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Talcott Mountain Science Center GLOBE Franchise for Central CT

Projects for 2009



Presented by
Thomas Alena

Meteorologist/Outreach Coordinator

Wednesday, March 17th, 2010

This presentation will outline three unique projects that Talcott Mountain Science Center conducted using GLOBE material .

This presentation will highlight the key components of each.

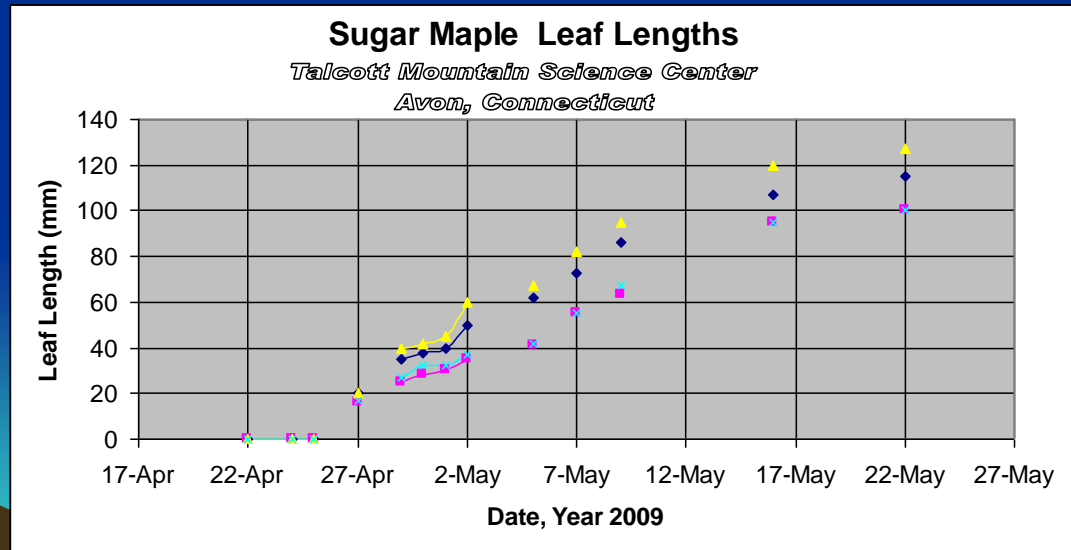
Project One: Thermochrons and their use in GLOBE

- a research project where students helped verified the use of a new data logging device for air temperature measurement



Project Two: Talcott Mountain Academy's GLOBE Mini-Course

- a six-week course for students grades 6-8 on "Seasons and Biomes" protocols during spring 2009 green-up



Project Three: Metacomet Ridge Interdistrict Academy

- Continued support for New Britain's long-standing program where students perform GLOBE measurements along a basaltic ridge cutting through the center of Connecticut.
- *A GLOBE Stars Program*



Project One:

Thermochron Temperature Data Loggers and their use in The GLOBE Program's Instrument Shelters

- Thermochrons are tiny data loggers programmable to store temperatures readings at intervals greater than 1-min.



Thermochron
CENTRAL..

Complete
Starter Kits
only **\$59.95**

Most IButton Models & Accessories In-Stock!

The advertisement features a collection of small, round, silver-colored data loggers (IButtons) arranged in a cluster. The background is a light blue gradient with a white diagonal line. The text is in a clean, sans-serif font, with the product name in red and black, and the price in red.

- Thermochrons are tiny data loggers programmable to store temperatures readings at intervals greater than 1-min.



- Data is downloaded through a USB port into a computer for use in EXCEL or other analysis software.

I was first introduced to this technology through

NASA's History of Winter PROJECT



Lead by Dr. Peter Wasilewski and his team at
Lake Placid, NY, February 2009

<http://education.gsfc.nasa.gov/how/>

- **Students calibrated thermochrons against calibration thermometers in a stirred ice/water solution.**



- **Students calibrated thermochrons against calibration thermometers in a stirred ice/water solution.**
- **Students placed thermochrons inside standard GLOBE instrument shelter.**



- **Students calibrated thermochrons against calibration thermometers in a stirred ice/water solution.**
- **Students place thermochrons inside standard GLOBE instrument shelter.**
- **Alongside the calibration thermometers**



