



Place-Based Climate Solutions

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Preparing New Jersey For Climate Change

“New Jersey Climate Adaptation Alliance”

njadapt.rutgers.edu

RUTGERS
New Jersey Climate Adaptation Alliance

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New Jersey Climate Adaptation Alliance

The **New Jersey Climate Adaptation Alliance** was formed in response to a diverse group of stakeholders who came together on November 29, 2011 at Rutgers University to participate in the conference "Preparing NJ for Climate Change: A Workshop for Decision-Makers."

A changing climate and rising sea levels will have a devastating impact on New Jersey's economy, the health of our residents, the State's natural resources, and the extensive infrastructure system that delivers transportation services, energy and clean water to millions of New Jerseyans. The Alliance will focus on climate change preparedness in key impacted sectors (public health; watersheds, rivers and coastal communities; built infrastructure; agriculture; and natural resources) through:

- ◆ Conducting outreach and education of the general public and targeted sectoral leaders;
- ◆ Developing recommendations for state and local actions through collaboration with policymakers at the state, federal and local levels;
- ◆ Undertaking demonstration and pilot projects in partnership with the private sector, local

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WHAT'S NEW?

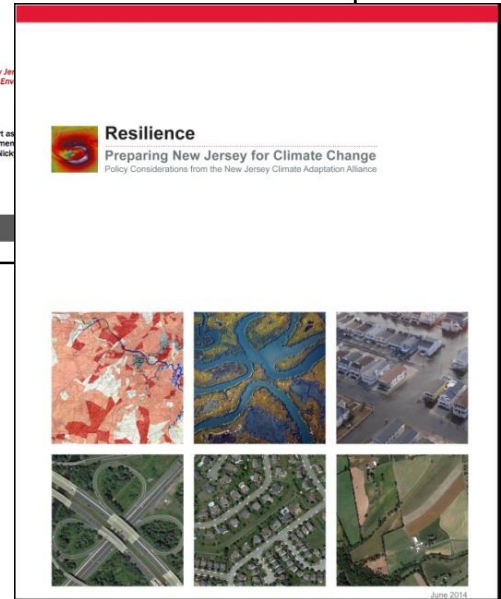
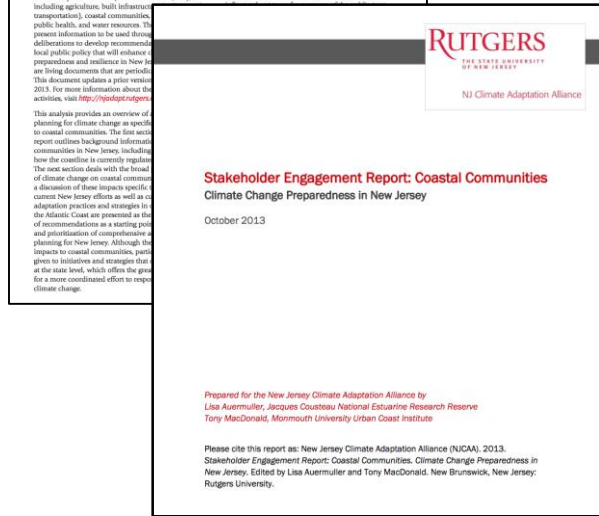
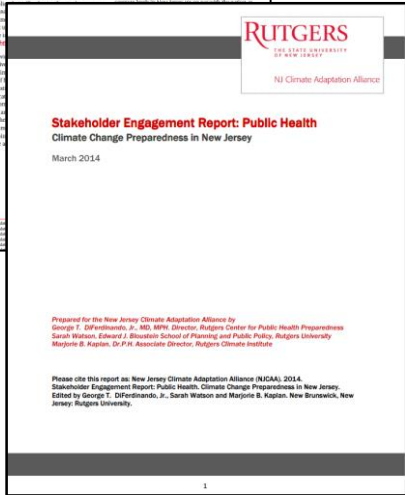
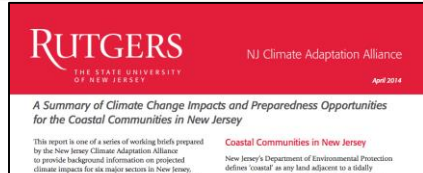
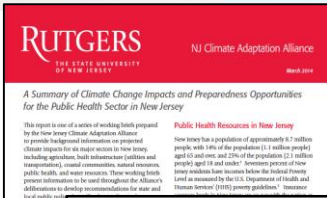
Conference Announcement
Creating the Healthiest Nation: Climate Changes Health annual meeting and expo hosted by the American Public Health Association will be held from November 4-8, 2017 in Atlanta, Georgia. Abstract deadline is February 20, 2017. More information [here](#).

