



# Louisiana Coastal Vegetative Type Characterization

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# Project Personnel:

- James B. Johnston, Principal Investigator
- Steve B. Hartley, Lead Principal Investigator
- John Barras, Co- Principal Investigator

## Project Collaborators:

- Greg Linscombe (Biologist), Louisiana Department of Wildlife and Fisheries Fur and Refuge Division
- Jerry Daigle (State Soil Scientist), USDA – Natural Resources Conservation Service
- Jon Porthouse (CRD Project Management Section), Louisiana Department of Natural Resources

# Introduction:

Coastal Louisiana has numerous data sets to conduct marsh change analyses. Most of these studies have used either the National Wetlands Inventory Data (1956, 1978, 1988) or the Vegetative Type Maps (1949, 1968, 1978, 1988, 1997) (Chabreck et al. 2001).

Recently, the United States Geological Survey (USGS)-Biological Resources Division (BRD)/ National Wetlands Research Center (NWRC) and the Louisiana Department of Wildlife and Fisheries Fur and Refuge Division (LDWF) completed the development of the 2001 Vegetative Type map for Louisiana.

# Introduction (cont.):

This data set and others are a cumulative effort to map and portray the ever-changing coastal vegetative types. However, because of the technology used in the past to map the vegetative types we can not reflect, within reason, the “true” amount of marsh acreages. In order to make better usage of the 2001 and others (1978, 1988, 1997), a new methodology must be adopted to calculate marsh acreages.

# History of Vegetative Type Maps

- Ted O'Neil, 1949
- Chabreck, Joanen, Palmisano, 1968
- Chabreck and Linscombe, 1978
- Chabreck and Linscombe, 1988
- Chabreck and Linscombe, 1997
- Chabreck and Linscombe, 2001

# Proposal Synopsis:

Geographic information systems (GIS) will be used to develop a comprehensive land / water interface for coastal Louisiana using the 1998 Digital Ortho-Quarter Quadrangles (DOQQ's). We propose to use this land / water interface and ancillary photography to classify LANDSAT imagery to the closest available corresponding vegetative marsh type map dates.

# Proposal Synopsis (cont.):

The classified land / water data sets would then be merged with each corresponding vegetative marsh type map to produce improved vegetative data sets, which then could be used to show realistic marsh acreage changes.

# Objectives:

- Develop improved Vegetative Type databases and maps for 1978, 1988, 1997, and 2001 Louisiana coastal areas.
- Develop a detailed coast-wide land / water interface that can be used by numerous studies relating to habitat loss, pipeline erosion, and navigable waterways.

# Objectives (cont.):

- Provide information that resource managers can utilize in a variety of applications related to their mission, such as:

Environmental Impact Statement Preparation

Pipeline Assessments

Natural Resource Damage Assessments

Vegetative Assessments

Navigable Waterway Assessments

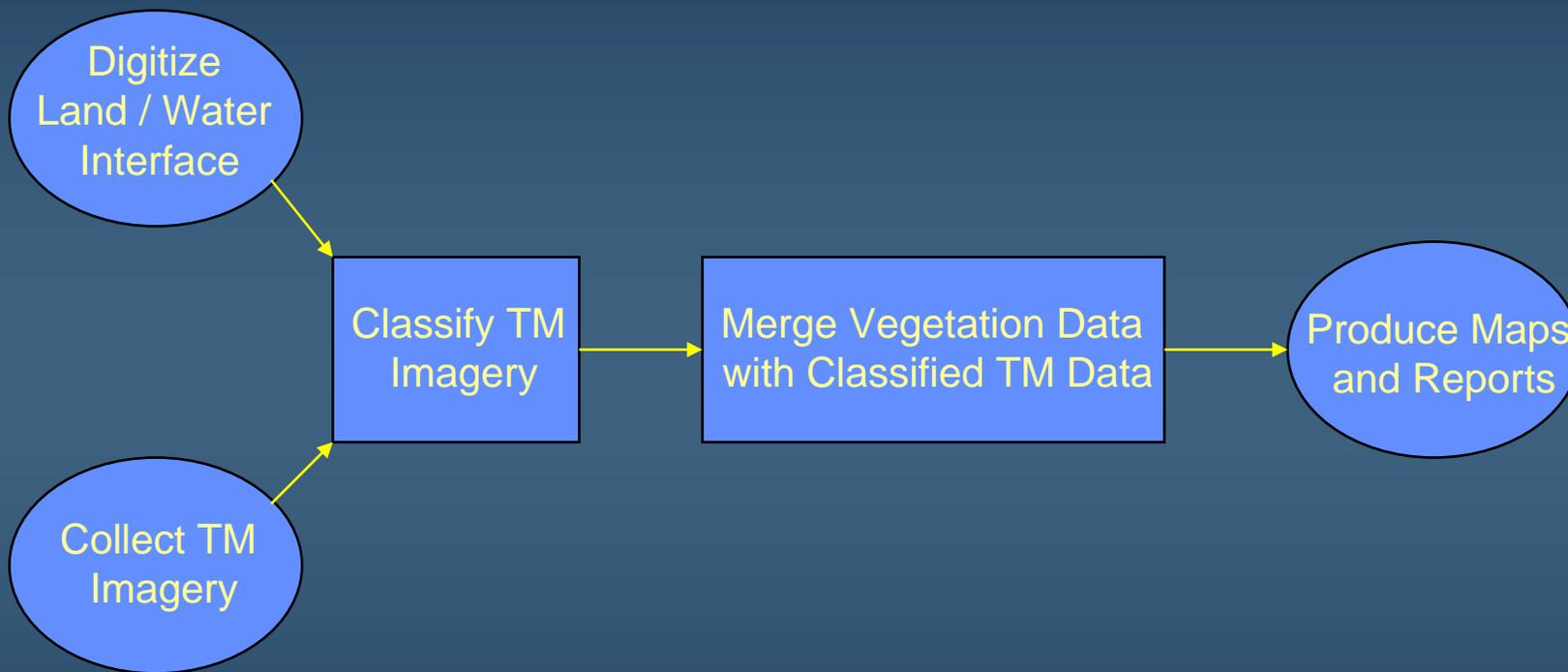
# Products:

- Maps showing marsh types for each time period with associated acreage tables.
- Map showing marsh type change analysis.
- Visual animation file of coastal marsh change.
- Complete coverage of land / water interface digitized from the 1998 DOQQs.
- Digital copy of all classified and raw TM data.

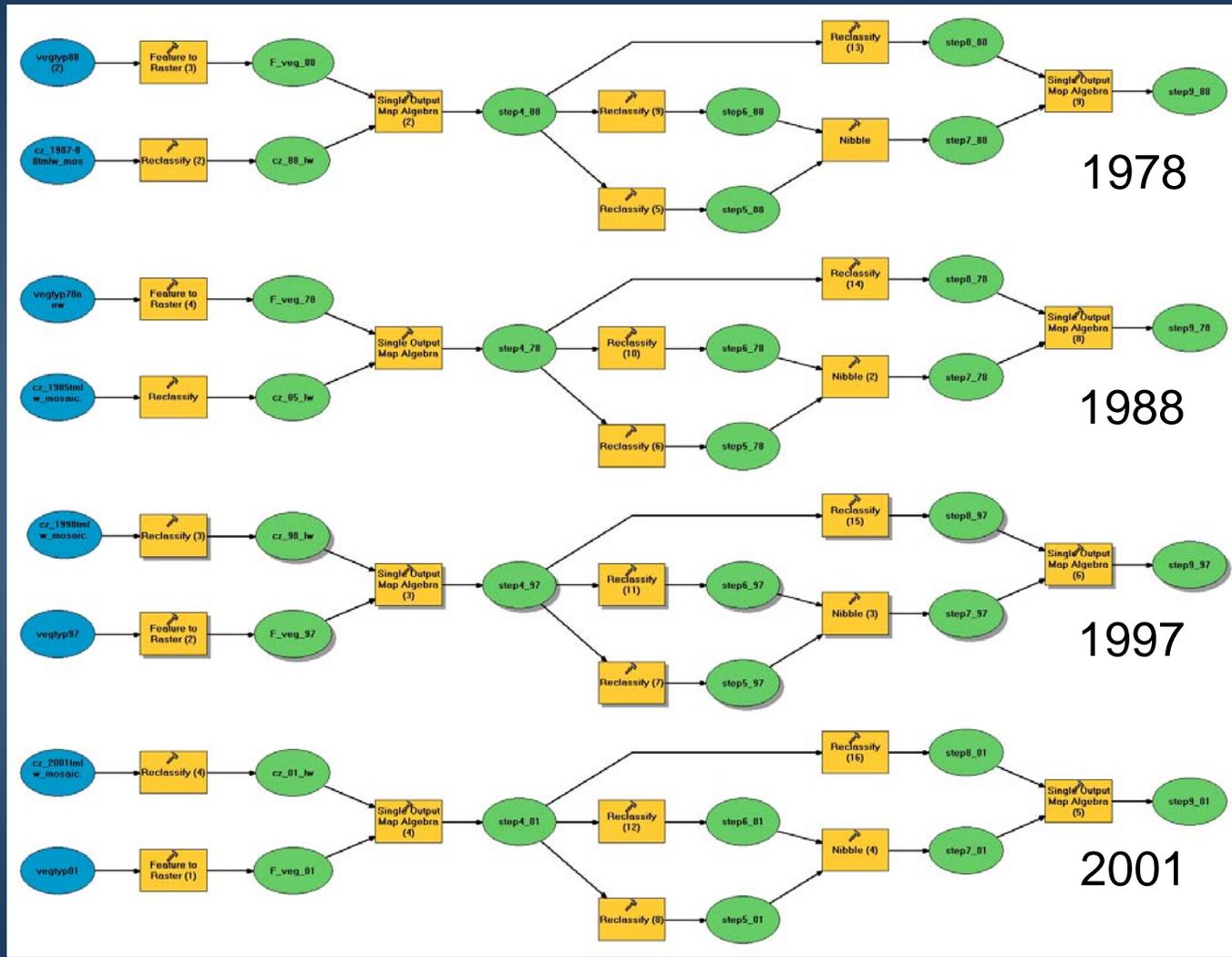
# Schedule:

- FY2003-04 – Development of a coast-wide land / water interface for Louisiana using the 1998 DOQQ database.
- FY2004-05 – Develop Vegetative Type databases and maps for 1978, 1988, 1997, and 2001 Louisiana coastal areas using LANDSAT TM imagery.

