



Louisiana's 2012 Coastal Master Plan

Forecasting vegetation changes in coastal Louisiana

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Team Members

Model Development and Implementation

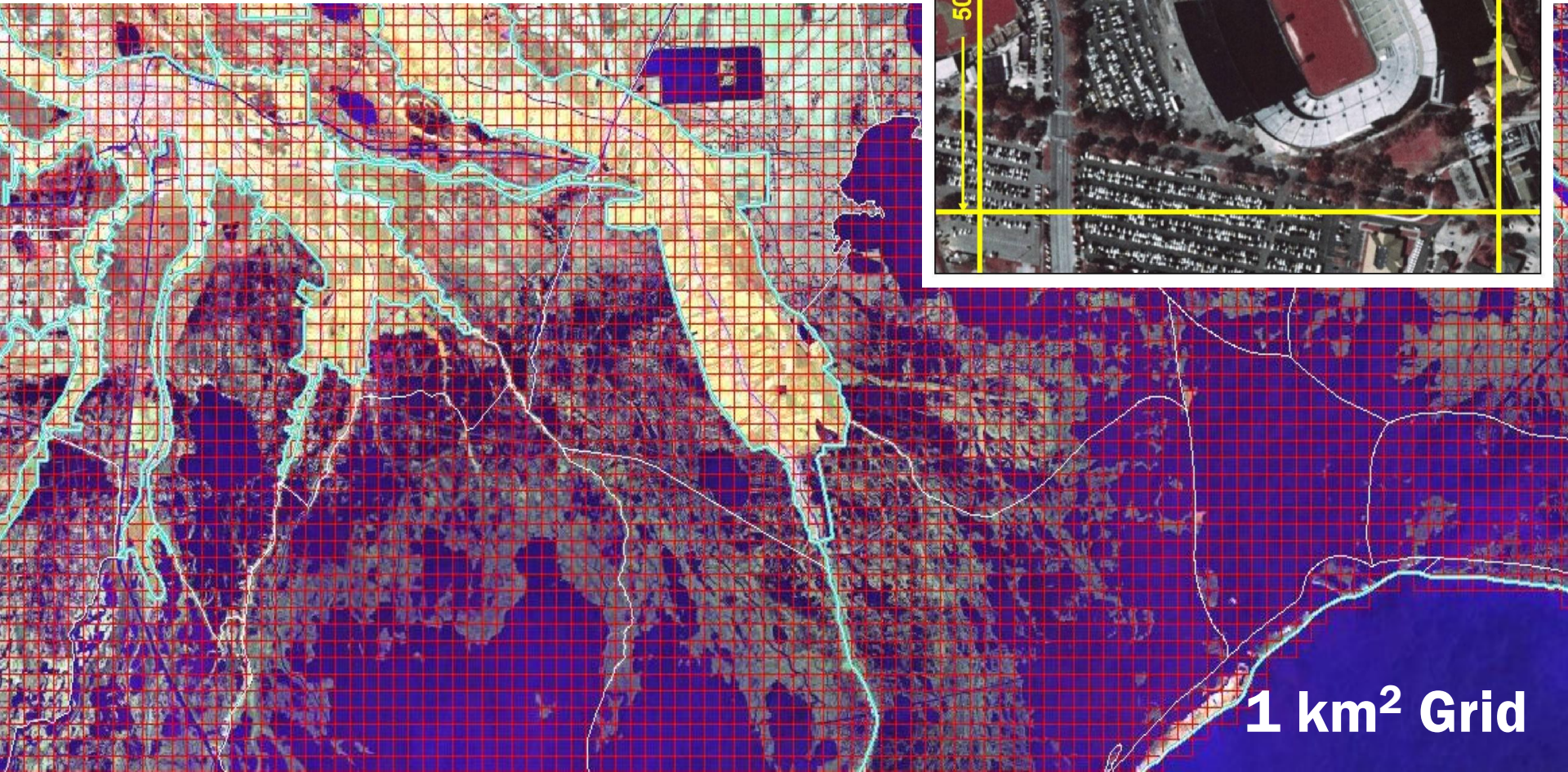
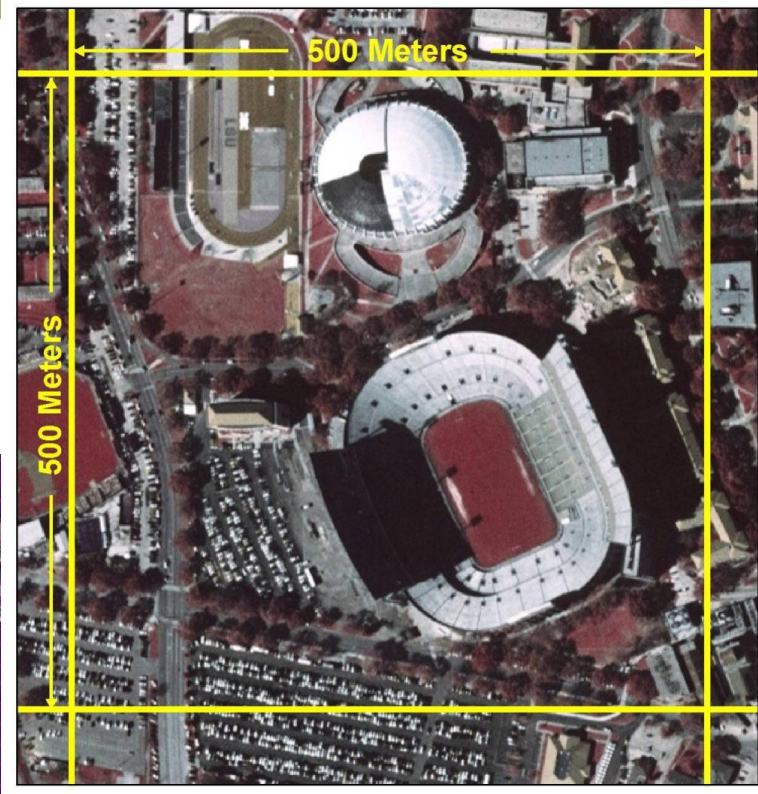
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 - Team Leader
- S. Duke-Sylvester PhD (ULL)
 - Algorithm Development and Implementation
- W. Broussard PhD (ULL)
 - Data analysis CRMS
- J. Carter PhD (USGS)
 - Data analysis SAV
- J. Woock BS (ULL)
 - Model development
- A. Heppermann BS (ULL)
 - Implementation support

Contributors and Embedded Reviewers

- H. Wang PhD (USGS)
 - CRMS Hydrology data
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 - Vegetation Basemap
 - Embedded Reviewers
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- R. Howard PhD (USGS)
- K. Krauss PhD (USGS)
- M. W. Hester PhD (ULL)

