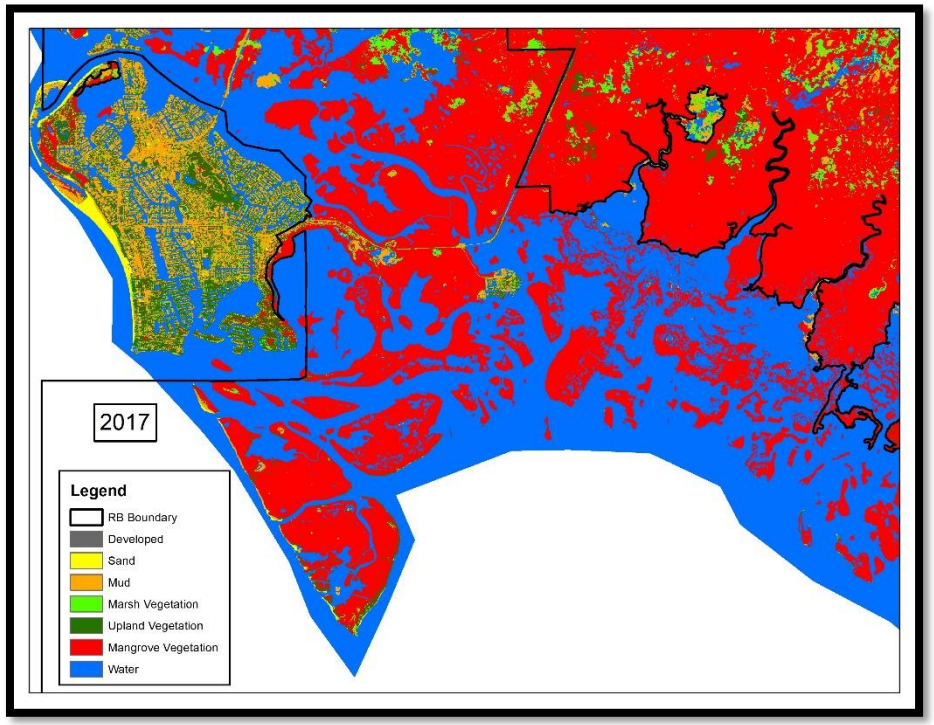
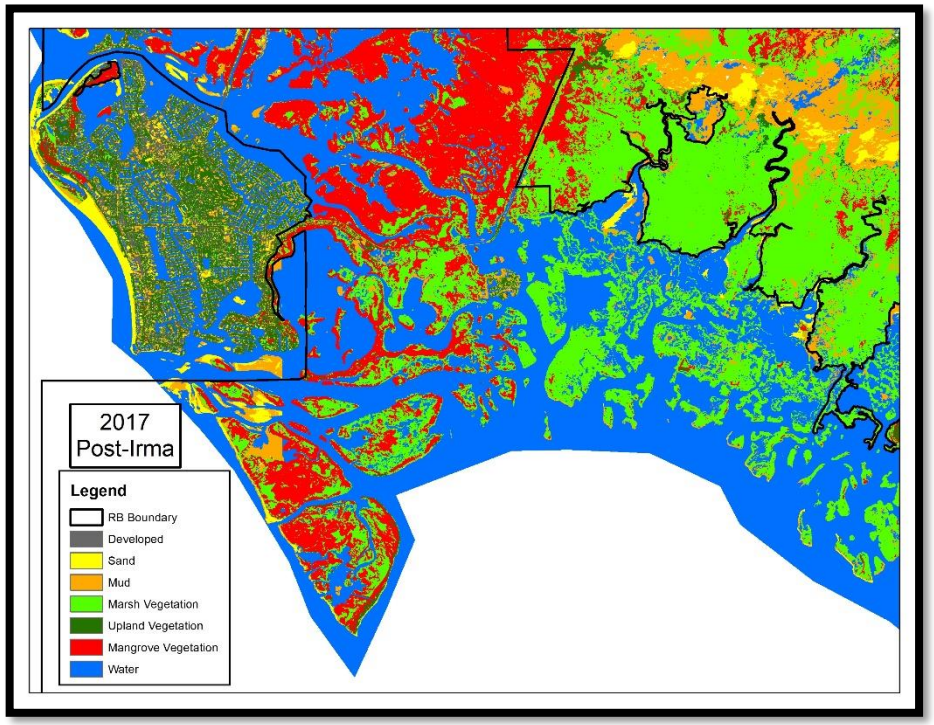
# Mapping terrestrial and benthic habitat change to address mangrove and seagrass migration and die-off in response to recent and long-term drivers

