

6x

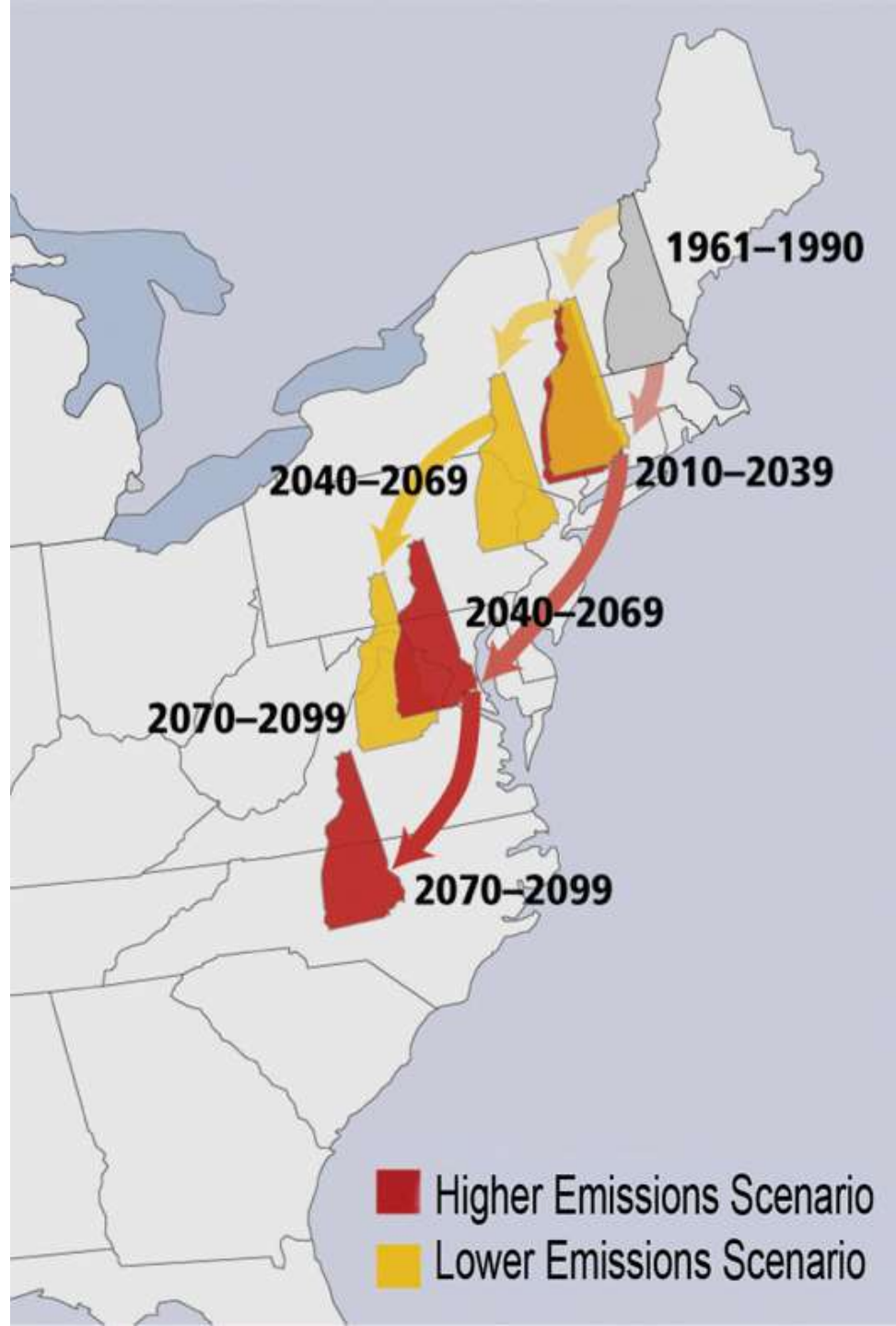
7.00 kV

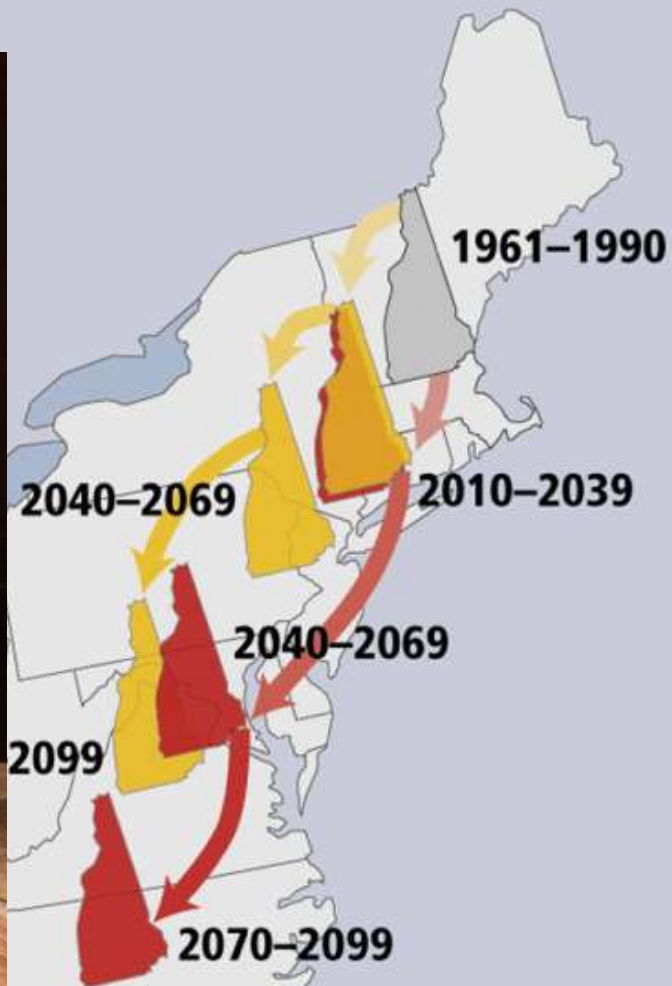
100 μm

SUGAR MAPLE

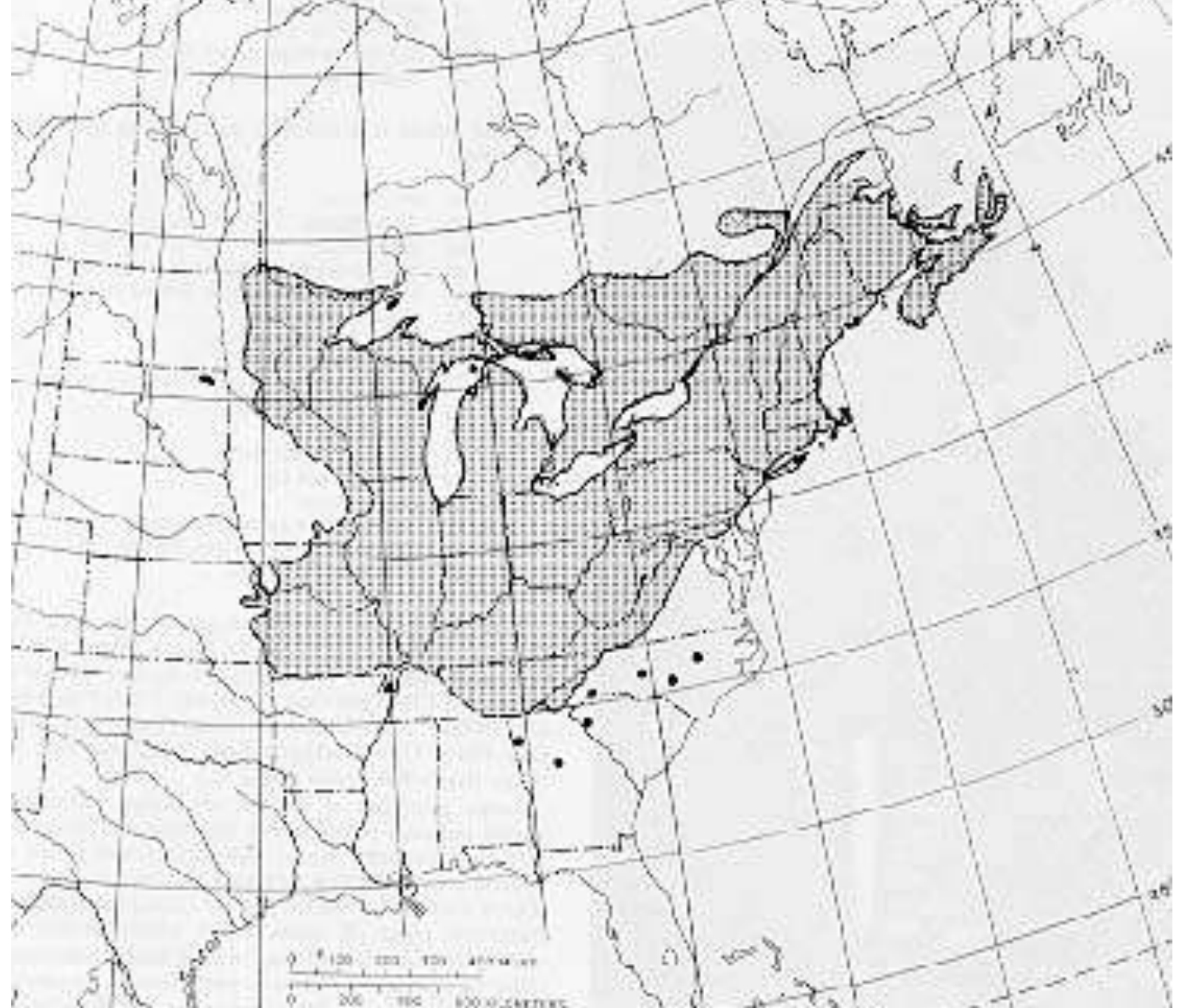