Job Opportunity
Associate Director position available at the Urban Coast Institute at Monmouth University. Application deadline **January 31, 2017**. More information [here](#).

Regional Plan Association's New Study
The Regional Plan Association recently released a study, citing the work of the New Jersey Climate Adaptation Alliance, [Under Water: How Sea Level Rise Threatens the Tri-State Region](#), which details the severe threats posed to parts of New York, New Jersey, and Connecticut metropolitan areas as a result of permanent sea level rise.

NJ Sea-Level Rise Reports
Read the October 2016 reports related to the New Jersey Climate Adaptation Alliance Science and Technical Advisory Panel on Sea-Level Rise and Coastal Storms: [Assessing New Jersey's Exposure](#)

- Policymakers
- Private & Public Sector Practitioners
- Business Leaders
- Nongovernmental Organizations
- Academics
- Work Via Existing Delivery Systems
- Facilitated by Rutgers University
- Pre-dated Sandy
- Follows Strategic Workplan and Advisory Committee Direction

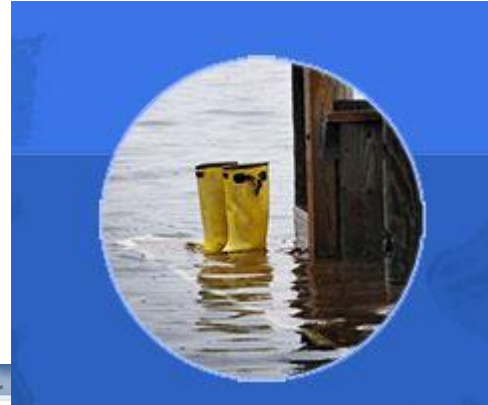


- **Sector specific reports:** impacts, best practices, recommendations.
- **Stakeholder engagement:** identification of policy gaps.
- **Analyses to “make the case”:** evidence-based, wide-ranging.

<http://njadapt.rutgers.edu/resources/njcaa-reports>

- **Community-based decision support:** tools, assistance, demonstration projects.
- **Communications:** materials, workshops, videos

Coastal Hazard Profiler



Start Collecting Maps



New Jersey Populations Vulnerable to Climate Change



Climate Change and the Jersey Shore
Impacts on Coastal Communities, Ecosystems and Economies