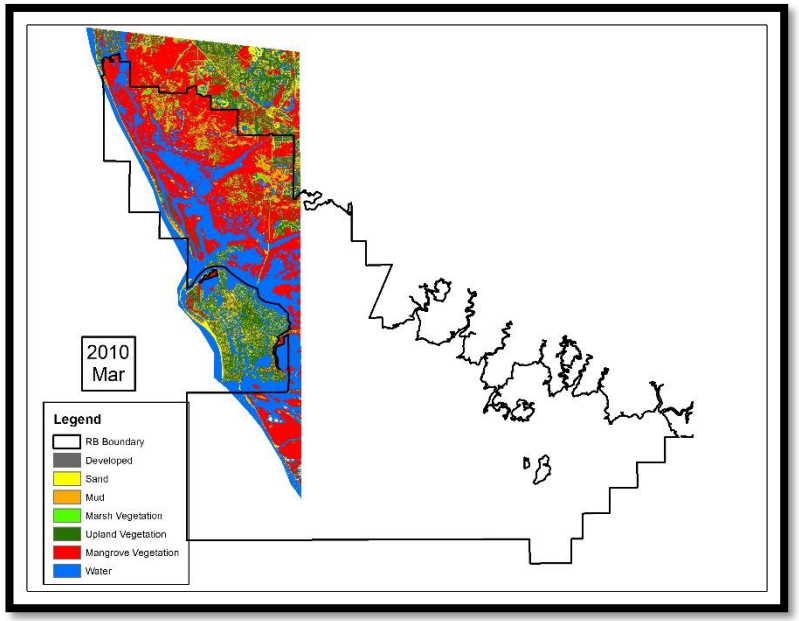
Dr. Matt McCarthy

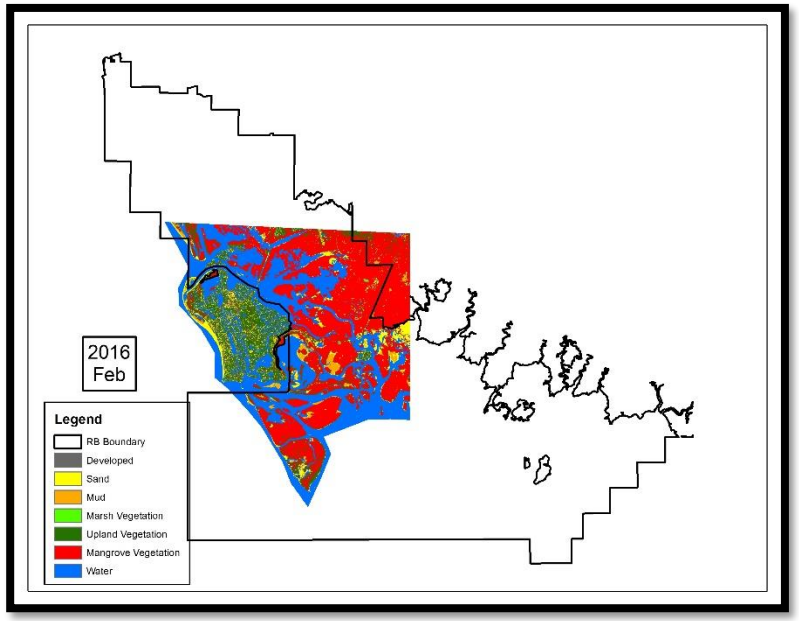
March 2019 End-User Update

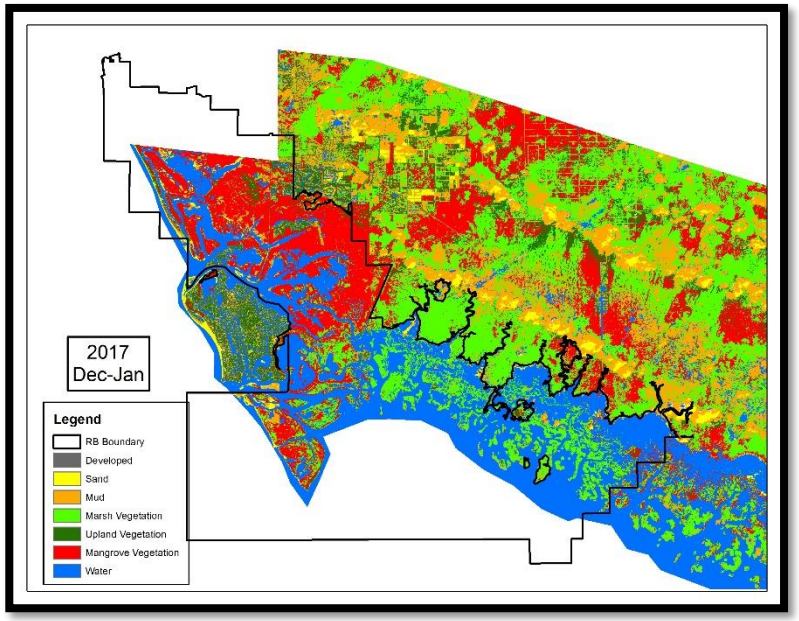


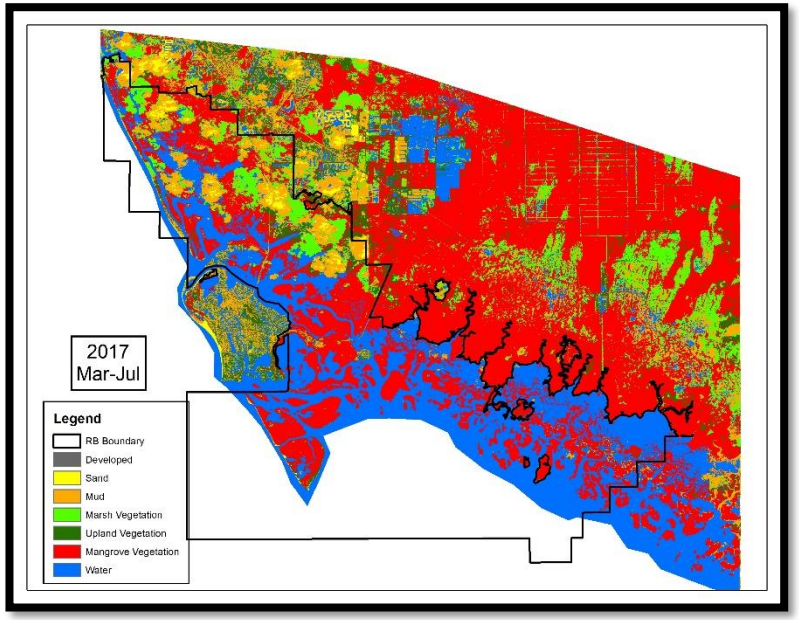



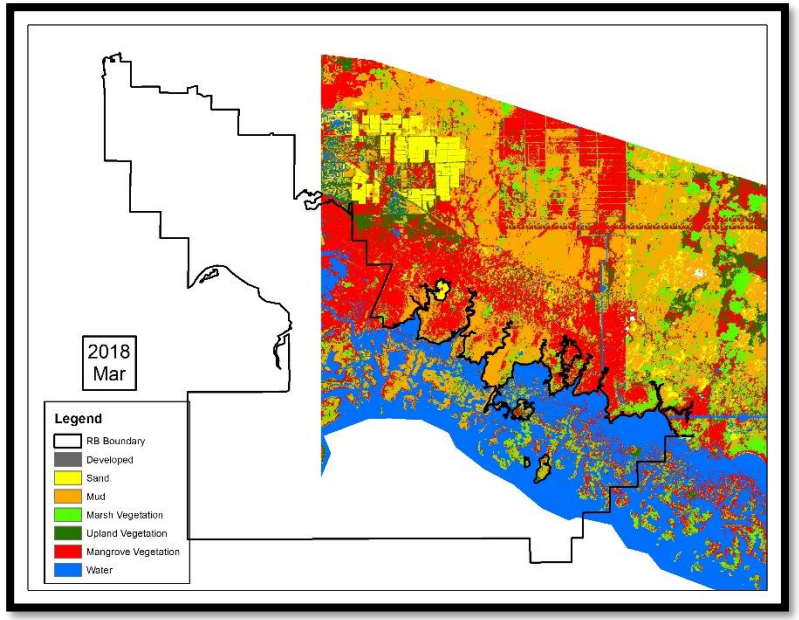
# WorldView
# Geographic Coverage

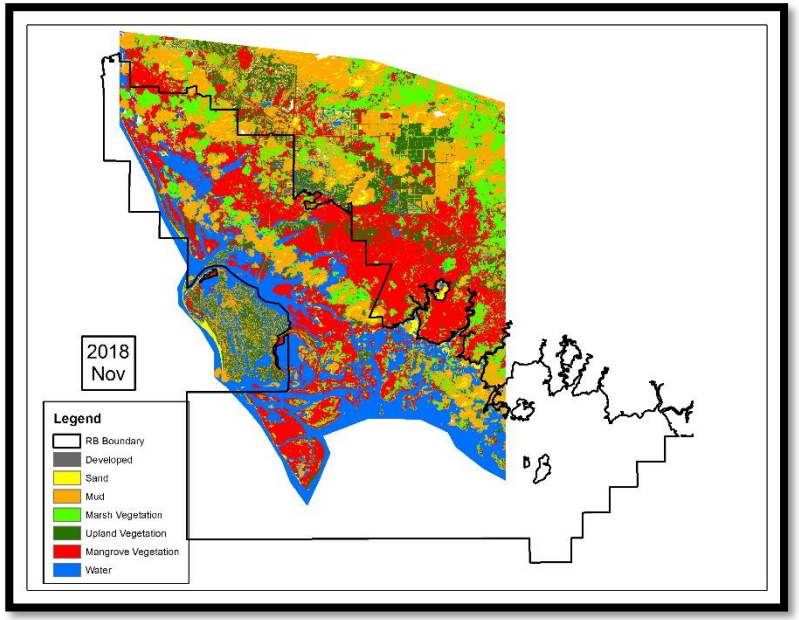