30 MAR 101

S. Roberge



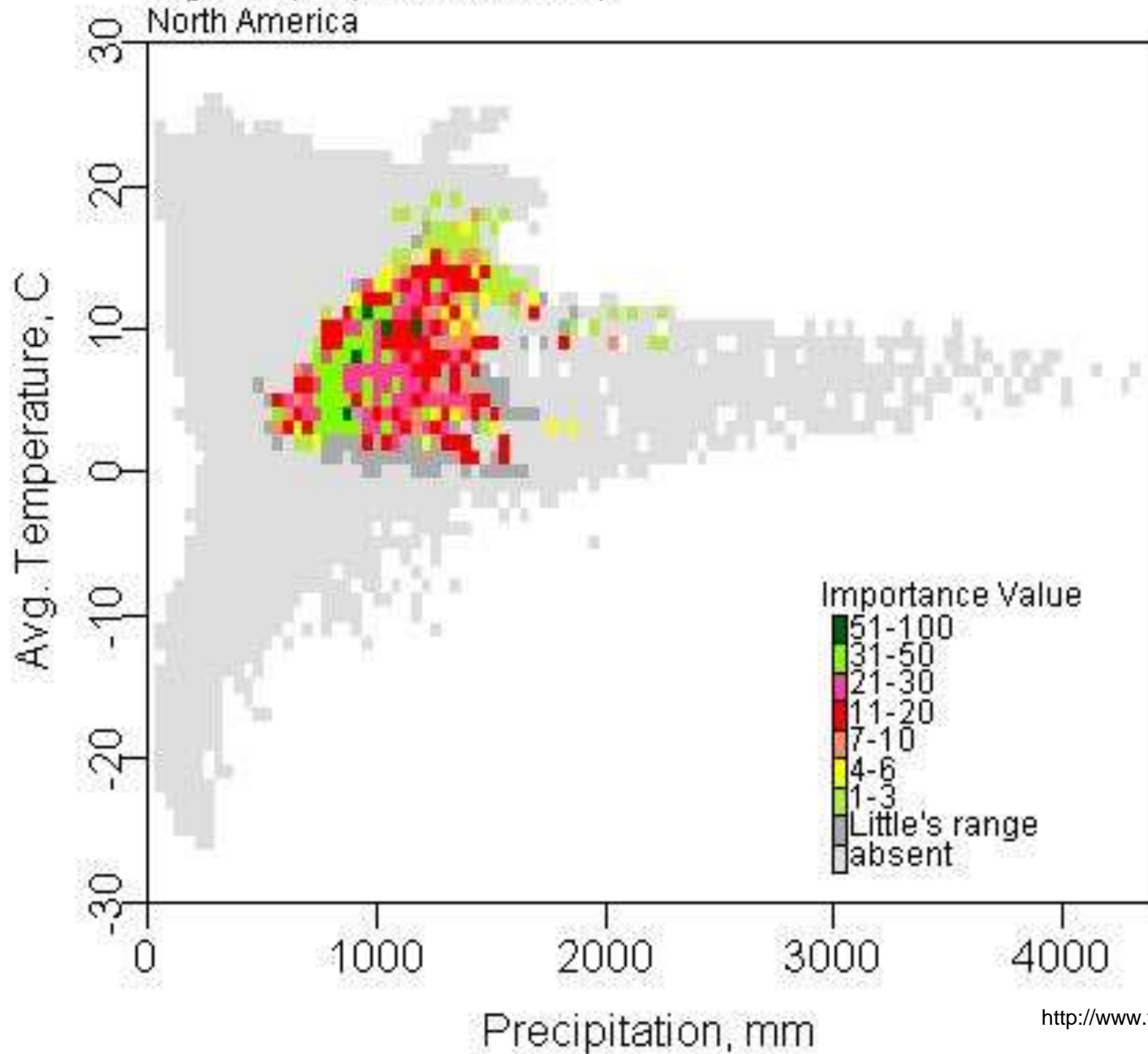


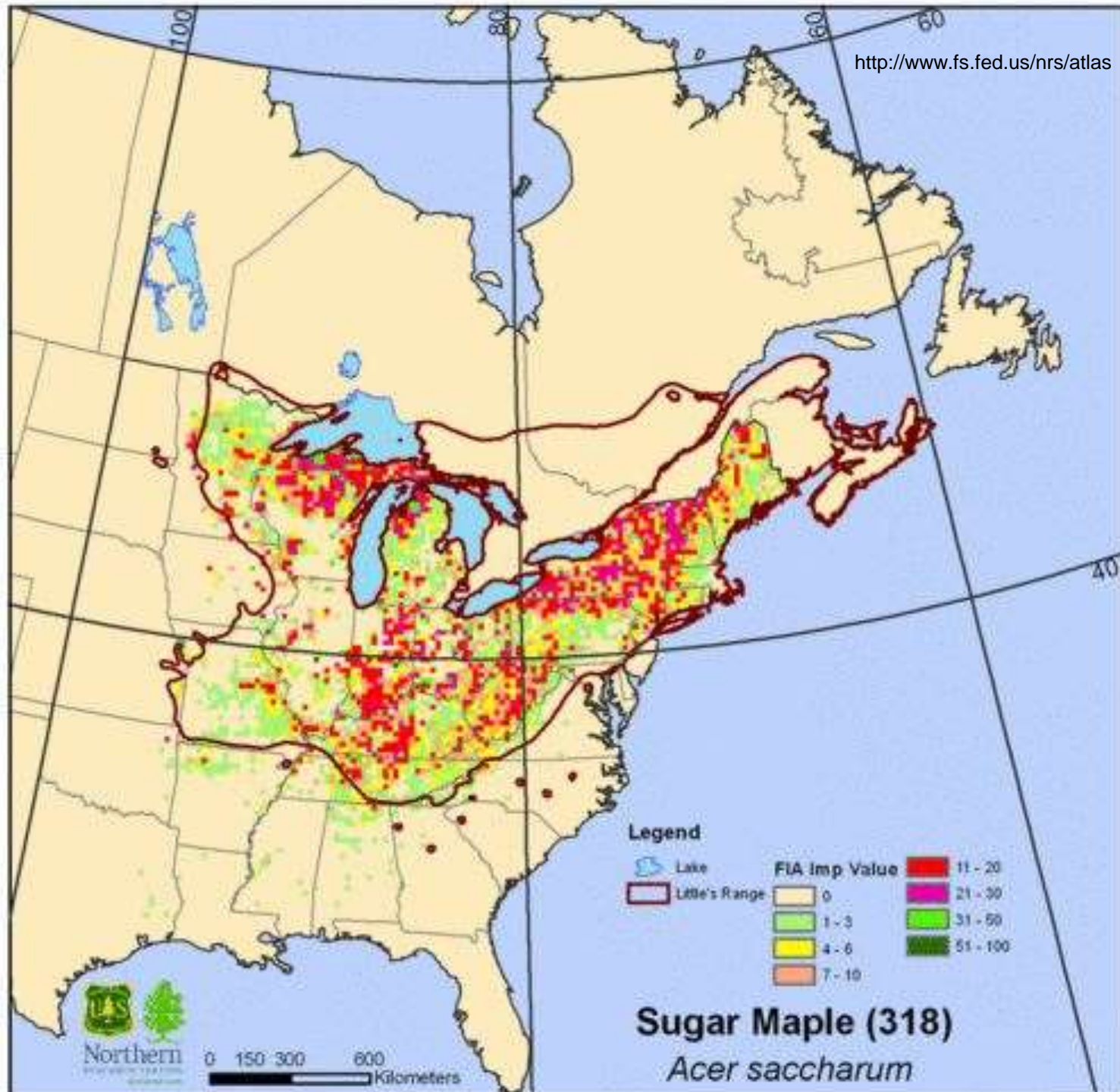
- Higher Emissions Scenario
- Lower Emissions Scenario