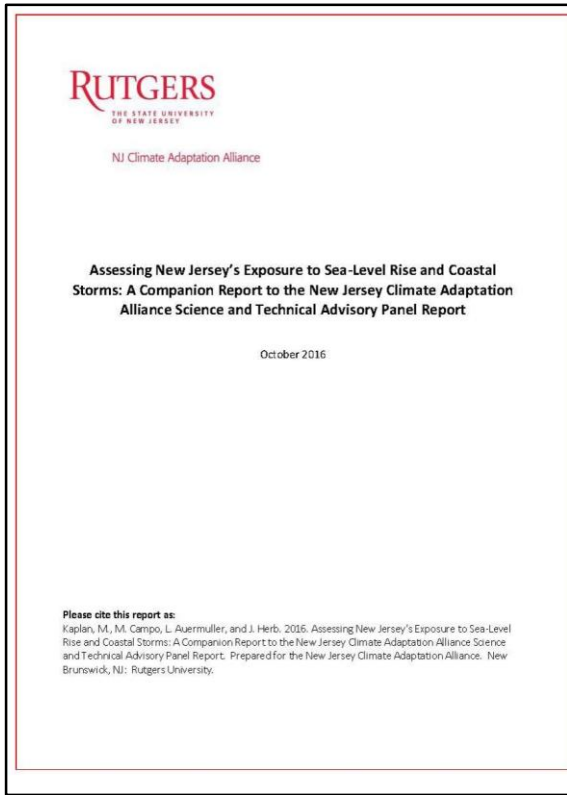


Climate Change and Flood Risk for New Jersey's Senior Citizens

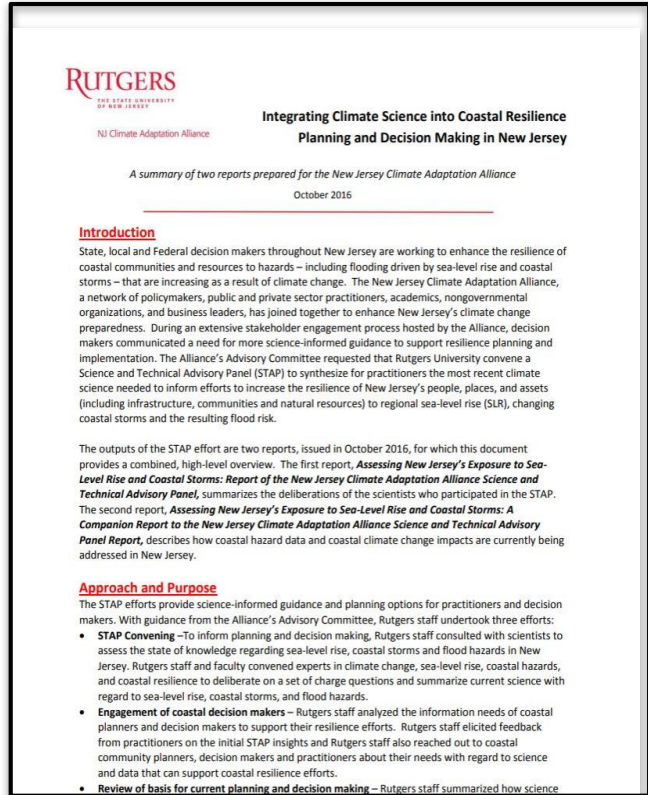
Sea-Level Rise and Coastal Storms for NJ



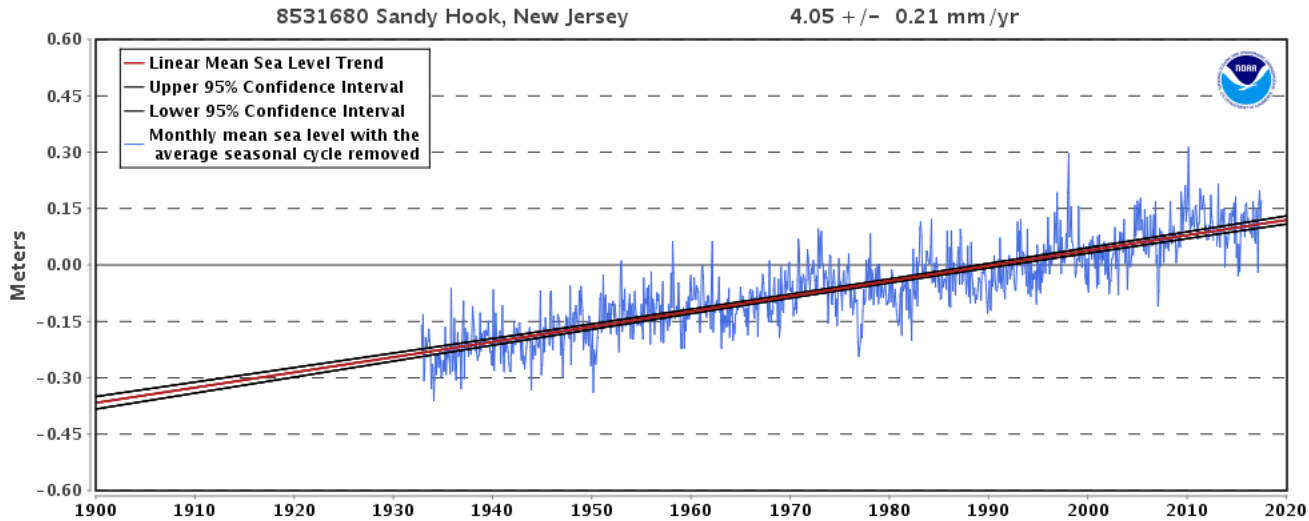
Science & Technical Advisory Panel Report