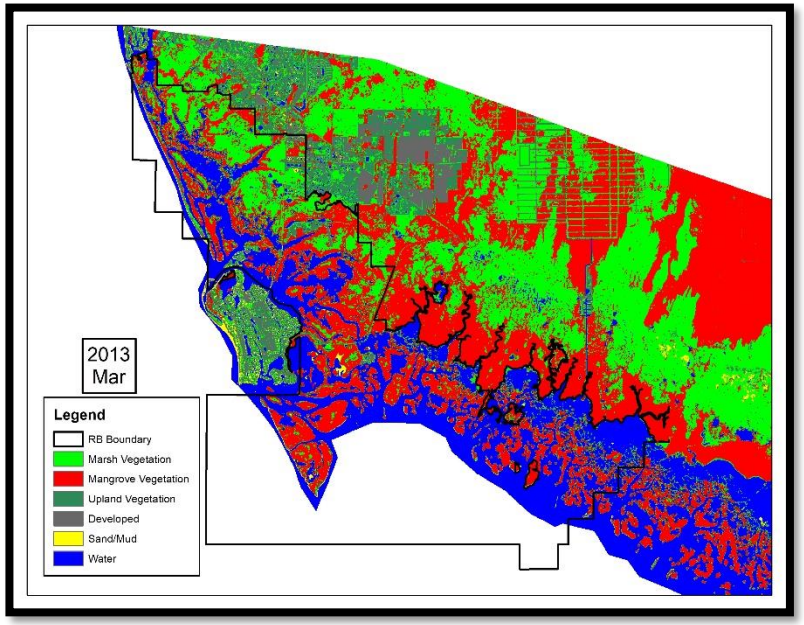



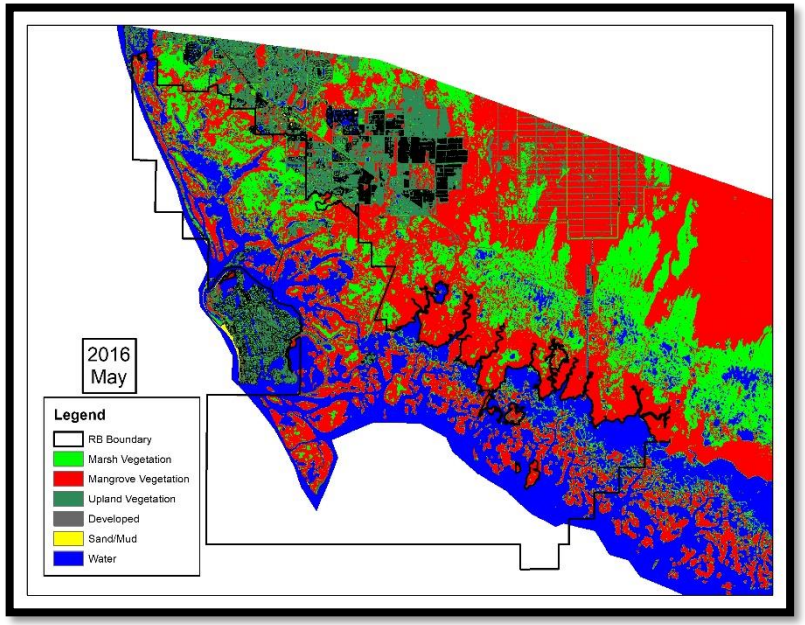



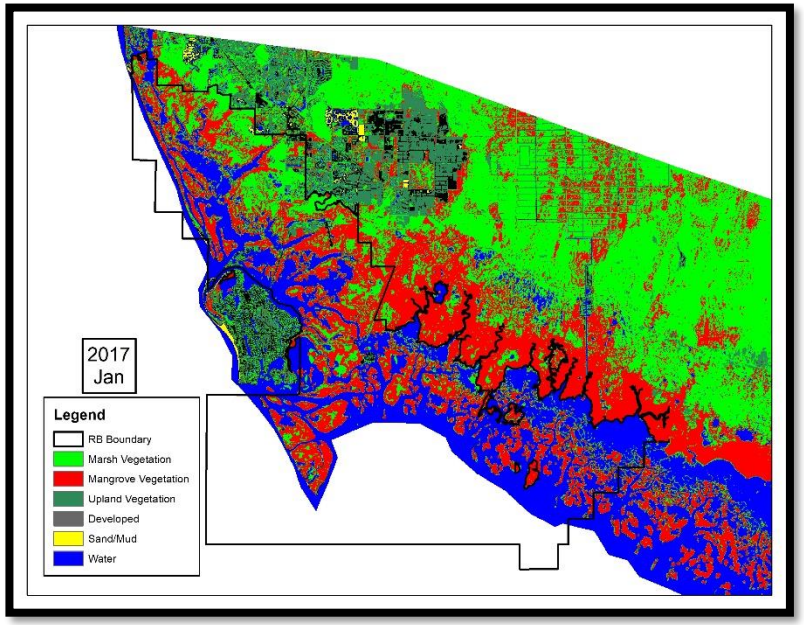



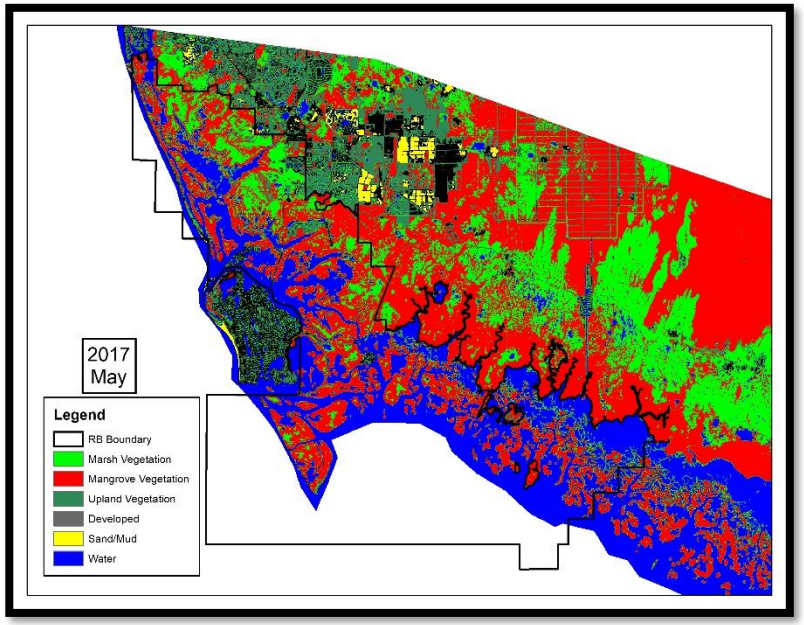



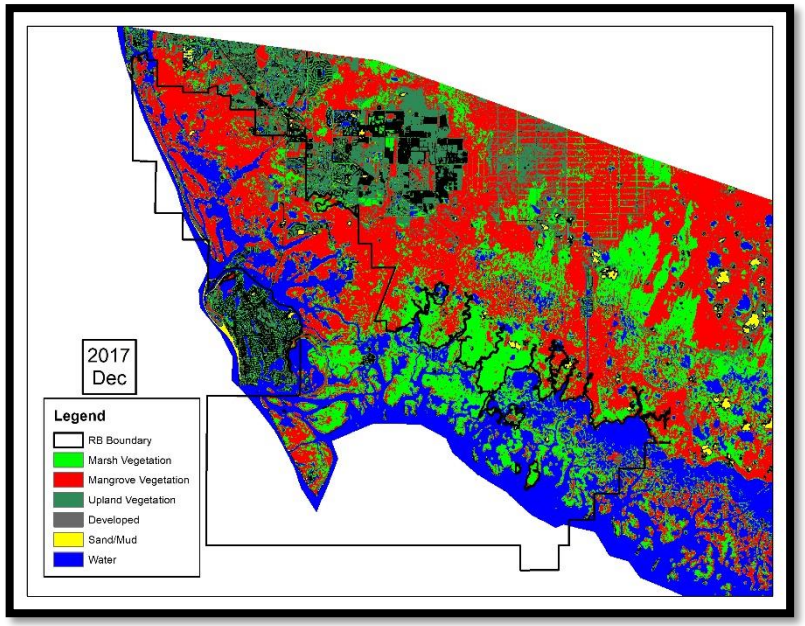
# Landsat
# Geographic Coverage

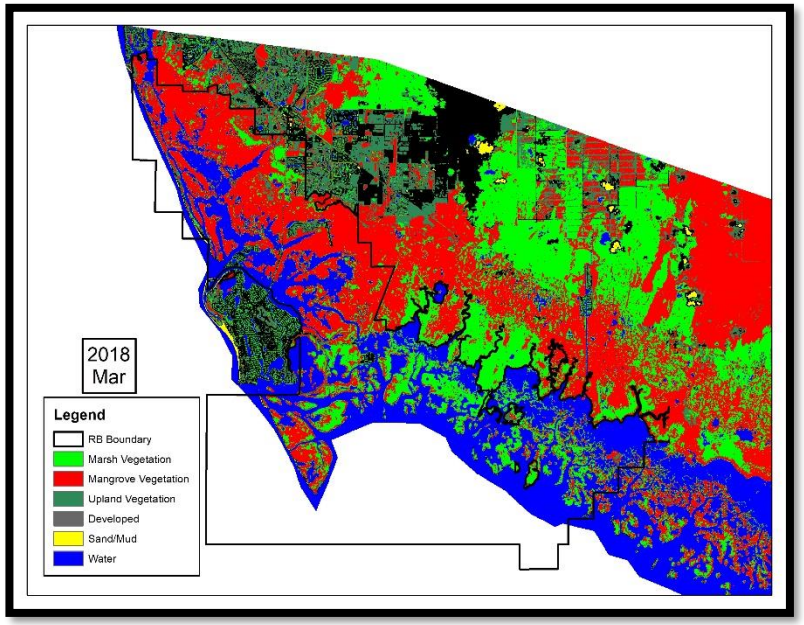


