

2ND NATIONAL IMAGERY SUMMIT

NASA DEVELOP Flashtalks

Ryan Hammock, Katie Lange, Rochelle Williams, Adriana Le Compte, Britnay Beaudry, & Scott Cunningham

Organizing Partners



Identifying Environmental and Social Drivers of Urban Heat Vulnerability and Model Urban Cooling Interventions in Yonkers, New York

National Aeronautics and
Space Administration



Objectives

Create Heat Maps &
Identify Heat Islands



Map Heat Risk &
Conduct Vulnerability
Analysis



Evaluate Cooling
Strategies

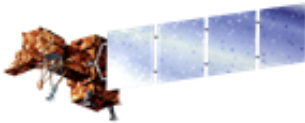


Landsat Earth Observations



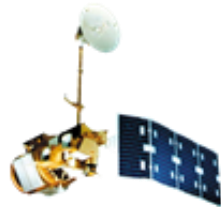
Landsat 8

▶ OLI
▶ TIRS



Landsat 7

▶ ETM+

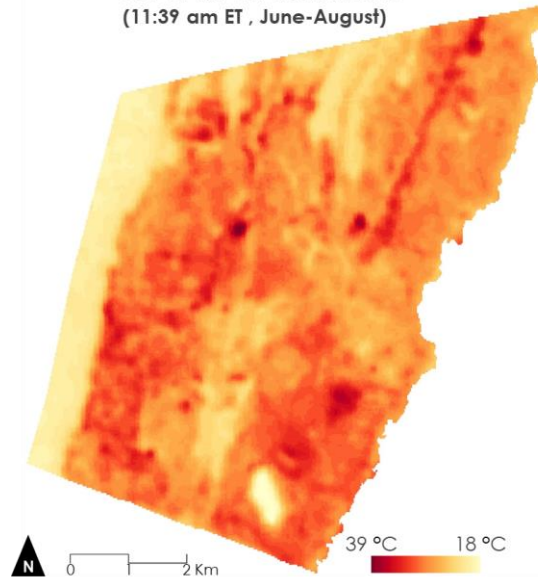


Landsat 4&5

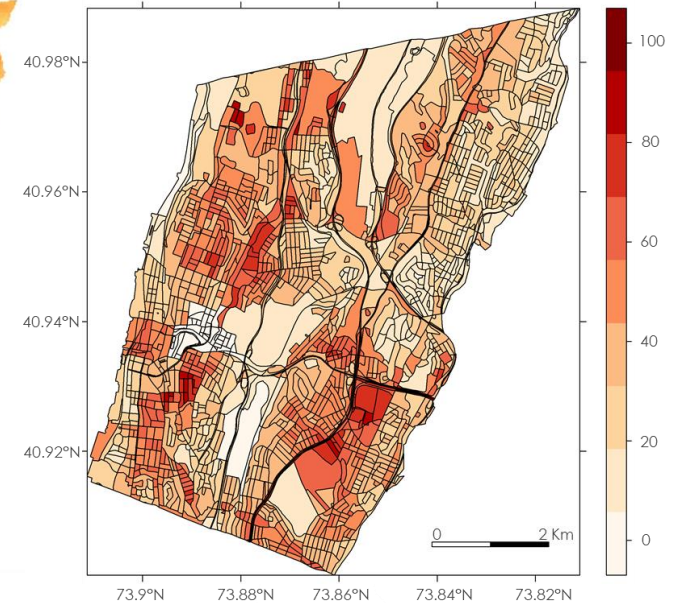
▶ TM

Results

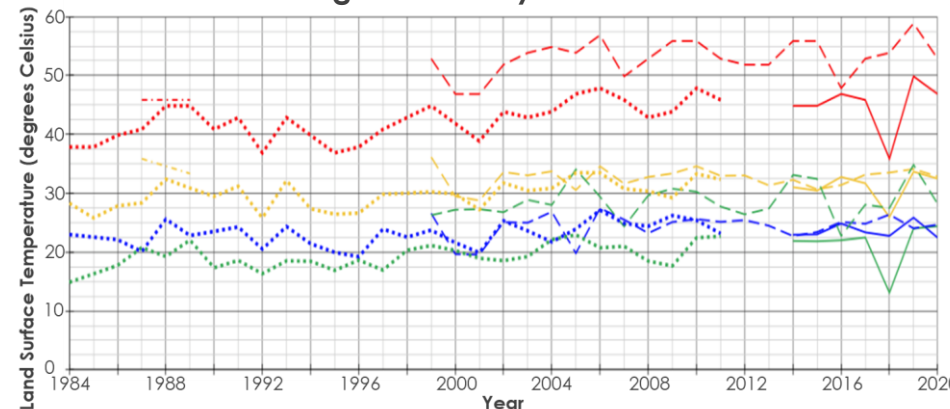
LST at 30 m. Resolution
(11:39 am ET, June-August)



