

# Good Things Come in Small Pixels

NOAA's next generation of coastal land cover

Nate Herold

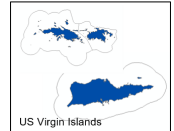
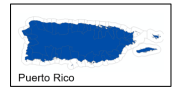
[nate.herold@noaa.gov](mailto:nate.herold@noaa.gov)

March 2026

# Coastal Change Analysis Program (C-CAP)

<https://coast.noaa.gov/digitalcoast/topics/coastal-land-cover.html>

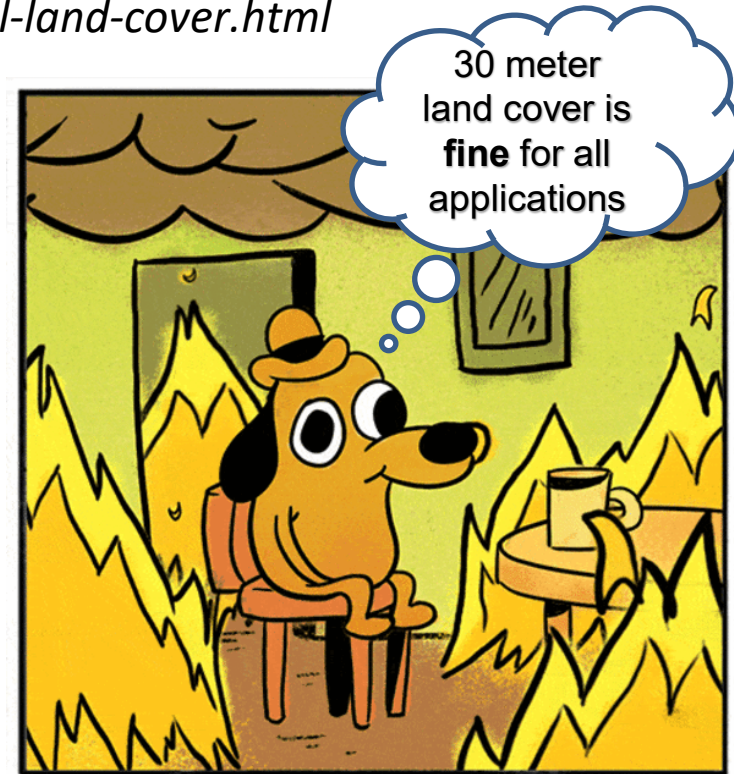
- FGDC National Geospatial Data Asset
- Coastal expression of the NLCD
- Regional Products at 30-meter
  - Updated every 5 years (1996 – 2021)
  - Historic dates in select geographies



# Coastal Change Analysis Program (C-CAP)

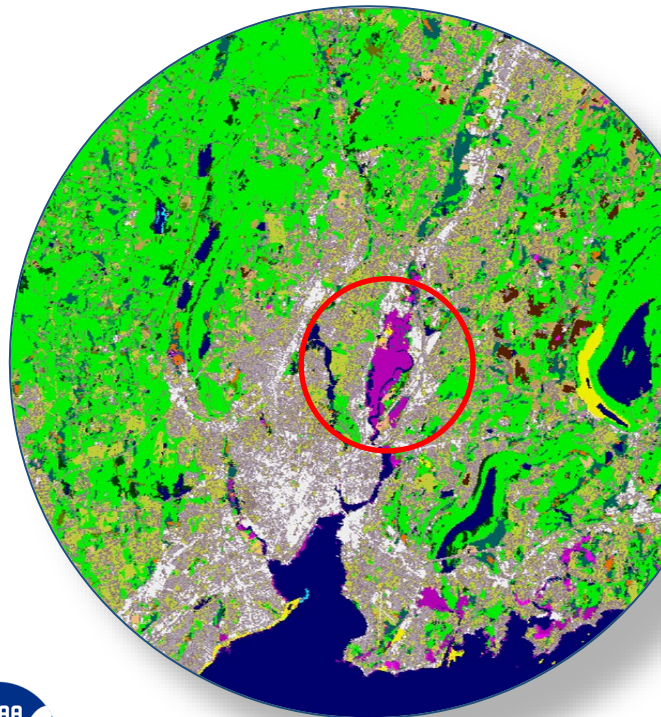
<https://coast.noaa.gov/digitalcoast/topics/coastal-land-cover.html>

- FGDC National Geospatial Data Asset
- Coastal expression of the NLCD
- Regional Products at 30-meter
  - Updated every 5 years (1996 – 2021)
  - Historic dates in select geographies
- High Resolution Products at 1-meter
  - Historically expensive to produce
  - Faster, cheaper, better now possible
  - 2020-2021 national buildout in progress
  - Vision of updates every 4 to 6 years