sugar maple (*Acer saccharum*)

North America



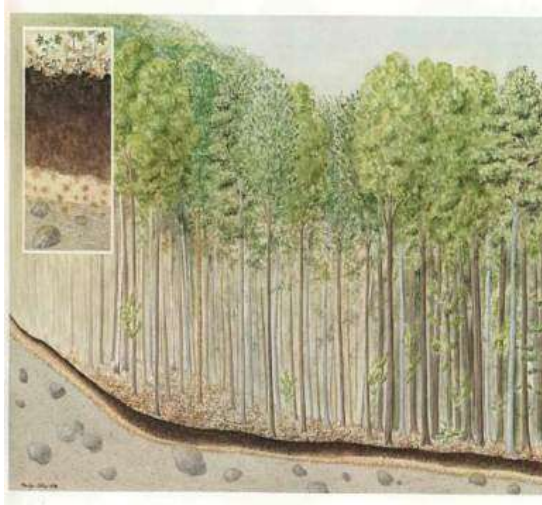


Why Trees Grow Where They Do In New Hampshire Forests



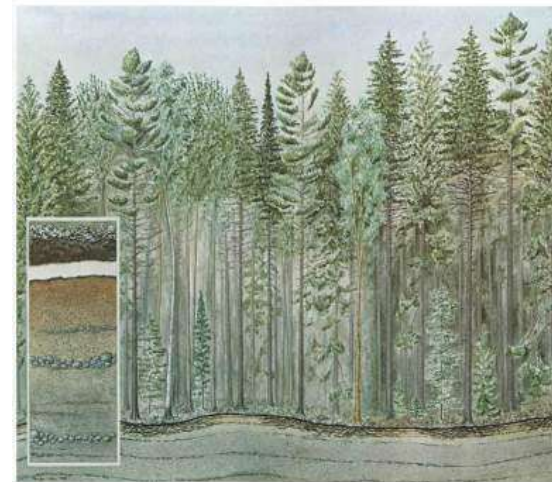
U.S. Department of Agriculture
Forest Service
Northeastern Forest Experiment Station
NE-INF-37-79

Enriched Soils

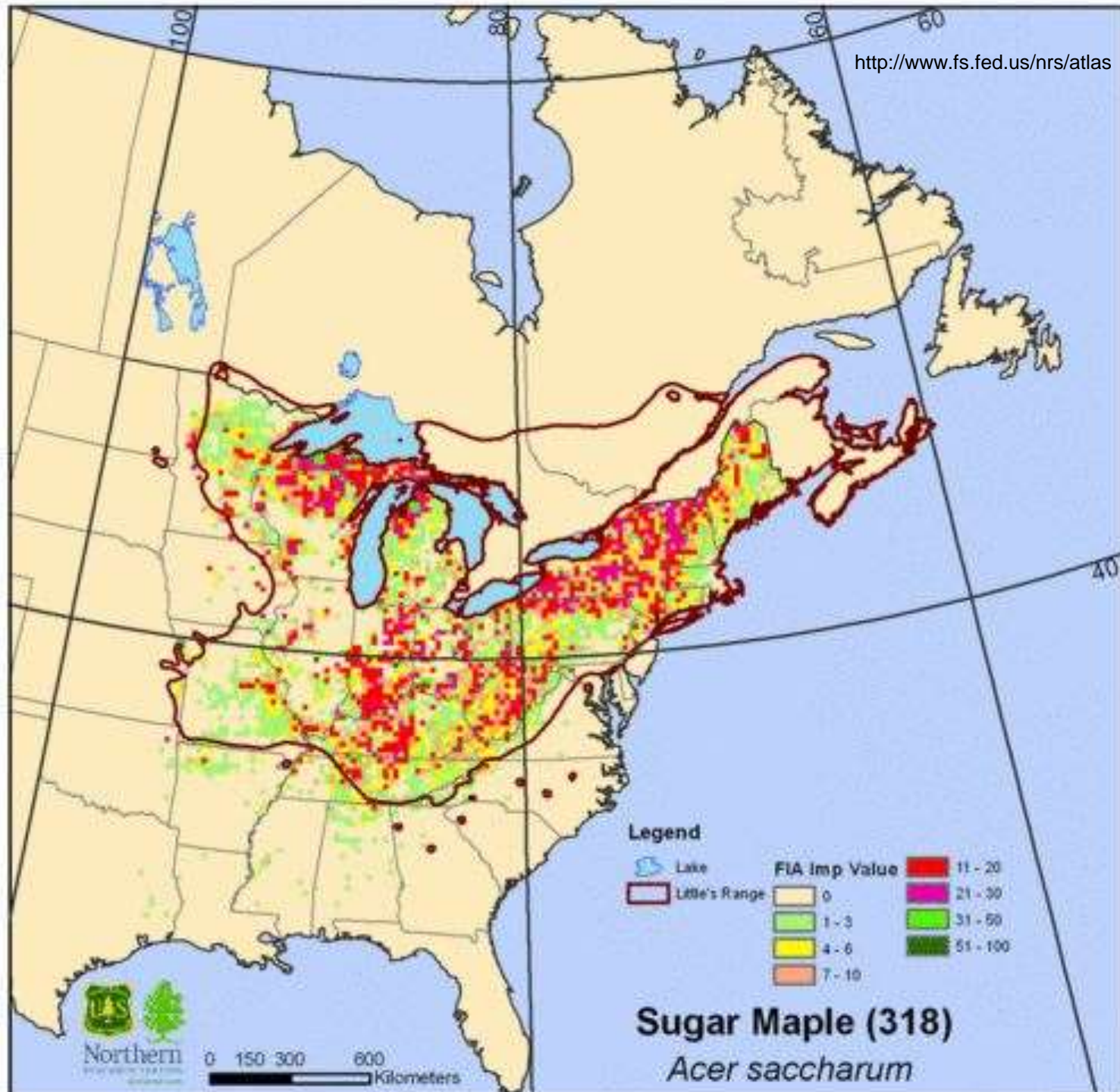


- Lots of organic matter and fine particles.
- Very productive for hardwoods - Sugar Maple, White Ash

Outwash Soils



- Mostly sand and gravel, left by glacial meltwater.
- Very productive for White Pine



