Let's talk about extreme weather: 
*Producer perspectives and adaptations for dairy farming in the Northeast*

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1. Extreme weather predictions
2. NYS dairy impacts and adaptations
3. Producer perspectives

**Observed Temperature Change —— Northeast U.S.**

![Graph showing temperature change over time](http://www.nyserda.ny.gov/climaid)
Precipitation Extremes

# of 1-day period events greater than 1 in 5 year recurrence

A1B 2080s 16 GCM Annual Temperature Change

Dairy

Key Climate Impacts

✓ Increased heat stress

Reduced milk production and calving rates
Dairy Adaptation

- Infrastructure
  - Increase cooling capacity…ventilation and/or misting
- Operations
  - Modify feed management
  - Provide adequate water
- Develop decision tools
  - Tools for adaptation timing & daily operations

Hot Weather Relief

- S — Shade
- A — Air Velocity
- W — Water

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Supplemental cooling:
- Convective cooling fans
Supplemental cooling: - Sprinkler systems

✓ Increased winter rainfall and rainfall extremes

Storage Issues
- Management
- Design
- Climate Change

Ideal Management
- Sized correctly based on CNMP
- Emptied according to plan
- Solids controlled
- Drainage area controlled
- Manure production stays same
Impacts of extreme weather changes?

- Severe storms
- More total precipitation

Manure Management Adaptation

- Infrastructure
  - Altered design specs for manure storage capacity
- Operations
  - Timing and quantity of spreading
  - Altered CAFO guidelines
- Develop decision tools
  - Tools for adaptation timing & daily operations

Design Adaptations

- Extra months of storage
- 2 x the 24 hr.- 25 yr. storm
- 10% production increase

Changes Ithaca Earthen Storage

<table>
<thead>
<tr>
<th>Months Storage</th>
<th>Precipitation Inches</th>
<th>Slope</th>
<th>Precipitation Volume ft³</th>
<th>Storage difference</th>
<th>Cost difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Months</td>
<td>14.7 Average</td>
<td>2.5</td>
<td>19,332</td>
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<tr>
<td>6 Months</td>
<td>19 90%</td>
<td>2.5</td>
<td>20,586</td>
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<td>8 Months</td>
<td>21.3 Average</td>
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<tr>
<td>8 Months</td>
<td>28 90%</td>
<td>2.5</td>
<td>42,858</td>
<td>13,018</td>
<td>$3,645</td>
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**Jefferson Earthen Storage**

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<thead>
<tr>
<th>Months</th>
<th>Precipitation Inches</th>
<th>Slope</th>
<th>Precipitation Volume ft³</th>
<th>Storage difference</th>
<th>Cost difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Months</td>
<td>19.6 Average</td>
<td>2.5</td>
<td>26,009</td>
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<td>6 Months</td>
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<td>32,790</td>
<td>6,781</td>
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<tr>
<td>8 Months</td>
<td>37 90%</td>
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<td>65,782</td>
<td>18,820</td>
<td>$5,270</td>
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</tbody>
</table>

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**Conclusions**

- More frequent extreme weather events
- Manure storage in Northeast need to change
- NRCS should help farms with risk management
- Storage size and cost will increase
- Consider storage cover

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**Producer perspectives**

Results from a survey distributed to Northeast dairy producers will be presented in this section. A 26-question survey was distributed to NEDPA newsletter recipients, and featured in the popular press magazine, Country Folks. Several producers responded with their thoughts on extreme weather and its impacts to dairy farming in the northeast.

Slides complete with survey results will be distributed during the conference, and will be posted on the conference website post-conference.

**Producer perspectives**

During the NEDPA Annual Meeting presentation, a clicker poll will be conducted with questions similar to that in the online survey distributed.
Thank you

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- Some content was taken from the USDA funded LPELC Animal Ag and Climate Change online course module on mitigation www.animalagclimatechange.org.
- Some content was used with permission from Art DeGaetano – Cornell University


This free, self-paced course requires 10 to 12 hours to complete—and the online platform eliminates travel time and expenses.

“Is the climate changing and what can we expect in the future?”
“How should we be planning and managing for the future?”
“How should farmers respond?”
“Where can we get objective information that serves the animal ag community?”