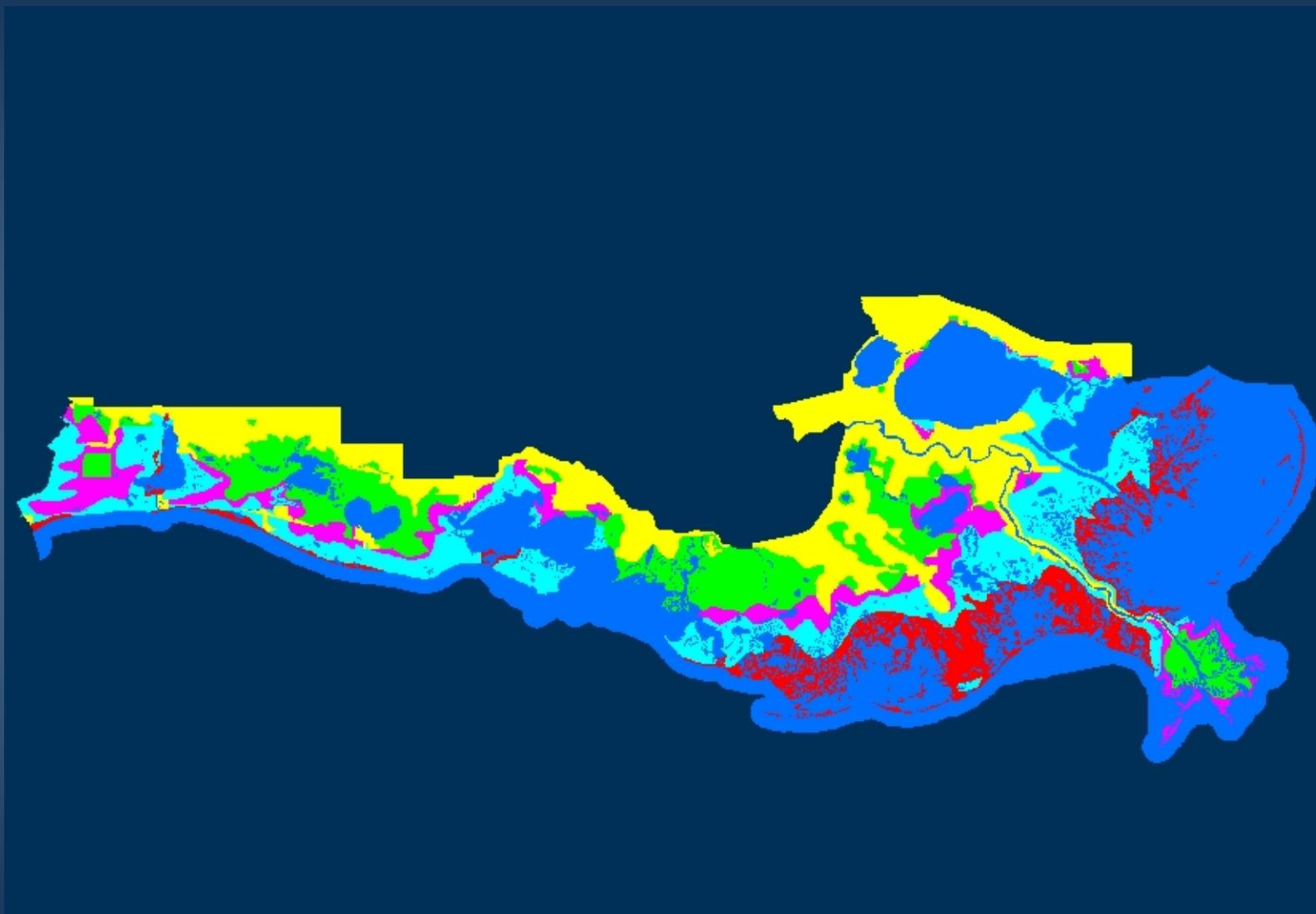
# Work Flow



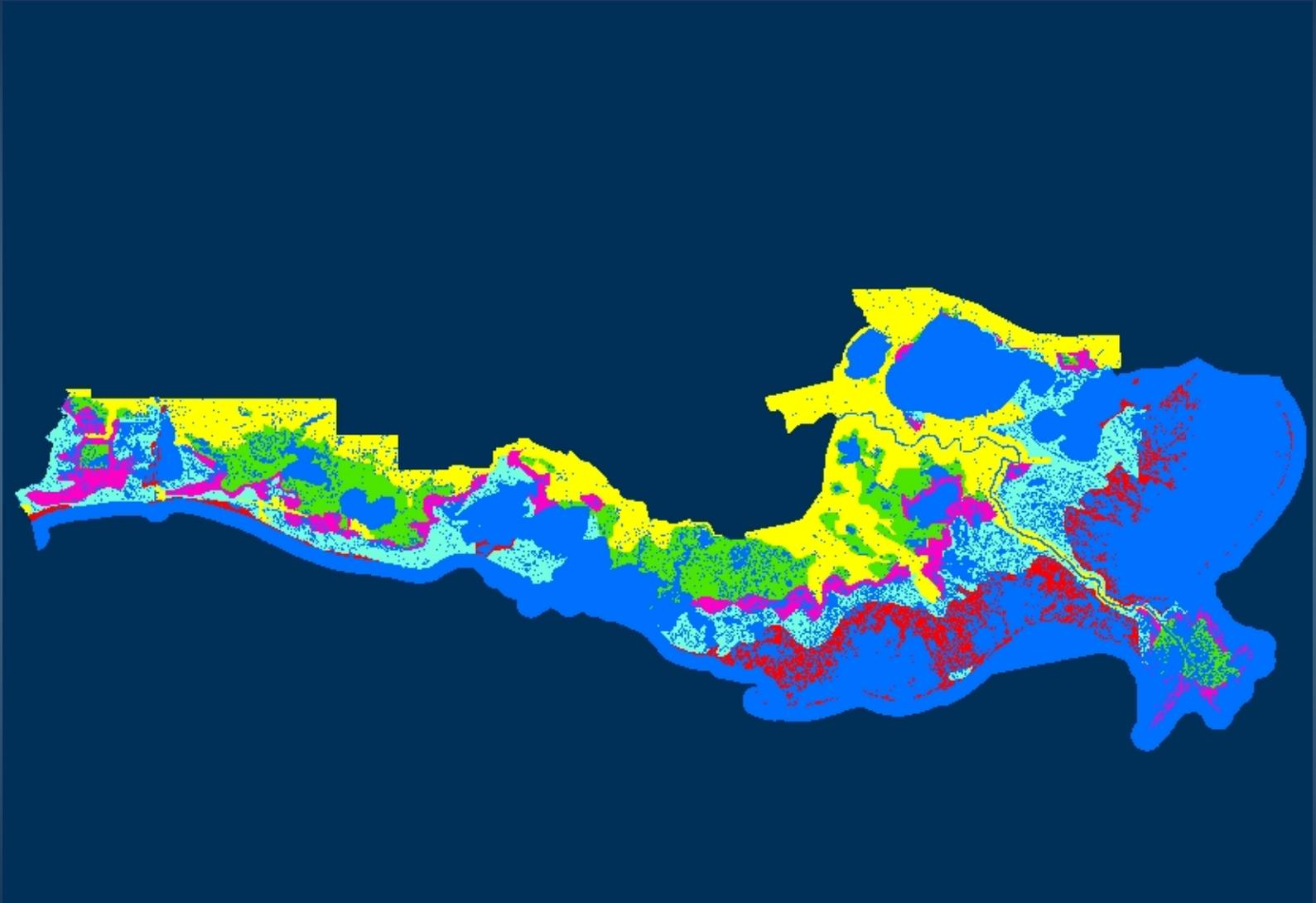
# ArcGIS Model for Classifying TM Imagery