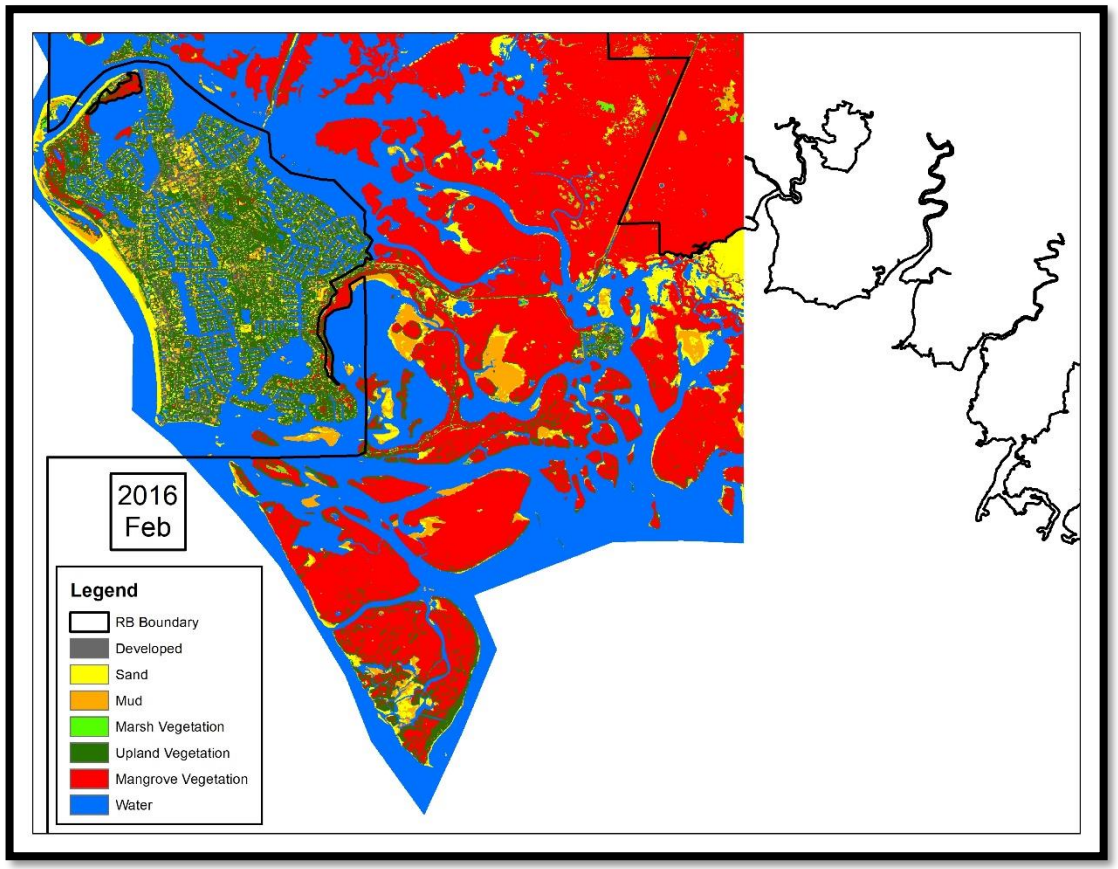



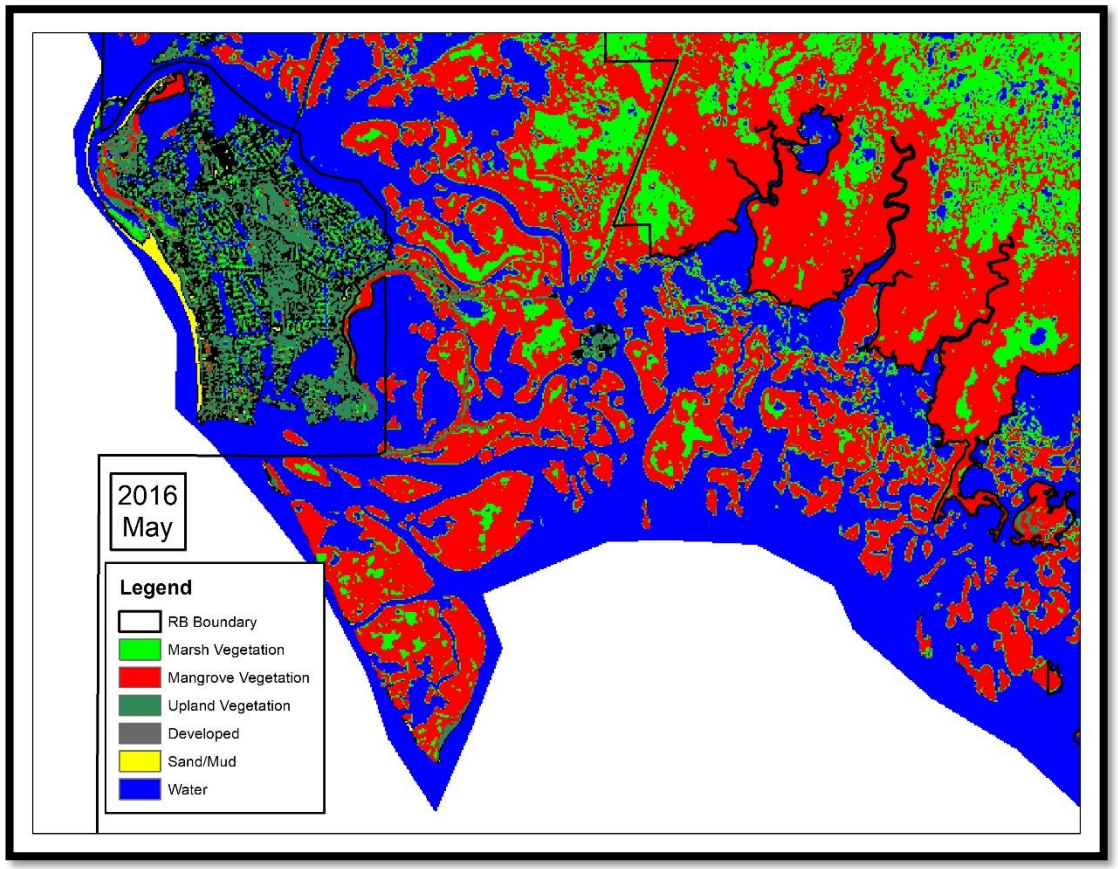



WorldView




Landsat



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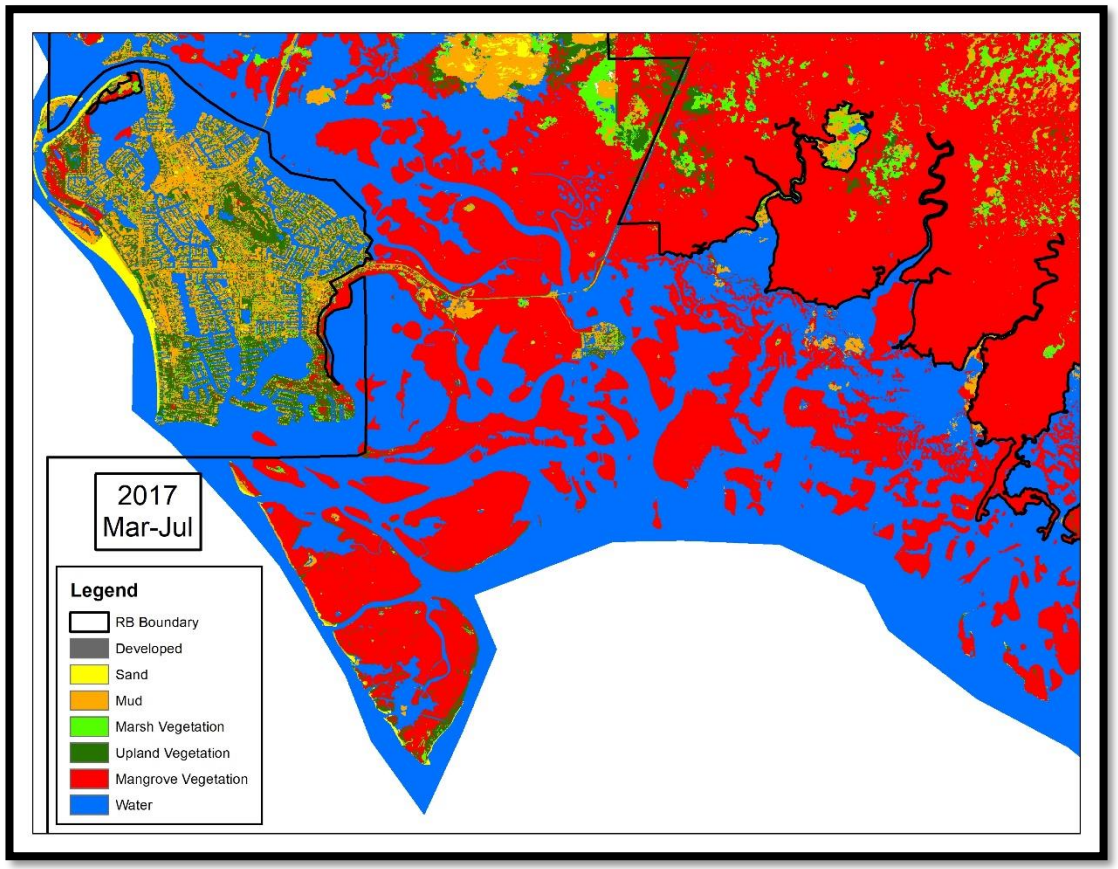


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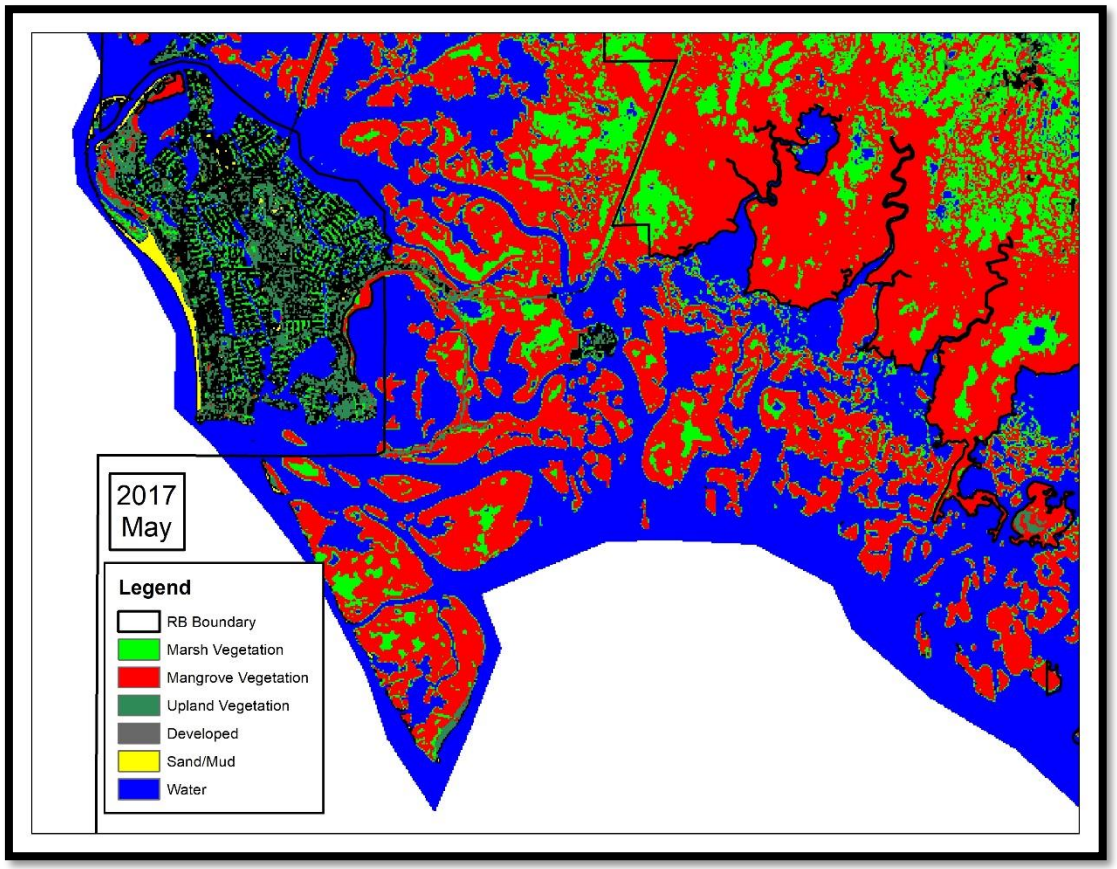
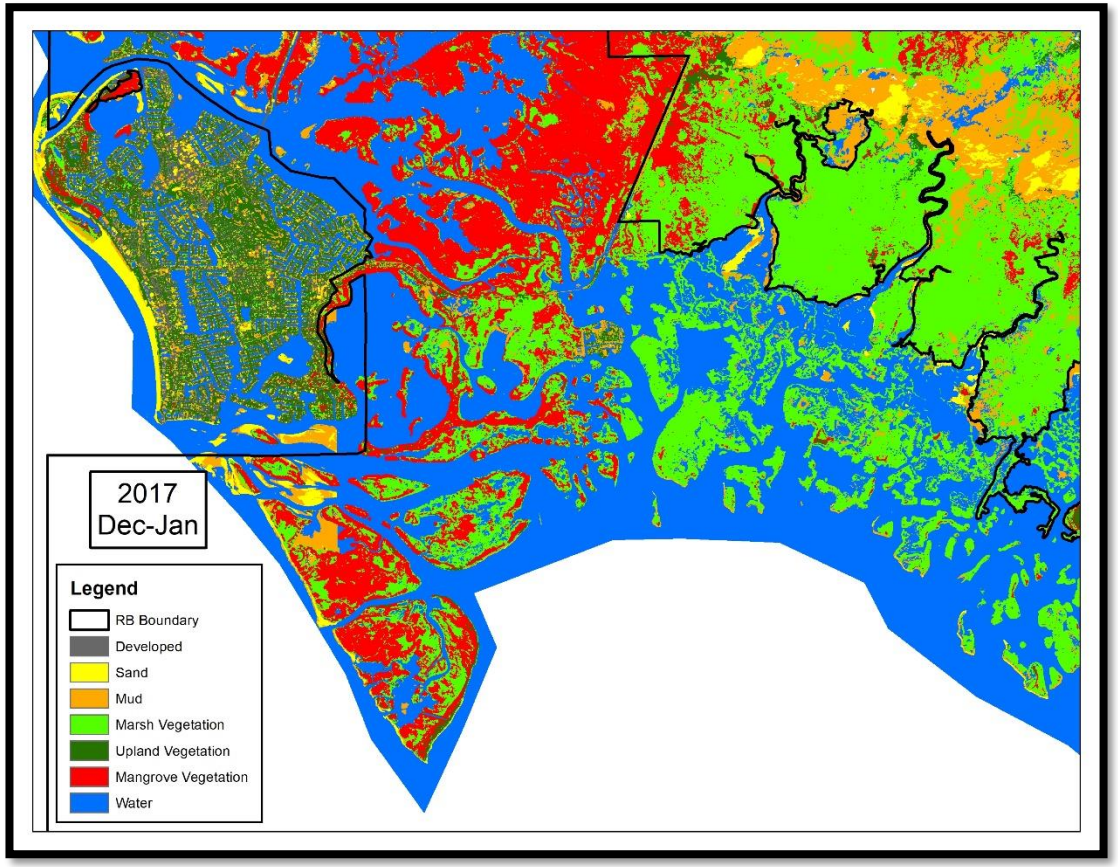