Guesses on Stresses

Root Damage
snowpack, frost depth, drought

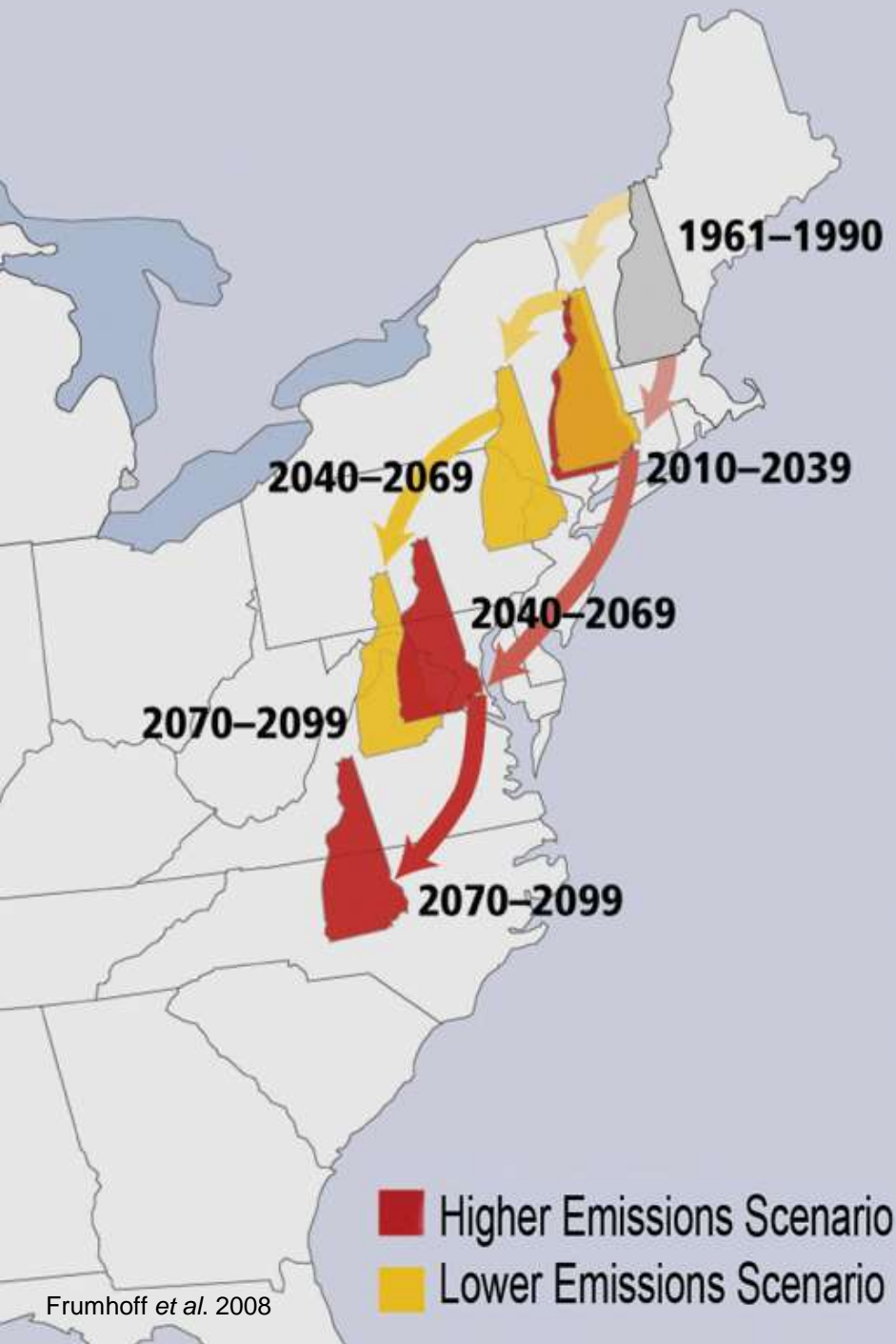
Nutrient loss
snowpack

Drought
drought

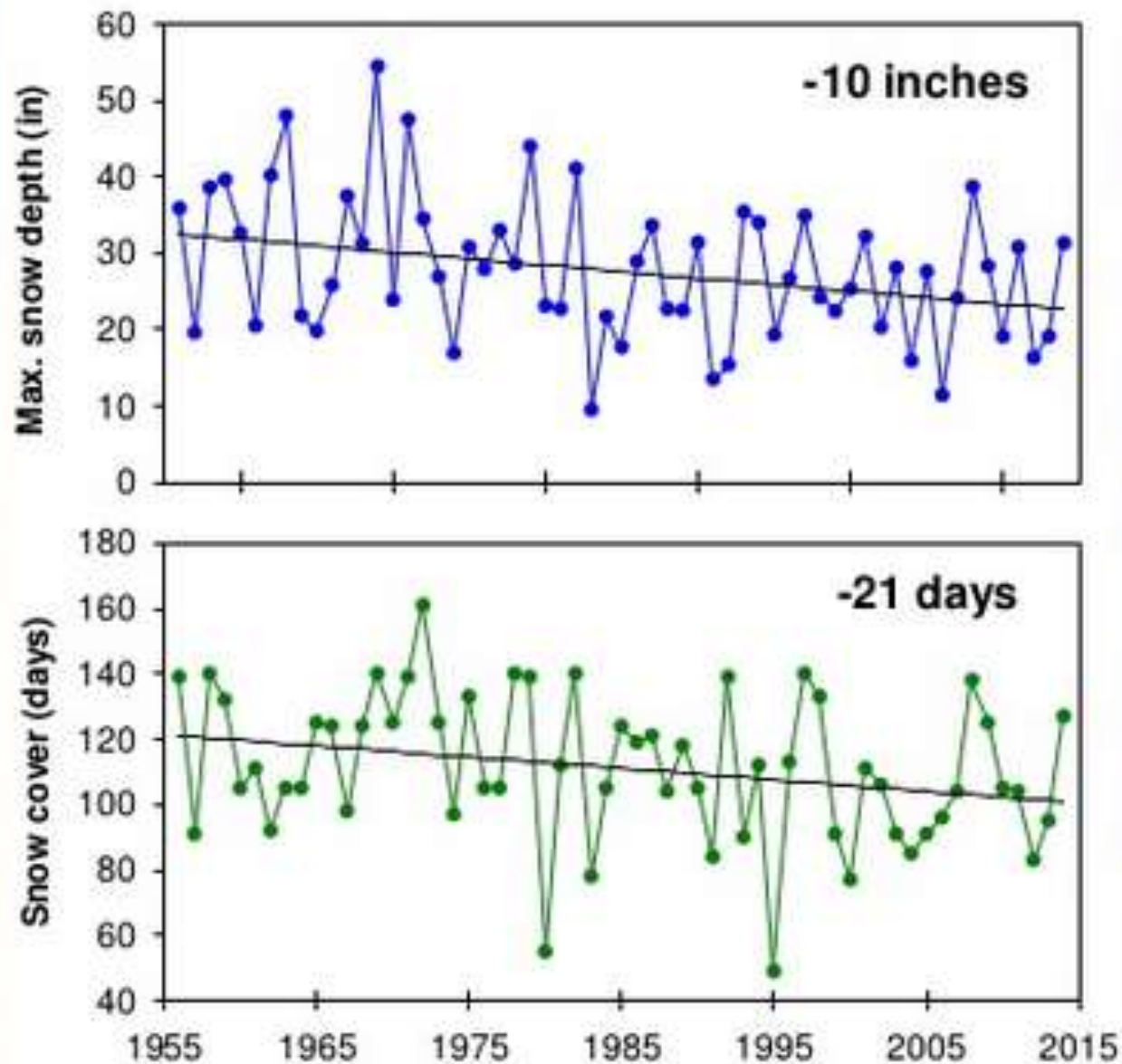
Insects (new & old)
drought, temperature