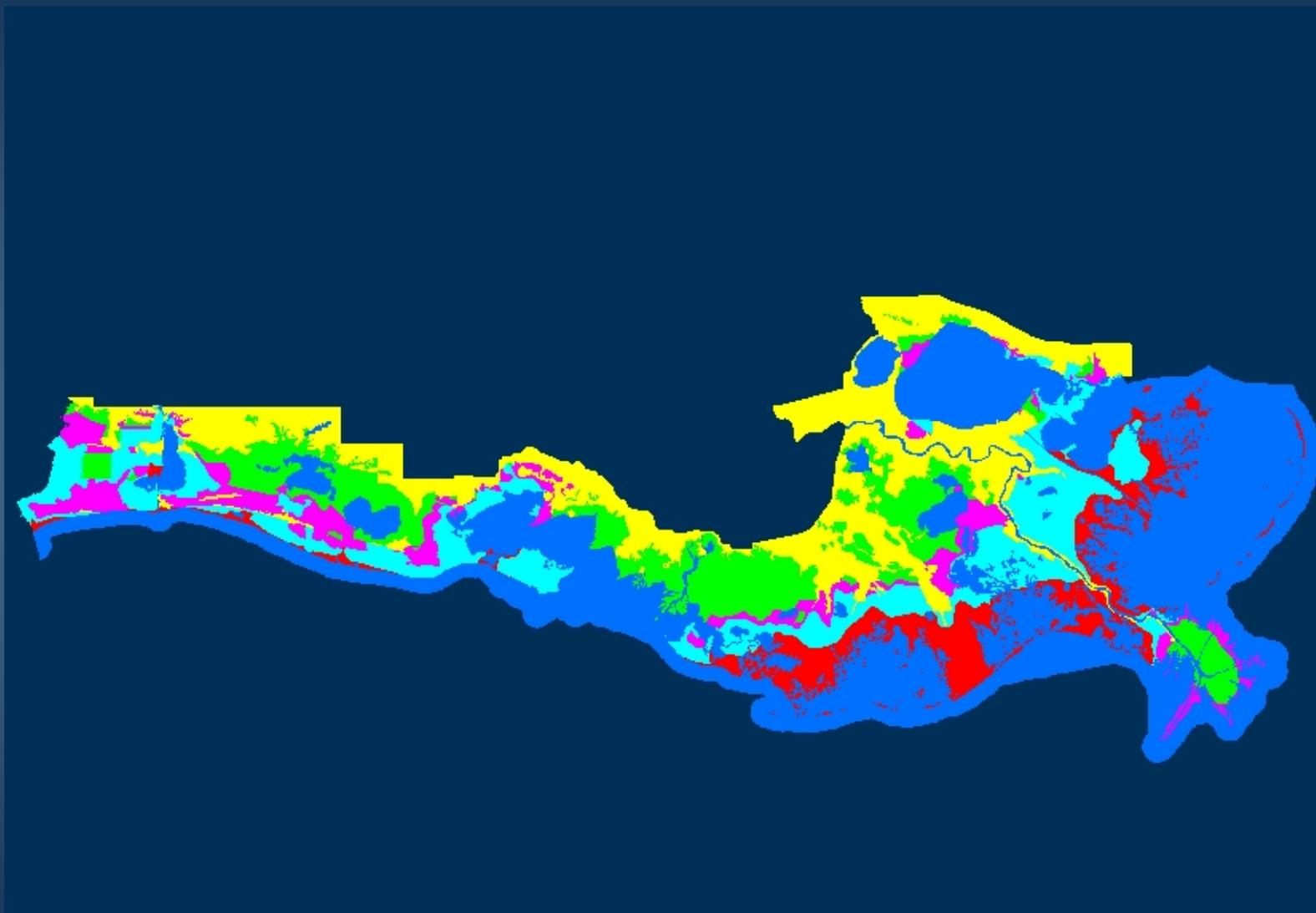
# Old Vegetation Map for 1978



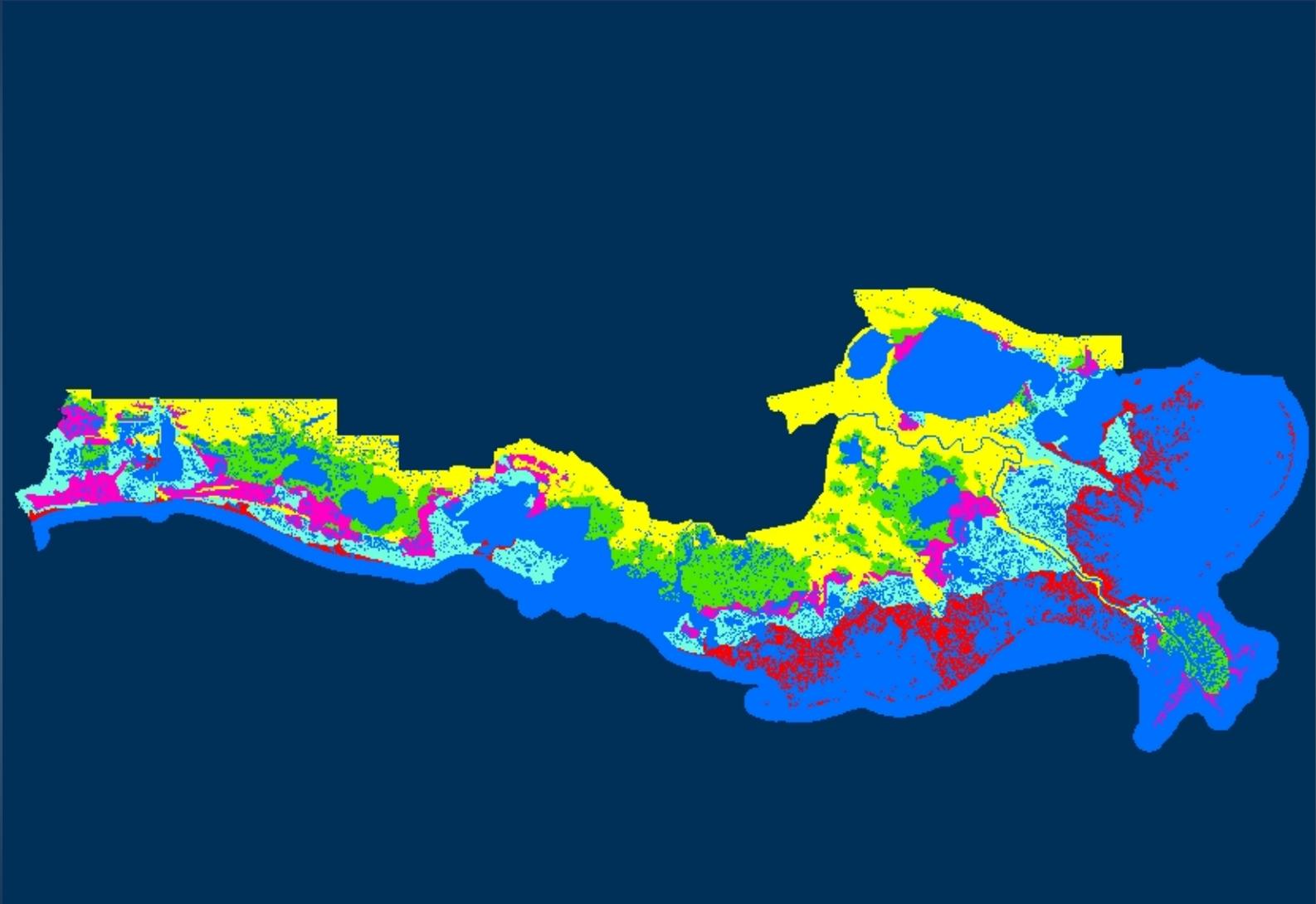
# New Vegetation Map for 1978



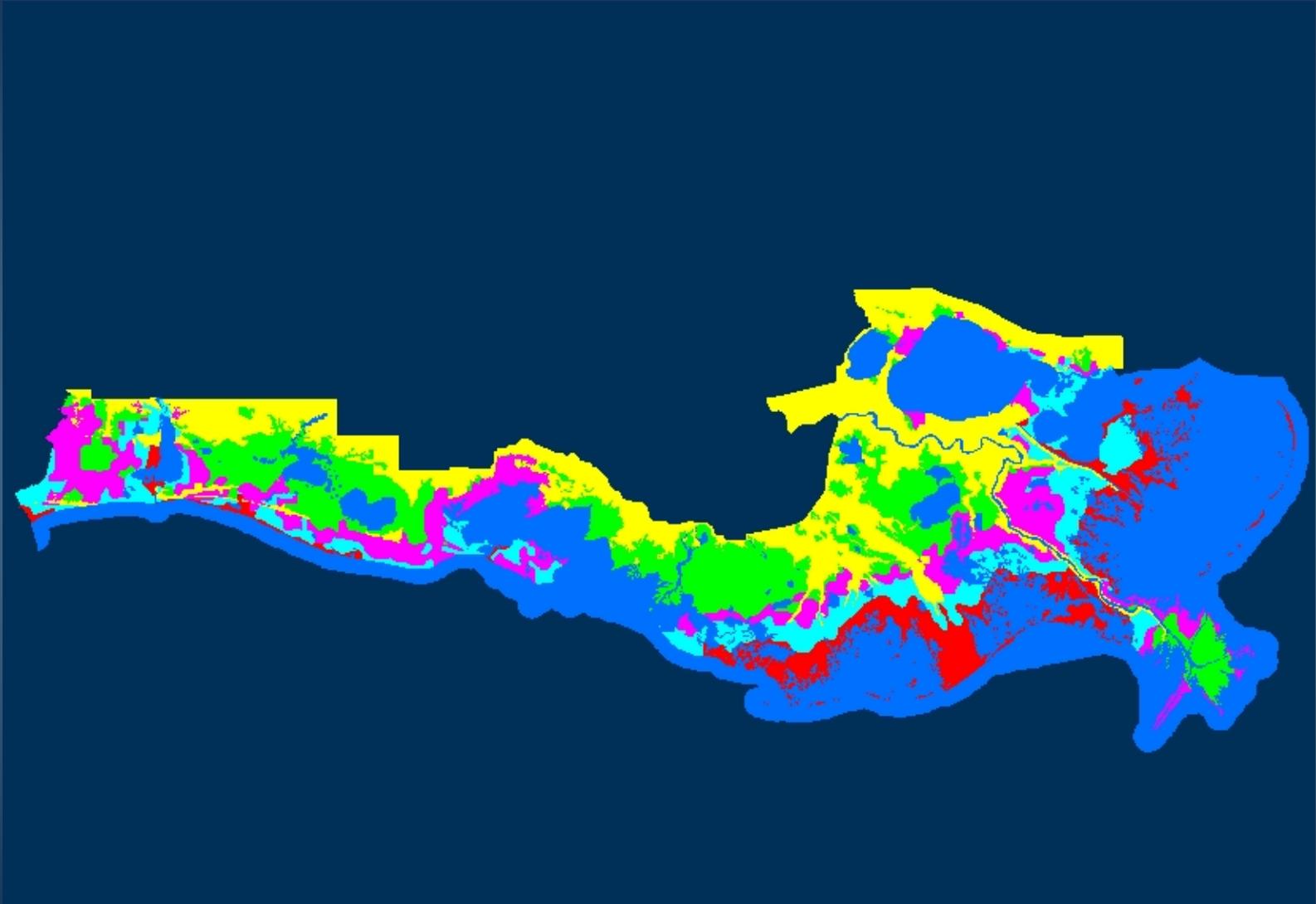
# Old Vegetation Map for 1988



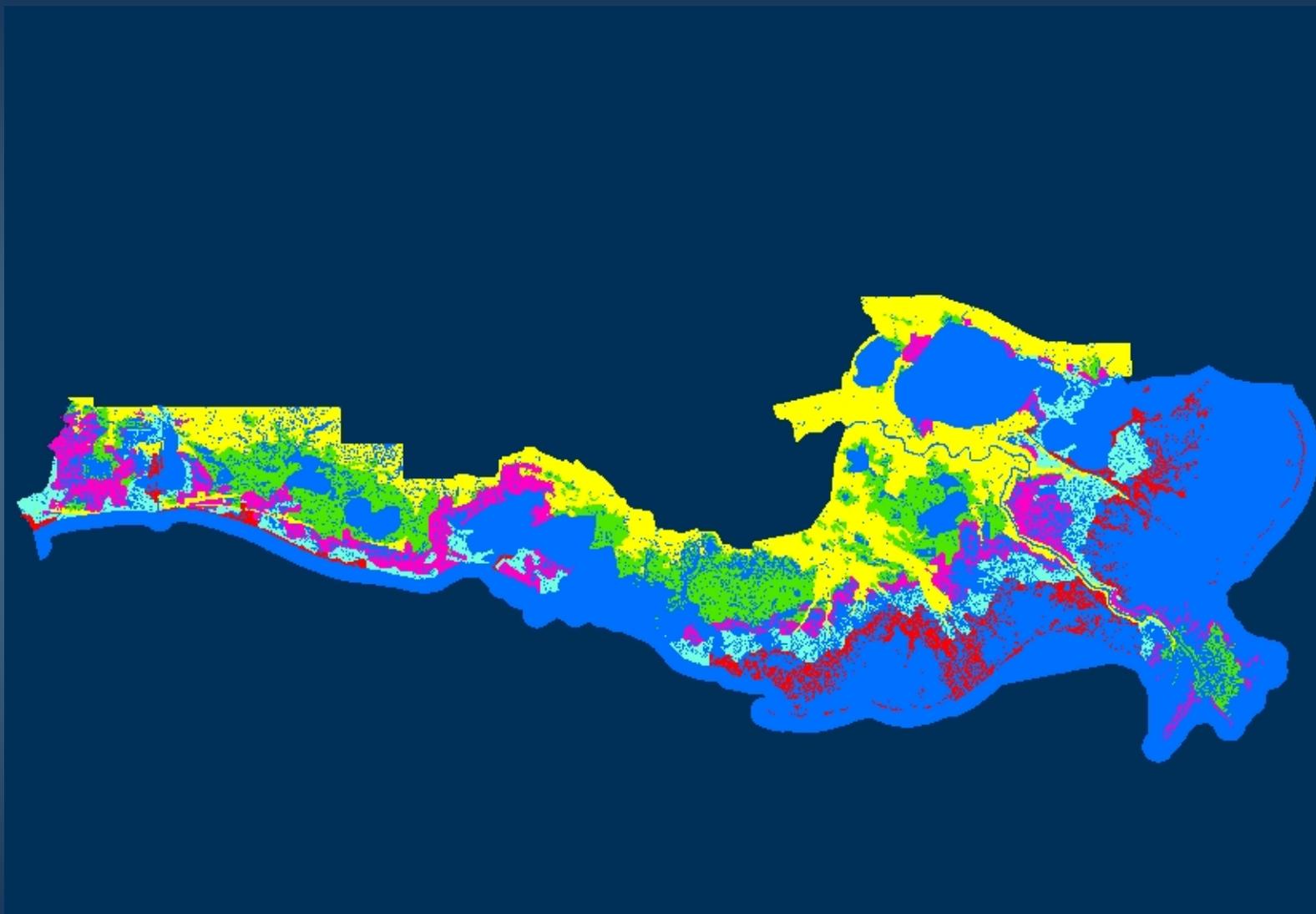
# New Vegetation Map for 1988



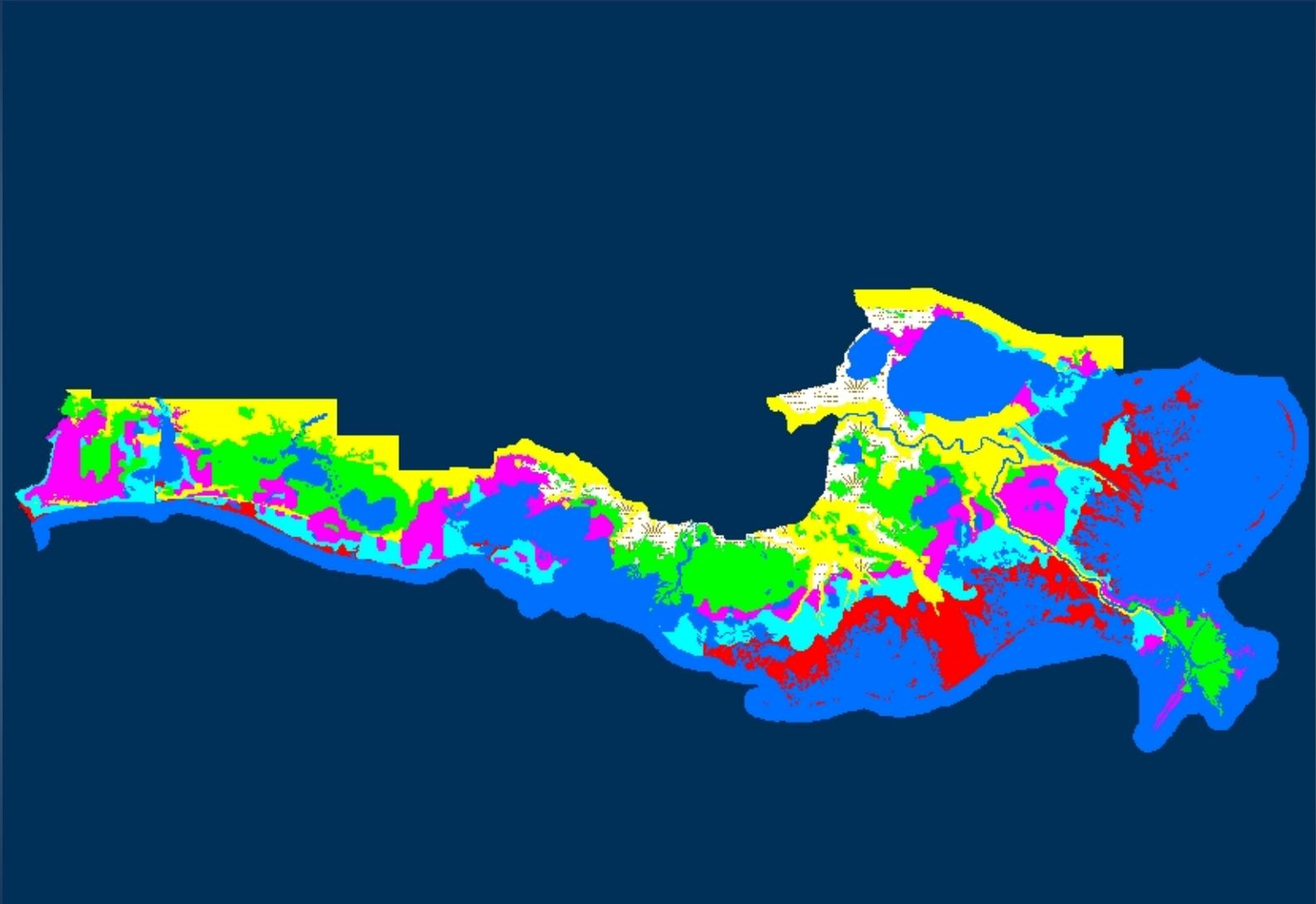
