



# Addressing Erosion in Natural Areas Under a Changing Climate

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## Heavy rainfall is more frequent

Observed Change in Very Heavy Precipitation

Severe storms in the Northeast that were "100 year storms" in the 1950s, now are projected to occur once every 60 years.

Warmer air holds more moisture.

Changes in large-scale weather patterns affects where precipitation occurs

The map shows percent increases in the amount of precipitation falling in very heavy events (defined as the heaviest 1% of all daily events) from 1958 to 2012 for each region of the U.S. The Northeast is experiencing significant increase in these heavy events.

Annual Temp. has warmed by almost 2°F between 1895 and 2011.

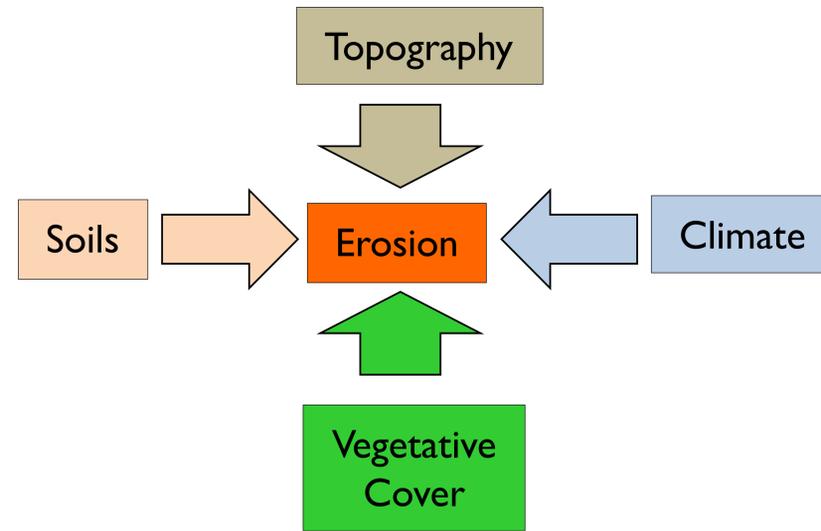
Precipitation during same period has increased almost 5 inches (10%).

Northeast has greater recent increase in extreme precipitation than rest of US.

Seasonal extreme precipitation September 2018 at Birch Hill Weather station

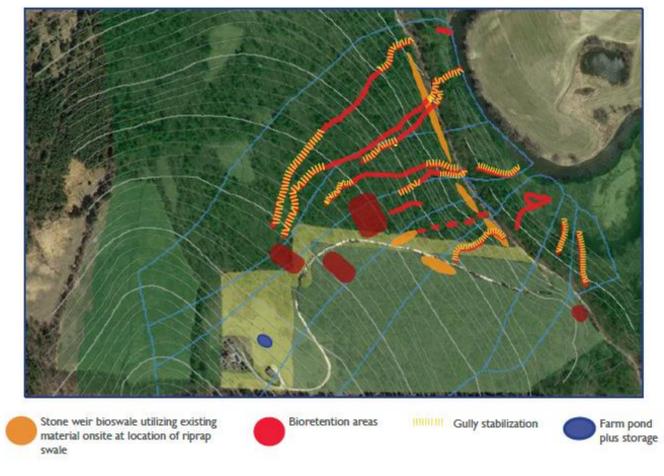
Climate summary gauge by Northeast Regional Climate Center

(www.nrcc.cornell.edu/wxstation/gauges/gauges.html)



## Solutions

As natural resource managers, our efforts to address the impacts of climate change on our properties have focused on protecting habitats, maximizing connectivity, managing for ecological processes and functions, limiting non-climate stresses, and maintaining species richness. We need to continue to expand our toolbox to address new challenges such as increased rainfall resulting in new areas of runoff and erosion.



With help from Sustainability Visions and a grant from Massachusetts Department of Environmental Protection Section 319 Nonpoint Source Competitive Grants Program, we are devising new solutions that will focus on source control, infiltration, and slowing of erosion in order to protect habitats and species of concern.



Initial efforts have included using pipe to temporarily contain runoff, building check dams (out of sandbags, rock or logs) to pool water, creating bioretention swales and changing the arrangement of culverts along roadways.

## Bartholomew's Cobble Sheffield, MA

- National Natural Landmark
- 40 + Rare species
- Priority habitats including floodplain forests, vernal pools



## Erosion is a natural process But also an increasing problem



- Small watershed
- Steep slopes
- Slopes vegetated, including forest



- ### Impacts
- Gully formation
  - Wetland deposition
  - Infrastructure
  - Impacting rare species



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