Heat Risk Index in Yonkers, NY



Landsat Change Over Study and Reference Areas



- Study Area Maximum Summer Mean
- Study Area Average Summer Mean
- Reference Region Average Summer
- Surface UHI Magnitude (Difference)
- Landsat 8 OLI & TIRS
- Landsat 7 ETM+
- Landsat 5 TM
- Landsat 4 TM

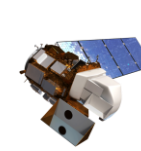
Mapping Forest Health & Hemlock Tree Composition



Objectives

- ▶ **Analyze** winter NDVI decline to identify areas of evergreen and potential hemlock decline
- ▶ **Explore** and **identify** hemlock suitable areas through a Weighted Suitability Analysis

Earth Observations



Landsat 8 OLI

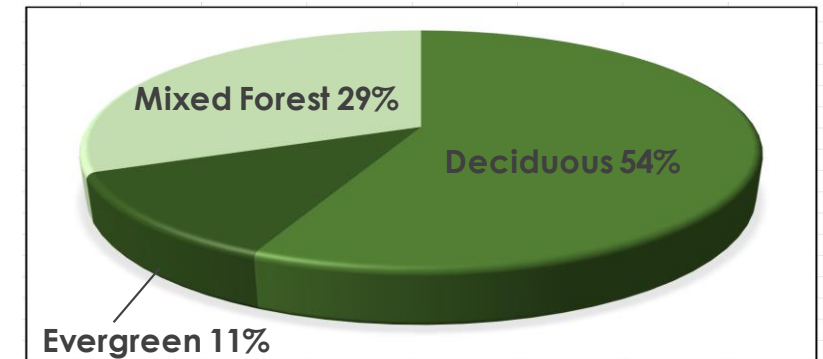


SRTM

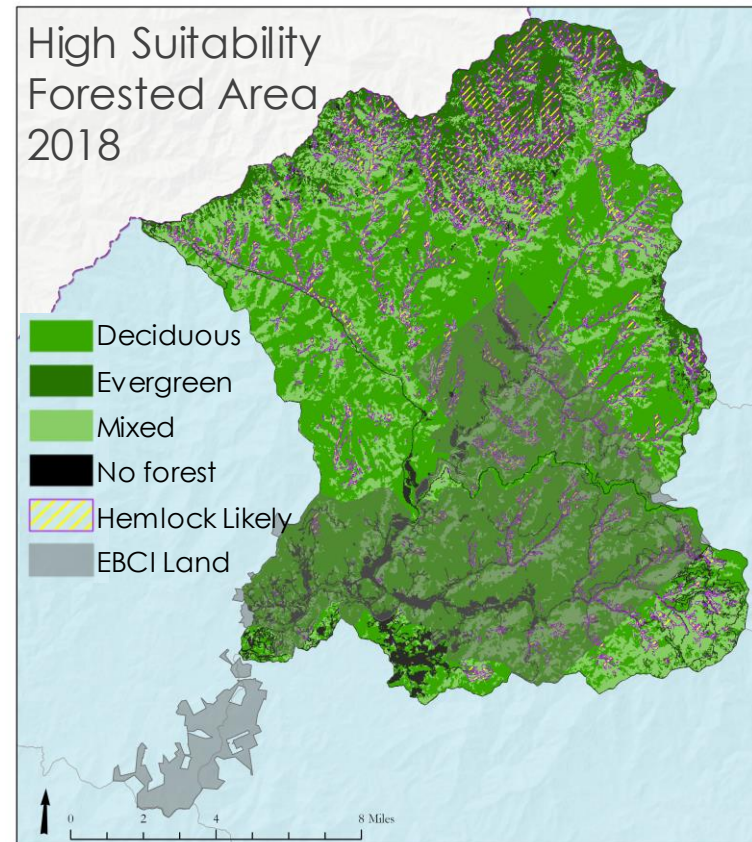
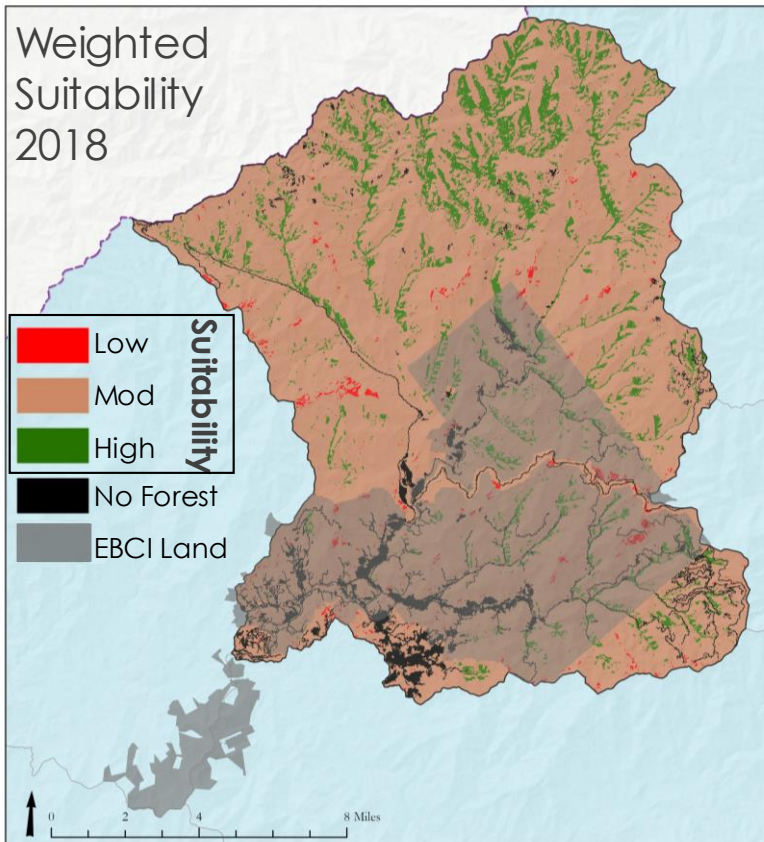
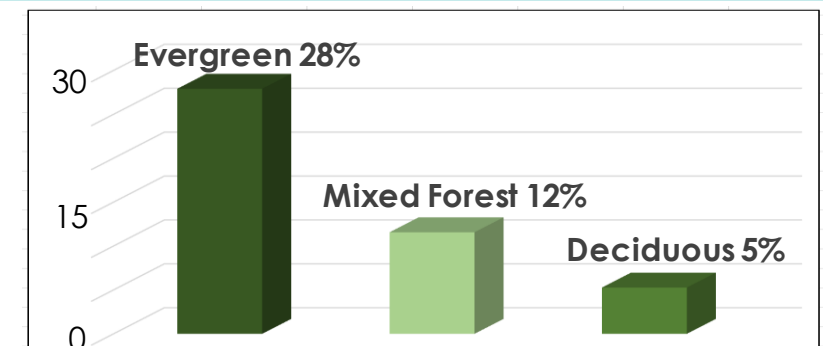


Landsat 5 TM

Oconaluftee Forest Composition



Percent Forest Type Suitable for Hemlock



Community Concerns

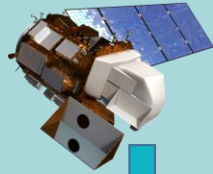
- Cheat River flooding causes community and ecological damage in Preston and Tucker Counties



Image Credit: Friends of the Cheat

Objectives & Methods

- Quantify** recent changes in land cover to better assess flood risk
- Map** flood risk and vulnerability to identify areas to target mitigation



Landsat 8 OLI (2013-2020)

NDWI
(2013-2020)