# Old Vegetation Map for 1997



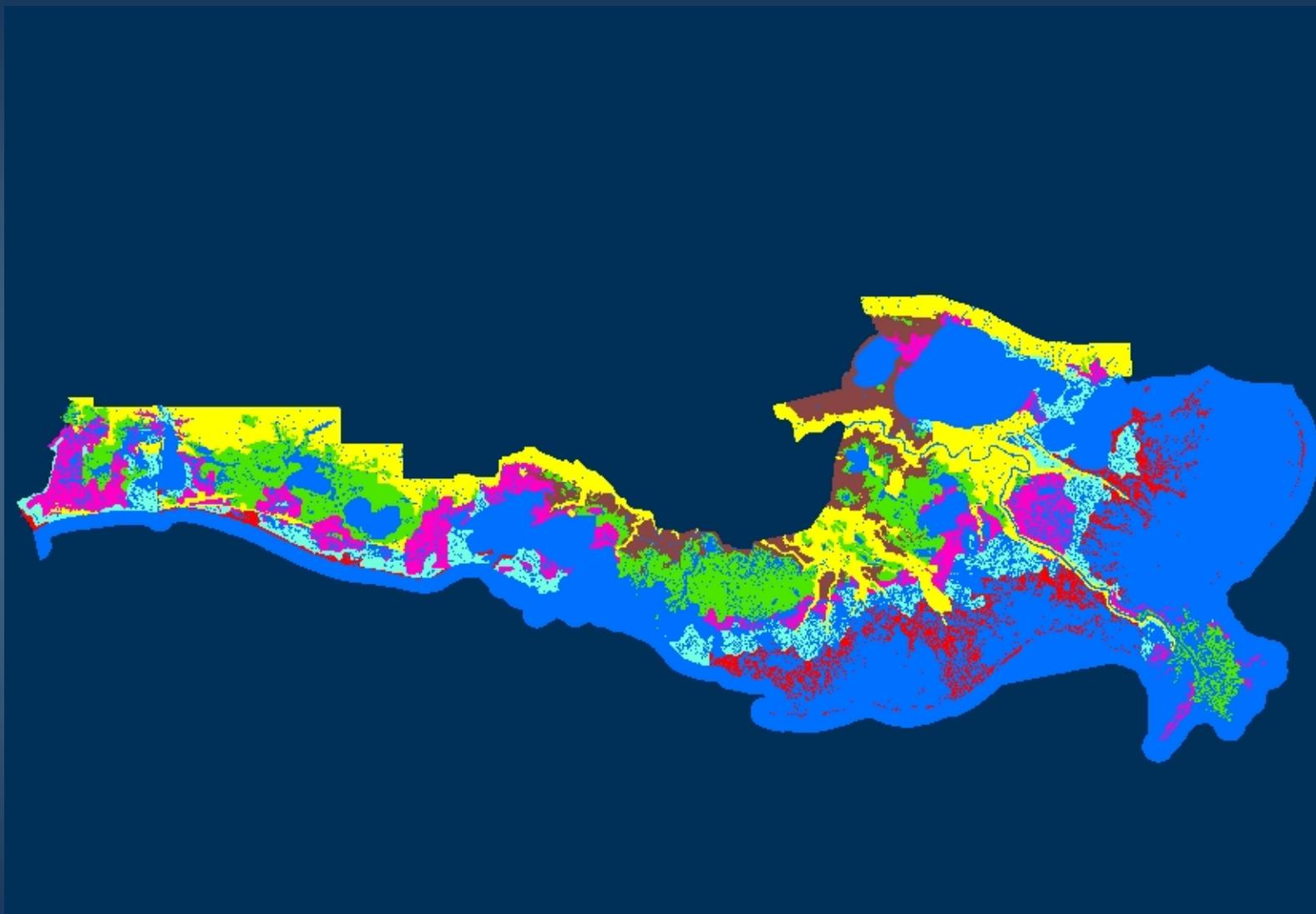
# New Vegetation Map for 1997



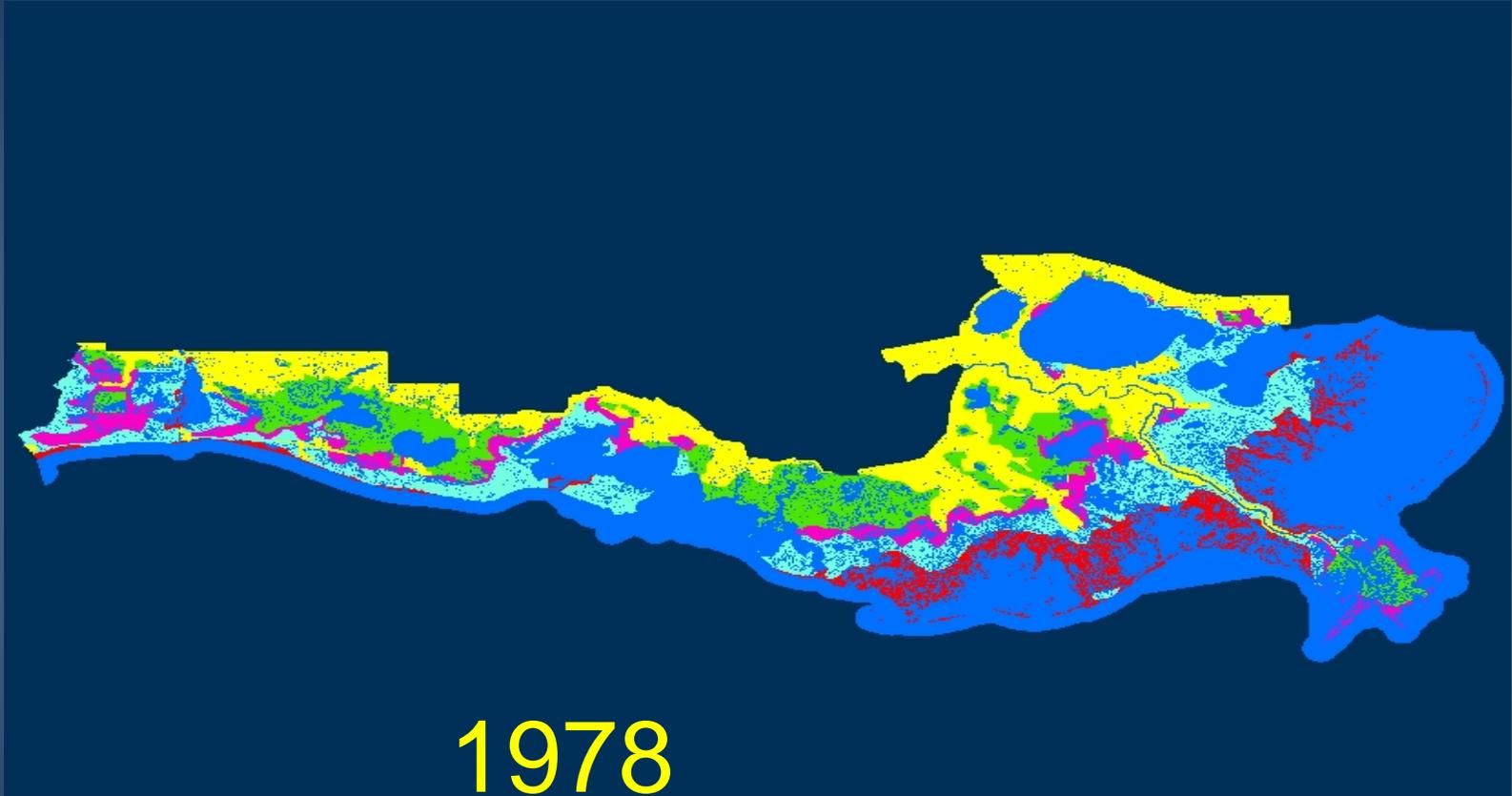
# Old Vegetation Map for 2001



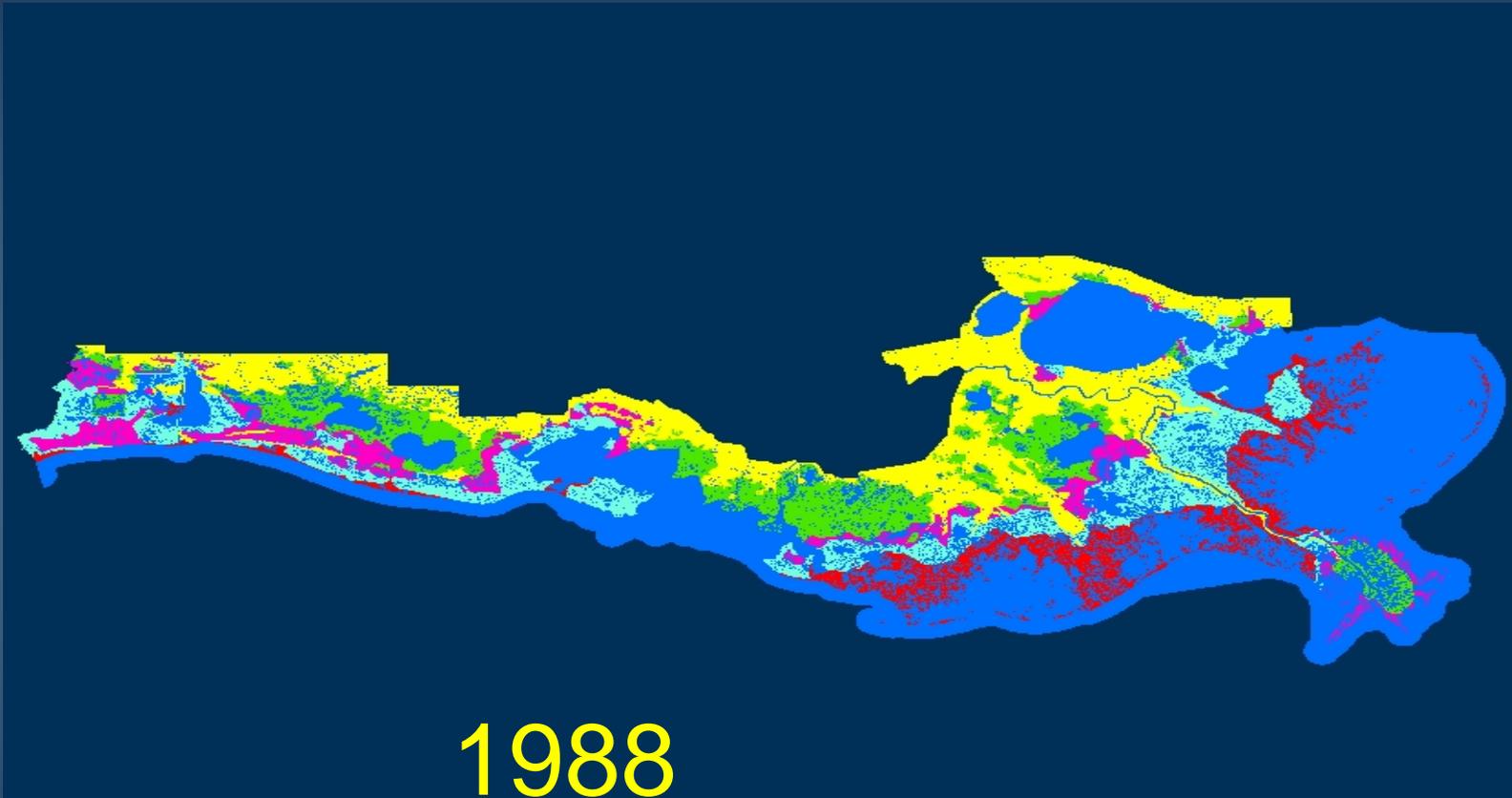
# New Vegetation Map for 2001



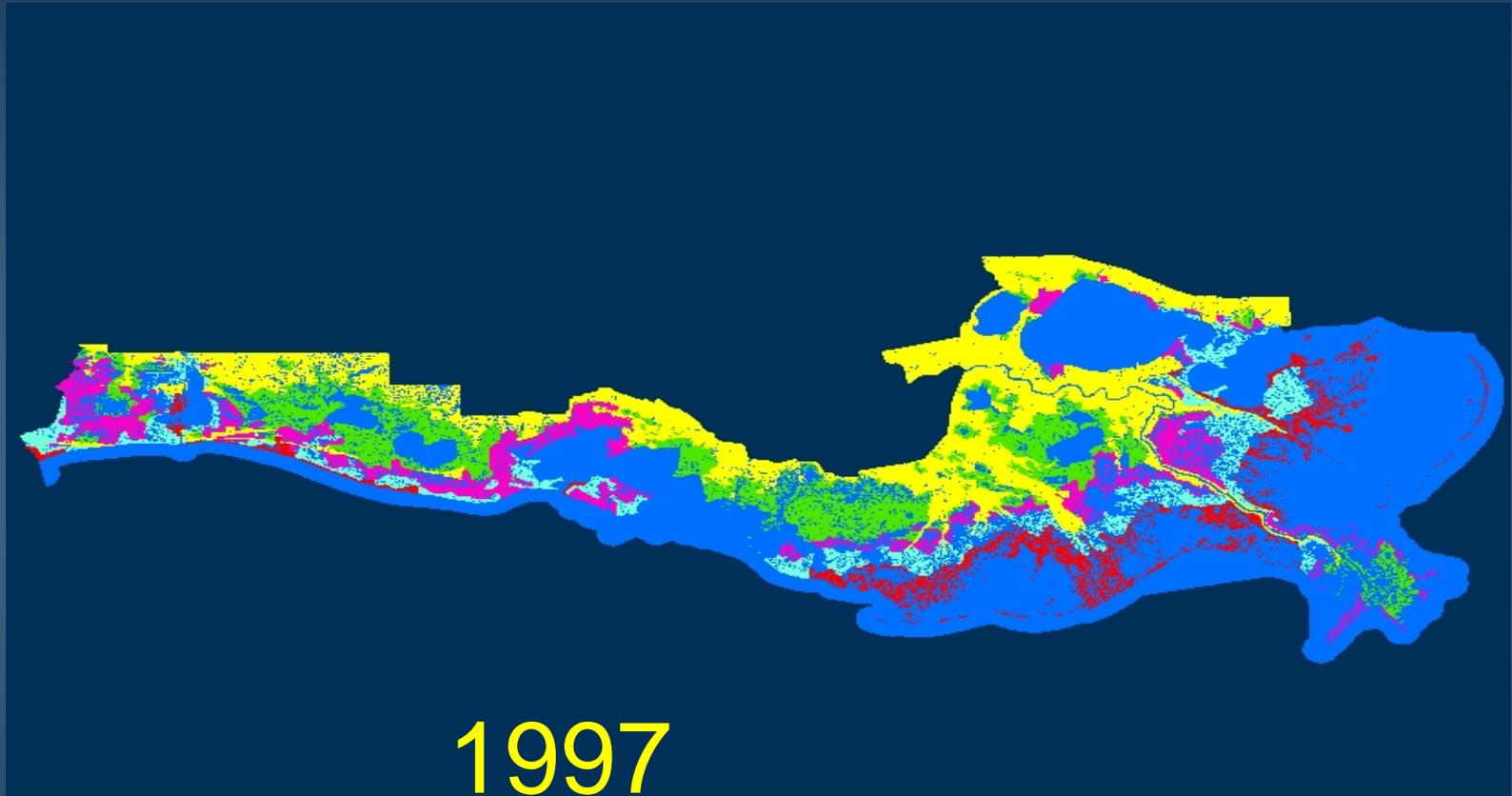
# Vegetation Time Change Map



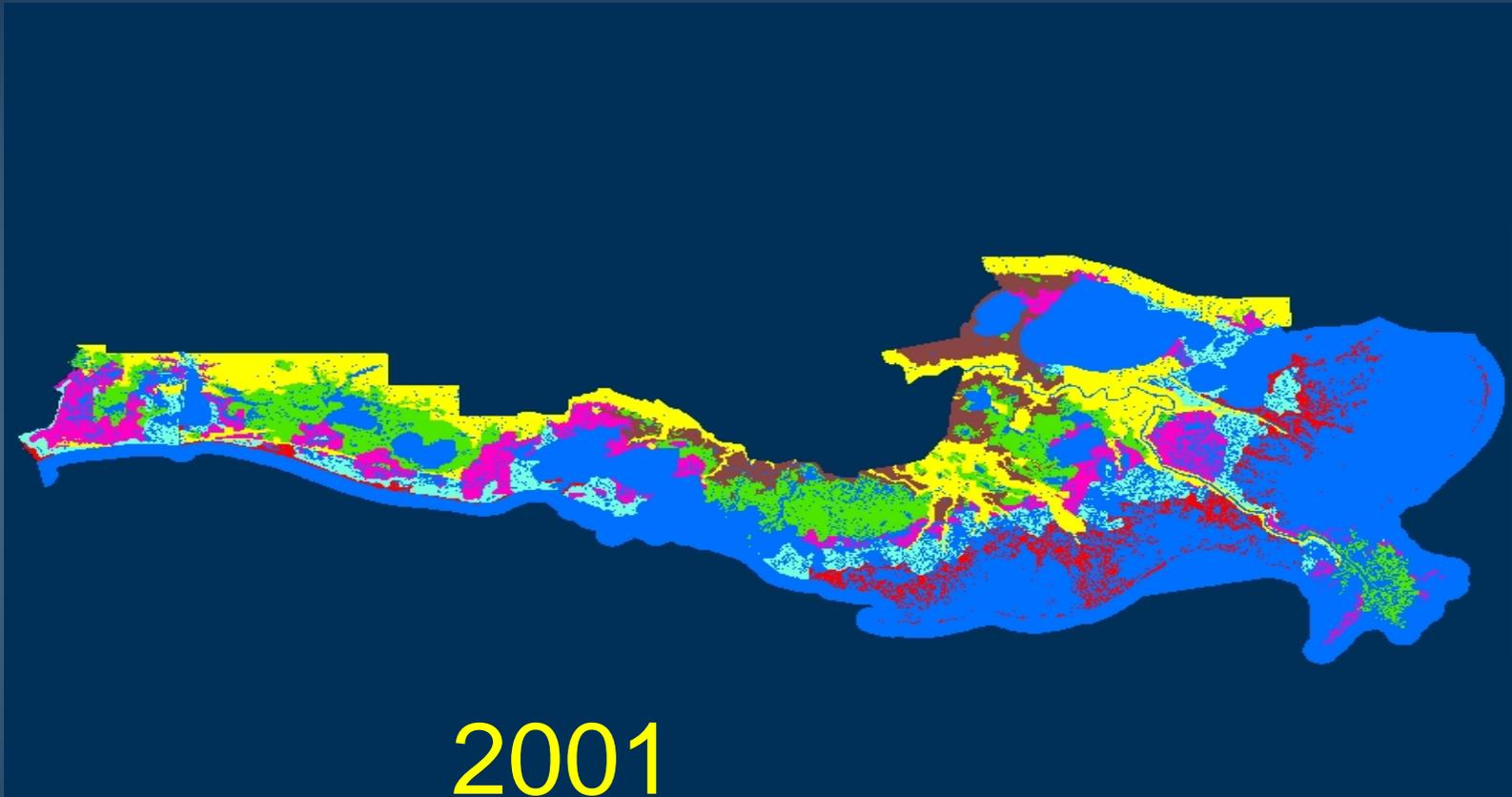