Winter injury
snowpack

Burning through starch reserves
temperature, snowpack,
additional stress

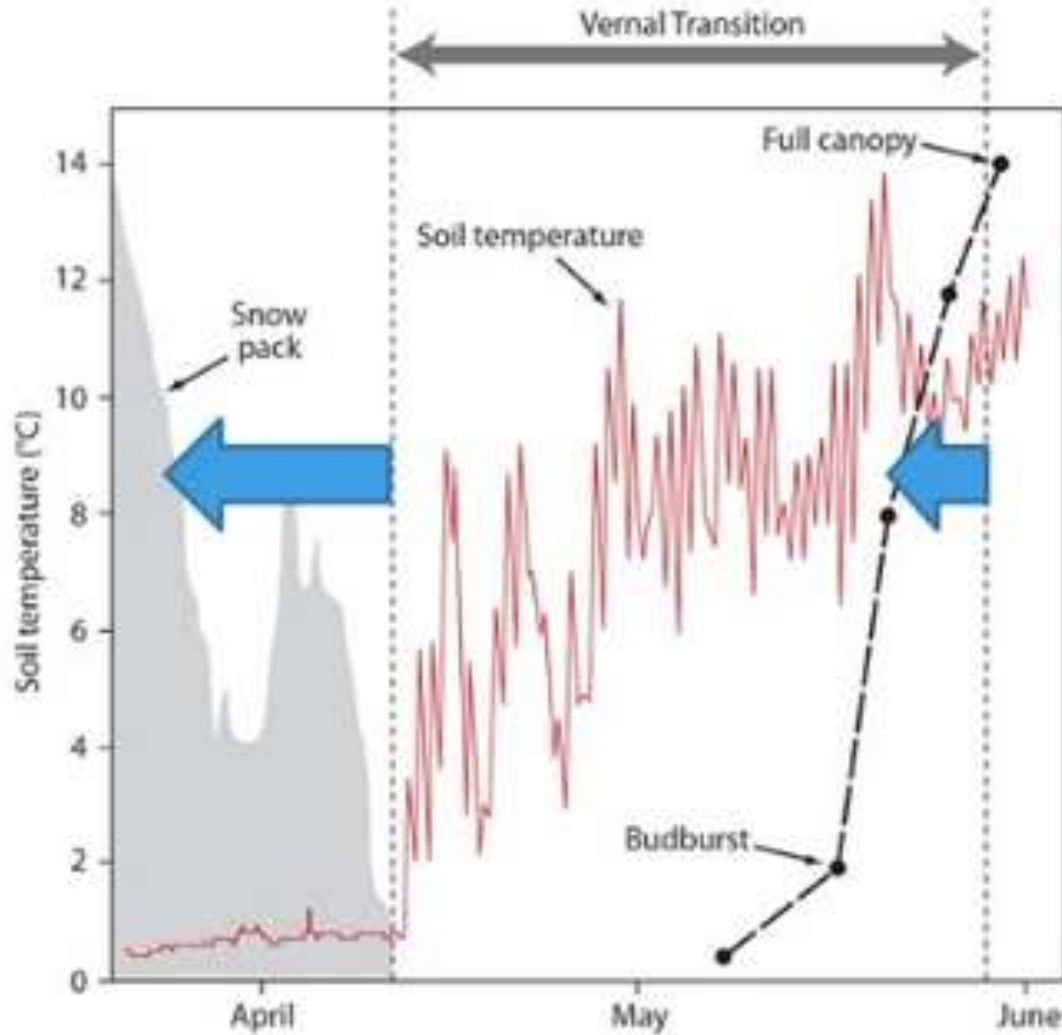


Snowpack

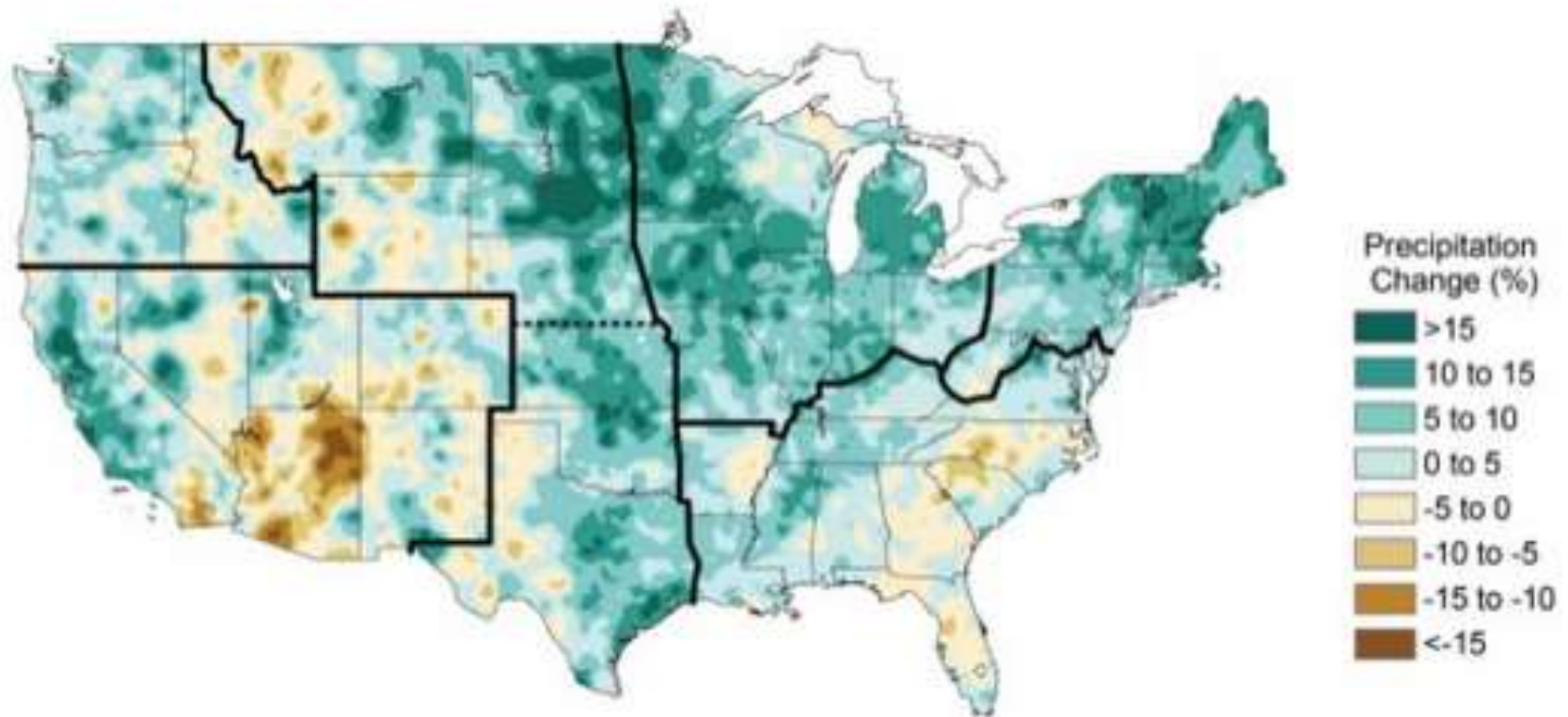


Updated from Campbell et al. 2007 – FS Gen. Tech. Rep.

The “Spring Trigger”



