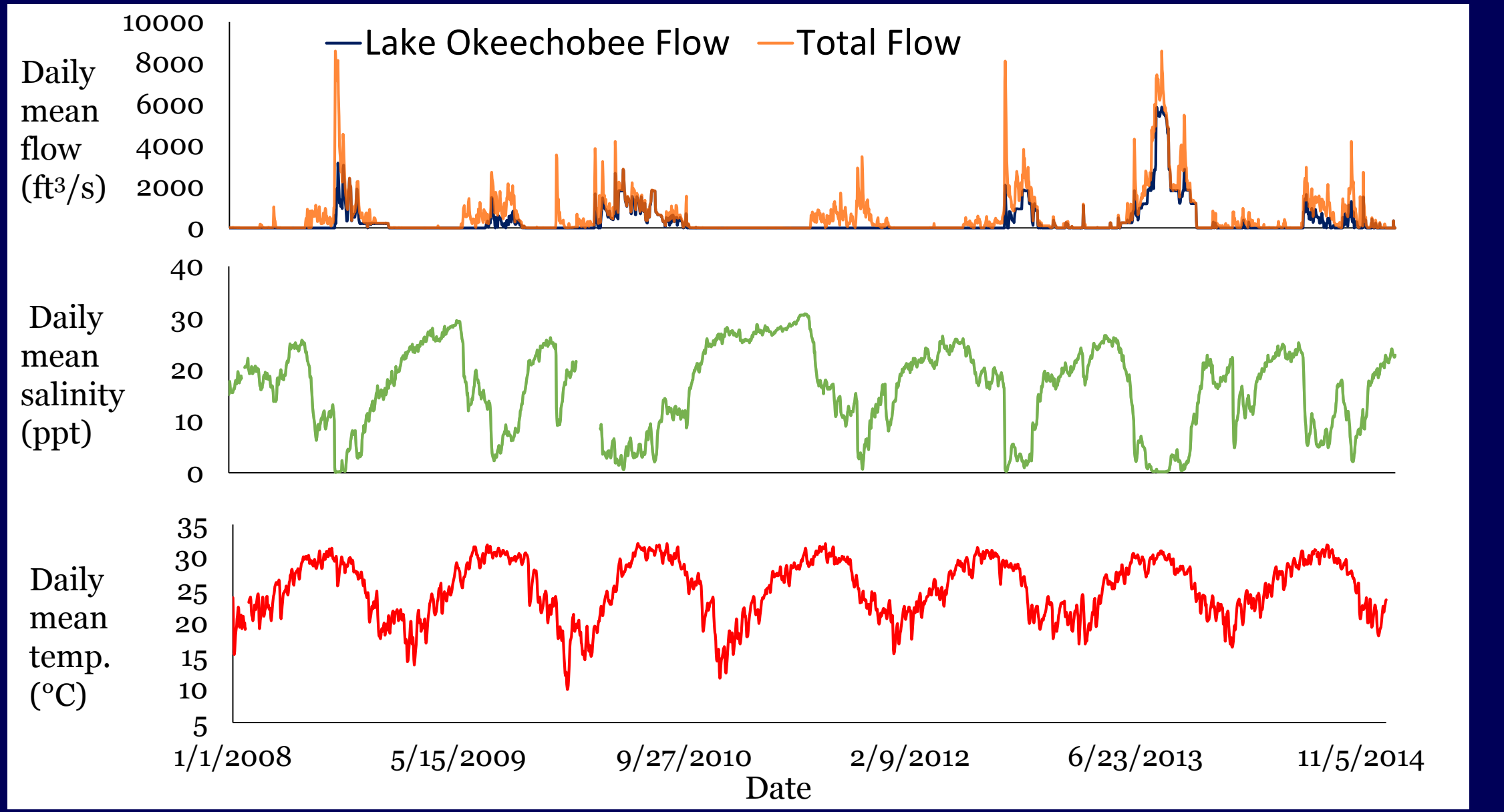
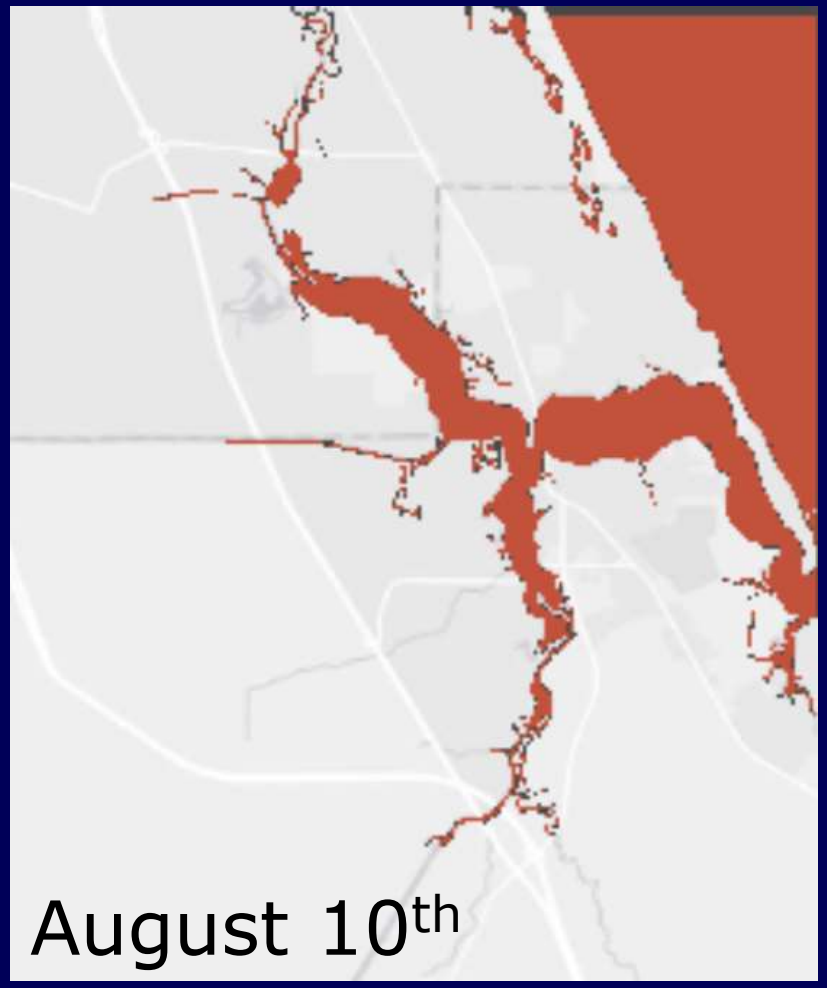
Environmental parameters