Companion Report



High Level Summary of Both Reports

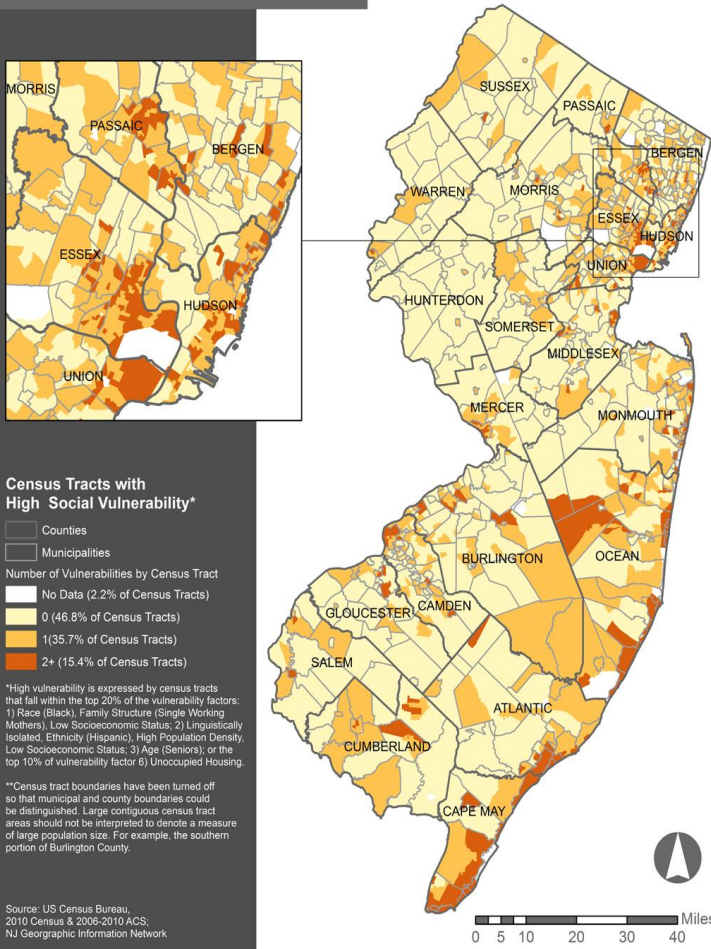


	Central Estimate	Likely Range	1-in-20 Chance	1-in-200 Chance	1-in-1000 Chance
Year	50% probability SLR meets or exceeds...	67% probability SLR is between...	5% probability SLR meets or exceeds...	0.5% probability SLR meets or exceeds...	0.1% probability SLR meets or exceeds...
2030	0.8 ft	0.6 – 1.0 ft	1.1 ft	1.3 ft	1.5 ft
2050	1.4 ft	1.0 – 1.8 ft	2.0 ft	2.4 ft	2.8 ft
2100 Low emissions	2.3 ft	1.7 – 3.1 ft	3.8 ft	5.9 ft	8.3 ft
2100 High emissions	3.4 ft	2.4 – 4.5 ft	5.3 ft	7.2 ft	10 ft