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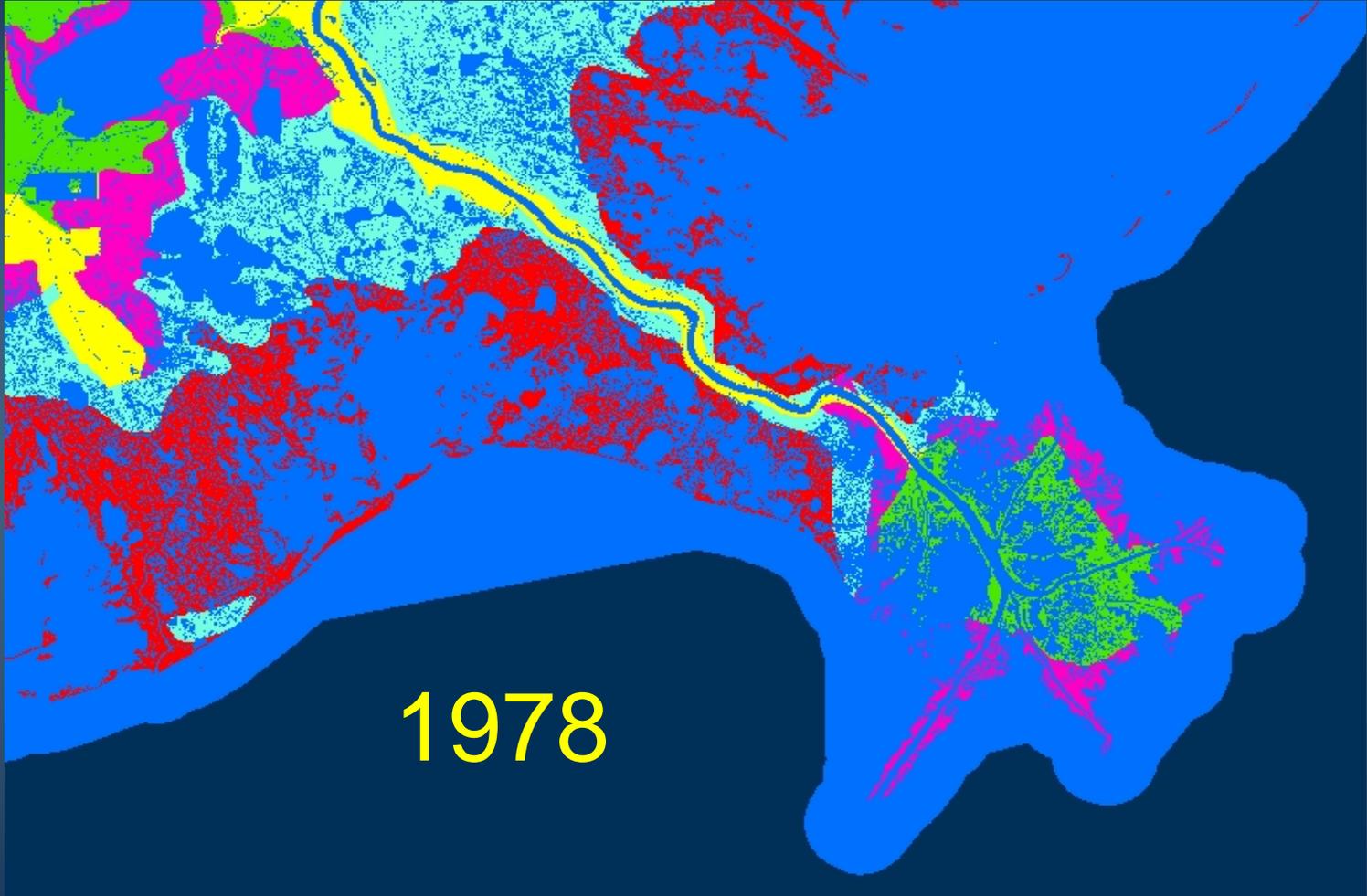
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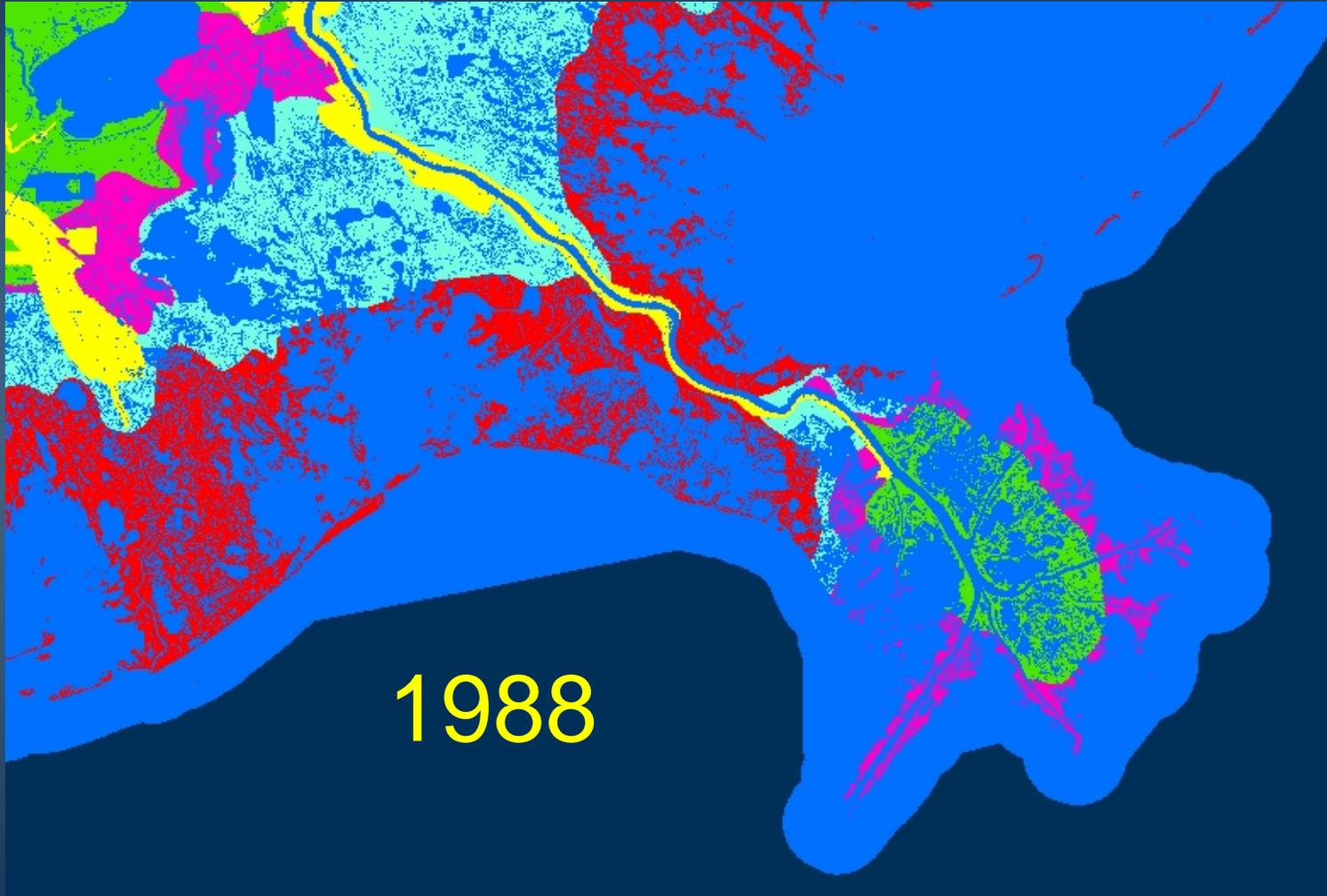
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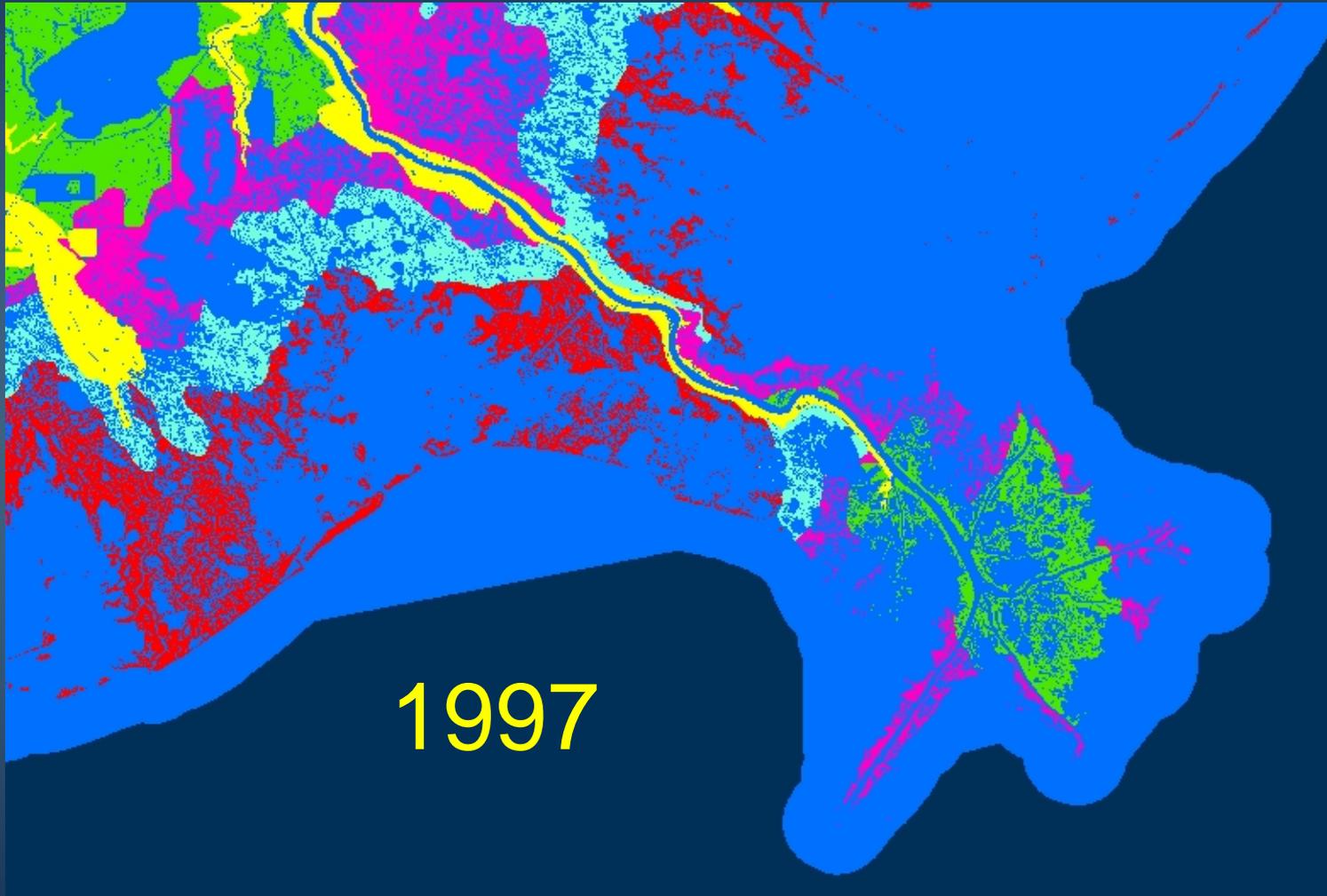
# Vegetation Time Change Map