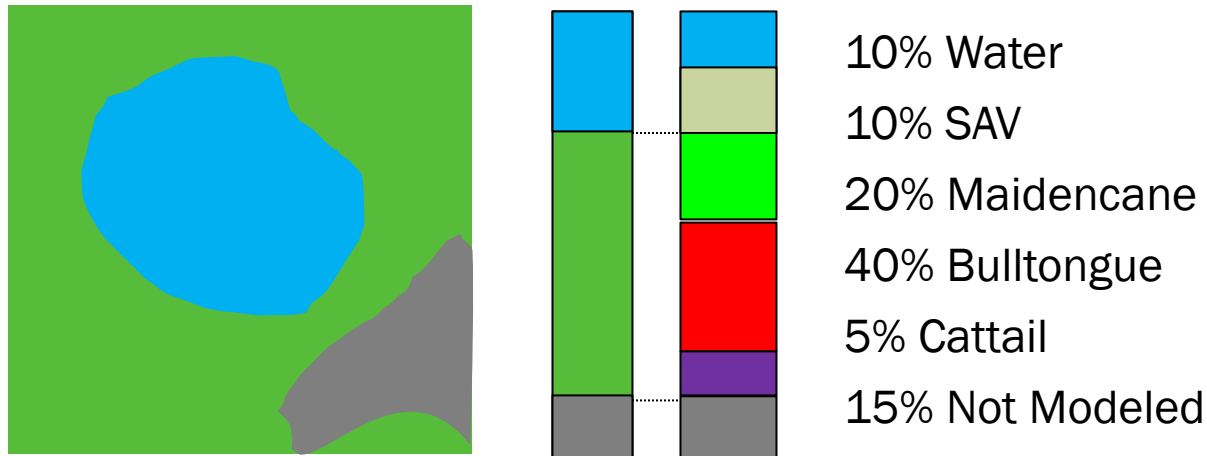


Modeling Scale LaVegMod 0.25 km² Cell



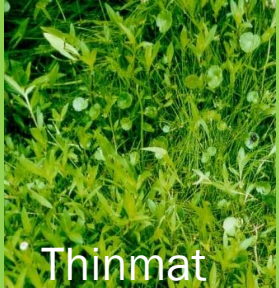
LaVegMod Output

- Annual over 50 years
- Proportion of 19 emergent vegetation types that occupy wetland in the cell.
- Proportion of water in the cell occupied by submerged aquatic vegetation (SAV)
- Not modeled
 - Several upland categories