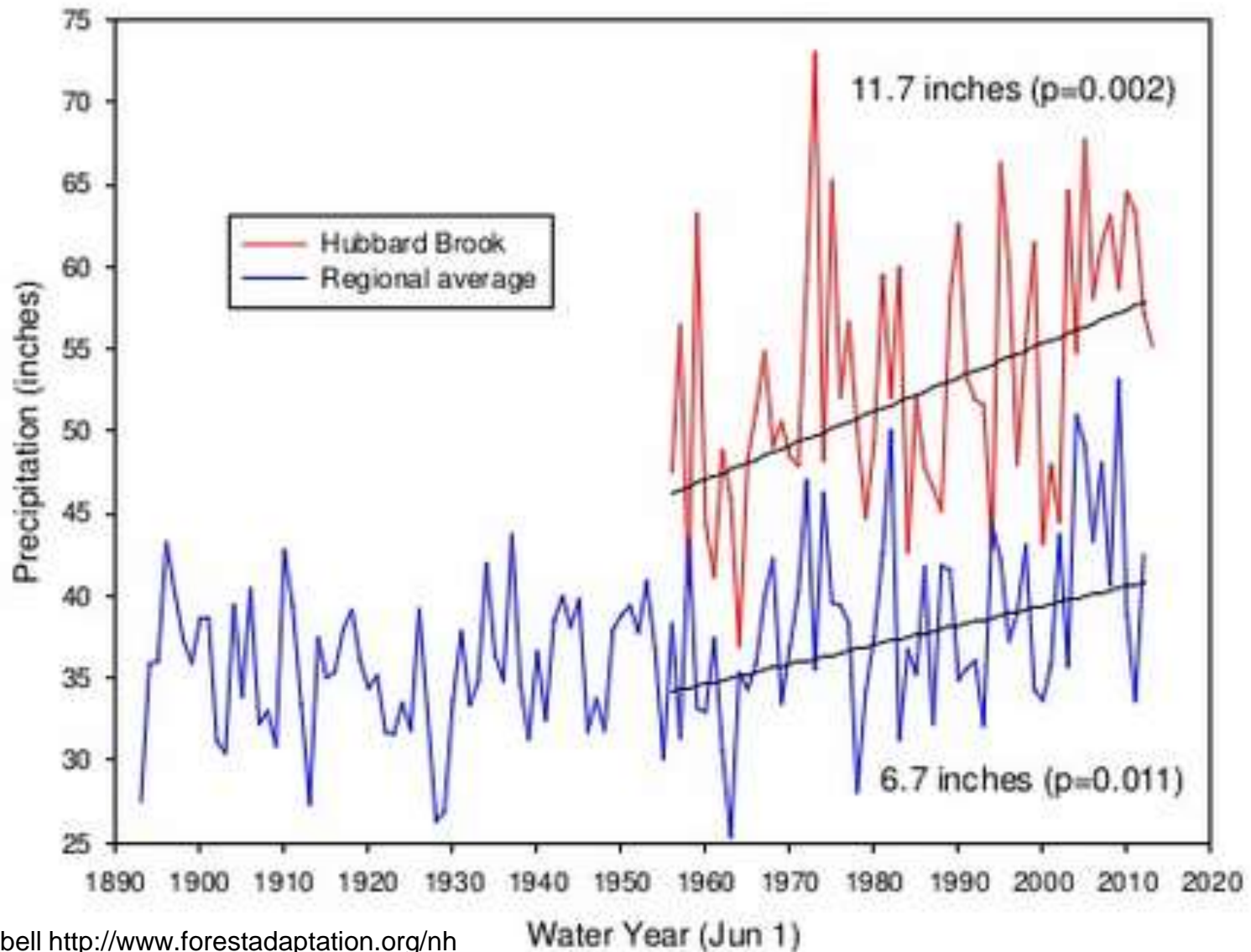
Observed US precipitation change



Annual total precipitation change for 1991-2012 compared to the 1901-1960 average.

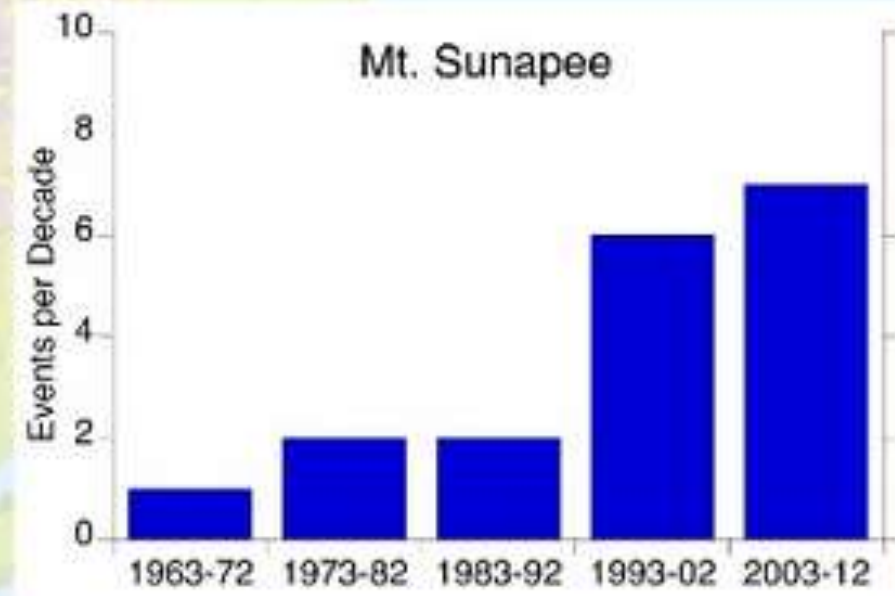
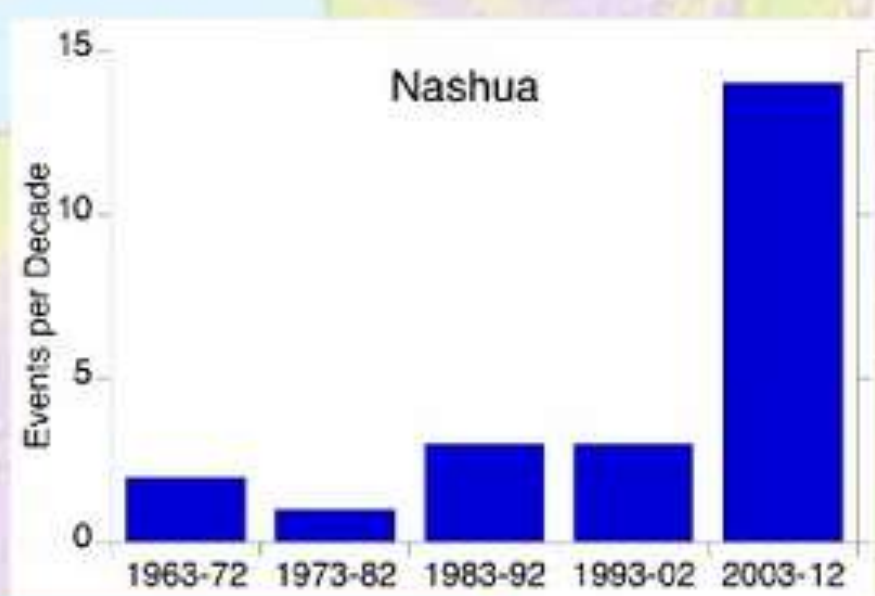
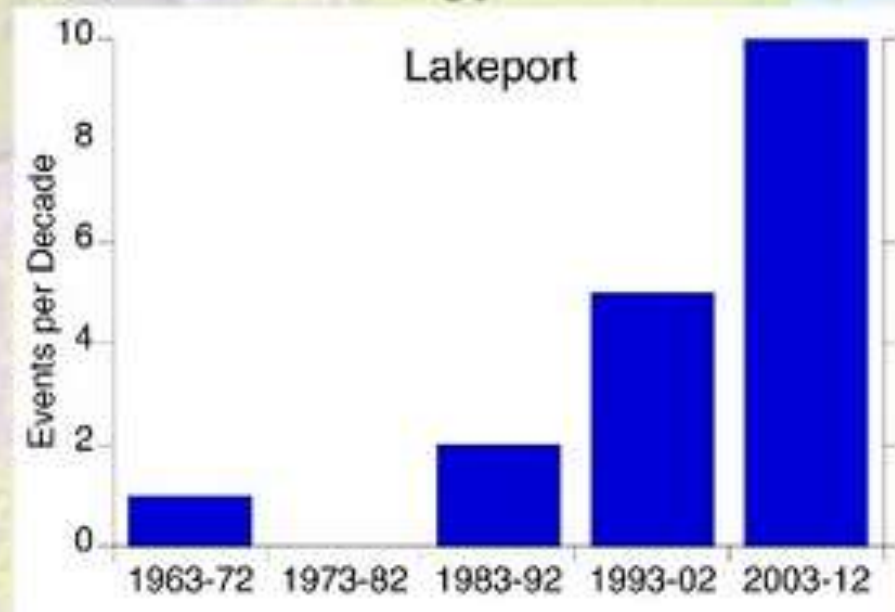
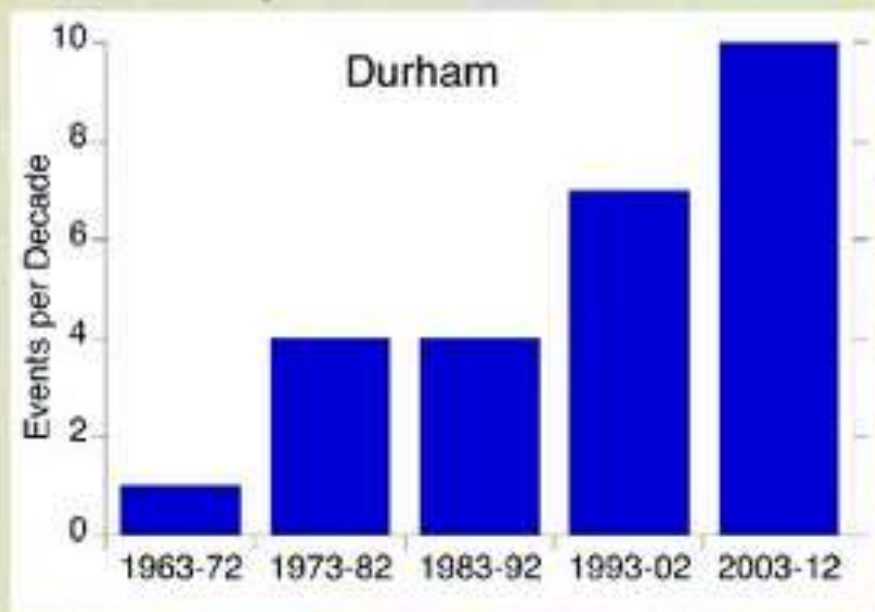
Melillo et al. 2014. National Climate Assessment.

