CLIMATE CHANGE
where WE live

Curt Stager
Natural Sciences
“I noticed, while observing the country, some very high mountains on the eastern side, on top of which there was snow...”

SAMUEL de CHAMPLAIN
From his visit to the North Country 400 years ago...
“I noticed, while observing the country, some very high mountains on the eastern side, on top of which there was snow…”

SAMUEL de CHAMPLAIN
From his visit to the North Country 400 years ago...

... in JULY, 1609
OVERALL WARMING
1.6 F

STRONGEST WARMING:
SEPT (3.2 F)
DEC & JAN (2.6 F)

NO SIG TREND:
Feb through July (except May)
DANNEBRO (1970-2018)

![Graph showing temperature trends from 1970 to 2018. The graph indicates an overall warming of 1.6°F. The strongest warming occurred in September (3.2°F) and December & January (2.6°F). There was no significant trend from February through July (except May).]
LATER FREEZE-UPS
7 days since 1988

EARLIER ICE-OUTS
7-8 days since 1970

LOWER ST. REGIS LAKE
1970-2019

Lower St. Regis Ice-out

Days starting Nov 1

Year A.D.
LAKE ICE IN RETREAT
EFFECTS of CHAMPLAIN ICE RETREAT
MIXED RESPONSES:
Robins = YES
Bees = NO
Salamanders = YES
MIXED RESPONSES:
Robins = YES
Bees = NO
Salamanders = NO

Little/no warming in SPRING.
Spring phenology variation is REGIONALLY COHERENT
Spring phenology covaries with

TEMPERATURE

[Graph showing temperature trends over years]
Red maple bud burst:
Strong, negative
CORRELATION with
March & April
temperatures

MARCH: $R^2 = 0.53$, $P < 0.0001$
APRIL: $R^2 = 0.56$, $P < 0.0001$

But
NO SIGNIFICANT
TREND w/o Spring warming
Total Annual P (inches)

Year AD

6 ADK stations
6 ADK stations

8 inches/year
WETTER since 1970
WETTER since 1970
WÄTTER
since
1970
Our local version of ‘SEA LEVEL RISE’
BIGGER STORMS
CHAMPLAIN- ADK BASIN
TEMPERATURE PROJECTIONS
(2010-2099 AD)

MODERATE B1 SCENARIO:

1-6°F warmer

EXTREME A2 SCENARIO:

6-11°F warmer

(greatest in winter)
PRECIPITATION PROJECTIONS
(2010-2099 AD)

MODERATE B1 SCENARIO:
little or no change

EXTREME A2 SCENARIO:
4-6 inches more per year
(seasonal changes unreliable)
LOSES?
Milder winters = more deer?
Milder winters = more deer TICKS?
ADIRONDACK LIFE ARTICLE

ADKS = the Blue Ridge by 2100AD

ADK fall colors will fade to “dull browns and greens”...
Could the ADKS come to resemble the Blue Ridge?
Hickory, oak, & black gum pollen in INTERGLACIAL deposits
WHAT IF
the ADKS come to resemble the Blue Ridge?
1. Sugar maples will NOT die off soon from warming

2. Maple sugaring works FINE in the Blue Ridge
BACK CREEK FARMS, Virginia
Northern Forest Alliance 2008 Climate Change Conference

The Northern Forest Alliance (NFA) is a non-profit organization based in Stowe, Vermont. Our priorities are threefold:

- To conserve Wildlands in the Northern Forest to help protect the forest’s ecological integrity, its recreational opportunities and its timber production
- To encourage well managed private forests to support the forest-based economy, including high-value timber products, recreation tourism, and the jobs these industries support
- To build strong, diverse, local economies that support vibrant communities throughout the Northern Forest

We are hosting a conference to address the impact of climate change. Our cherished Northern Forest is at risk. For example, recent scientific studies show that Sugar Maples will go extinct by the end of the century. The time to address these challenges and ensure the health of our natural and human communities is now.
Read the following before interpreting the maps and tables.

With these models, we are predicting potential suitable habitat by year 2100. We are NOT predicting where the species will be at that time, as great lag times are involved in tree species migrations.

It should also be borne in mind that the model does not account for future biotic interactions (competition, herbivory, mutualism etc.) or other human (land-use change, fire) or natural (ice, wind) disturbances - as these are extremely difficult to quantify accurately for future scenarios. For more details see: Caution
USDA plant hardiness zones in New York State really ARE CHANGING
NOT ALL BAD?
CHAMPLAIN-RICHELIEU INTERNATIONAL WINE TRAIL

“Drink the Wine, Savor the Scenery”
THANK YOU
1980-2014 TIME FRAME

<table>
<thead>
<tr>
<th>Season</th>
<th>R-sq</th>
<th>P</th>
<th>slope</th>
<th>change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual</td>
<td>0.23</td>
<td>0.0016</td>
<td>0.068</td>
<td>2.4</td>
</tr>
<tr>
<td>Winter</td>
<td>0.036</td>
<td>0.1397</td>
<td>0.055</td>
<td>x</td>
</tr>
<tr>
<td>Spring</td>
<td>0.033</td>
<td>0.1484</td>
<td>0.042</td>
<td>x</td>
</tr>
<tr>
<td>Summer</td>
<td>0.22</td>
<td>0.0022</td>
<td>0.07</td>
<td>2.5</td>
</tr>
<tr>
<td>Fall</td>
<td>0.31</td>
<td>0.0002</td>
<td>0.096</td>
<td>3.4</td>
</tr>
</tbody>
</table>

Winter P 0.21 0.0031 0.079 2.8
Spring P 0.09 0.0374 0.0802 2.8
Summer P 0.08 0.0474 0.072 2.5
Fall P 0.003 0.4605 x

1970-2018, DANMEMORA
JAN, 0.055, SIG (2.6 F)
FEB, MAR, APR, JUNE, JULY = NS
MAY, 0.029, SIG
AUG, 0.025, SIG
SEPT, 0.066, highly SIG (3.2F)
OCT, 0.038, SIG
NOV, 0.03, sig
DEC, 0.056, SIG (2.6 F)