Delta splay



Thinmat



Sawgrass

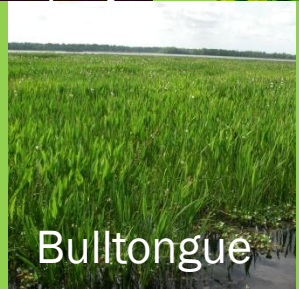


Cutgrass



Swamp

Fresh



Bulltongue



Maidencane



Cattail



Waxmyrtle

Intermediate



Bullwhip



Roseaucane



Scrub-shrub

Brackish



Paspalum

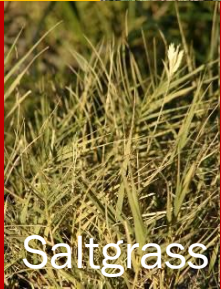


Wiregrass

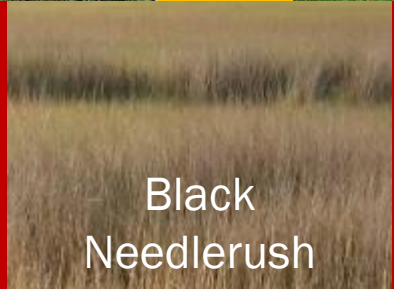


Brackish Mix

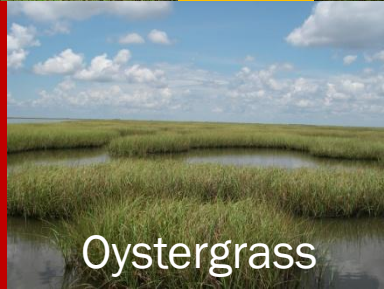
Saline



Saltgrass



Black
Needlerush

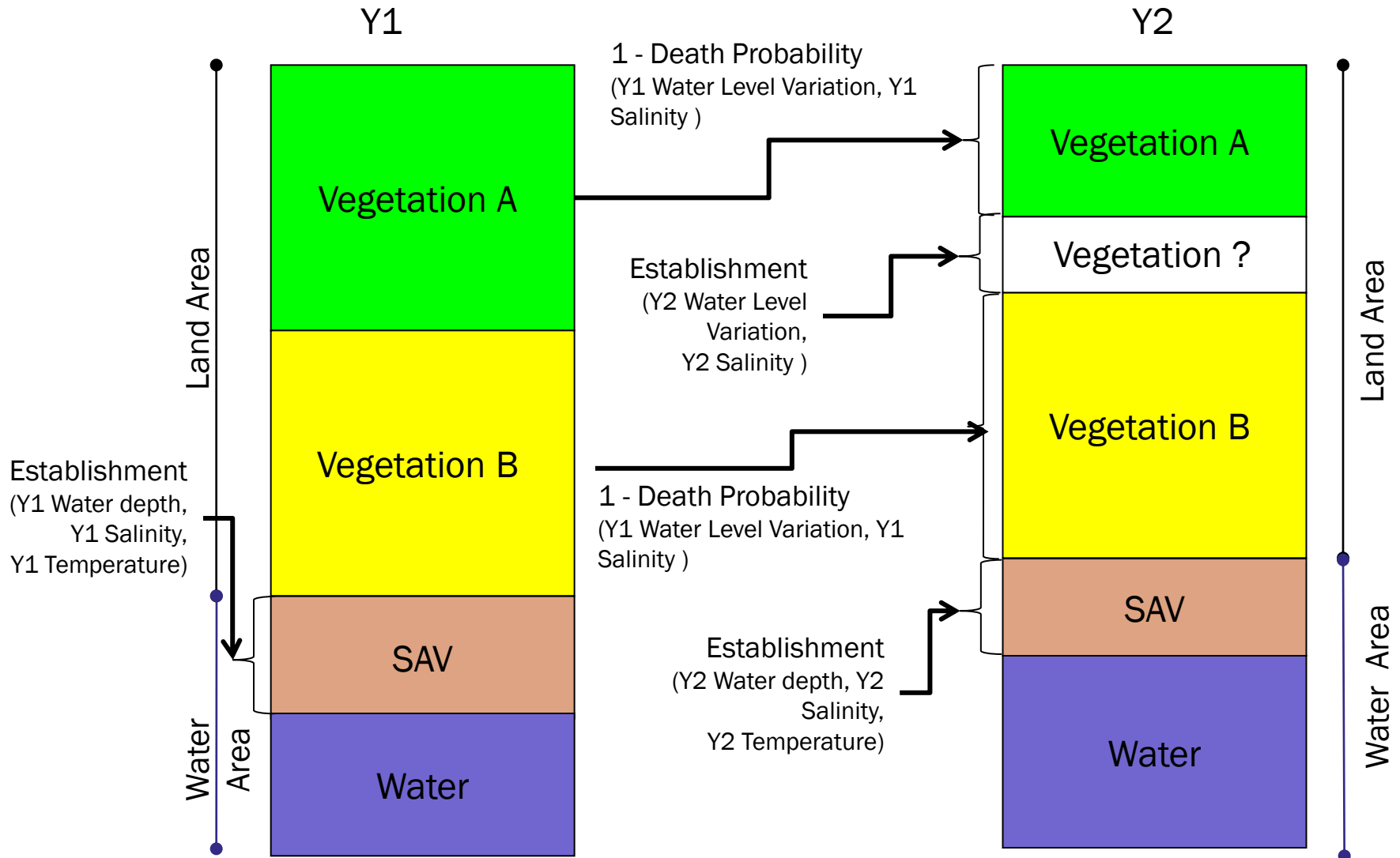