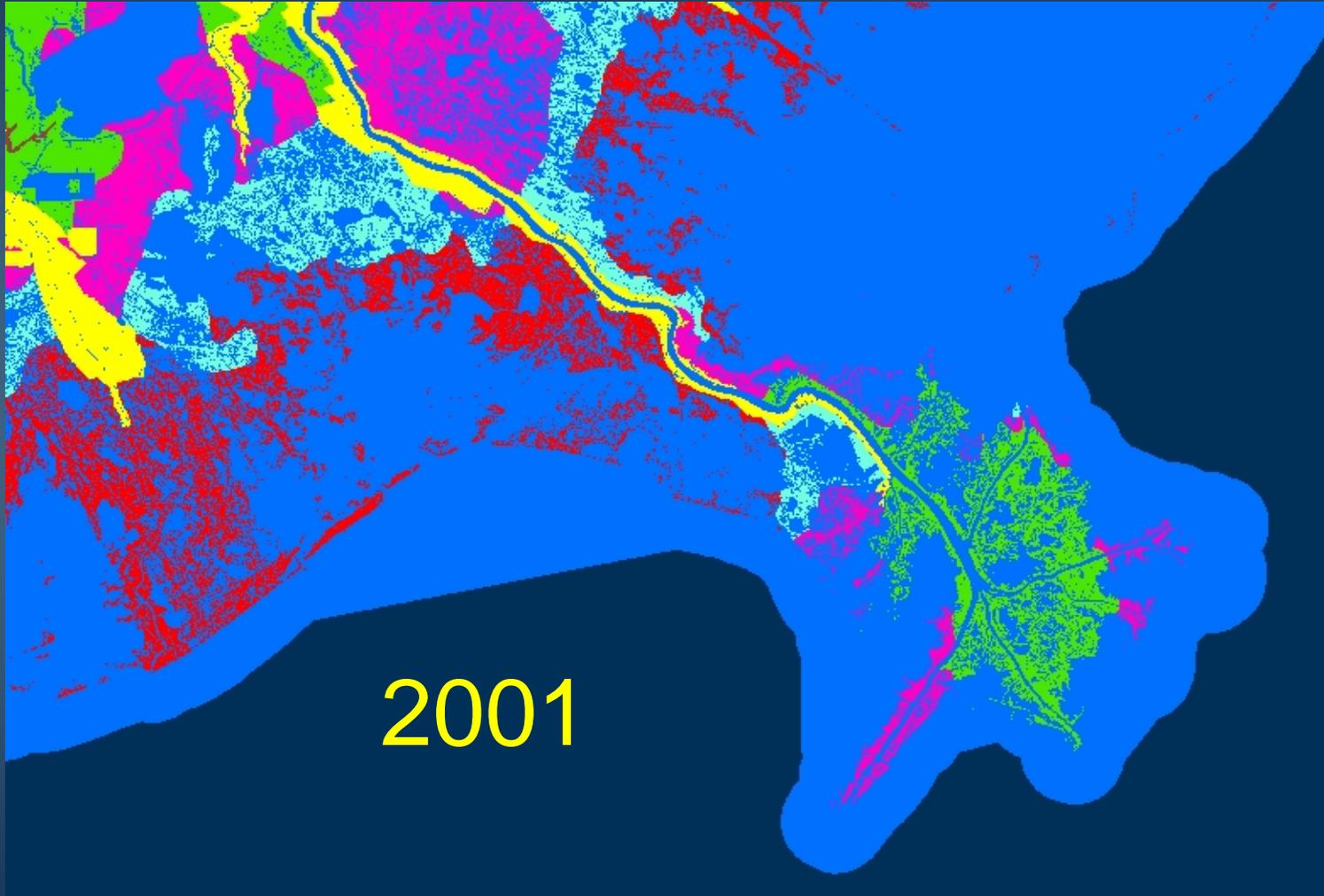
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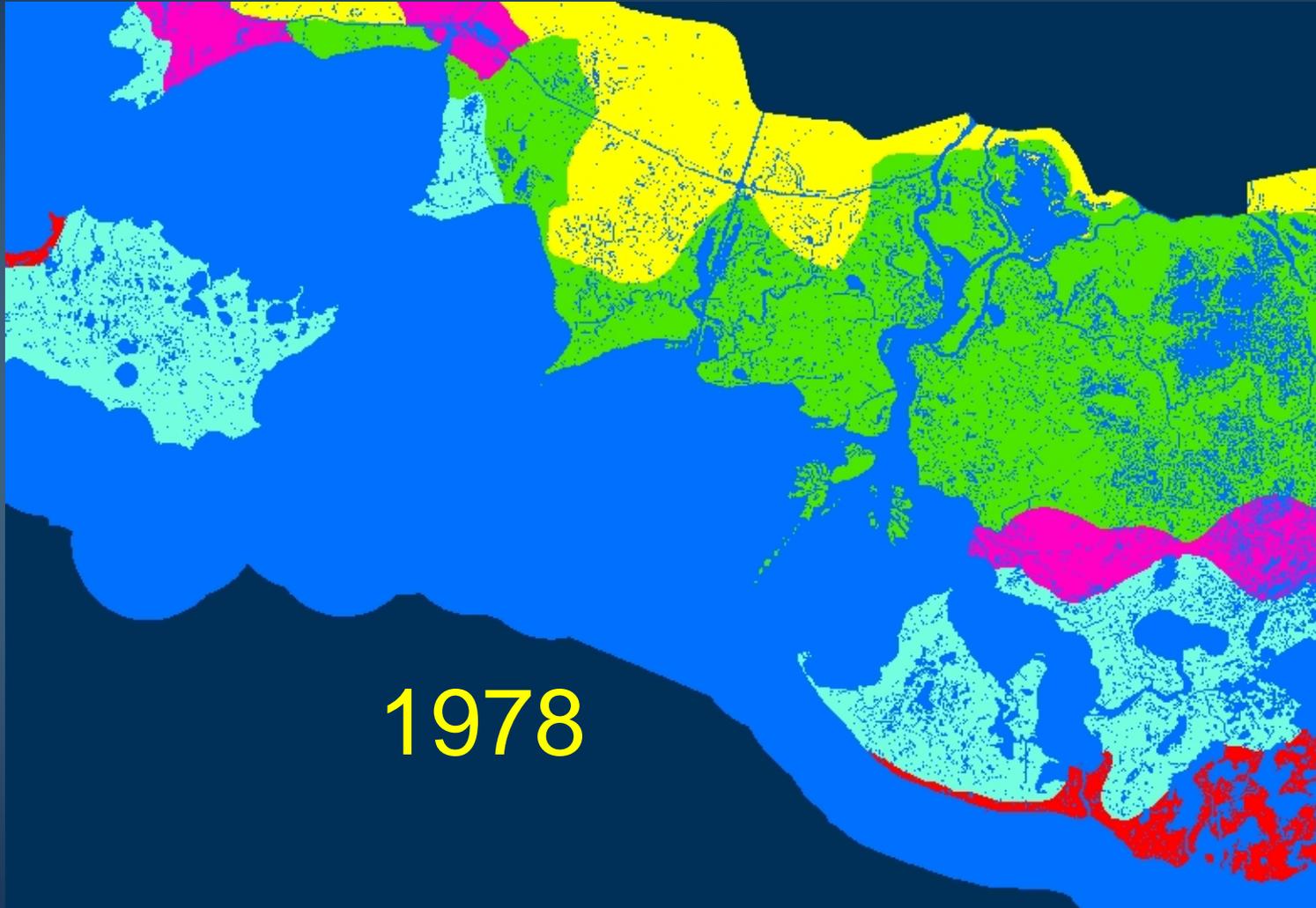
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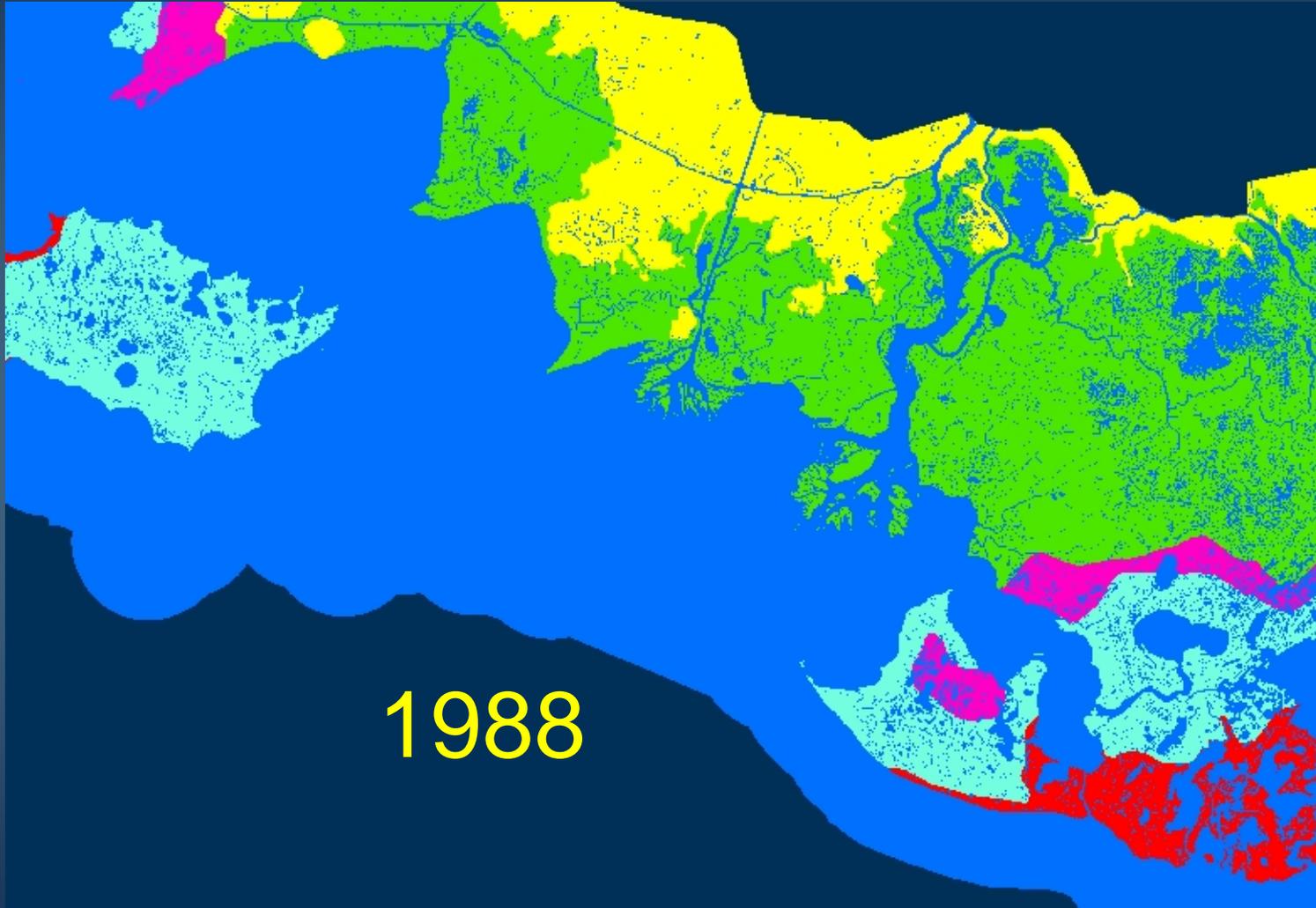
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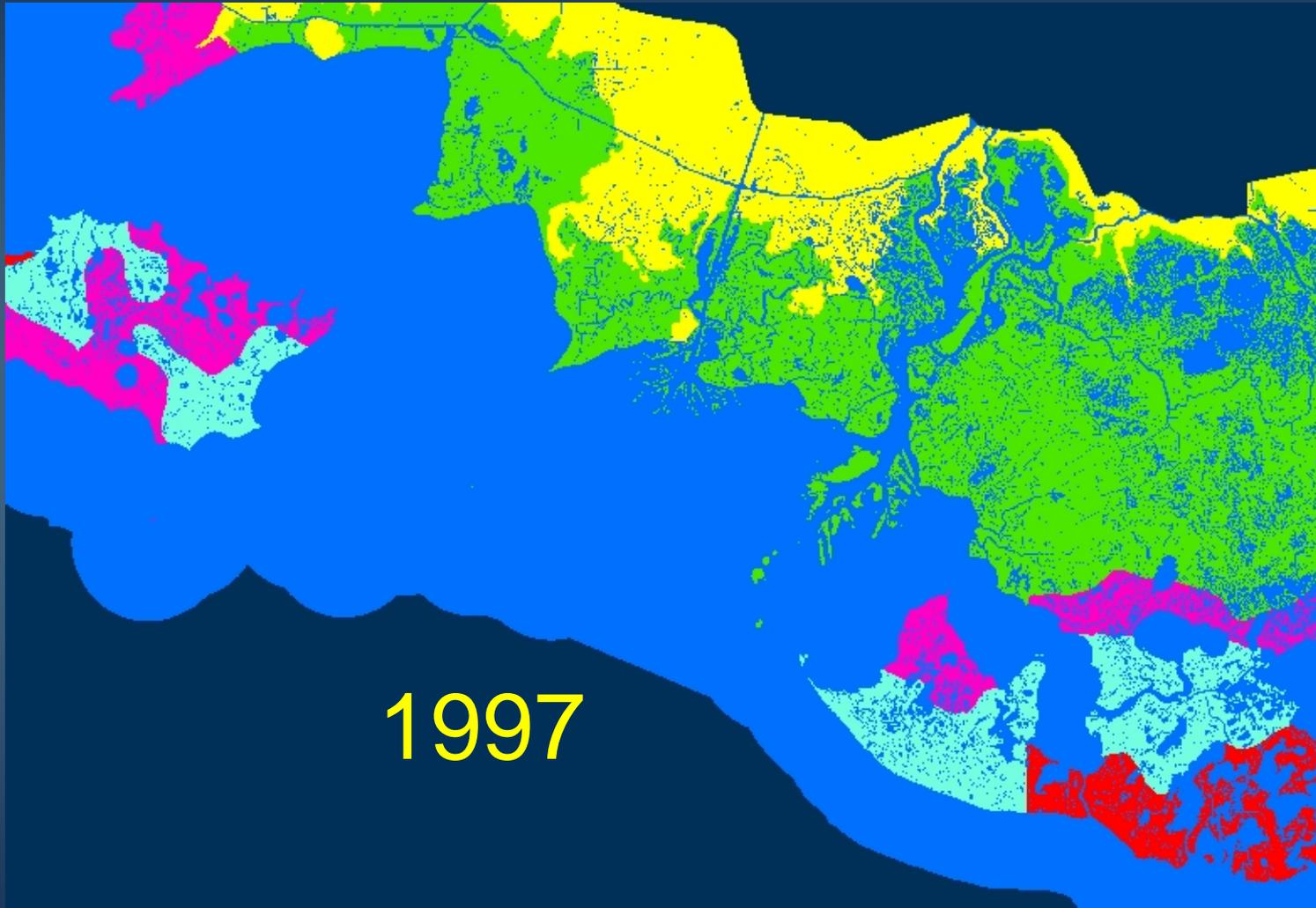
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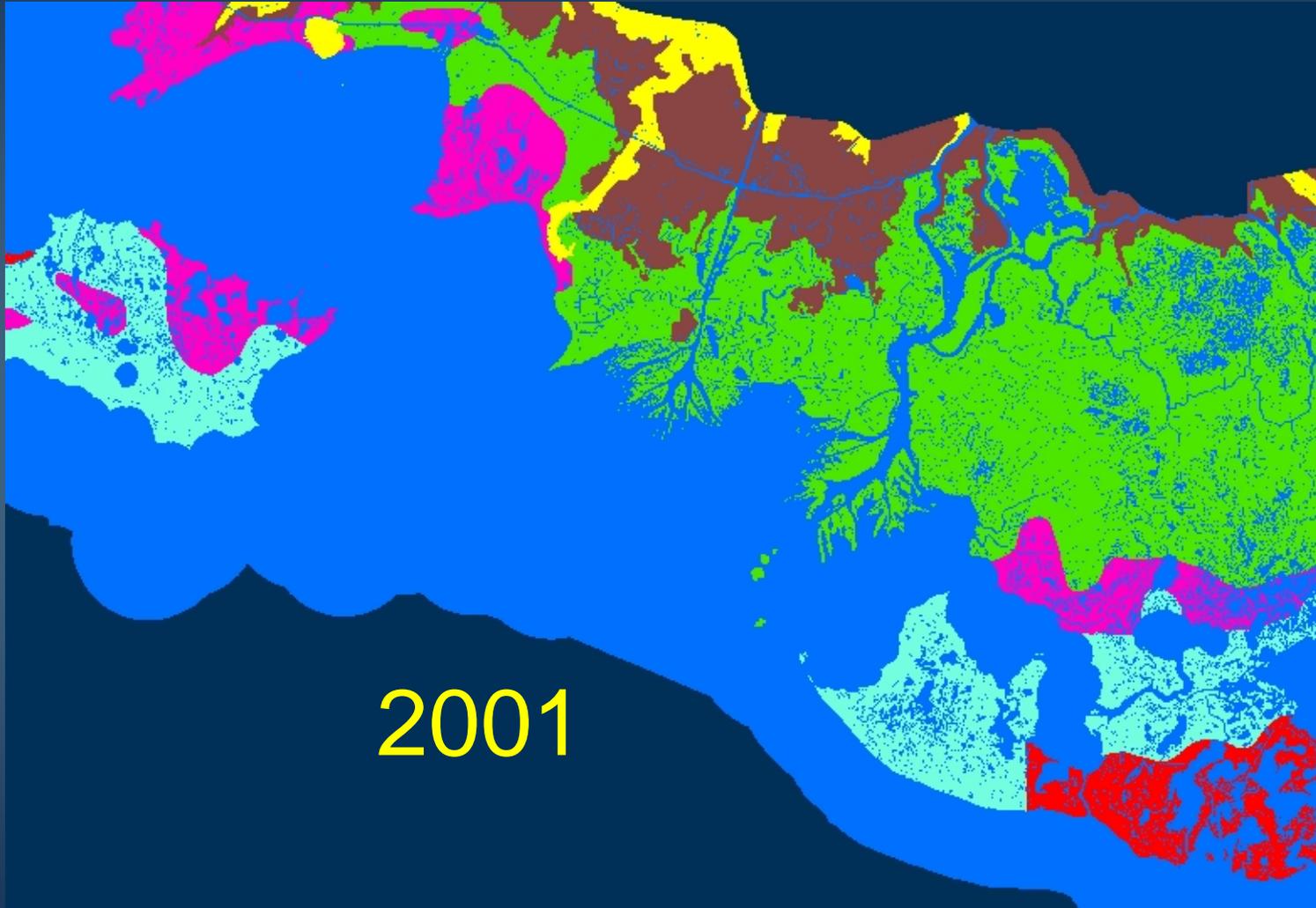
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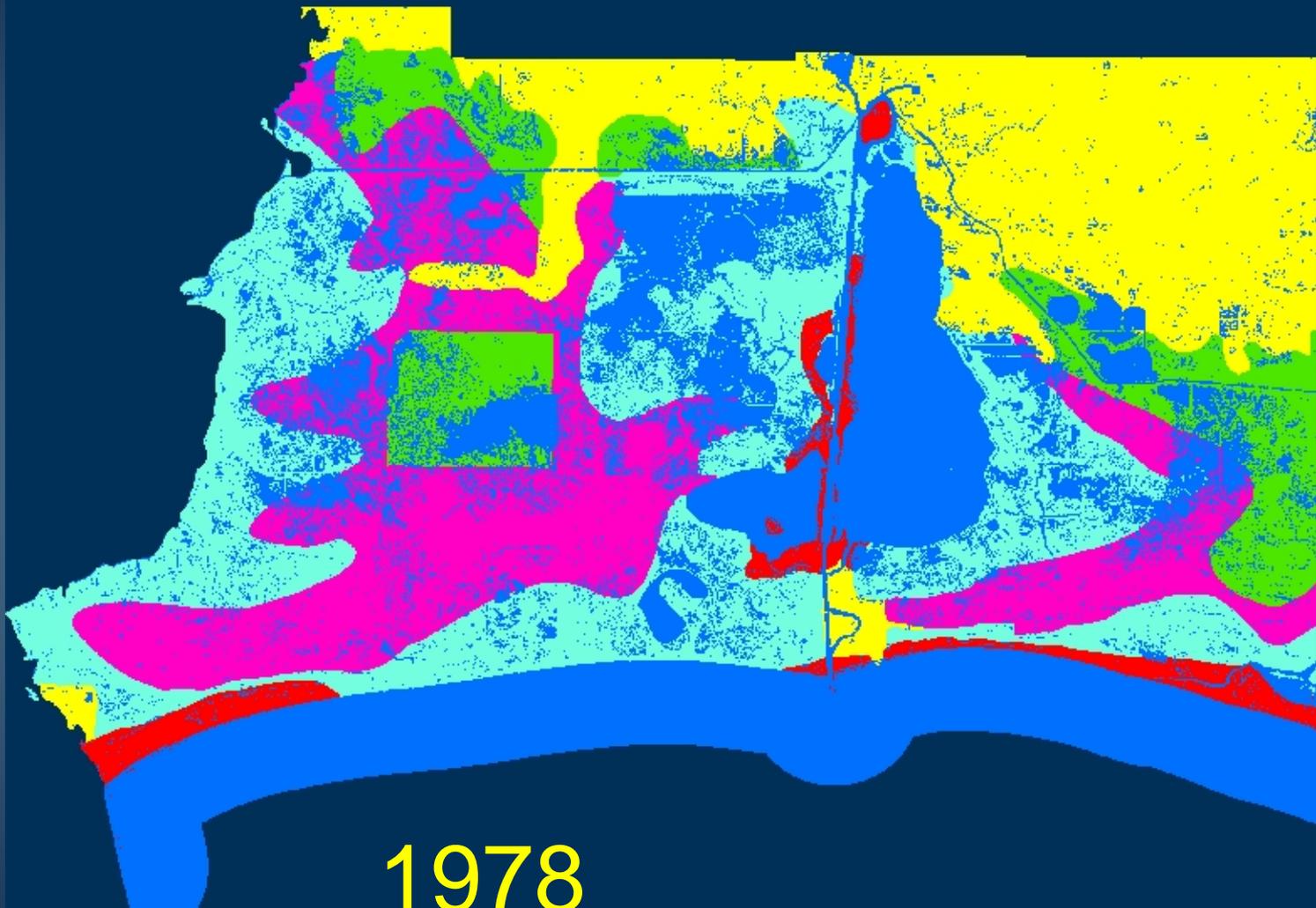
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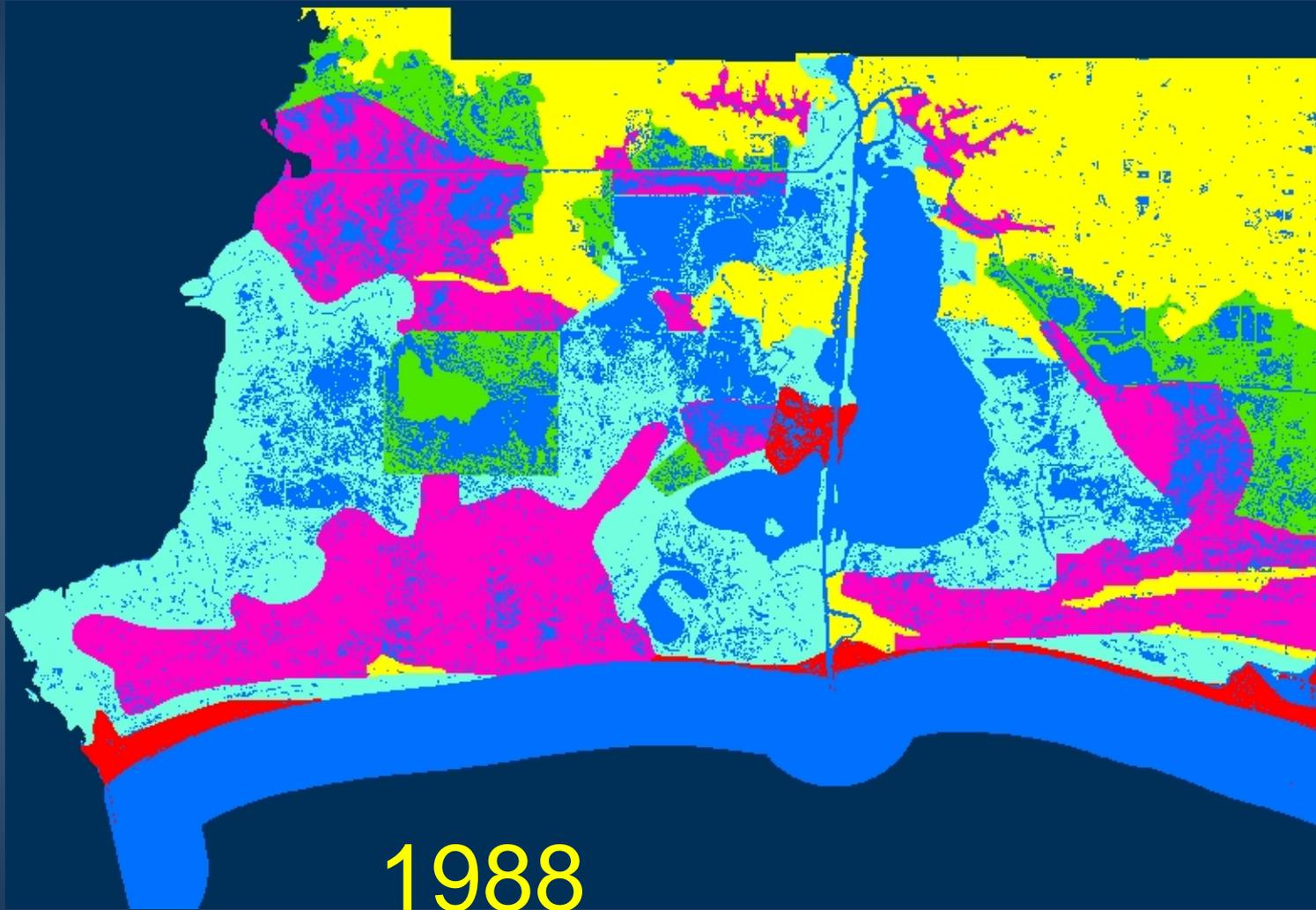
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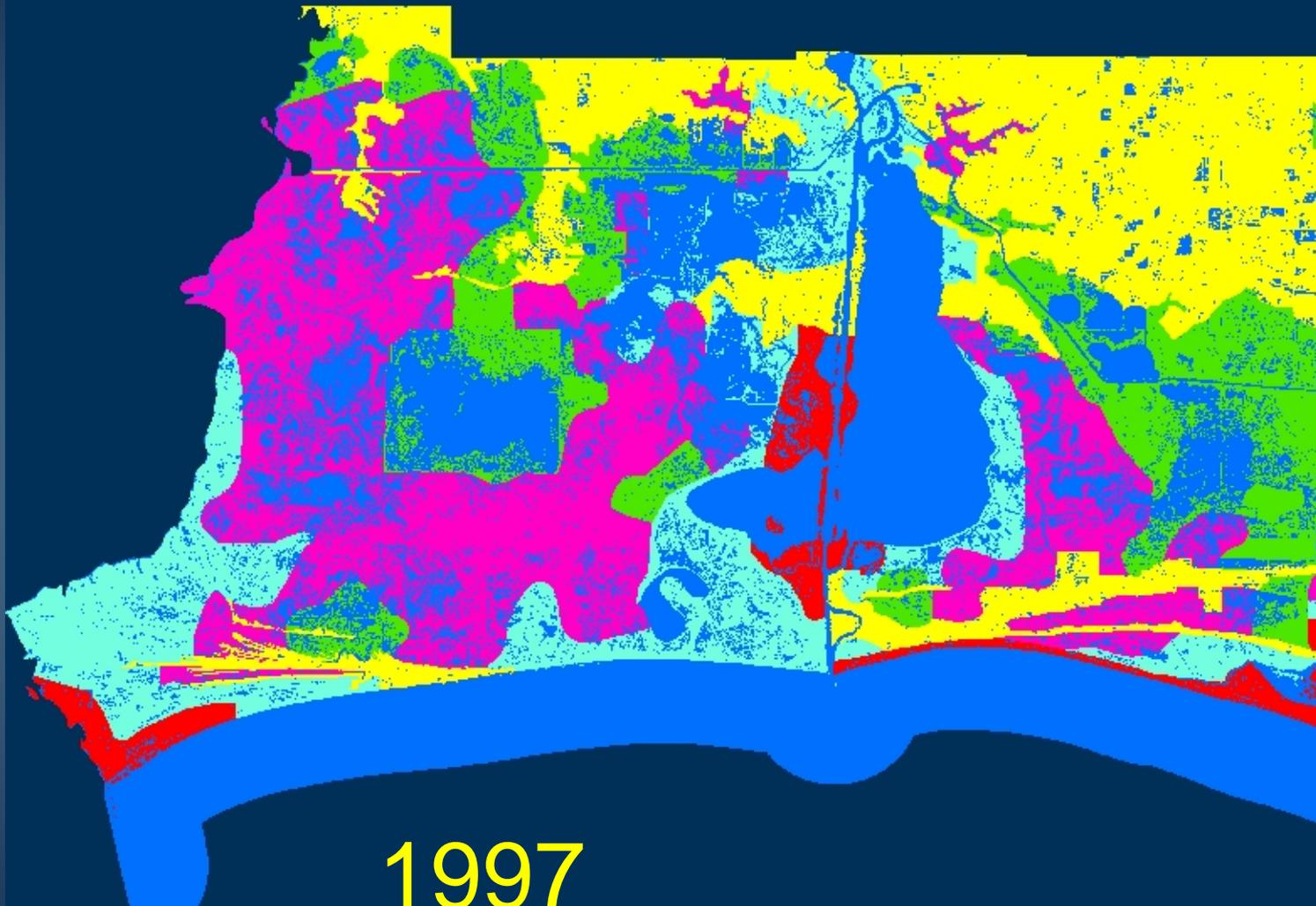