Apply an Equity lens

High Social Vulnerability and Flood Risk

Summary of High Social Vulnerability Areas in New Jersey



Census Tracts with High Social Vulnerability*

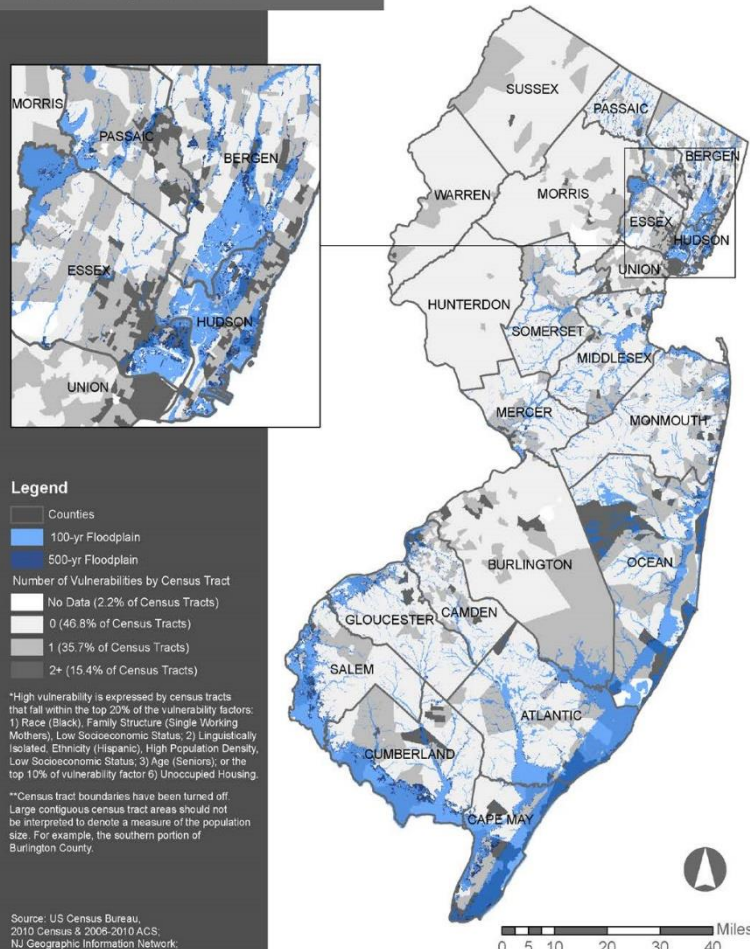
- Counties
- Municipalities
- Number of Vulnerabilities by Census Tract
- No Data (2.2% of Census Tracts)
- 0 (46.8% of Census Tracts)
- 1 (35.7% of Census Tracts)
- 2+ (15.4% of Census Tracts)

*High vulnerability is expressed by census tracts that fall within the top 20% of the vulnerability factors: 1) Race (Black), Family Structure (Single Working Mothers), Low Socioeconomic Status; 2) Linguistically Isolated, Ethnicity (Hispanic), High Population Density, Low Socioeconomic Status; 3) Age (Seniors), or the top 10% of vulnerability factor 6) Unoccupied Housing.

**Census tract boundaries have been turned off so that municipal and county boundaries could be distinguished. Large contiguous census tract areas should not be interpreted to denote a measure of large population size. For example, the southern portion of Burlington County.

Source: US Census Bureau, 2010 Census & 2009-2010 ACS; NJ Geographic Information Network

Areas of High Social Vulnerability* with Flood-prone Lands



Legend

- Counties
- Municipalities
- 100-yr Floodplain
- 500-yr Floodplain
- Number of Vulnerabilities by Census Tract
- No Data (2.2% of Census Tracts)
- 0 (46.8% of Census Tracts)
- 1 (35.7% of Census Tracts)
- 2+ (15.4% of Census Tracts)

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**Census tract boundaries have been turned off. Large contiguous census tract areas should not be interpreted to denote a measure of the population size. For example, the southern portion of Burlington County.