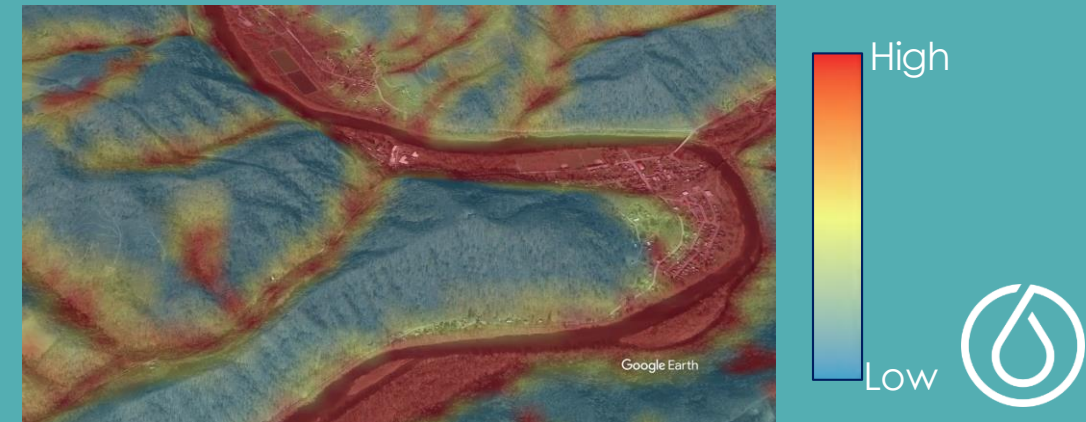
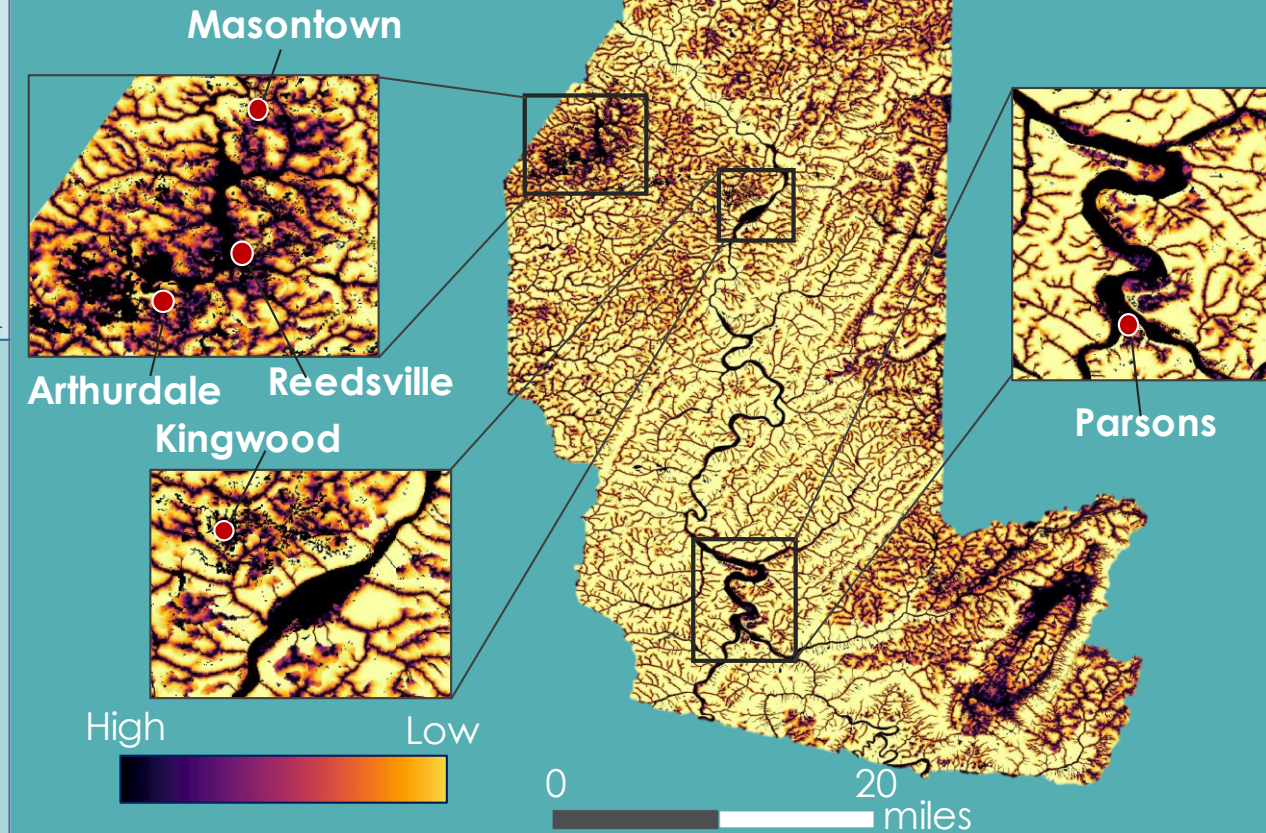
Max Flood
Extent