Regional trends in precipitation

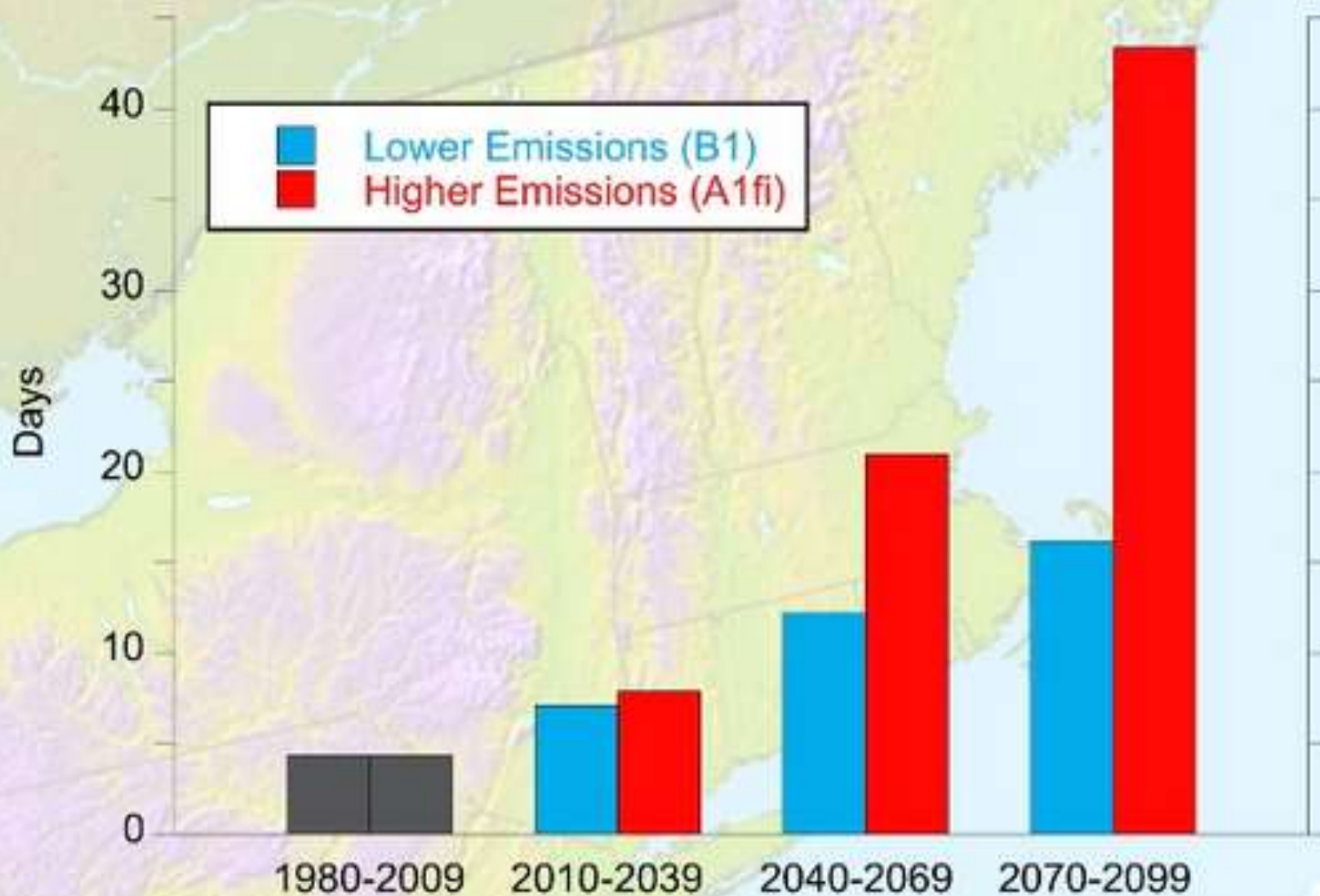


Precipitation Events >4" in 48 hrs per Decade

Daily data from US Global Historical Climatology Network

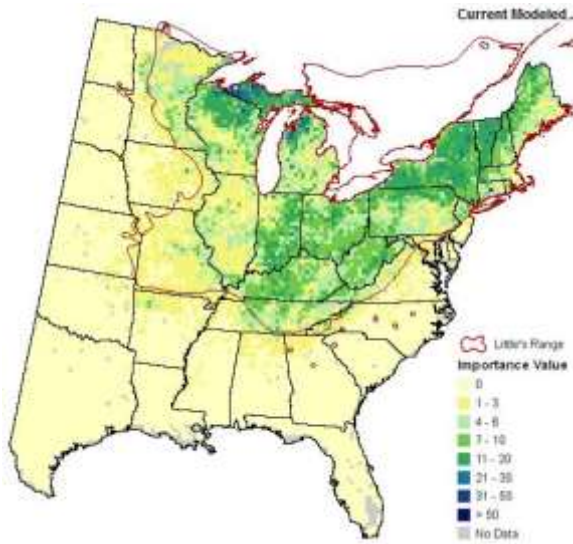


New England: Number of Days Hotter than 90°F (30 year averages)
Average of statistically downscaled simulations from 4 GCMs