WorldView

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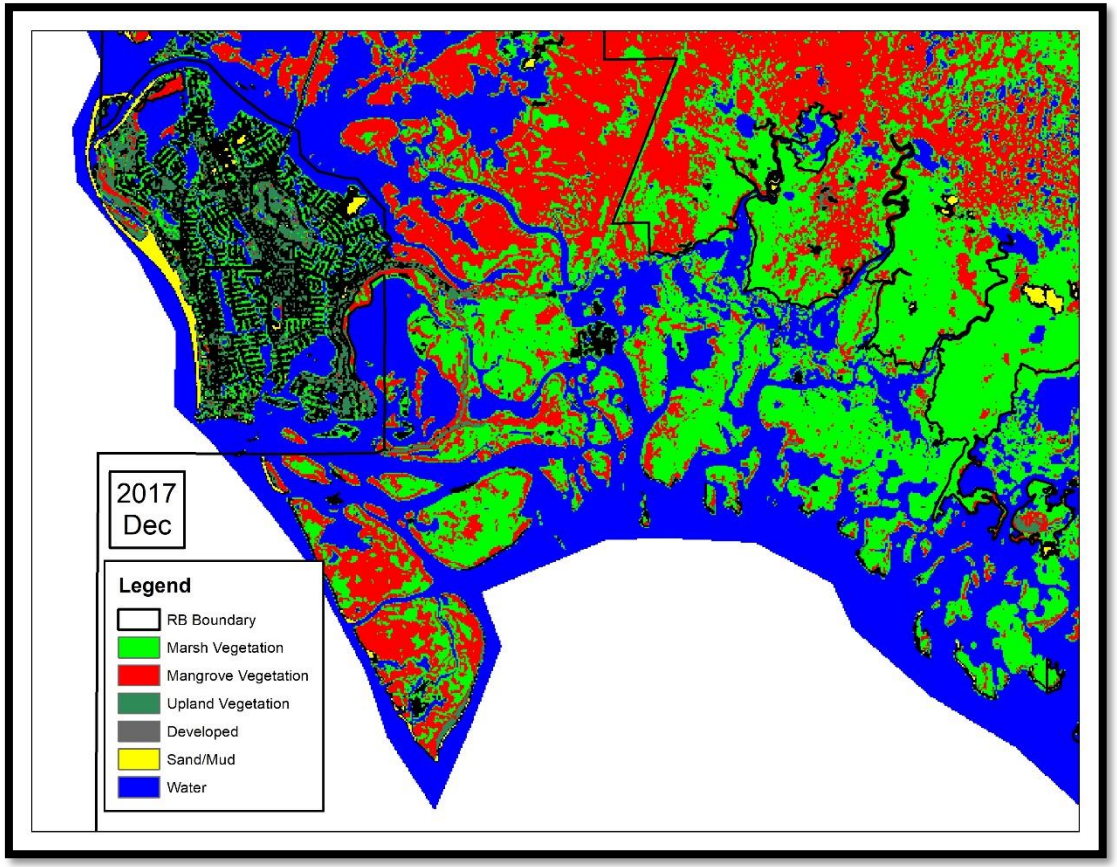
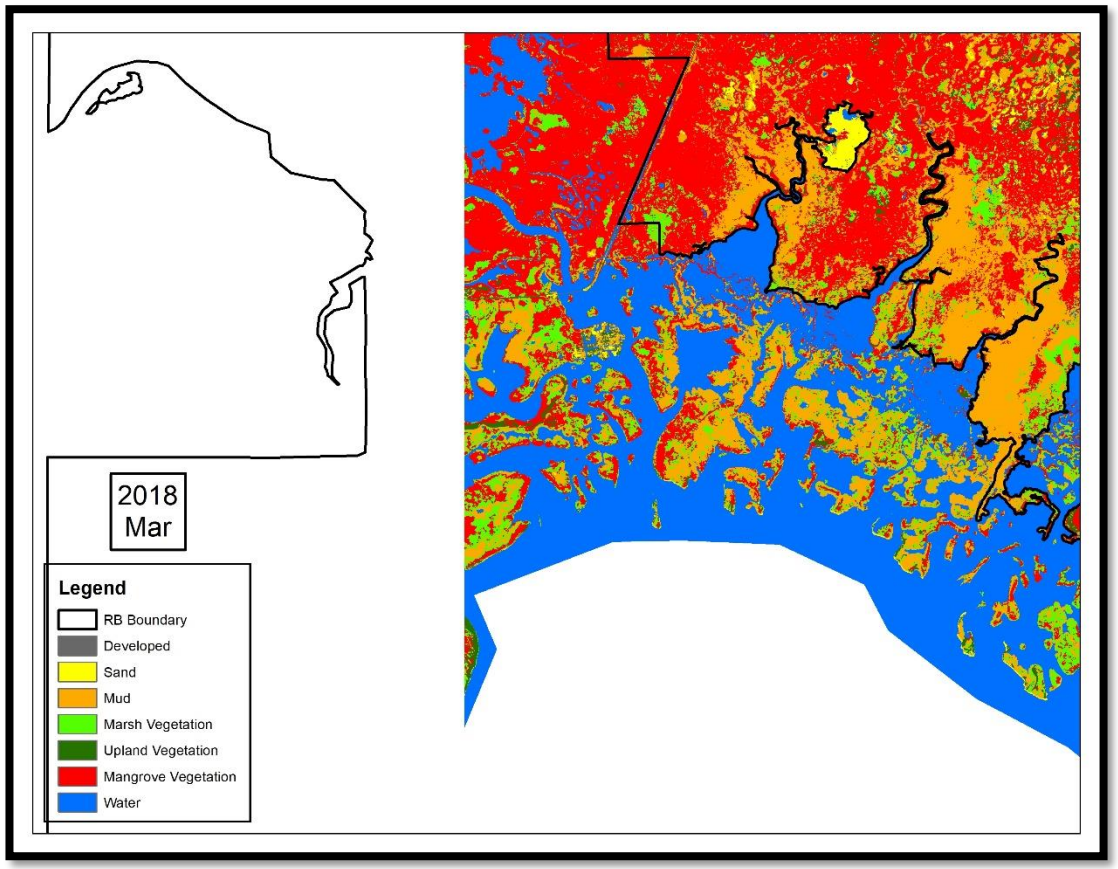