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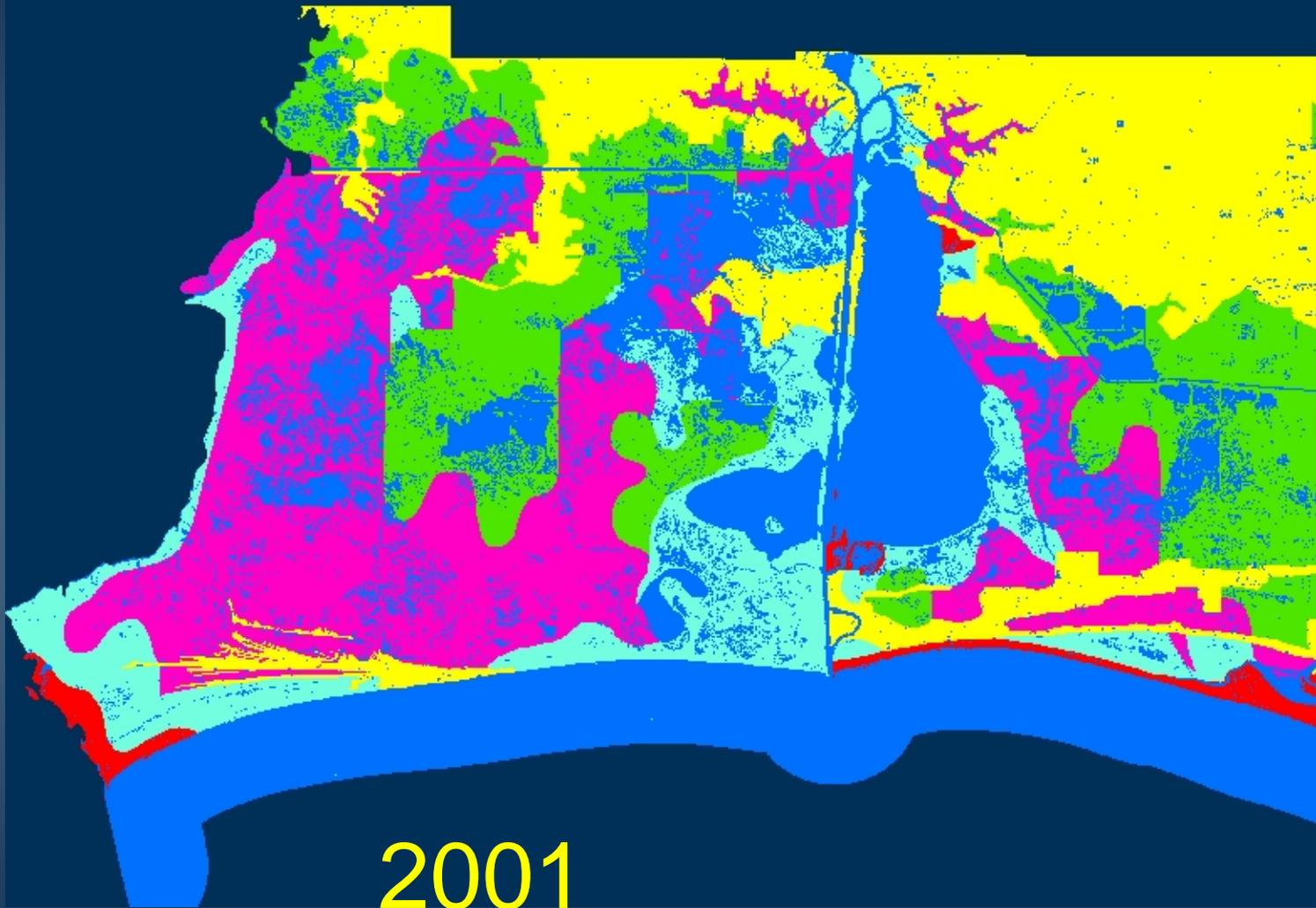
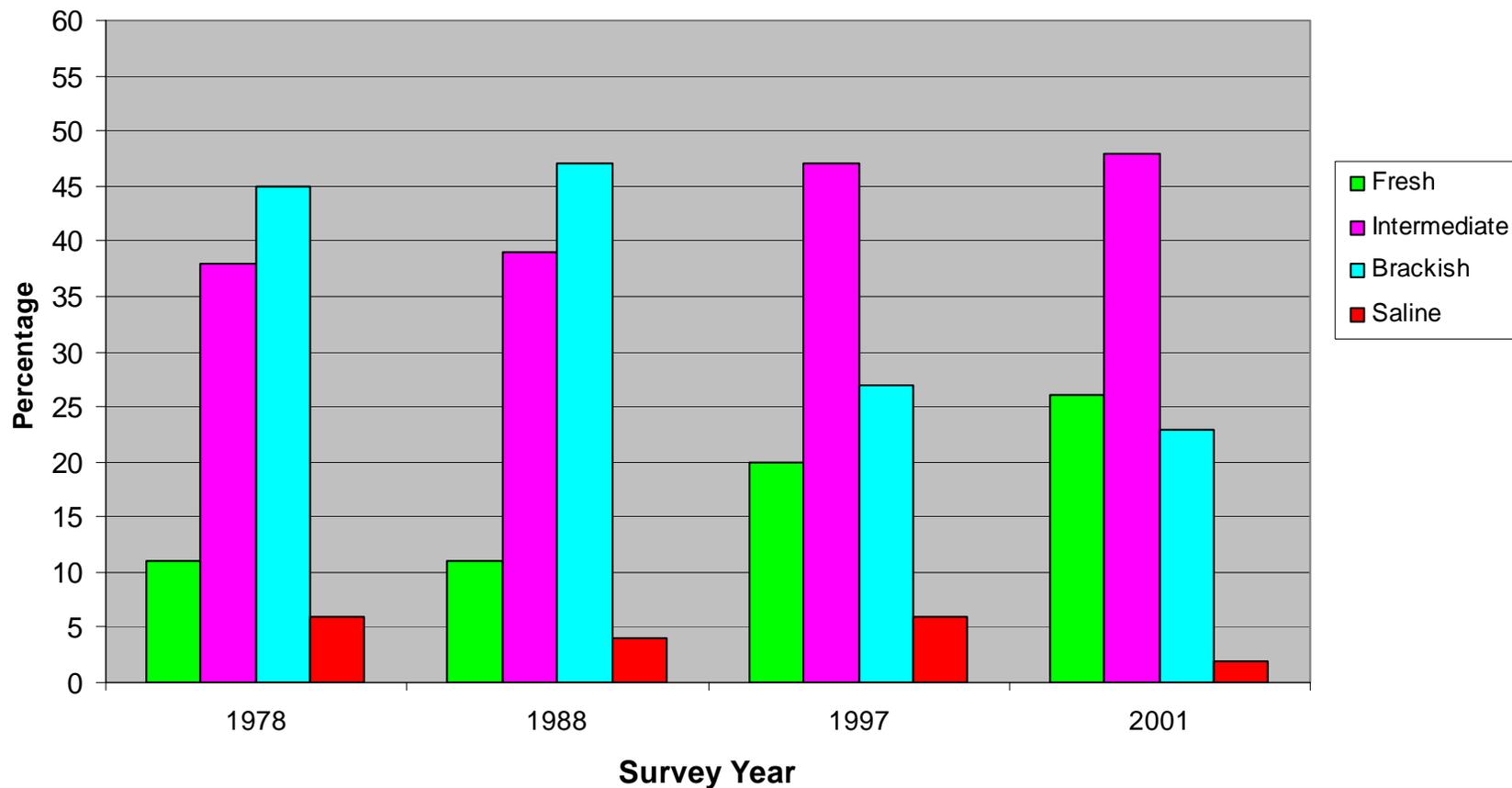


Figure 1.

### Calcasieu Sabine Basin Marsh Type Percentages - 1978, 1988, 1997, 2001



# Project Status

- TM Land/Water classification is complete.
- Merge of TM and Vegetation Type Maps is complete.
- Vegetation Type Maps are completed.
- Vegetation Change Analysis Maps are completed.
- Draft Report is being edited.
- Final Report and Change Maps due 07 June.

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# References

- Chabreck, R.H., T. Joanen, and A.W. Palmisano. 1968. Vegetative type map of the Louisiana coastal marshes. Louisiana Department of Wildlife and Fisheries, New Orleans, LA.
- Chabreck, R.H. and G. Linscombe. 1978. Vegetative type map of the Louisiana coastal marshes. Louisiana Department of Wildlife and Fisheries, New Orleans, LA.
- Chabreck, R.H. and G. Linscombe. 1988. Vegetative type map of the Louisiana coastal marshes. Louisiana Department of Wildlife and Fisheries, New Orleans, LA.
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- O'Neil, T. 1949. Map of Louisiana showing the vegetation types of Louisiana coastal marshes 1949. U.S. Geological Survey, National Wetlands Research Center Coastal Restoration Project Office.