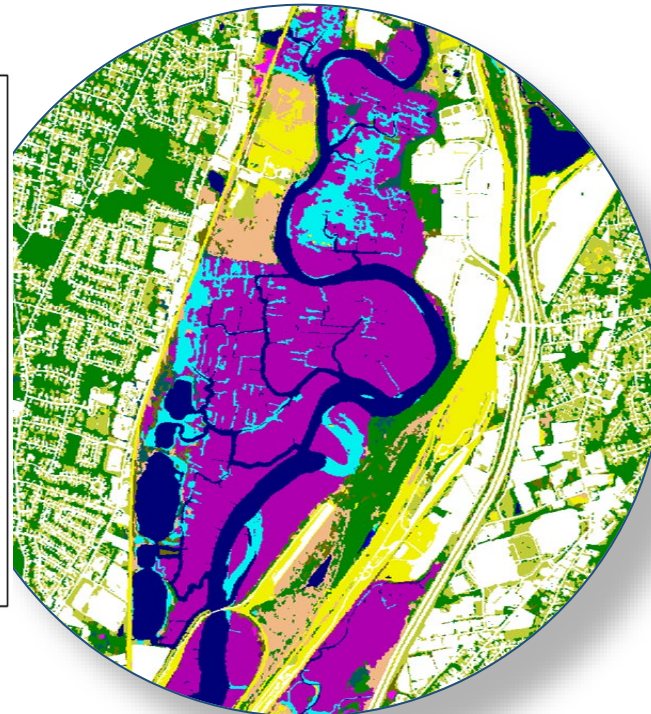


# Comparison of Resolutions

## REGIONAL (30 METER)

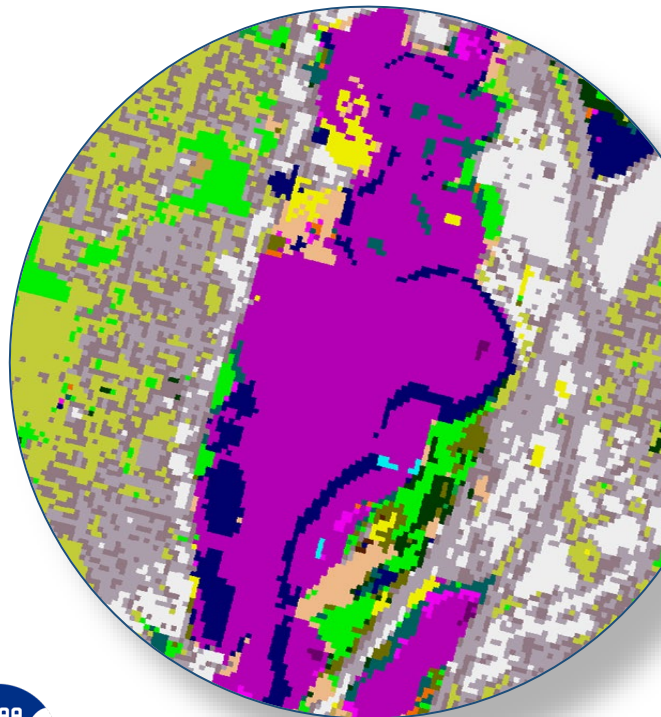


## LOCAL (1 METER)

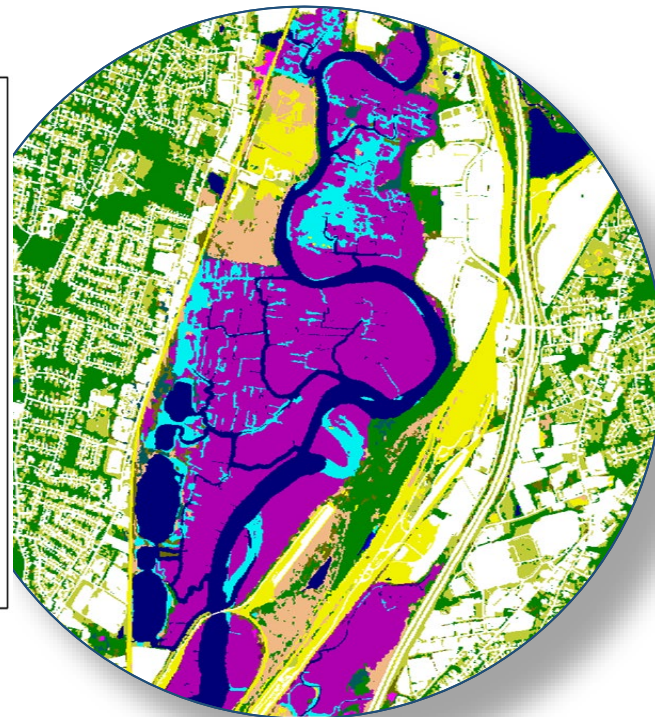