WorldView

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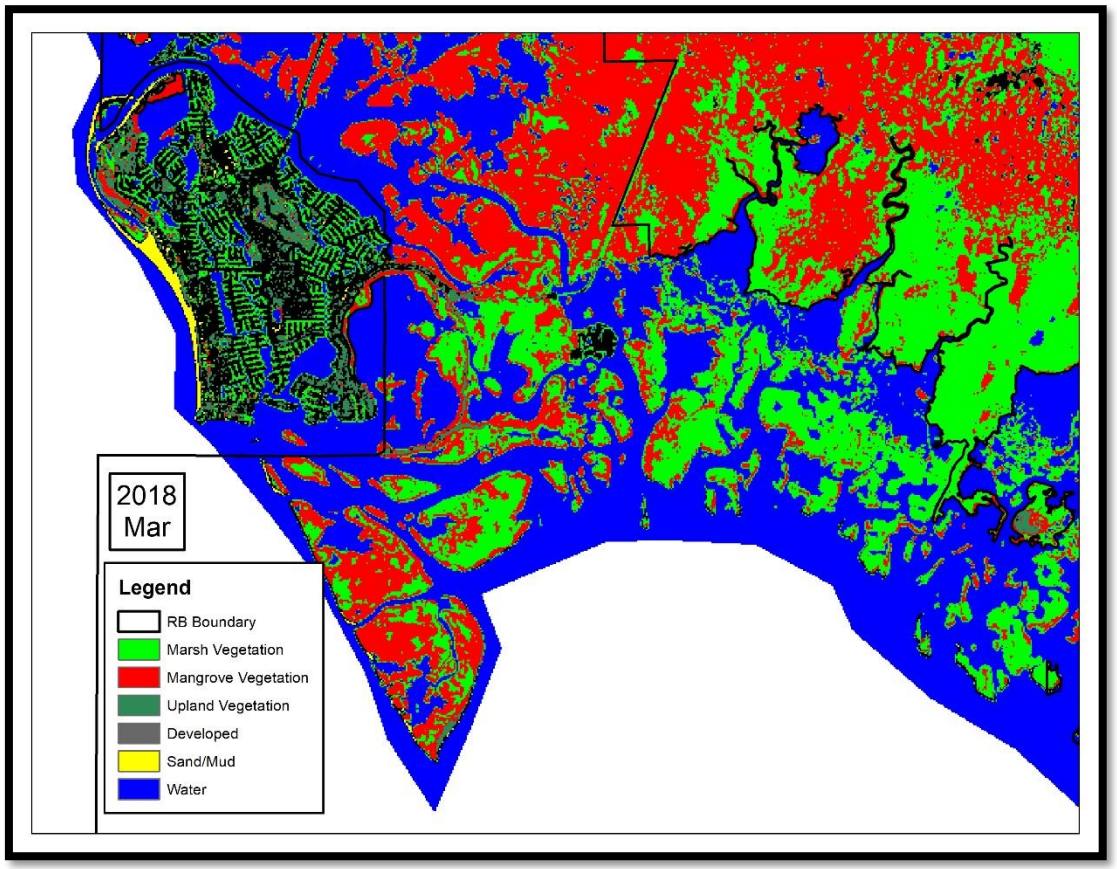
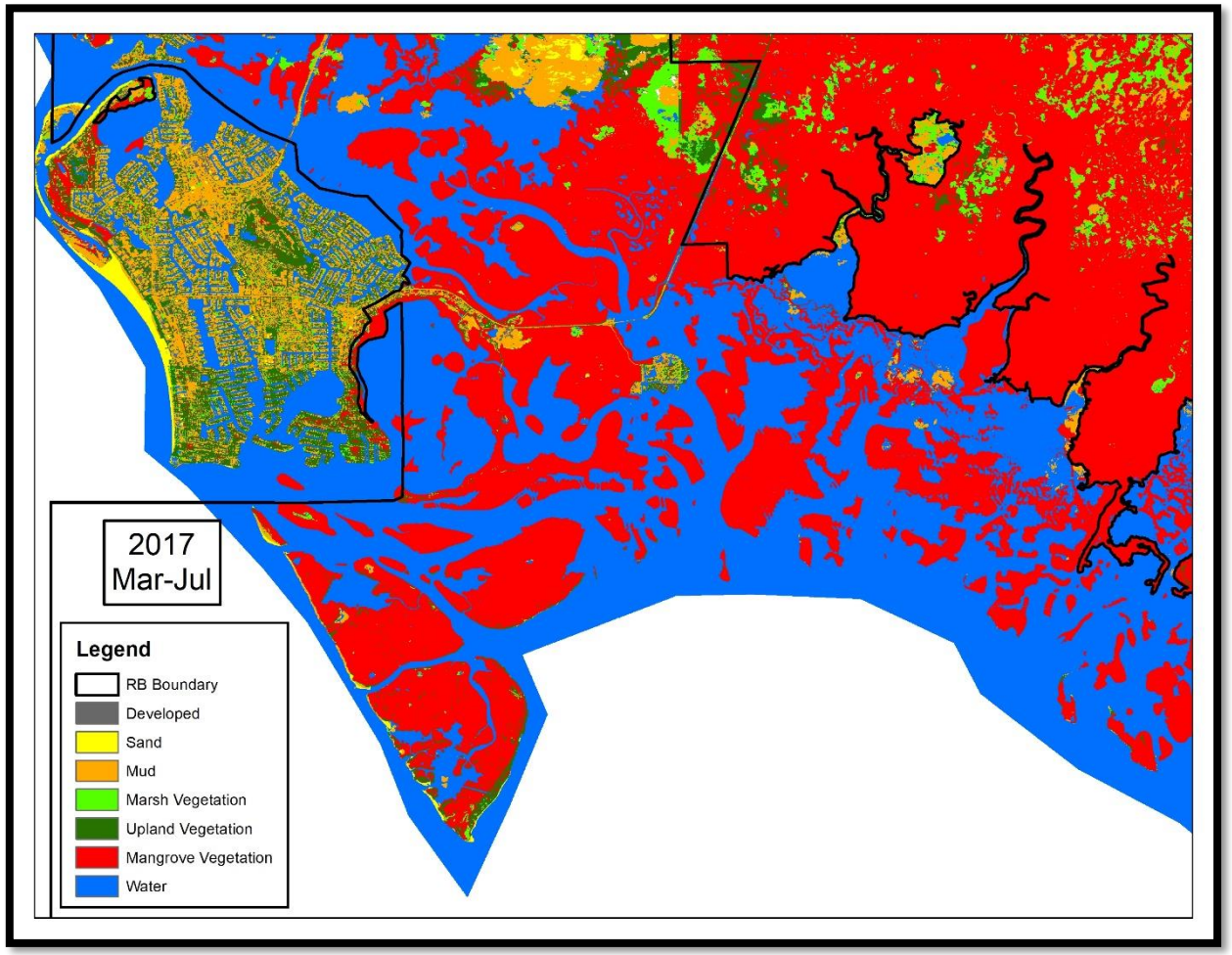
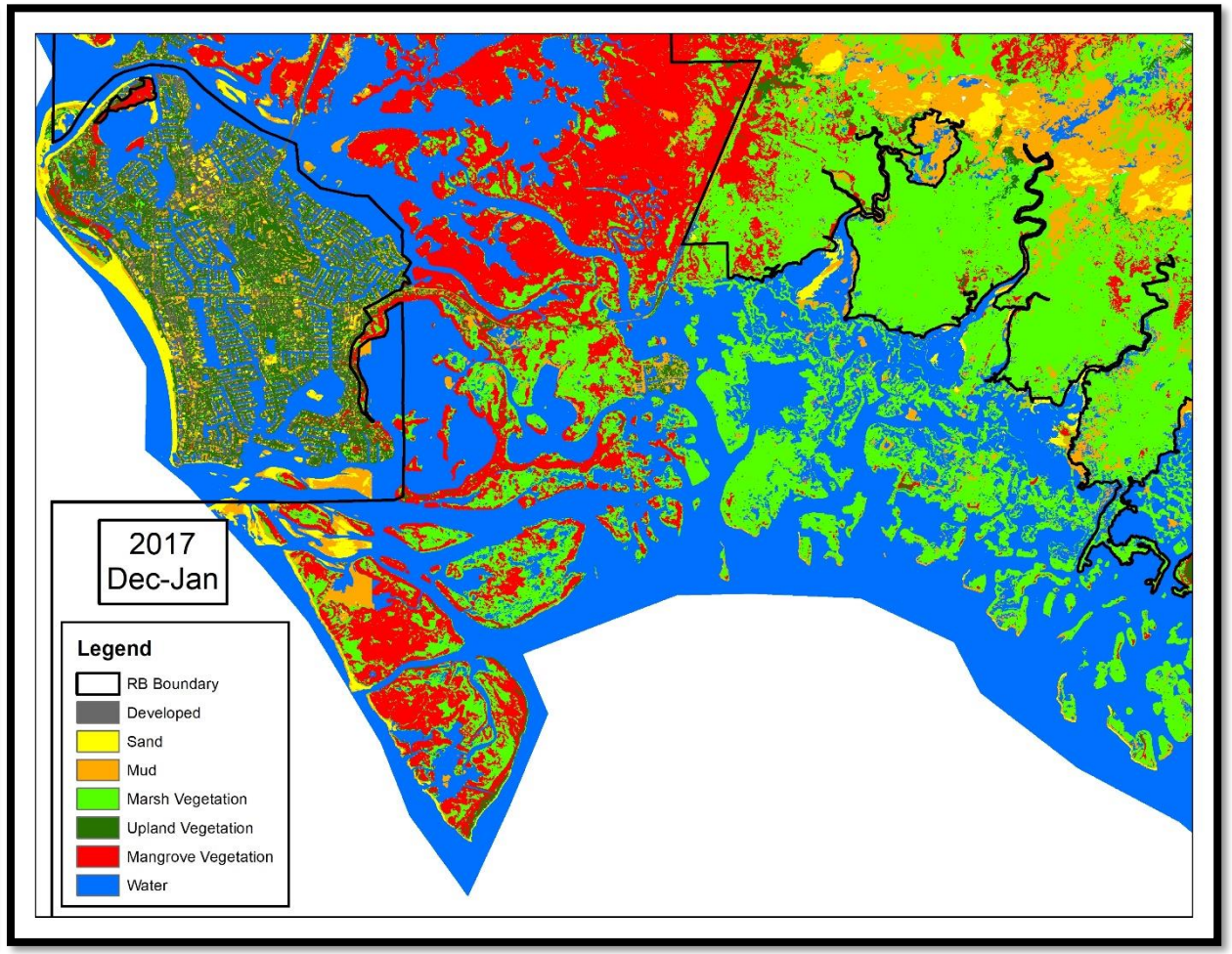
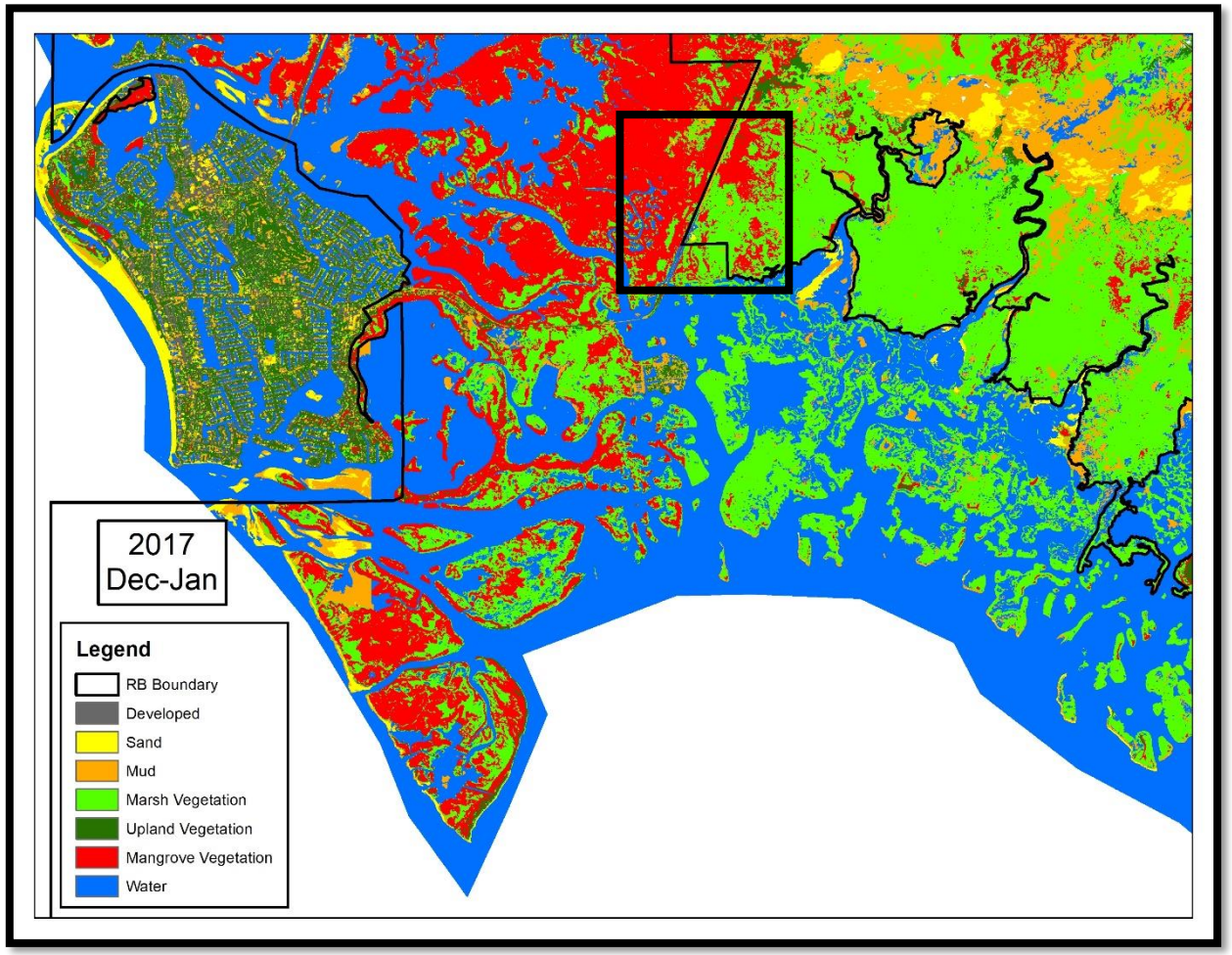