Oystergrass

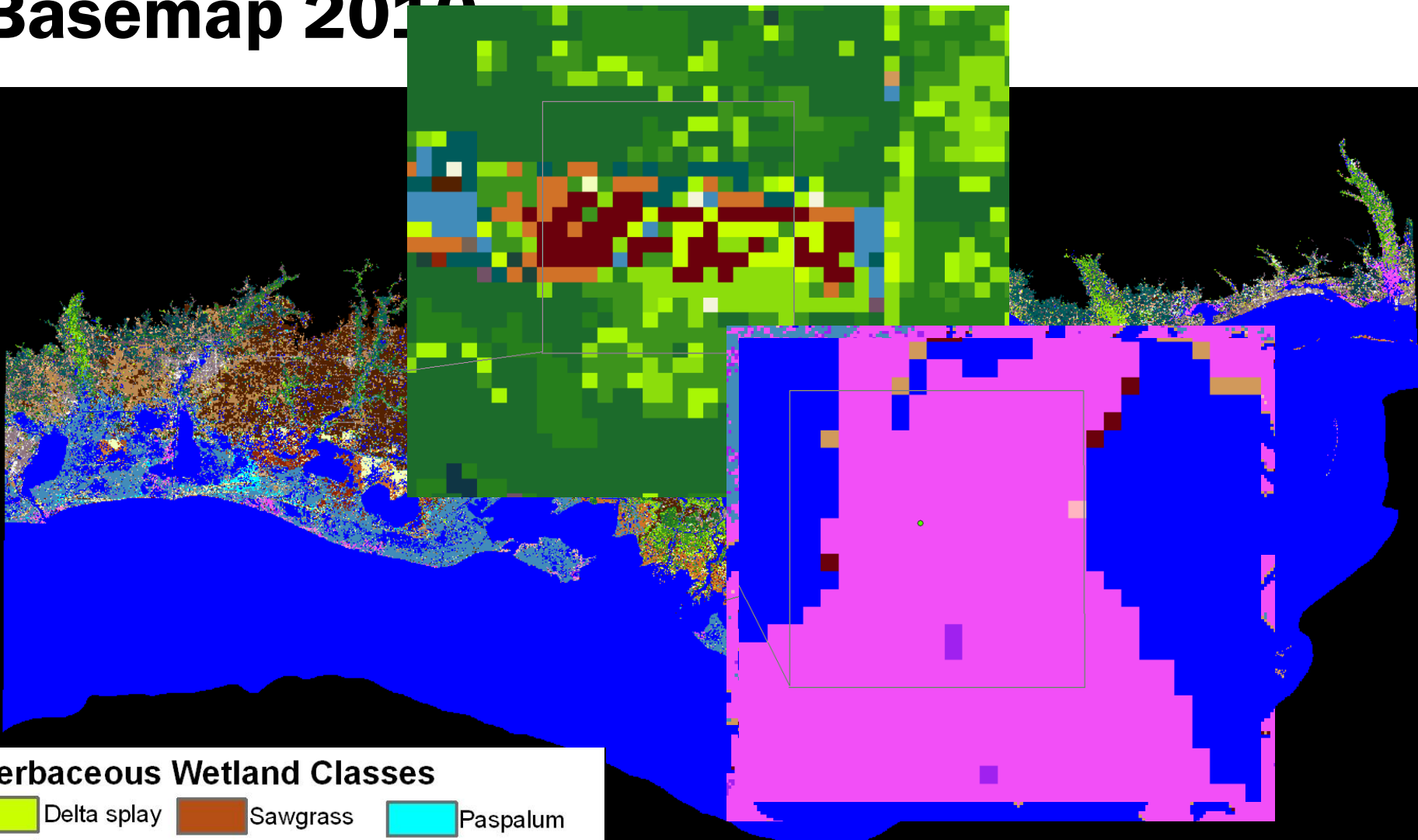

















Mangrove

Conceptual Model



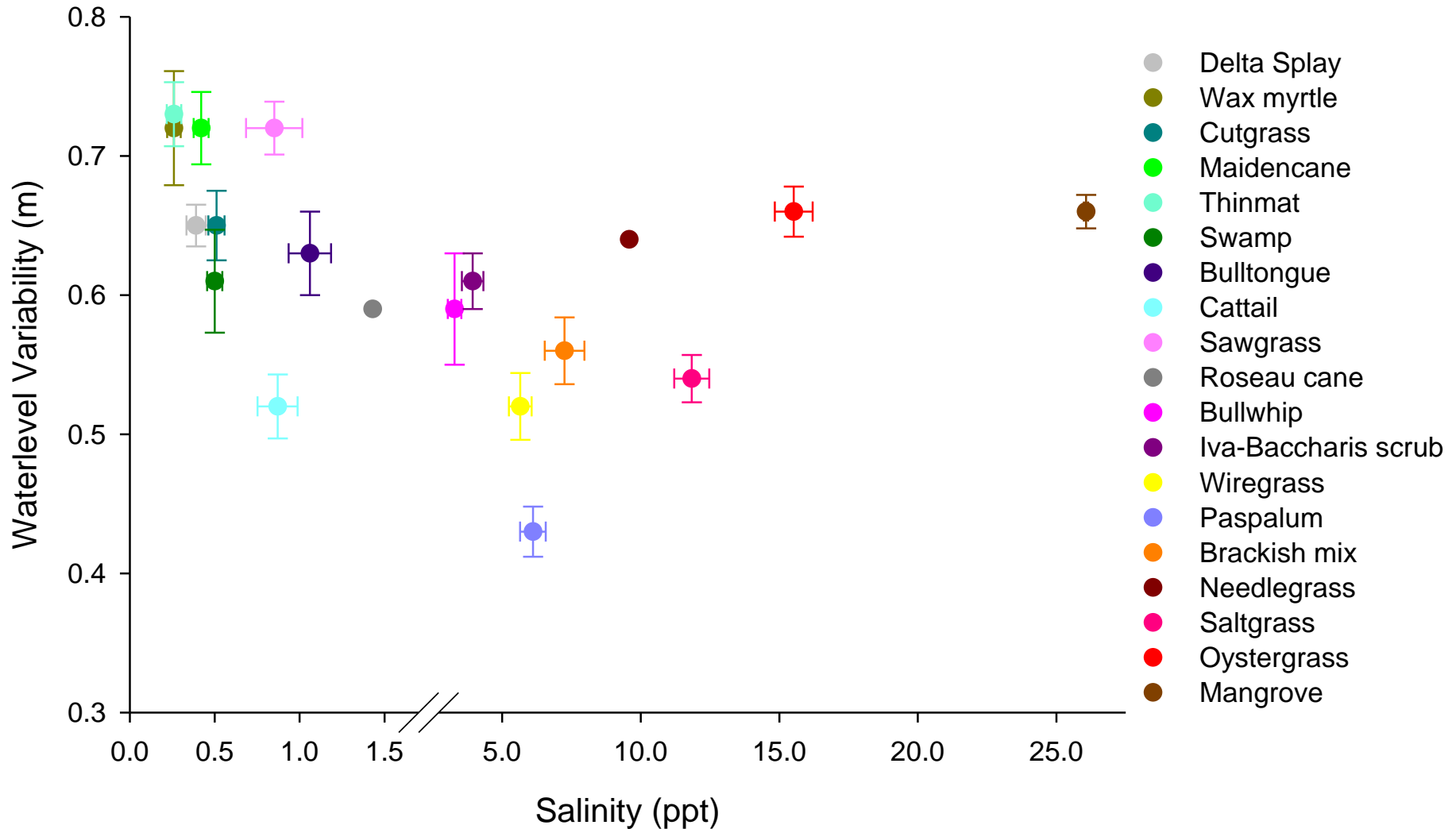
Basemap 2010



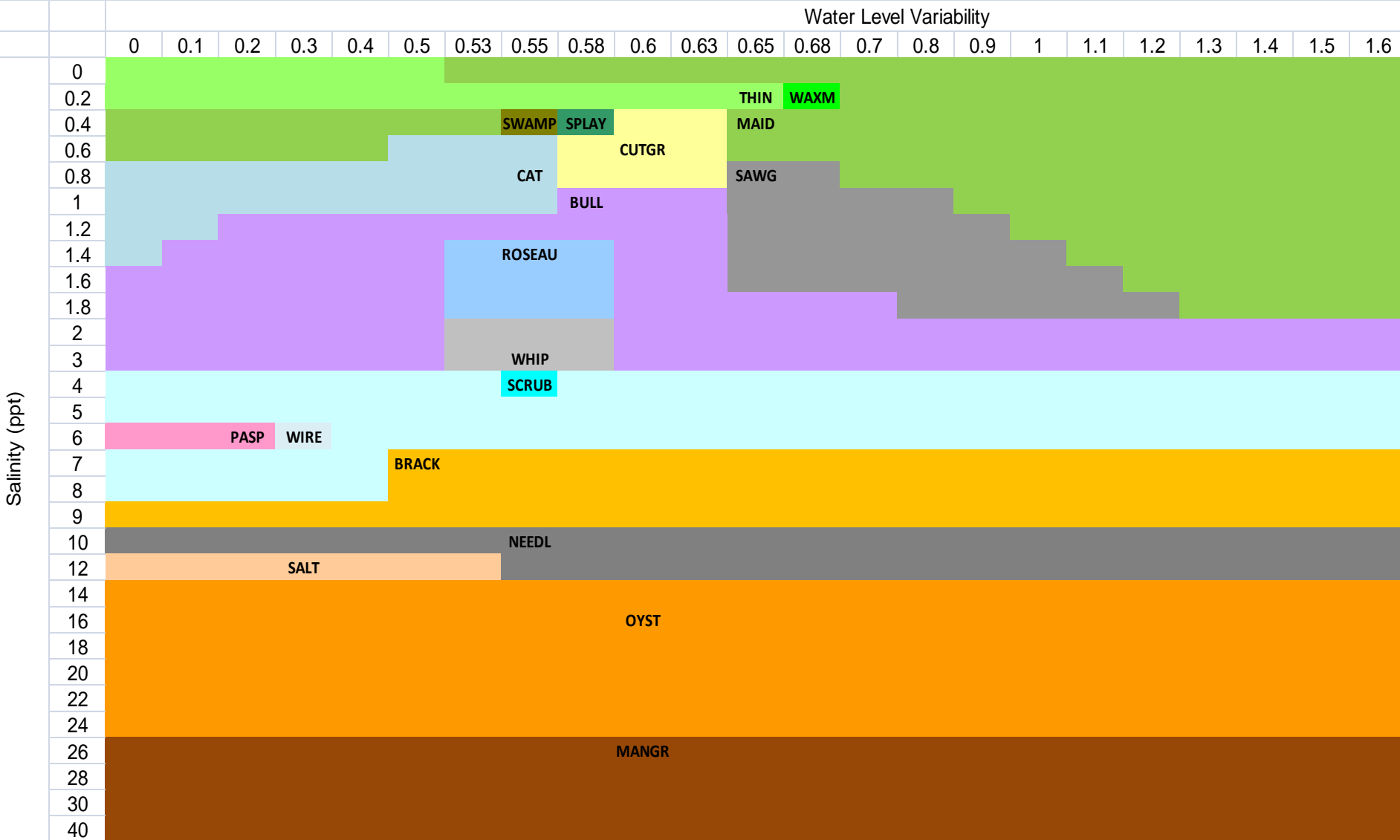
| Herbaceous Wetland Classes | | |
|--|--|--|
|  Delta splay |  Sawgrass |  Paspalum |
|  Cutgrass |  Bulltongue |  Brackish Mix |
|  Maidencane |  Roseaucane |  Needle grass |
|  Thin mat |  Bullwhip |  Saltgrass |
|  Cattail |  Wiregrass |  Oystergrass |