# Comparison of Resolutions

## REGIONAL (30 METER)

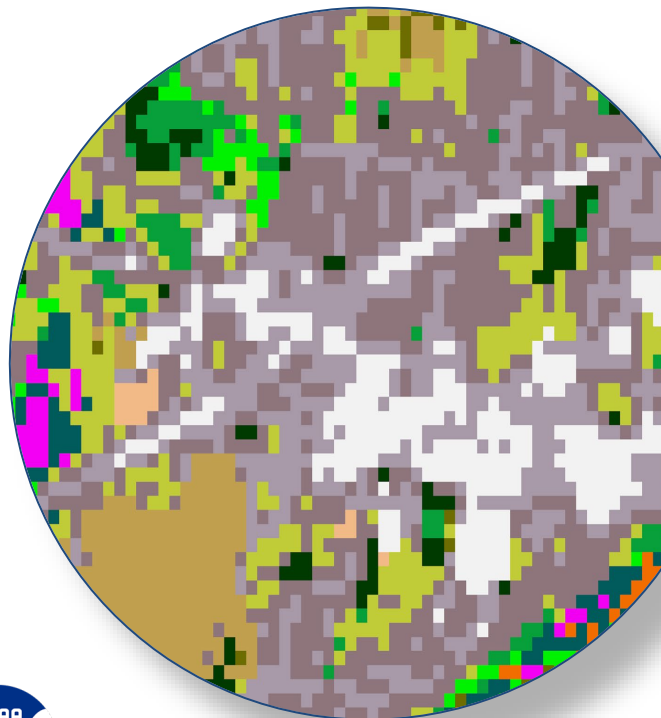


## LOCAL (1 METER)



# Comparison of Resolutions

## REGIONAL (30 METER)



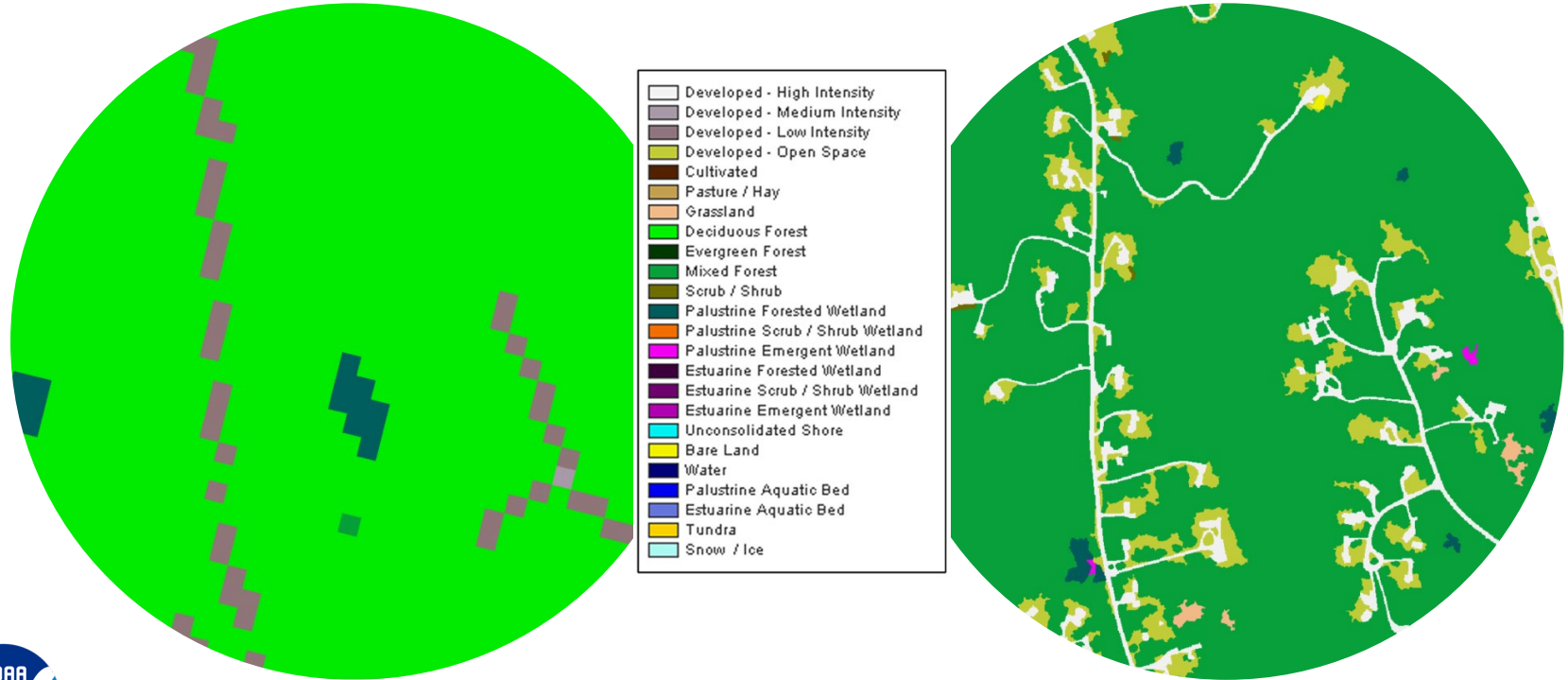
## LOCAL (1 METER)