Source: US Census Bureau, 2010 Census & 2009-2010 ACS; NJ Geographic Information Network; FEMA P-FIRM Data as of Jan. 2015

Water Resource Planning: Delaware River Basin Commission



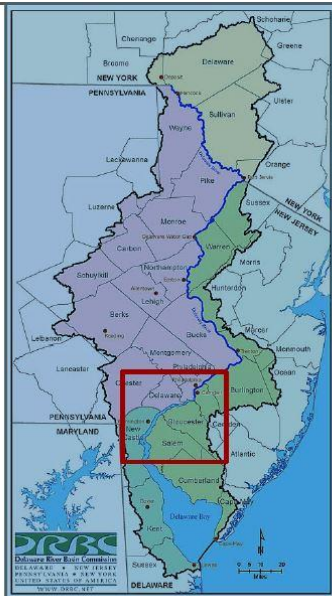
Freshwater Hydrologic Climate Considerations:

- Precipitation
- Flow
- Temperature
- Evapotranspiration
- Snowpack

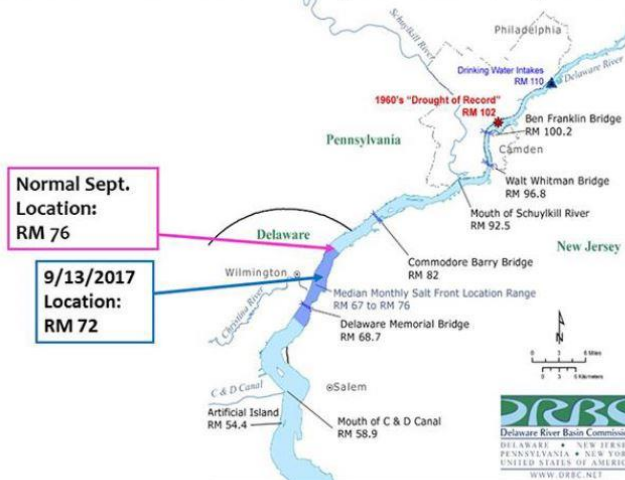


Salt Water Climate Considerations:

- Sea Level Rise



Salt Line Location: September 13, 2017



Images courtesy of S. Tambini, DRBC

Preliminary Results Summary Temperature / Precipitation / Hydrology/ Droughts

- Predicted trends in climate indicate that the basin will experience similar conditions as those of the past 30 years through 2060.
- Seasonal changes could impact seasonal and shorter term extreme “wet” or “dry” periods.
- Over a long term periods, significant impacts on water storage availability, drought days and the movement of the salt line are not expected.
- The drought of the 1960s is the appropriate planning criteria for the basin. A worse drought is always a possibility.



Preliminary Evaluation: Sea-Level Rise

Summary

- Sea level rise and its impact to salinity in the estuary most likely pose the greatest drought-related climate impacts in the basin.
- Sea level rise in the Estuary is expected to be greater than global sea level rise averages
- Additional water (storage) may be needed to meet freshwater water flow objectives and flow objectives may need to be adjusted to maintain the salt front.
- Water users in the Estuary need to plan for sea level rise impacts.



Images courtesy
of S. Tambini,
DRBC

Living shorelines



Incorporates natural features to reduce erosion and create habitat

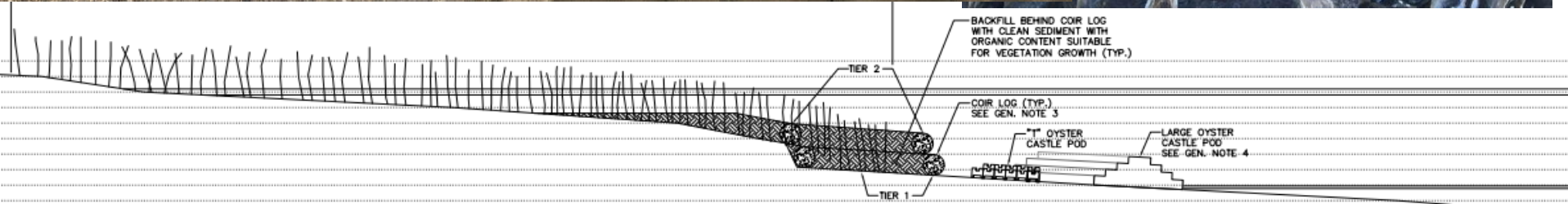


Two complementary goals:

1. Stem erosion that can lead to rapid loss of marsh surface
2. Accelerate sediment accretion to assist the marsh in keeping pace with SLR and thus reduce flooding



Integrates ecological principles into engineering design



A Few more examples from Alliance Partners



NJ Audubon addressing climate change impacts to forests, by developing and implementing Forest Stewardship Plans on Public and Private Lands statewide.

Beach nourishment/habitat restoration for horseshoe crabs and shorebirds, with oyster reefs to add resiliency to the restored beach and adjacent communities;



Green Stormwater Infrastructure projects in urban and suburban areas, both for immediate benefits in problematic sites as well as for demonstration purposes (Bridgeton, Cohansey and Maurice River watersheds).

NJ Forest Adapt

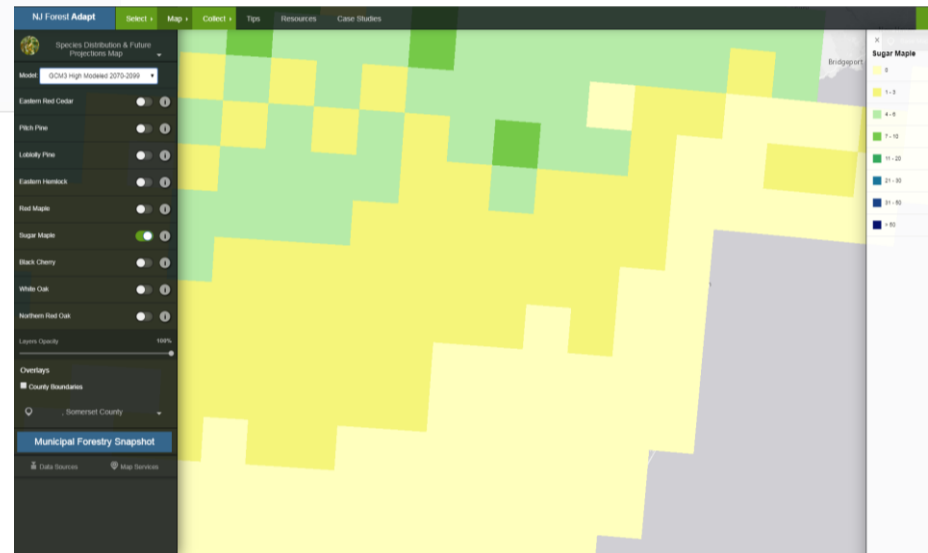
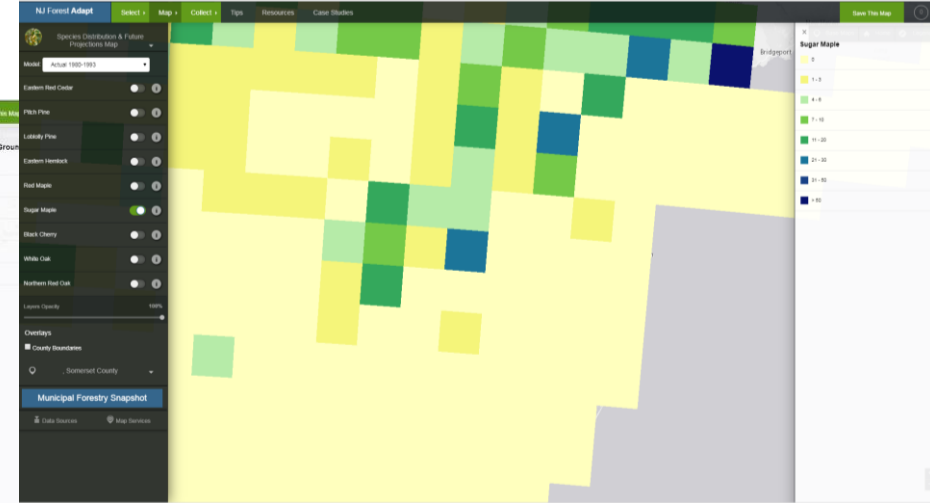
Forest Carbon