Source: Brady Couvillion, USGS
Generated from Landsat Imagery

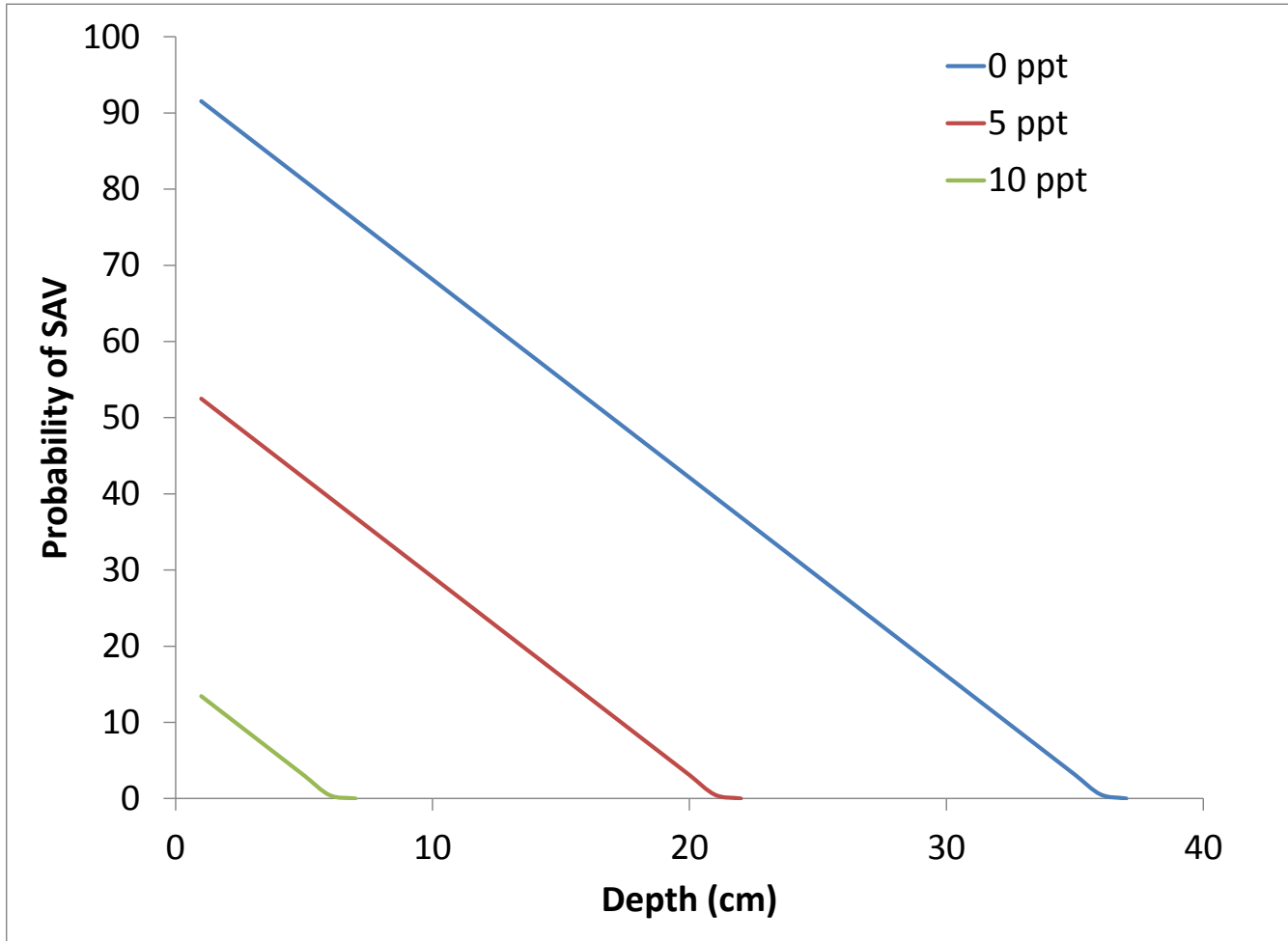
CRMS Vegetation Analysis (2007-09)