# Comparison of Resolutions

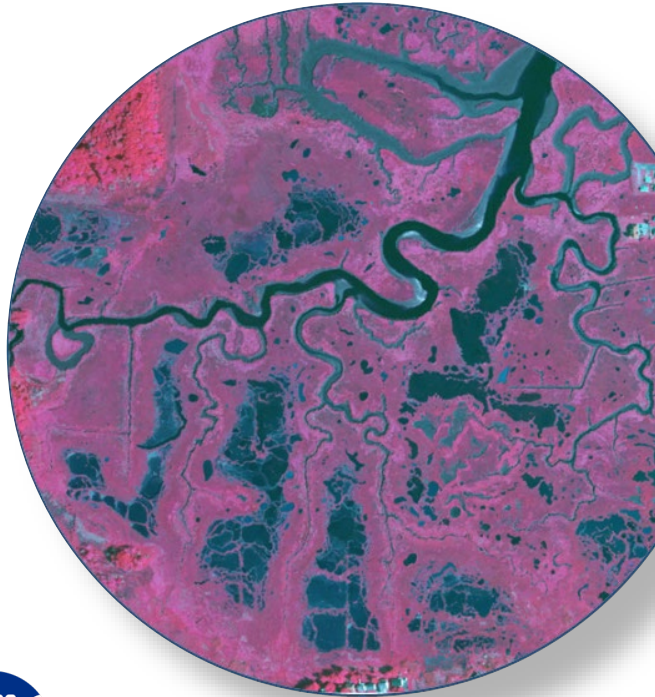
## REGIONAL (30-METER)