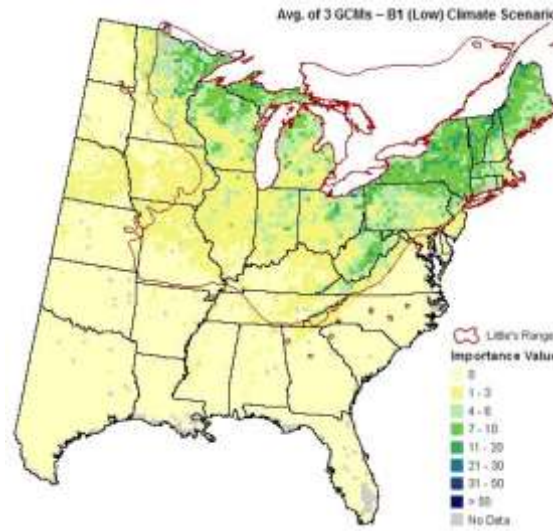




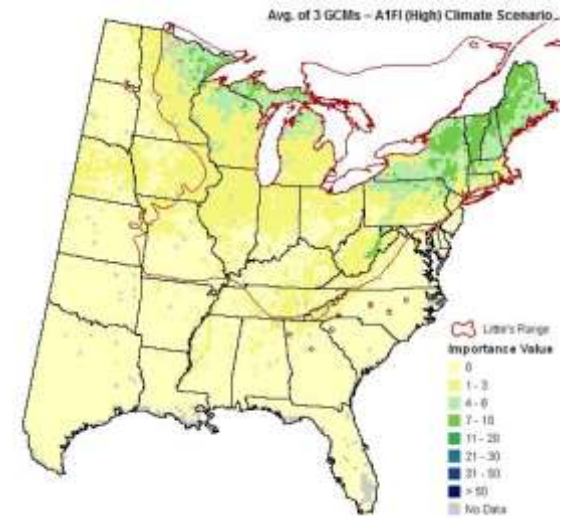
Current Range



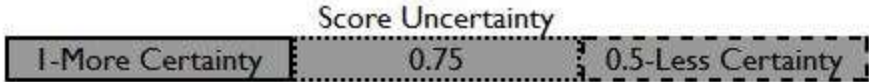
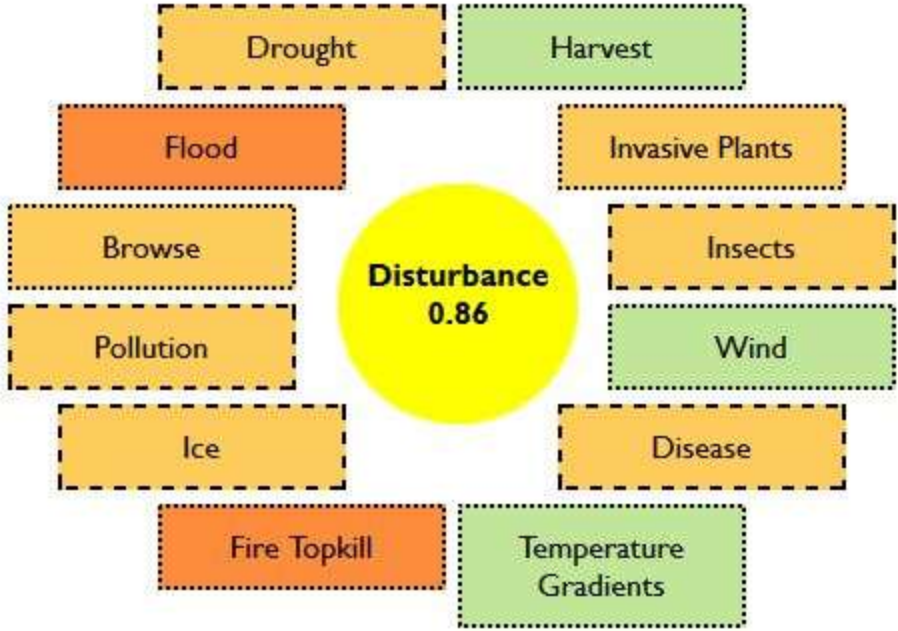
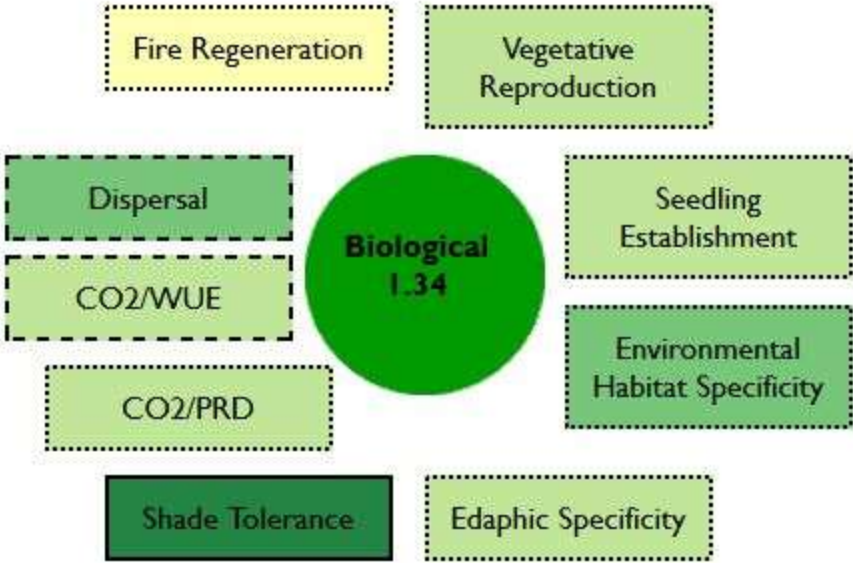
Low Emissions



High Emissions



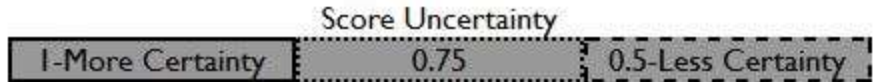
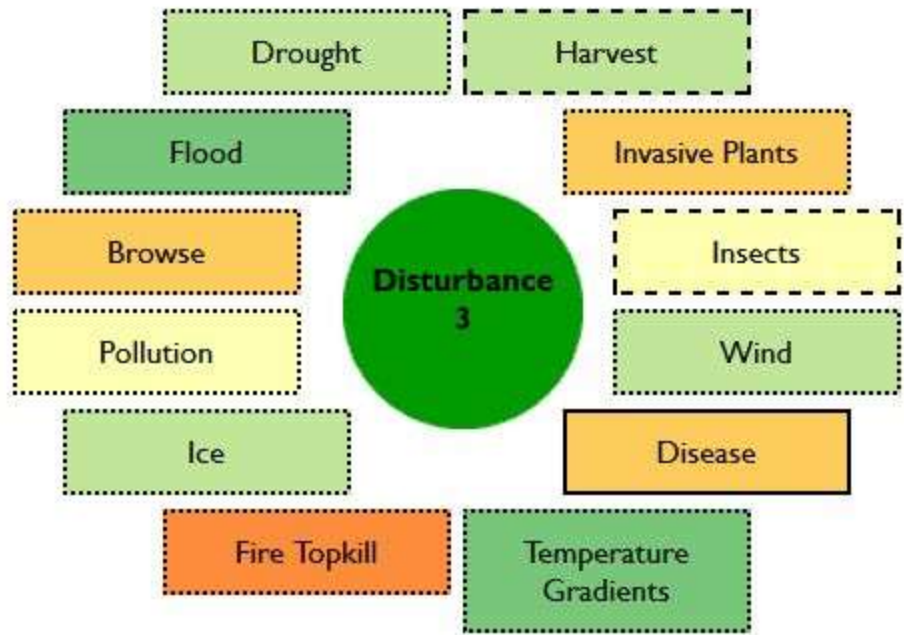
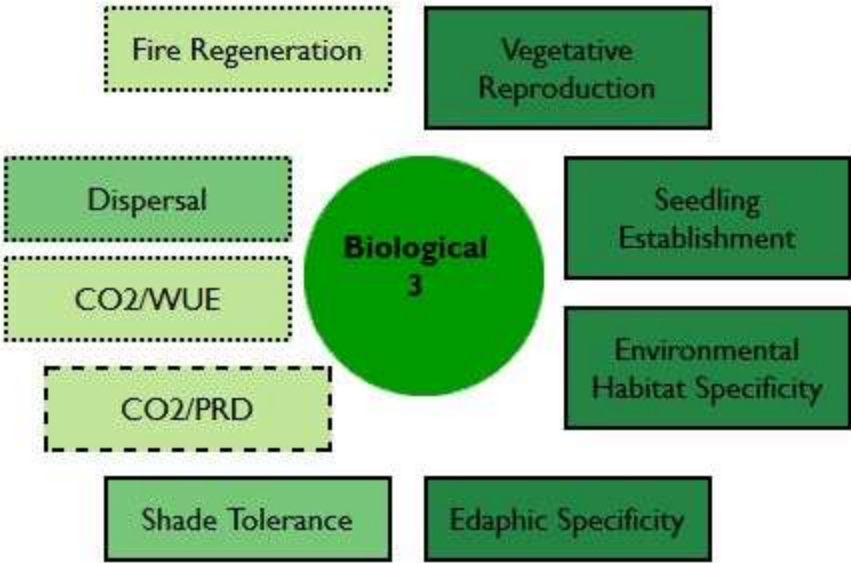
sugar maple
Acer saccharum
 Adaptability = 5.8



Characteristic Score =
 Literature Score X Uncertainty X Future Relevance

V Hi Pos +3	High Pos +2	Low Pos +1	Minimal 0	Low Neg -1	High Neg -2	V Lo Neg -3
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red maple
Acer rubrum
 Adaptability = 8.5



Characteristic Score =
 Literature Score X Uncertainty X Future Relevance

V Hi Pos +3	High Pos +2	Low Pos +1	Minimal 0	Low Neg -1	High Neg -2	V Lo Neg -3
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