FEMA
Floodplains

- Cloud Mask
- Reduce by max pixel value
- Water threshold

Total Flood Extent

Results: Flood Risk





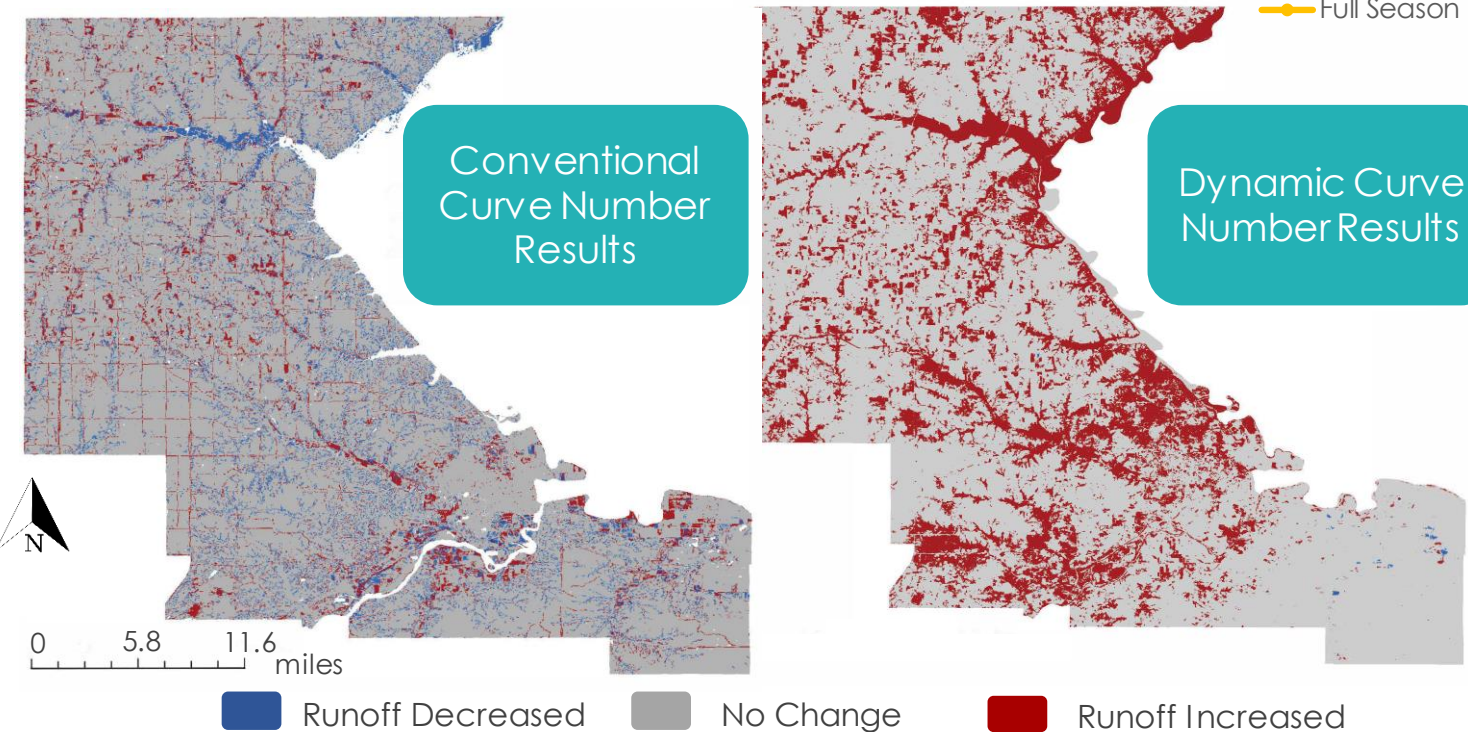
Comparing Curve Calculation Methods to Inform Local Resiliency Initiatives in Riley County, Kansas

Concern:

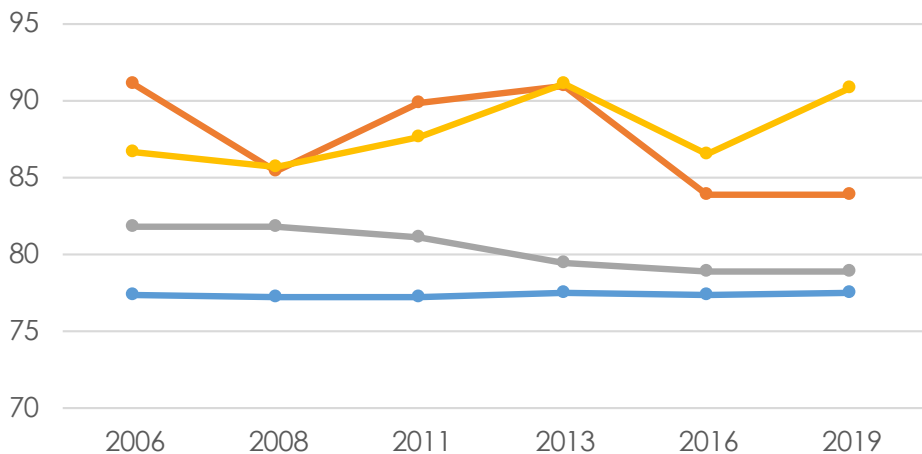
In recent years, Riley County, Kansas has experienced unprecedented flooding

Objectives:

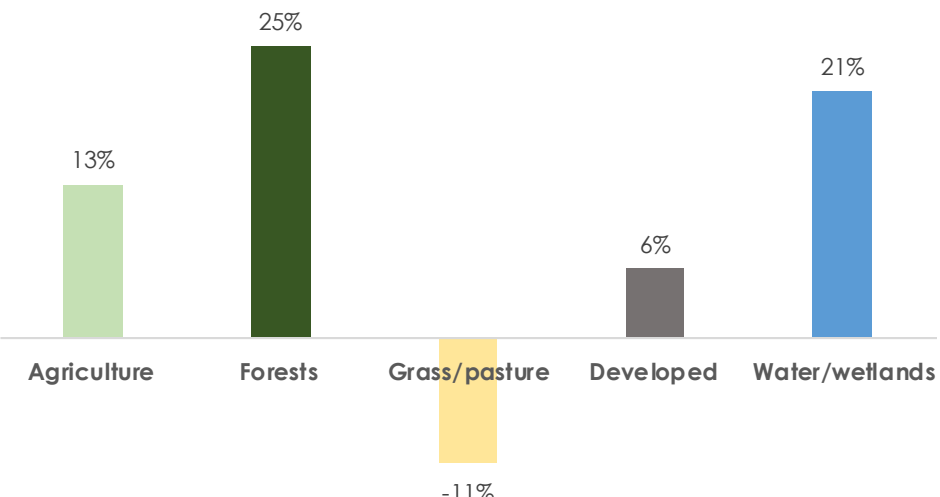
Compare two methods of curve number calculation, and create detailed land use land cover maps