## LOCAL (1-METER)

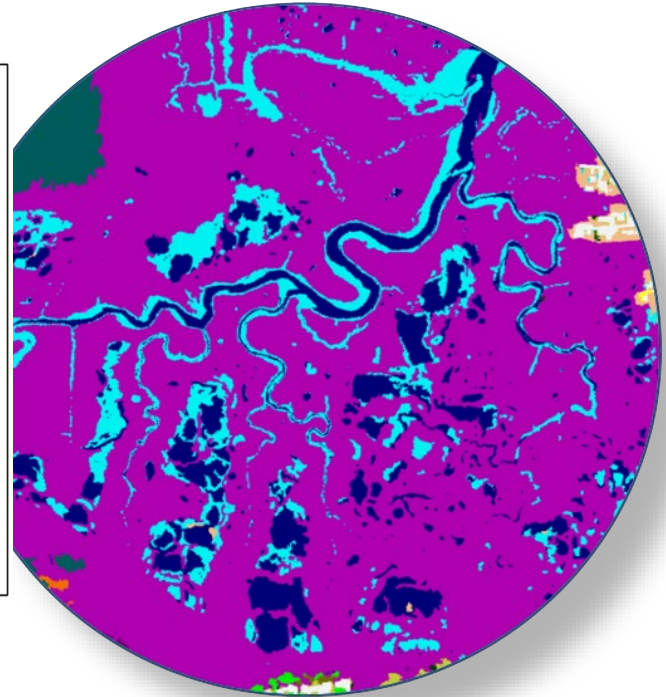


# High Resolution Land Cover

ORTHOIMAGE



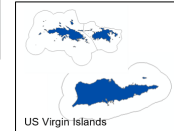
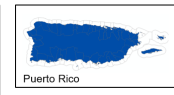
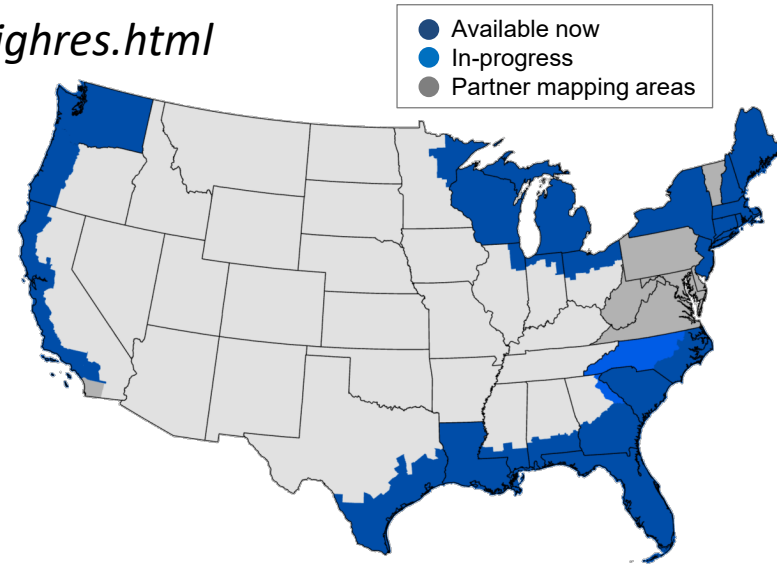
LAND COVER



# High Resolution C-CAP


<https://coast.noaa.gov/digitalcoast/data/ccaphighres.html>

- Initial Mapping Products (Phase 1)
  - Impervious, Canopy, & Water layers
  - Based on 2020 & 2021 imagery
  - Released January 2024







An aerial photograph of a city with a yellow overlay representing the Minimum Mapping Unit (CONUS). The overlay highlights buildings, roads, and railways. A semi-transparent white box with a blue border is overlaid on the center of the image, containing text. In the bottom right corner, there is a logo for 'Ecopia' with a blue arc above the text.

Minimum Mapping Unit (CONUS)

Building – greater than 100 square


Road – greater than 8 feet wide and 100 feet long


Railway – greater than 4 feet wide

Pavement – greater than 400 square feet





 Canopy



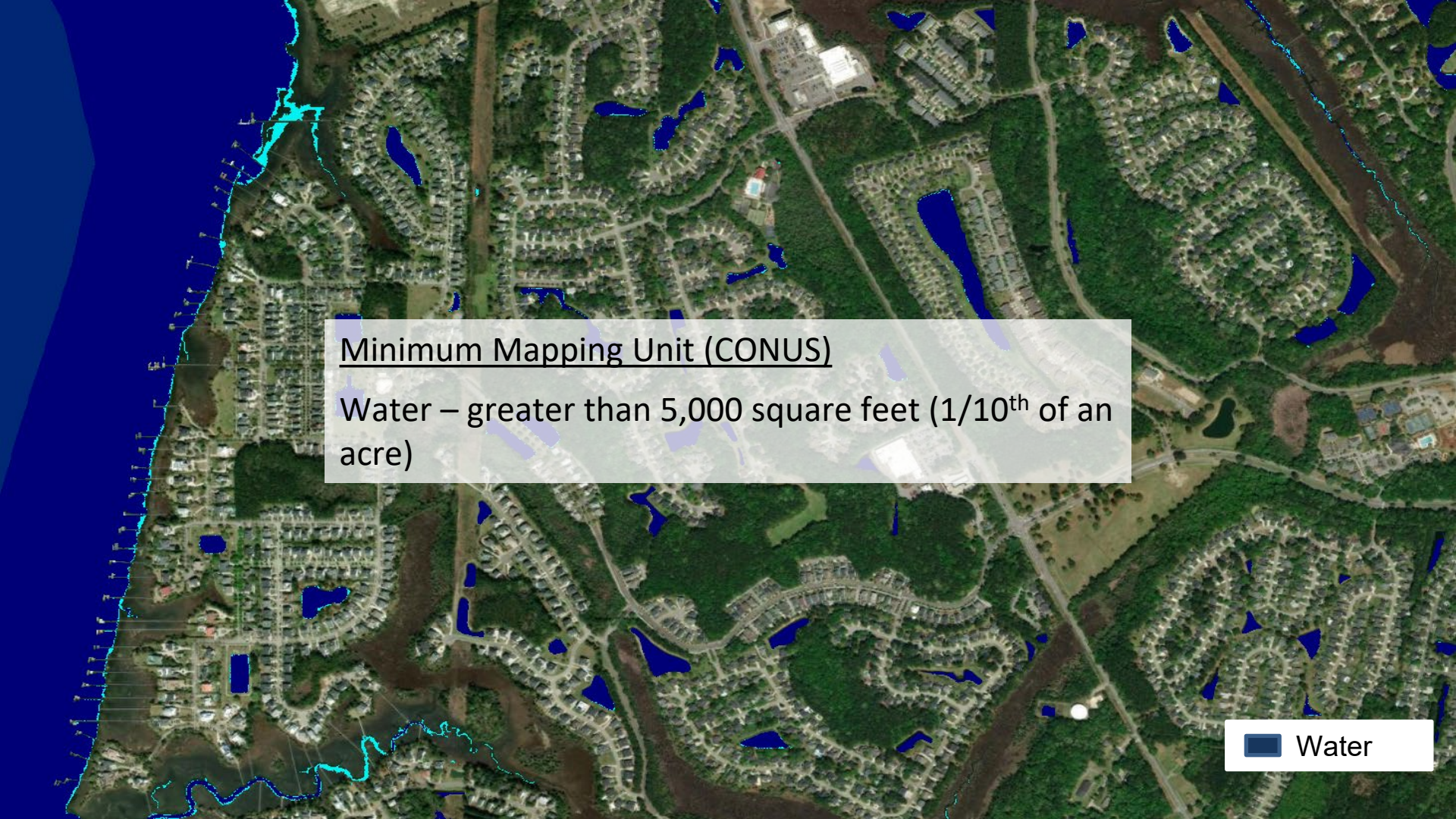
Minimum Mapping Unit (CONUS)