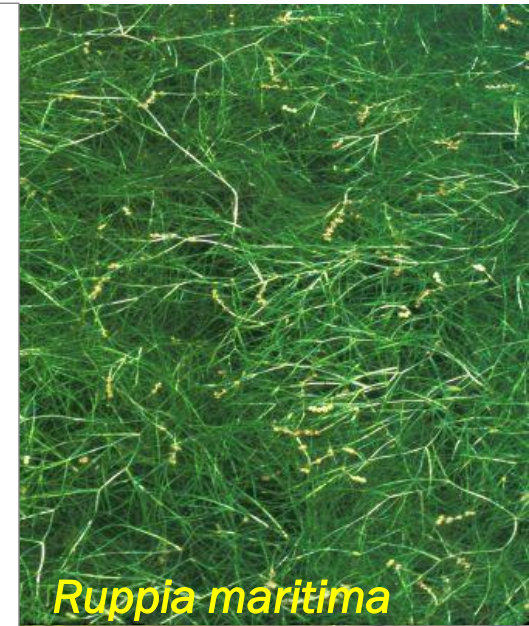
Establishment Table



Submerged Aquatic Vegetation



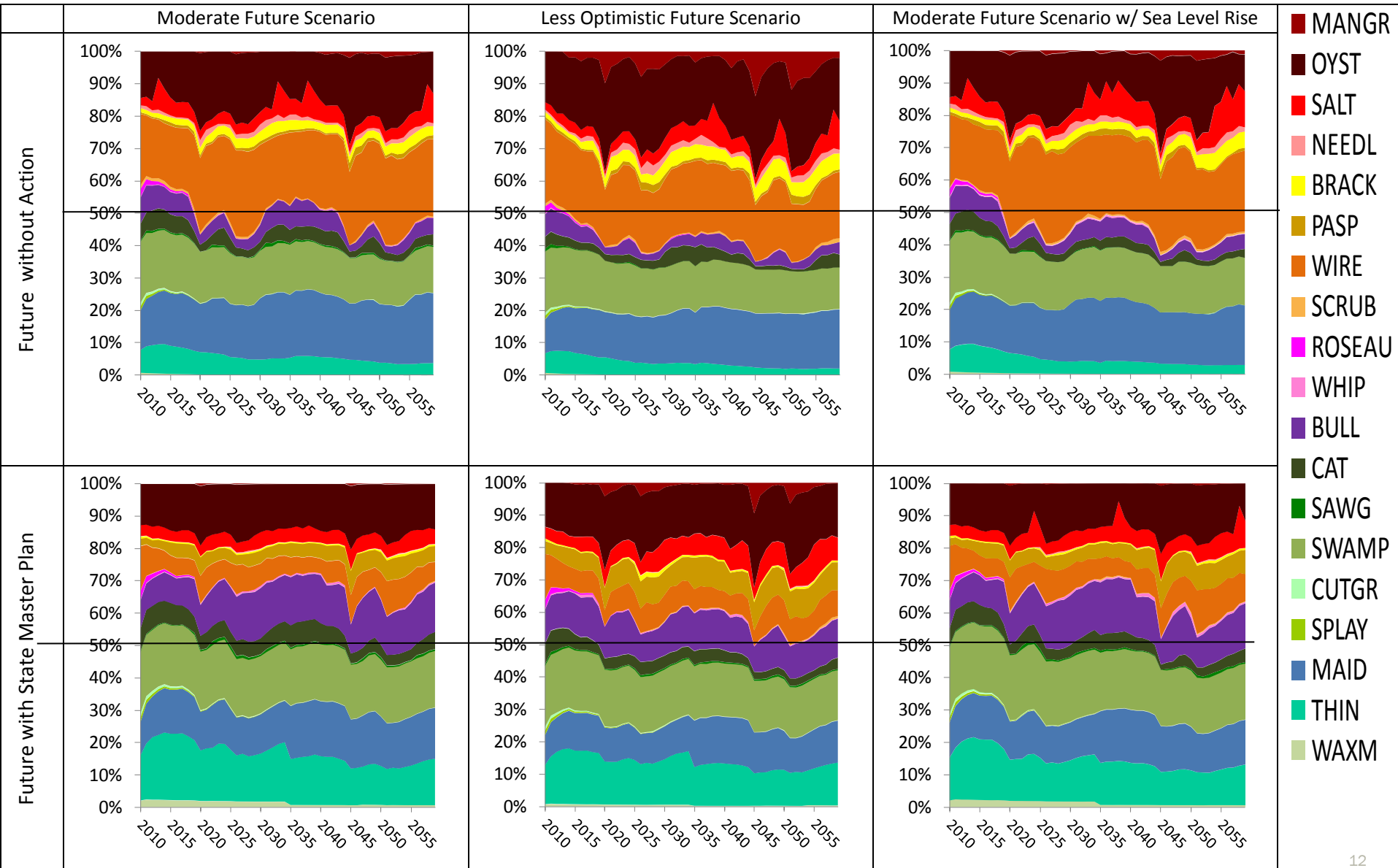
At temperature of 25 °C



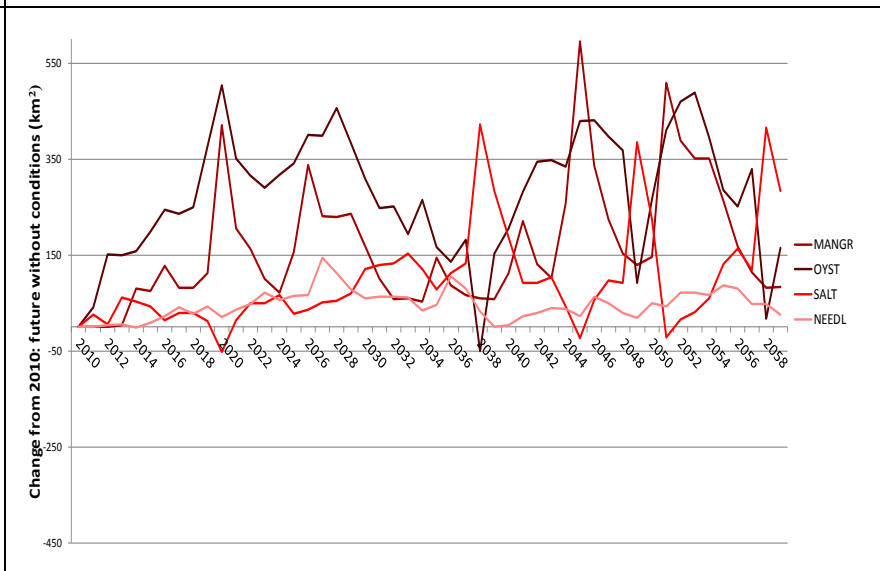
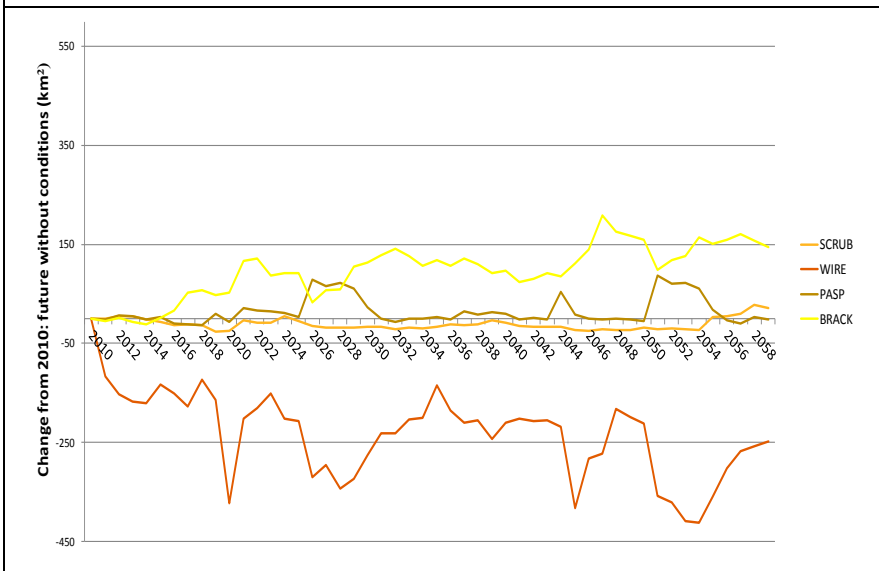
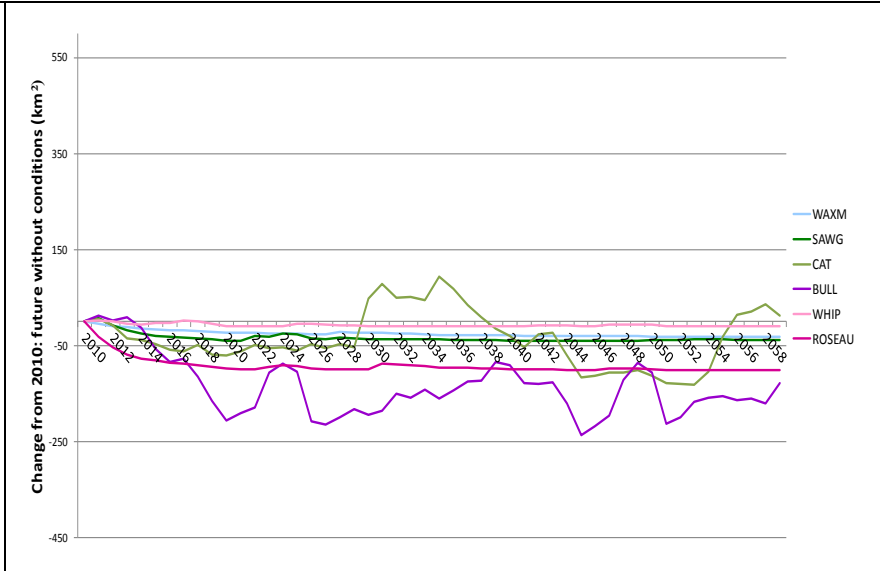
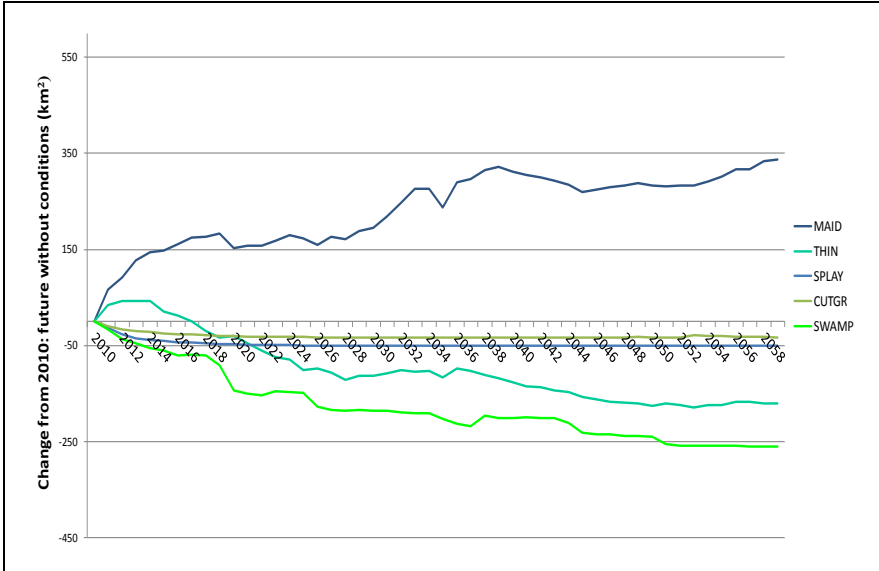
Ruppia maritima