Tree Species Distribution & Future Projections



Forest Stand | Carbon Characteristics Map

- Forest Carbon Total
- Forest Carbon Above Ground
- Forest Carbon Below Ground
- Forest Carbon Understory
- Forest Carbon Standing Dead
- Youngstown Forest Carbon Down Dead
- Forest Carbon Litter
- Forest Carbon Soil Organic



Resiliency of Wild Trout Streams to Future Climate Change

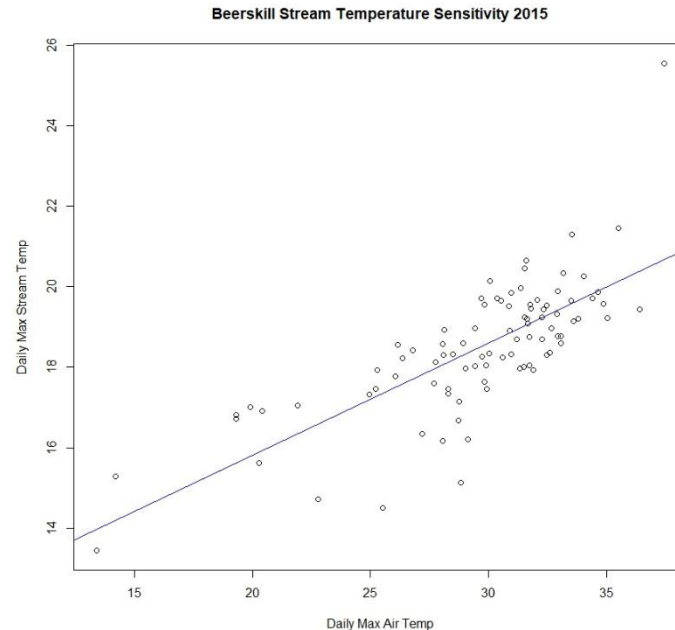


Image courtesy of S. Crouse, NJDEP

- Will inform which stream habitats in NJ will support native brook trout and potential management strategies

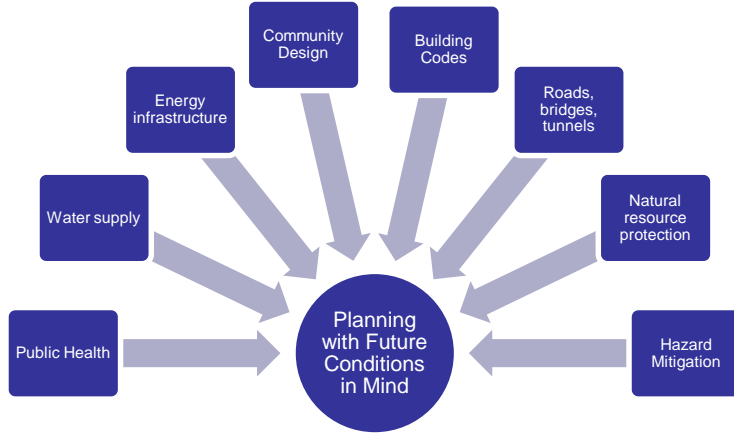


- NJDEP BFF measuring stream and air temperature data at Brook Trout streams
- Input to models to assess how specific streams will fare at different temperature increases



Data courtesy S. Collenburg, NJDEP

Planning based on future climate conditions



Collective Impact



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