Tree and shrub (5-meter height threshold) – greater than 5,000 square feet (1/10<sup>th</sup> of an acre), minimum 7 feet wide

 Canopy



Water



Minimum Mapping Unit (CONUS)

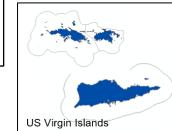
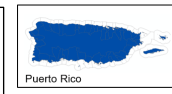
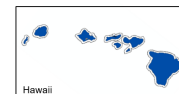
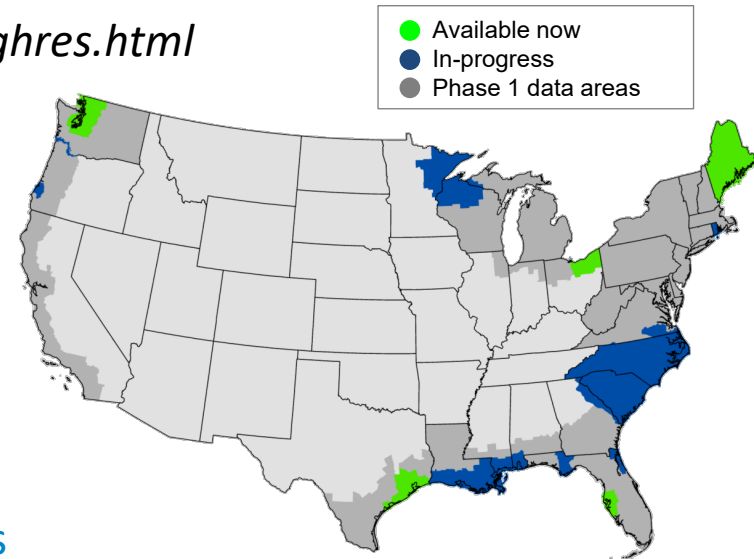
Water – greater than 5,000 square feet (1/10<sup>th</sup> of an acre)

Water

# High Resolution C-CAP

<https://coast.noaa.gov/digitalcoast/data/ccaphighres.html>

- Initial Mapping Products (Phase 1)
  - Impervious, Canopy, & Water layers
  - Based on 2020 & 2021 imagery
  - Released January 2024
- Full Scheme Land Cover (Phase 2)
  - Refinements made to initial layers
  - Additional categories added
  - Goal of future updates every 4 to 6 years
  - Looking for interested partners