Average Curve Number

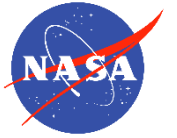


Percent Change in LULC Area 2006-2019

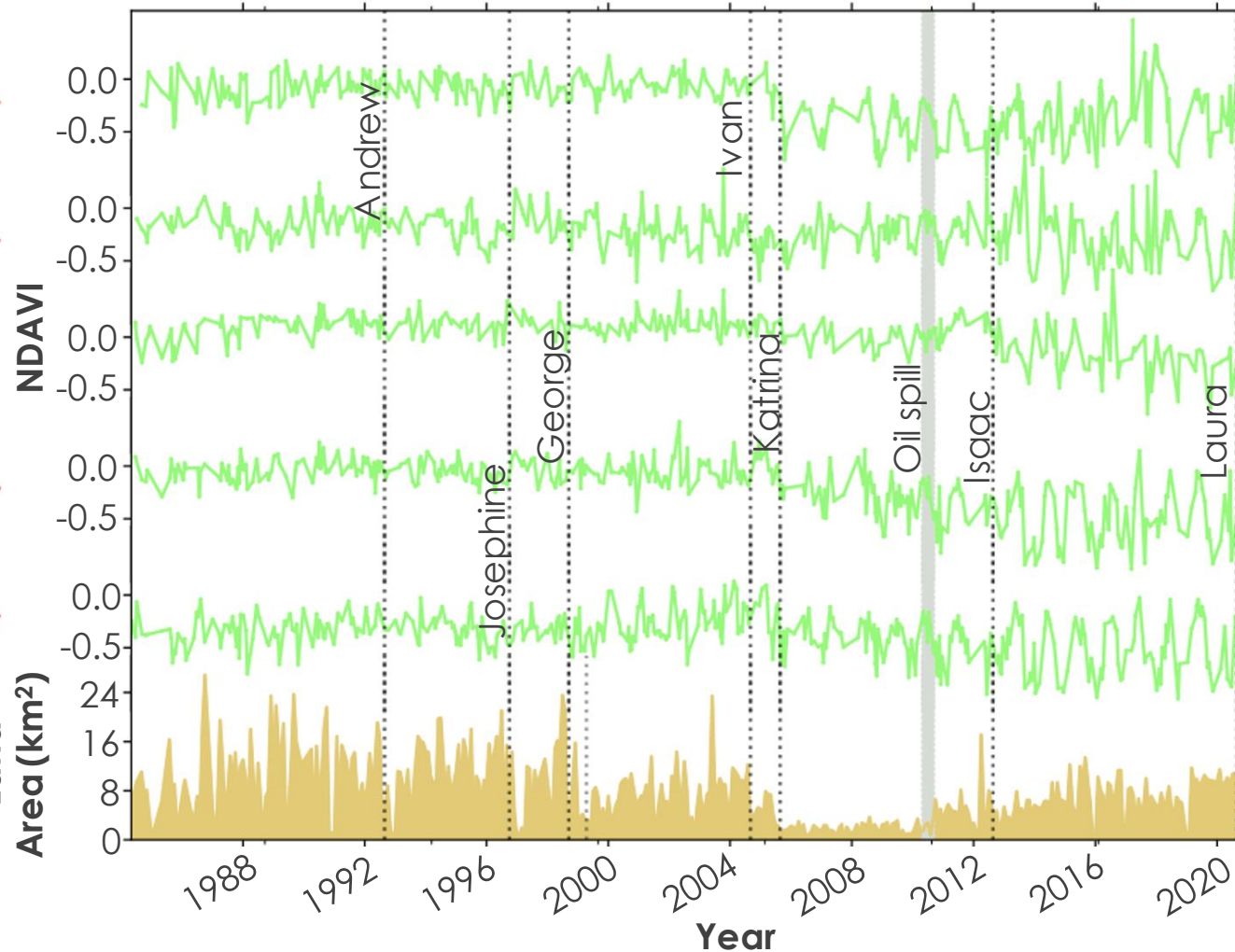
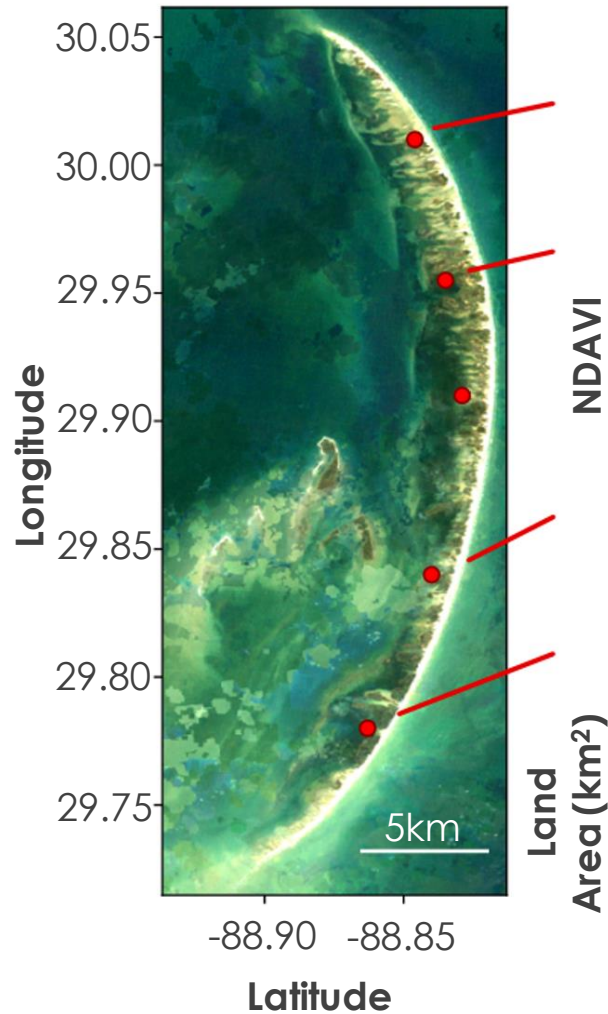