Potamogeton pussilus

Changes in Emergent Vegetation



No Action Future Less Optimistic Scenario

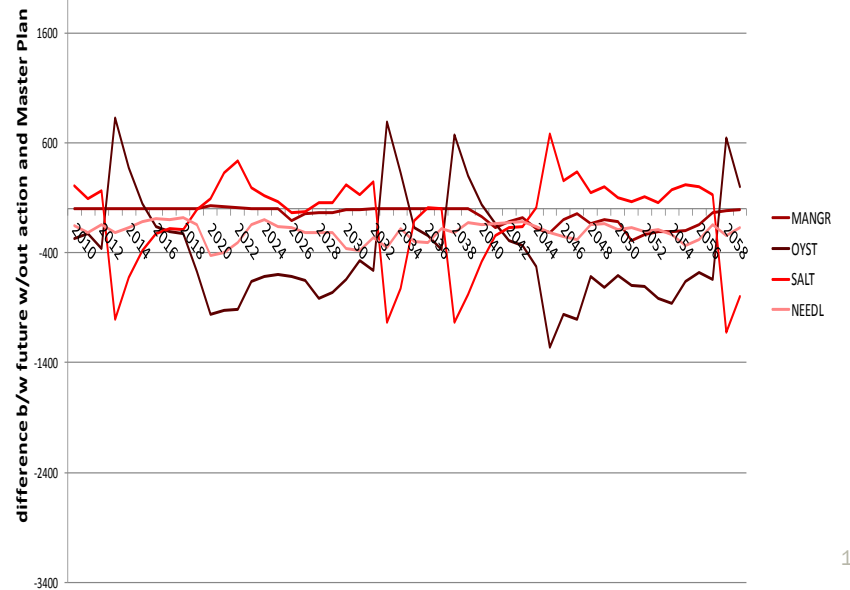
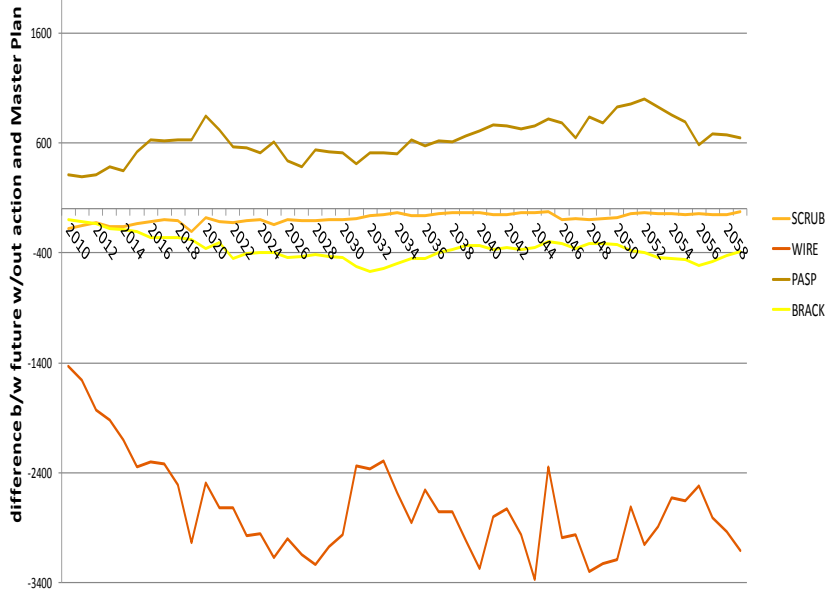
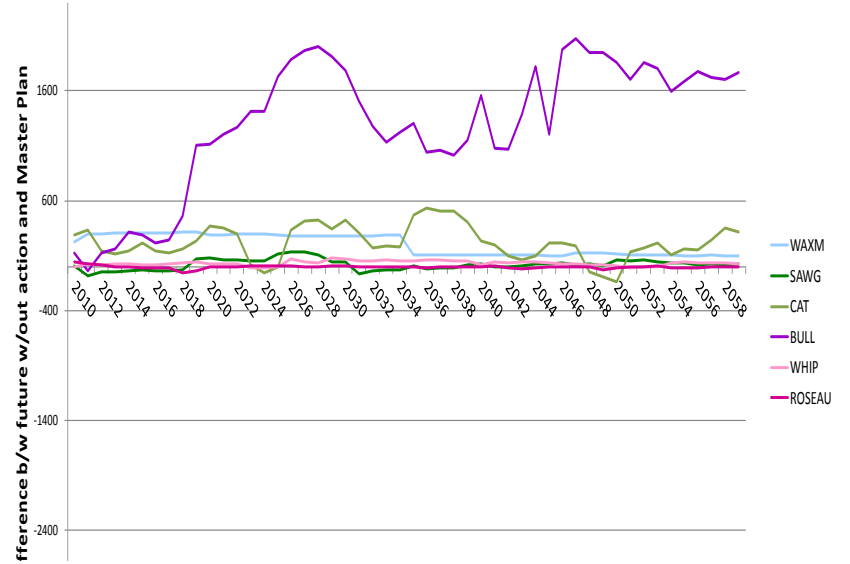
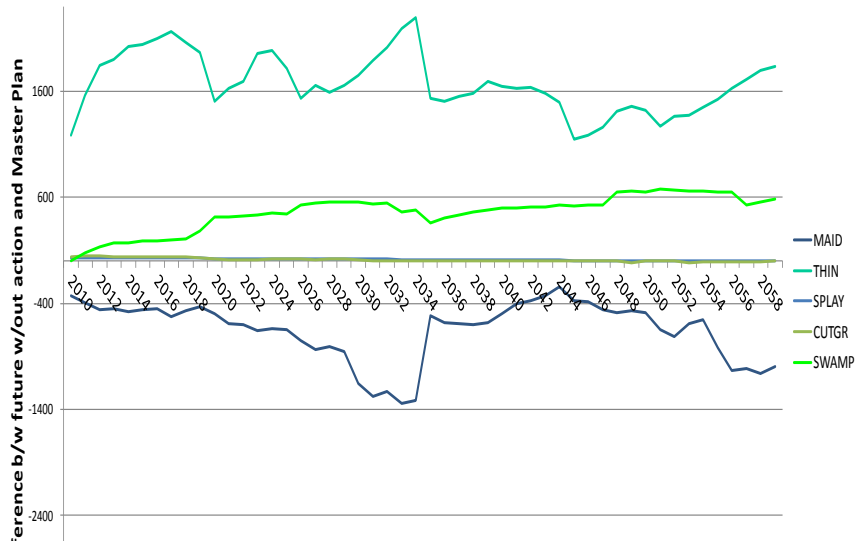