# C-CAP Land Cover Categories

**Impervious**

**Impervious under canopy**

Open Space Developed

Cultivated

Pasture/Hay

Grassland

**Upland Forest / Tree**

**Upland Scrub/Shrub**

Bare Land

Snow/Ice

Palustrine Forested Wetland

Palustrine Scrub/Shrub Wetland

Palustrine Emergent Wetland

Estuarine Forested Wetland

Estuarine Scrub/Shrub Wetland

Estuarine Emergent Wetland

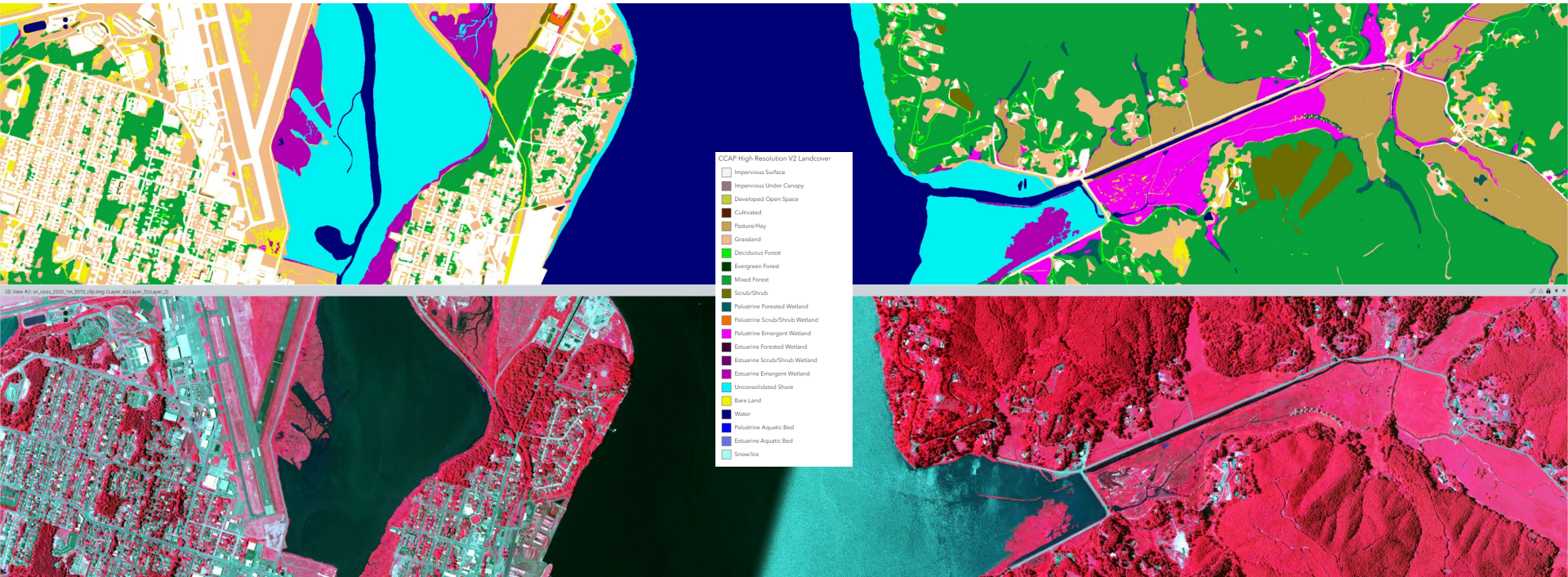
**Water**

Palustrine Aquatic Bed

Estuarine Aquatic Bed



# Coos County DRAFT Example

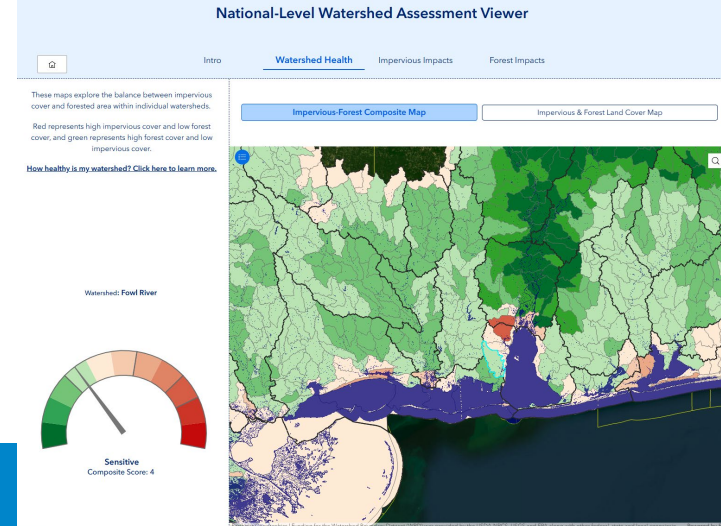




# Example Applications

<https://coast.noaa.gov/states/stories/landcover.html>

- **Improved Flood Modeling and Risk Assessment**
  - SLOSH Modeling in the Caribbean
  - Transportation Infrastructure in Texas
  - Lowering Flood Insurance Rates (FEMA CRS)
- **Stormwater management and Water Quality**
  - Stormwater Mapping in Jacksonville, FL
  - Assessing Stream Health in Snohomish, WA
  - Water quality assessment screening tool
- **Heat Risk and Urban Forestry**
  - Mitigating Urban Heat Risks in SC