Using Landsat 5, 7, and 8 to Monitor Historical Changes in Extent of Seagrass Meadows in the Breton National Wildlife Refuge in Louisiana

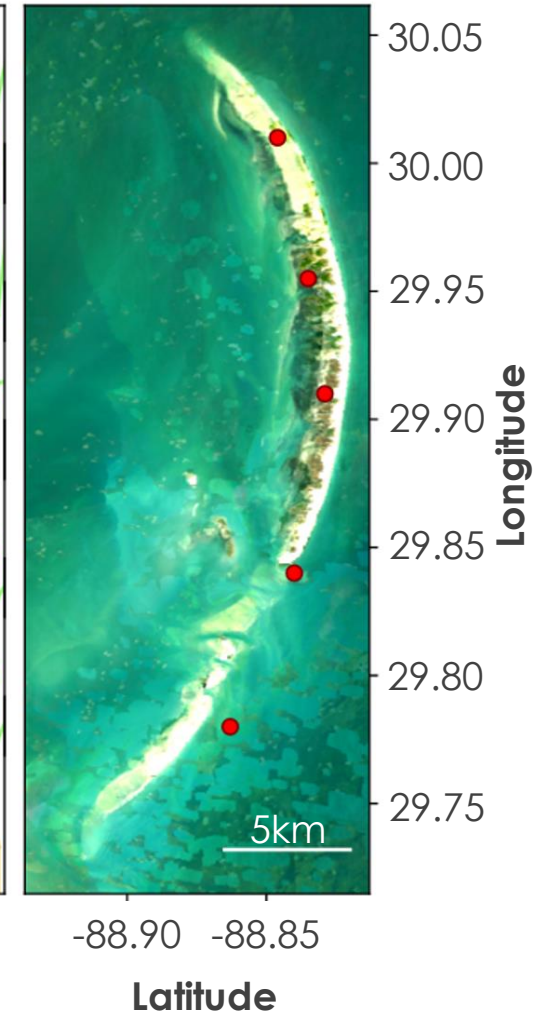
National Aeronautics and
Space Administration