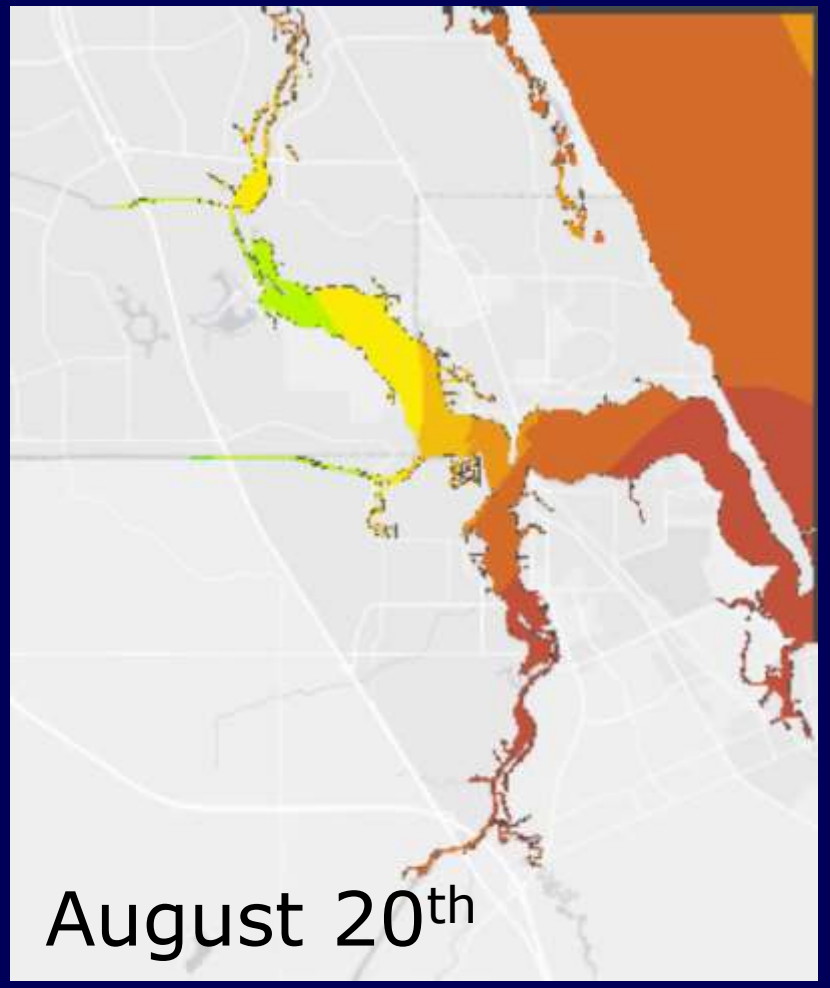


Comparing High and Low Flow Events

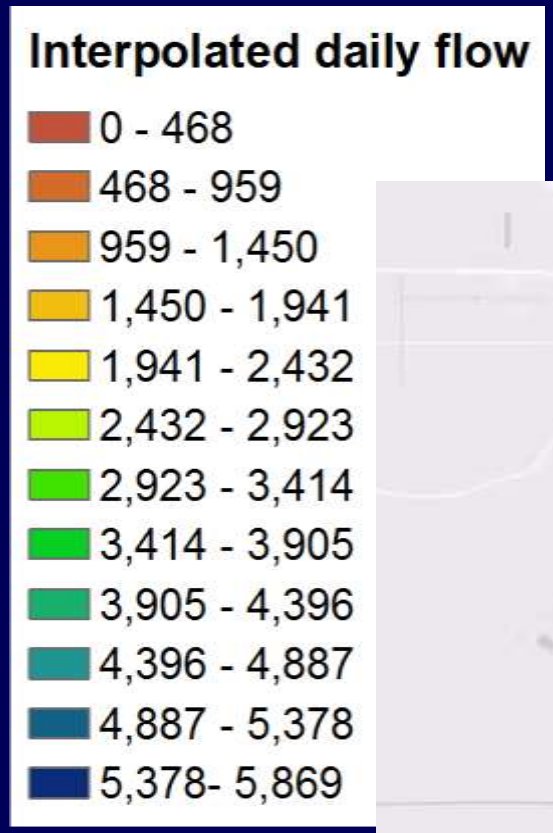
Interpolated daily flow

- 0 - 468
- 468 - 959
- 959 - 1,450
- 1,450 - 1,941
- 1,941 - 2,432
- 2,432 - 2,923
- 2,923 - 3,414
- 3,414 - 3,905
- 3,905 - 4,396
- 4,396 - 4,887
- 4,887 - 5,378
- 5,378- 5,869