FWOA Effect under all scenarios

| Vegetation Type | Moderate | Less Optimistic | Moderate +Sealevel |
|------------------|----------|-----------------|--------------------|
| Mangrove | - | ↑↑ | ↑ |
| Oyster grass | ↑↑ | ↑↑ | ↑↑ |
| Salt grass | ↑ | ↑ | ↑↑↑ |
| Brackish Mixture | ↑ | ↑↑ | ↑ |
| Wiregrass | ↑ | ↓↓ | ↑ |
| Roseau cane | ↓ | ↓ | - |
| Bultongue | ↓↓ | ↓ | ↓↓ |
| Cattail | ↓ | - | ↑ |
| Maidencane | ↑↑ | ↑↑ | ↑↑ |
| Thinmat | ↓ | ↓ | ↓ |
| Waxmyrtle | - | - | - |
| Swamp | ↓↓ | ↓ | ↓ |

Vegetation types that were not substantially changed are omitted from this table

Master Plan Effect Moderate Future

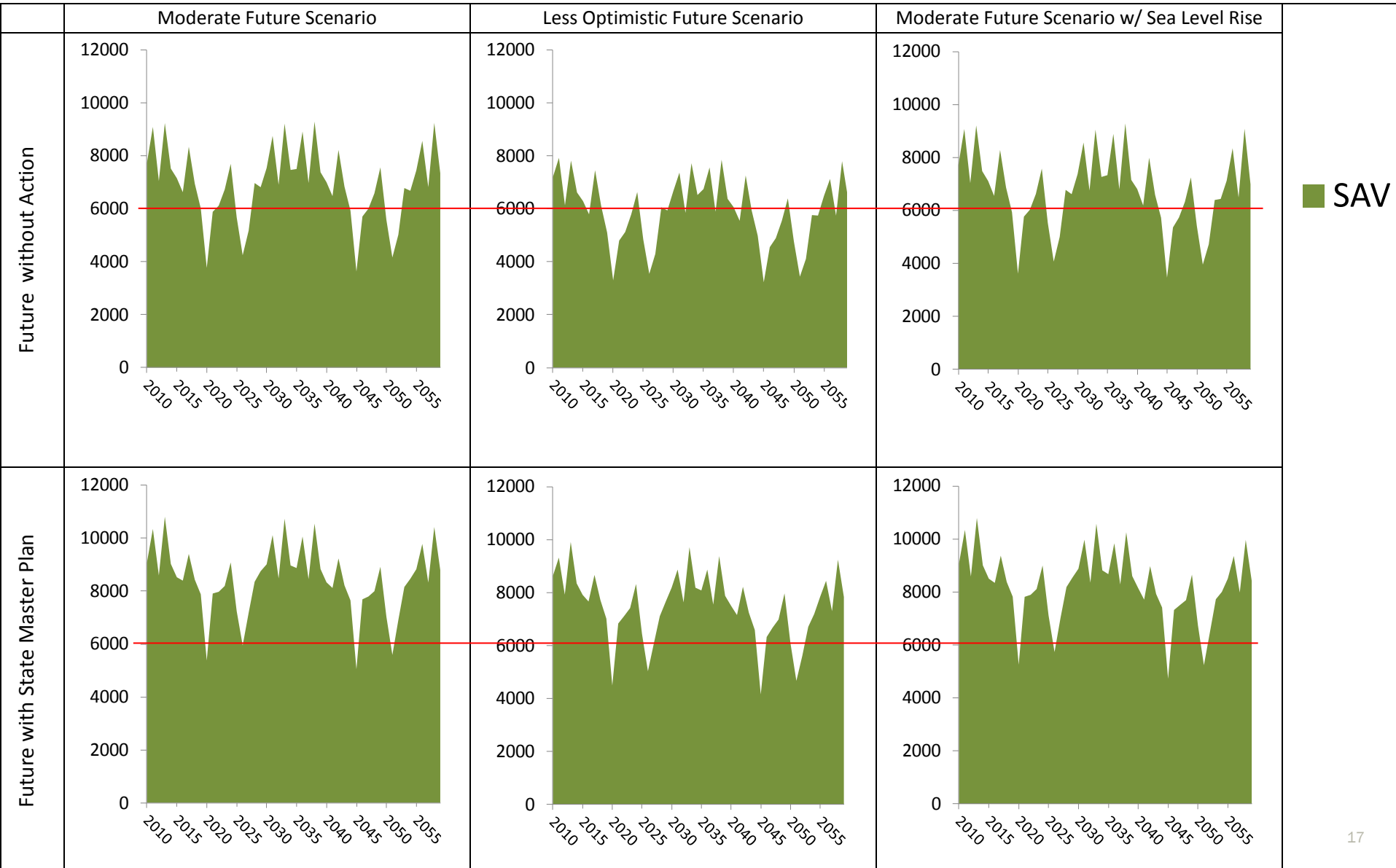


Master Plan Effect under all scenarios

| Vegetation Type | Moderate | Less Optimistic | Moderate +Sealevel |
|------------------|----------|-----------------|--------------------|
| Mangrove | - | ↓ | - |
| Oyster grass | ↓ | ↓↓ | ↓ |
| Salt grass | - | ↑ | - |
| Brackish Mixture | - | ↓ | ↓ |
| Wiregrass | ↓↓↓ | ↓↓ | ↓↓↓ |
| Paspalum | ↑ | ↑↑ | ↑↑ |
| Bultongue | ↑↑ | ↑↑ | ↑↑ |
| Cattail | - | - | ↑ |
| Maidencane | ↓↓ | ↓↓ | ↓↓ |
| Thinmat | ↑↑ | ↑↑ | ↑↑ |
| Swamp | ↑ | ↑ | ↑ |

Vegetation types that were not substantially changed are omitted from this table

Changes in Submerged Aquatic Vegetation



Conclusions

- Under all circumstances the estuarine gradient remains
 - Future without Action
 - Reduction of oligohaline and mesohaline zones
 - Loss of swamp forest
 - Master Plan
 - Reduction of mesohaline zone
 - Stops expansion of saline marsh types
 - Significantly reduces loss of swamp forest
 - Increases submerged aquatic vegetation