Spring 1984



Spring 2021



Landsat 5 TM

Landsat 8 OLI

^
Landsat 7 ETM+

Objectives:

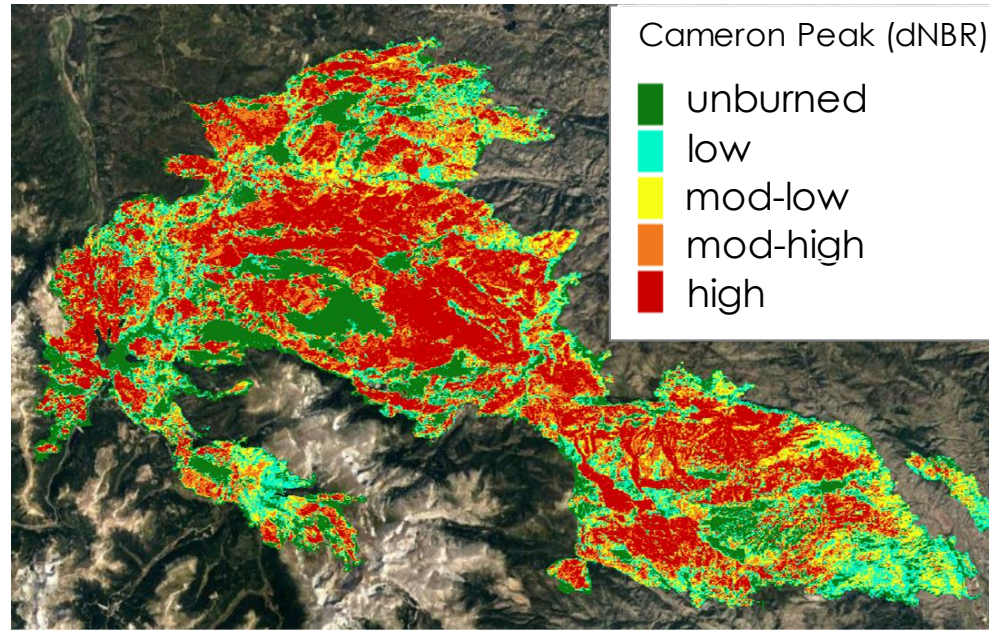
Create a
treatment
database

Map burn
severity for both
fires

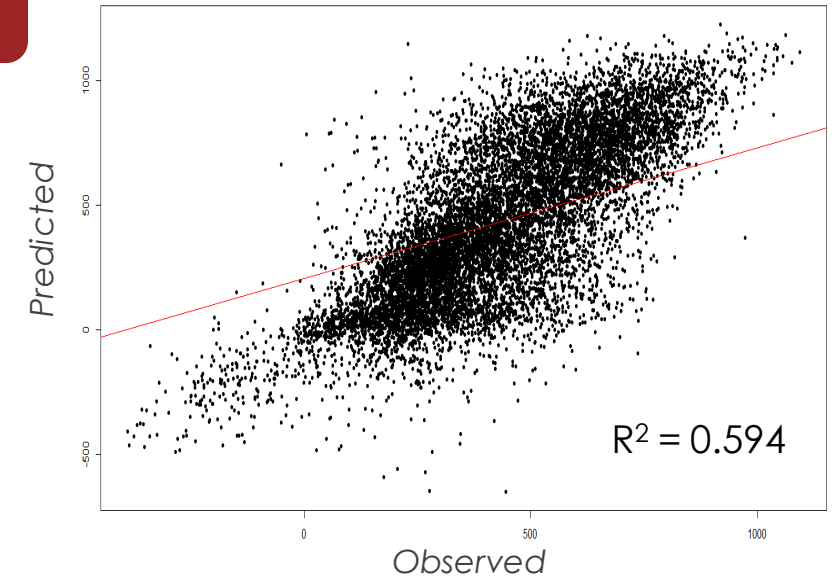
Explore relationships between
burn severity and forest
treatment

Cameron Peak:
208,918 acres

CalWood:
10,106 acres



Burn Severity Model (CP)



Most Important Predictors:
Elevation, Treatment Distance,
Physiographic Diversity