Fish 9763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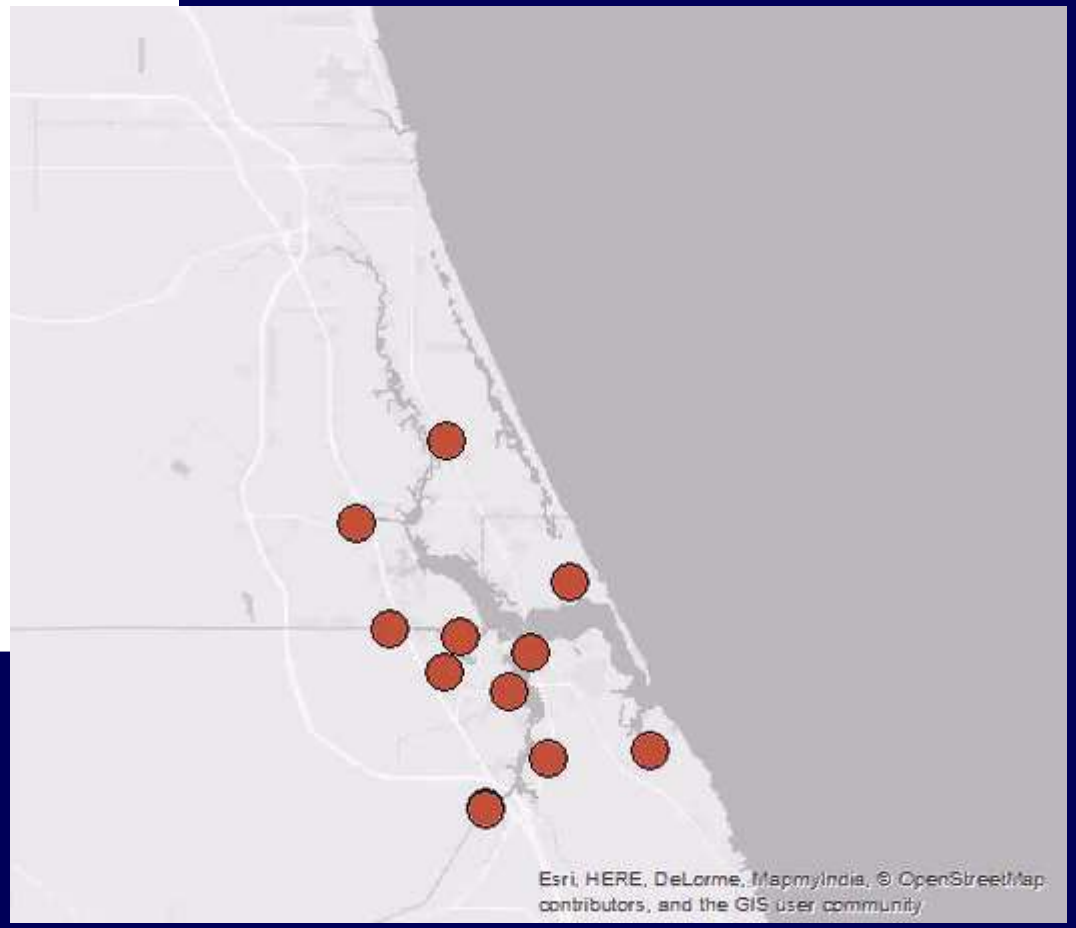
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Day 36
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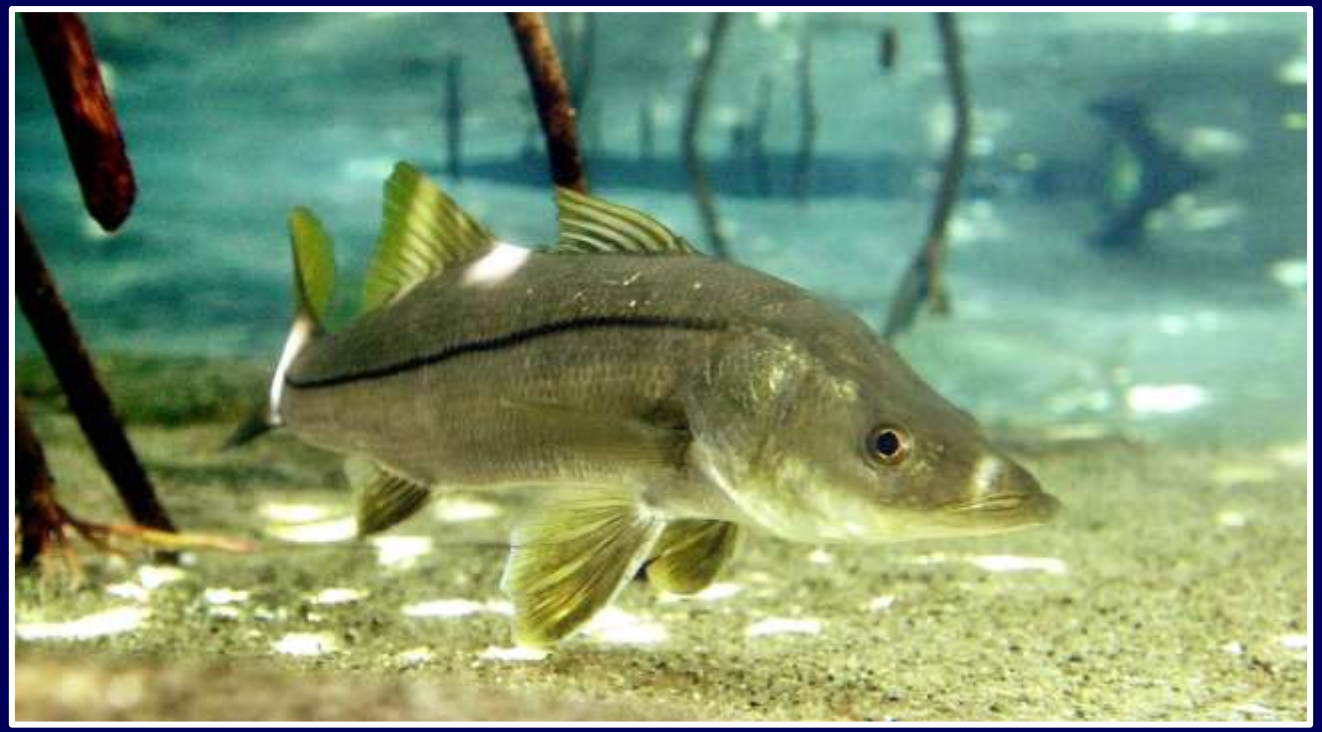
Preliminary Conclusions

- Flow increases seasonally throughout the estuary
  - Or just from Lake Okeechobee discharge
- Large flows occur primarily in August and September
- Fish 9763 moved to inlets for large flow events

Future Work

- Incorporate other parameters
- Modeling to determine main interactions
- Implication for enhancing management



Acknowledgments

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  - Dr Weibo Liu
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