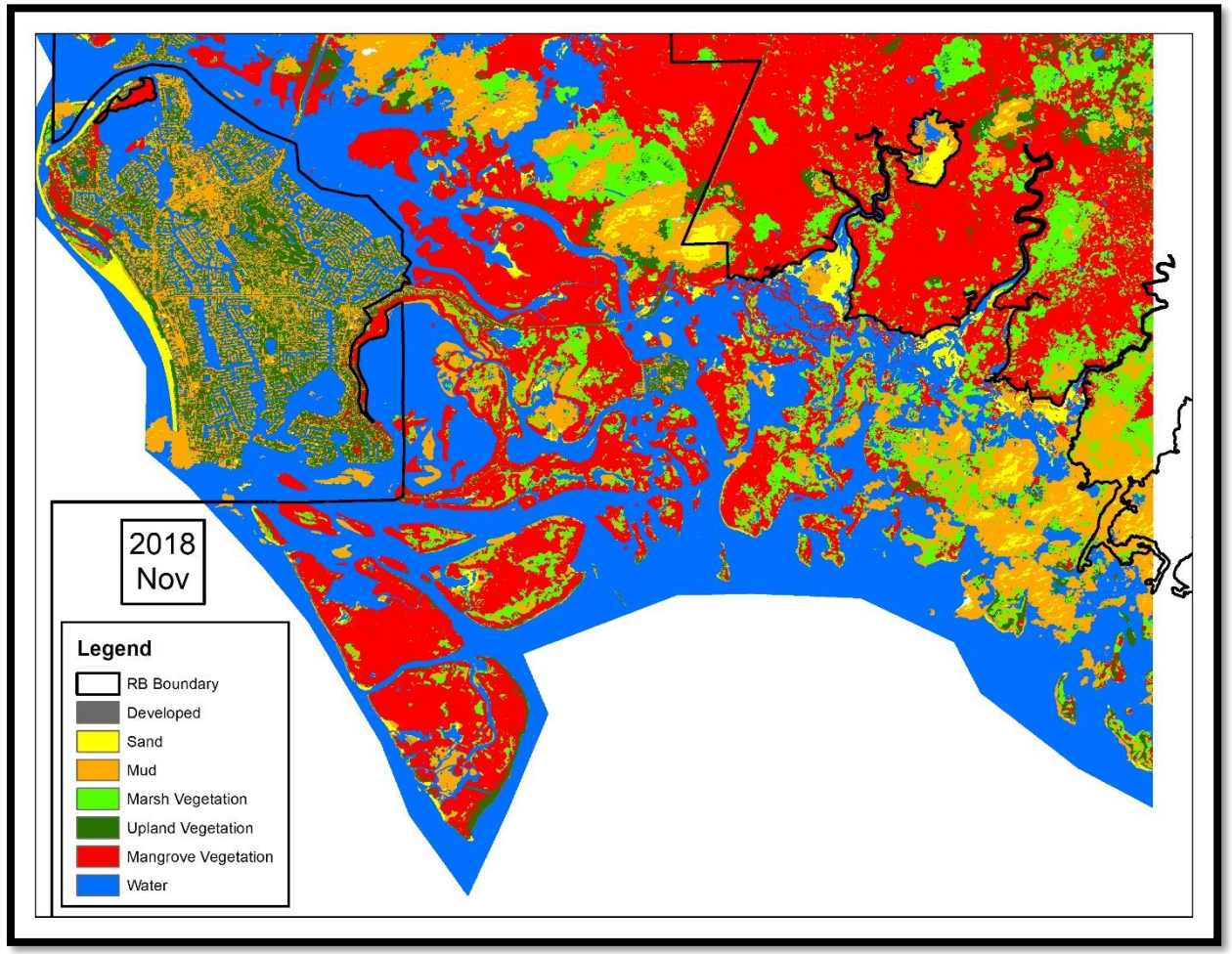
# WorldView:
# Irma Damage



# WorldView:
# Irma Damage Recovery

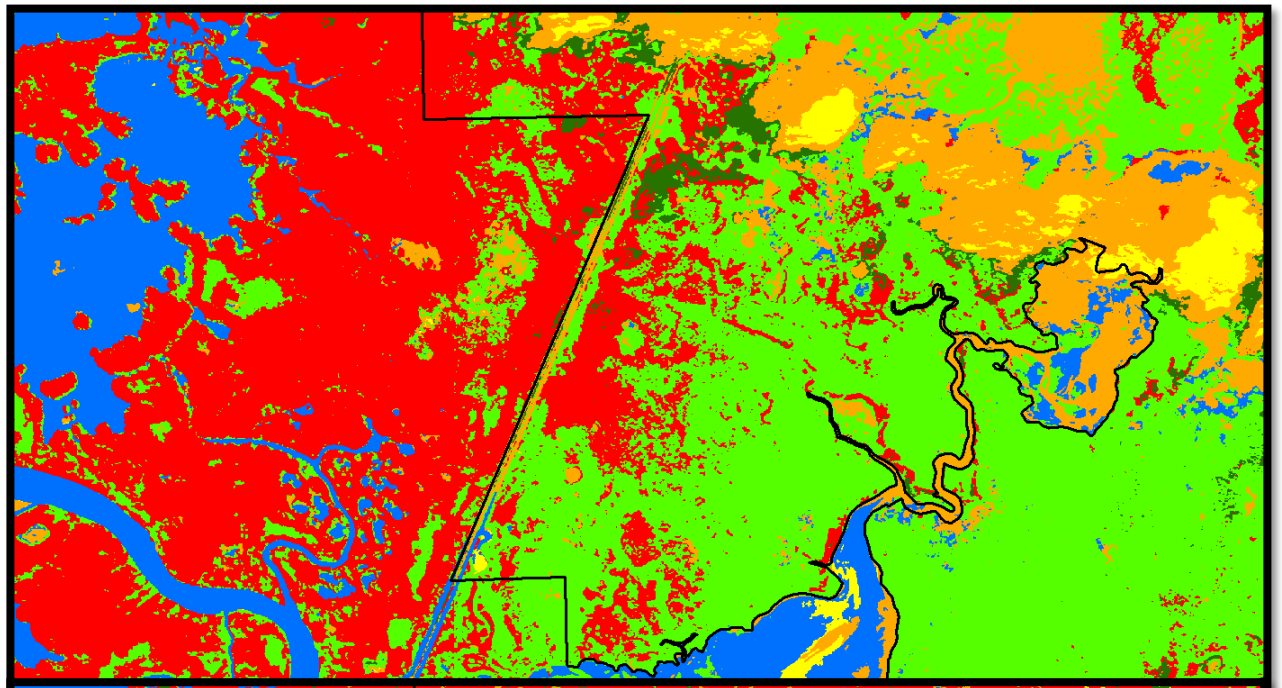


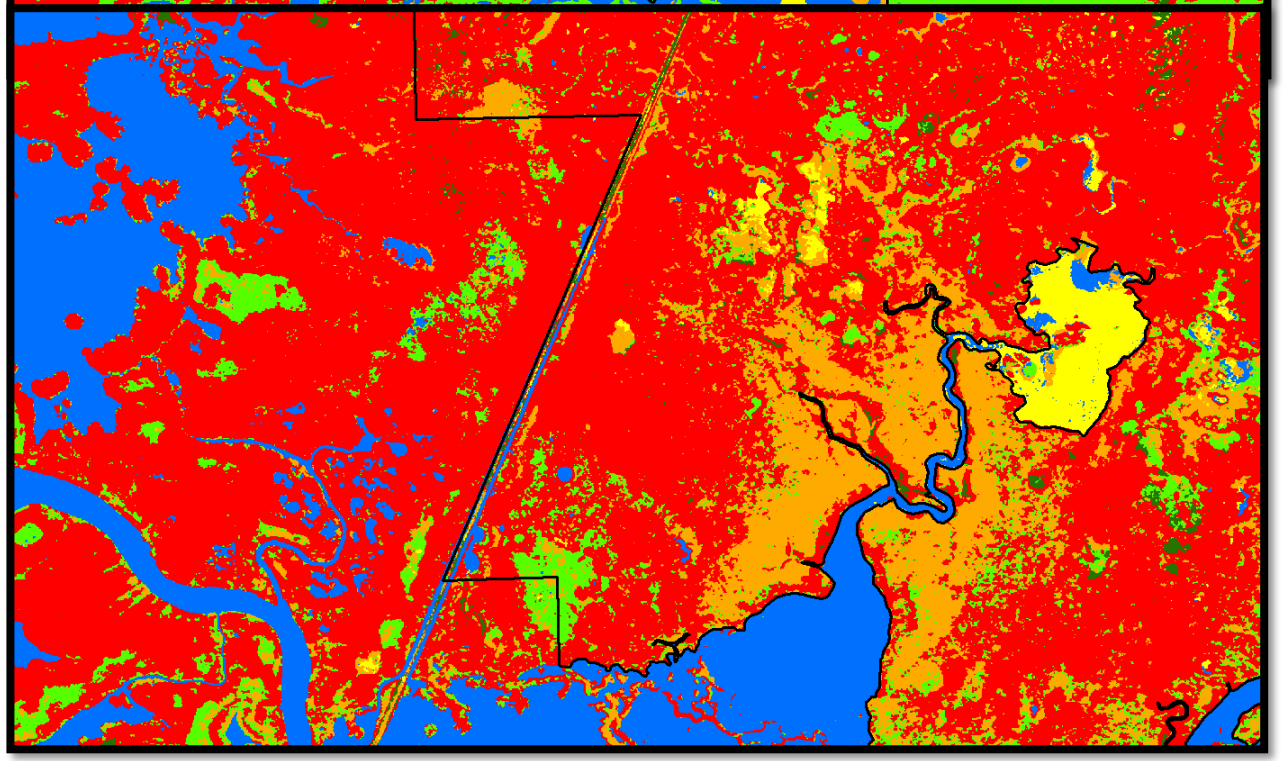
January 2017

January 2018

WorldView
December 2017



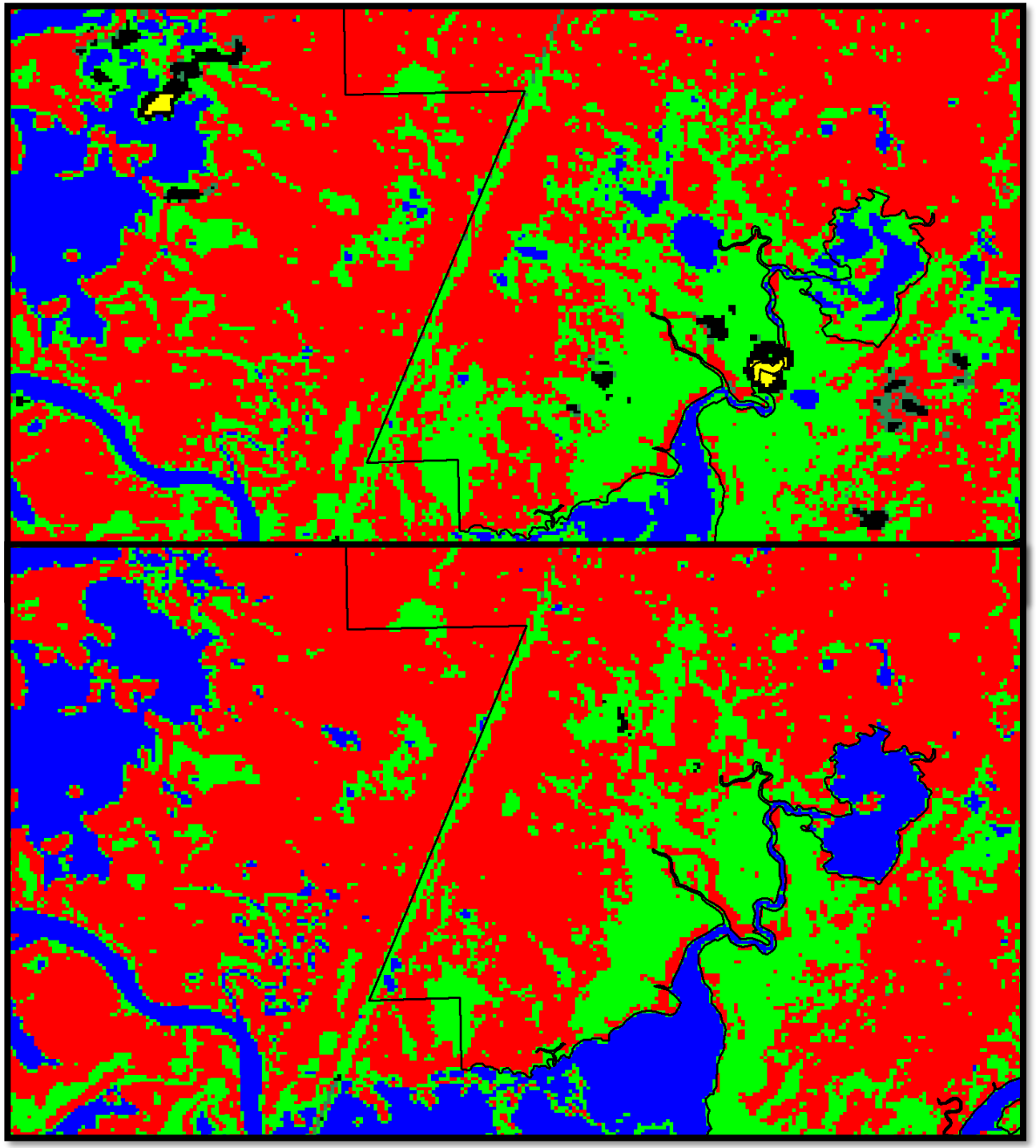
WorldView
March 2018



Recovery

- Some mangrove rebound
- Some mangrove die-off

Landsat
December 2017

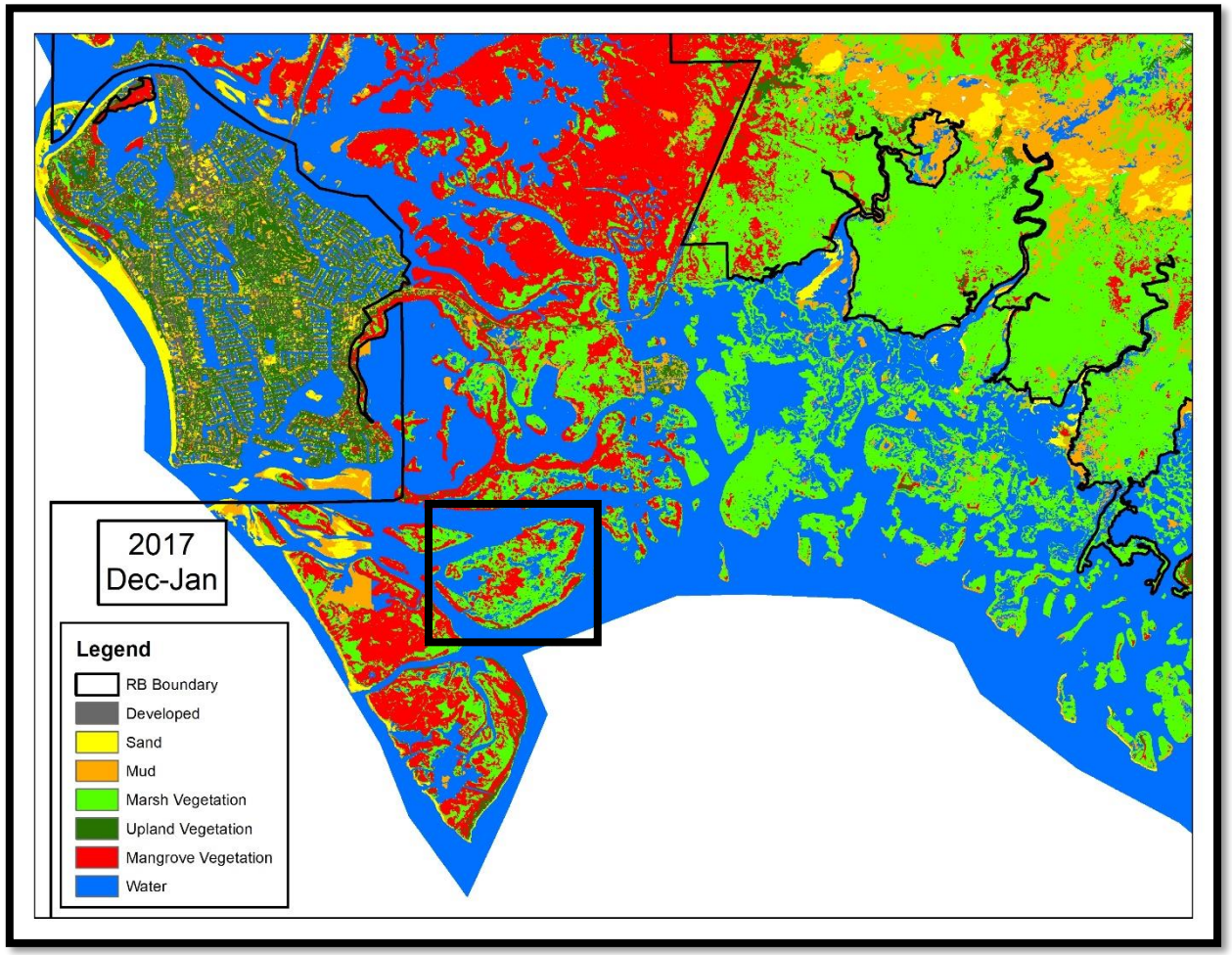


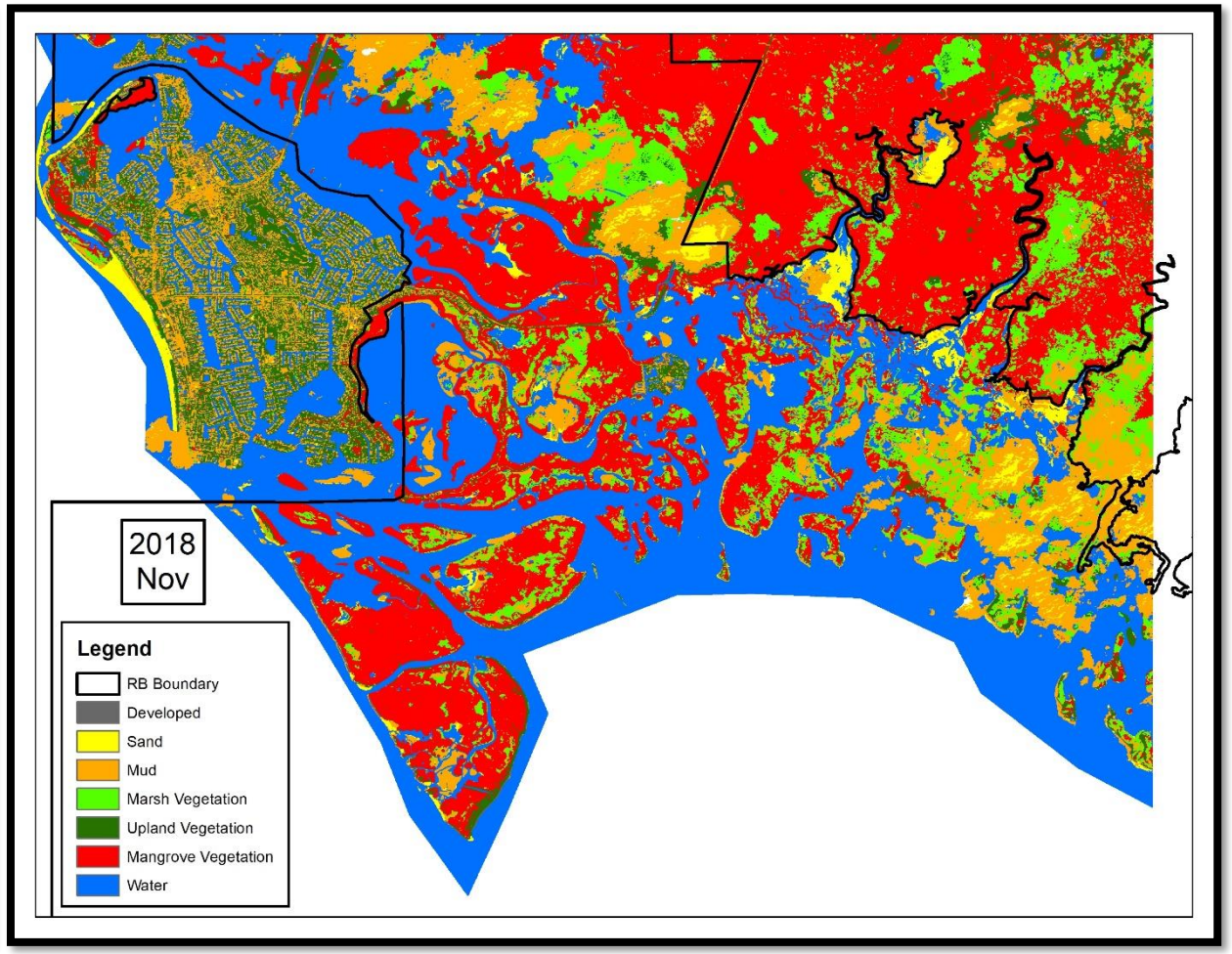
Landsat
March 2018

Recovery

- Some mangrove rebound

# WorldView:
# Irma Damage Recovery



# Challenges

- Seagrass
  - Turbidity obscuring accurate benthic classification
  - Manually mapping Sentinel imagery
- Hydrology
  - 2007 = only reserve-wide Lidar
  - 2018 Lidar release TBD
    - Supplement with WV-derived elevation if necessary

# Next steps:

- Accuracy assessments
- Change detection
- Change attribution
  - Areas of mangrove die-off
    - Maerl overwash starving mangroves
    - Sea level rise inundating low-lying areas more frequently
      - Lowest mean sea-level 2010-2017 = 40% higher than 1966-2017 average
      - Highest mean sea-level rise 1966-1998 = 2 mm/yr
      - Highest mean sea-level rise 1998-2017 = 7 mm/yr
- Hydrology