# Example Applications

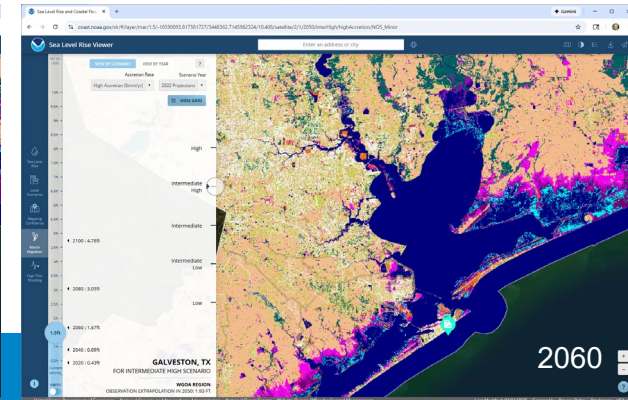
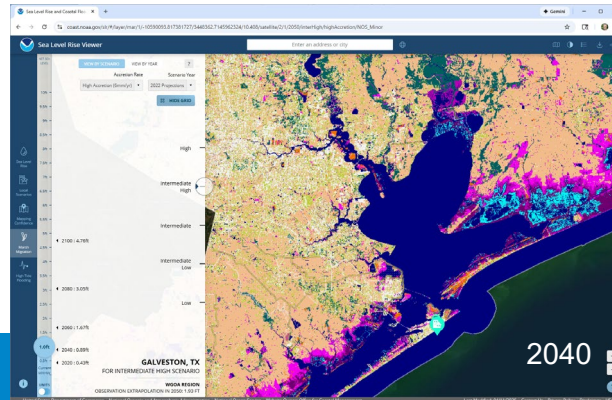
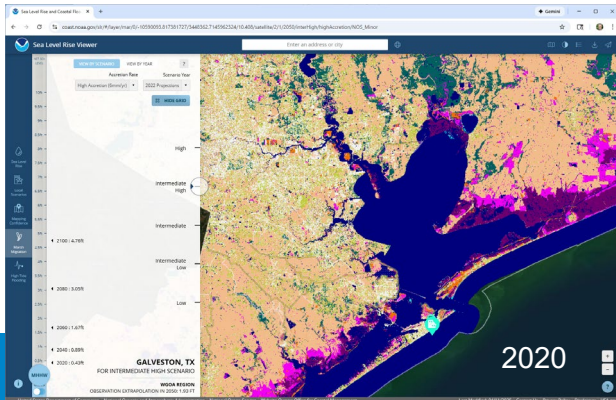
<https://coast.noaa.gov/states/stories/landcover.html>

- **Wetland Monitoring, Conservation, or Restoration**
  - Comprehensive Marsh Management in NH
  - Coastal Wetland Impacts & Migration Modeling



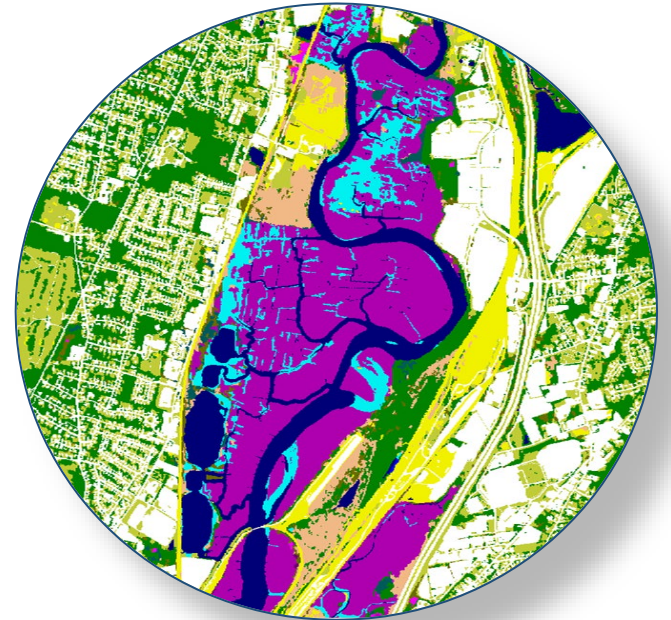
[coast.noaa.gov/slr](https://coast.noaa.gov/slr)

Houston-Galveston, TX Example  
Intermediate High Scenario  
6mm/year of Accretion



# Questions?

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*Visit us on the Digital Coast at:*

<https://coast.noaa.gov/digitalcoast/data/ccaphighres.html>

<https://coast.noaa.gov/digitalcoast/topics/coastal-land-cover.html>