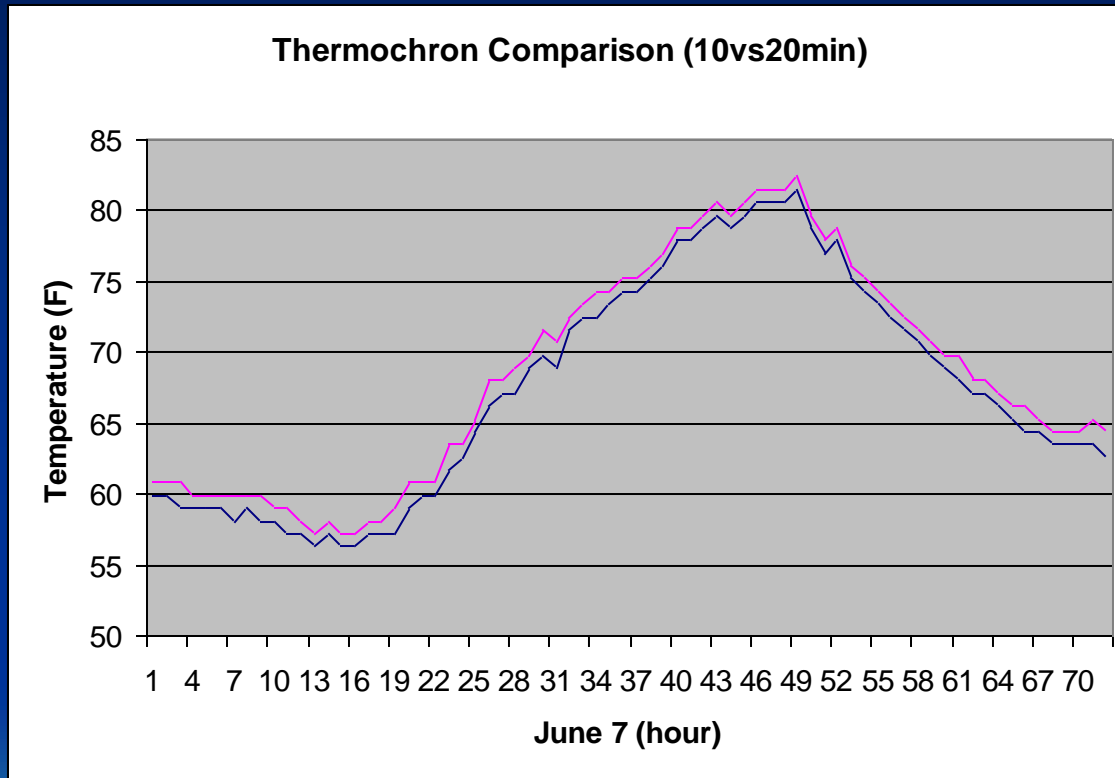
- They set the unit outside carefully observing all GLOBE siting protocols.



- They set the unit outside carefully observing all GLOBE siting protocols.
- They recorded temperatures (at 10 & 20-min intervals) over a one-week period and analyzed the results.



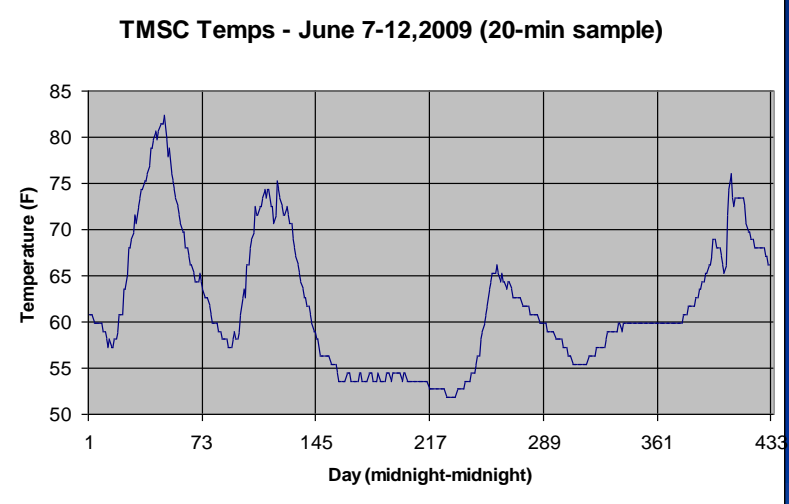
- Results showed excellent daily temperature profile at both intervals.



Slight offset is due to accuracy and 0.9F increment recording

- Over one week, themochron data matched with GLOBE calibration thermometers well within specs.

Date	10-min. thermo		20-min. thermo		Difference	
	max	min	max	min	max	min
7-Jun	81.5	56.3	82.4	57.2	0.9	0.9
8-Jun	74.3	56.3	75.2	57.2	0.9	0.9
9-Jun	57.2	51.8	58.1	52.7	0.9	0.9
10-Jun	64.4	50.9	66.2	51.8	1.8	0.9
11-Jun	59	53.6	59.9	55.4	0.9	1.8
12-Jun	75.2	58.1	76.1	59.9	0.9	1.8
avg:	68.6	54.5	69.65	55.7	1.05	1.2



- **Conclusions:**
- **GLOBE requires 0.5 deg C precision (0.9 deg F).**
- **Thermochron delivers 0.9 deg F precision.**
- **GLOBE requires +/-1.0 deg C accuracy (+/- 1.8 deg F)**
- **Thermochron delivers (+/- 1.2 deg F) under test conditions.**
- **It was also determined that thermochrons programmed to sample every 20-minutes accurately measures the maximum and minimum for a 24 hour period as required by GLOBE.**

Project Two:

**Talcott Mountain Academy's
GLOBE mini-course**

- During March and September 2007, I was trained in GLOBE “Seasons and Biomes” Protocols by Dr. Elena Sparrow and her team at the University of Fairbanks, Alaska.



- In Spring 2009, I implemented several learning activities and protocols into a 6-week mini-course for my students G6-8.

- In Spring 2009, I implemented several learning activities and protocols into a 6-week mini-course for my students G6-8.
- One was “A Sneak-Preview of Budburst” where students cut twigs from various plants and trees and put them in a greenhouse.



- Over the next days and weeks, students observed the change as the twigs responded to the warmer temperatures.



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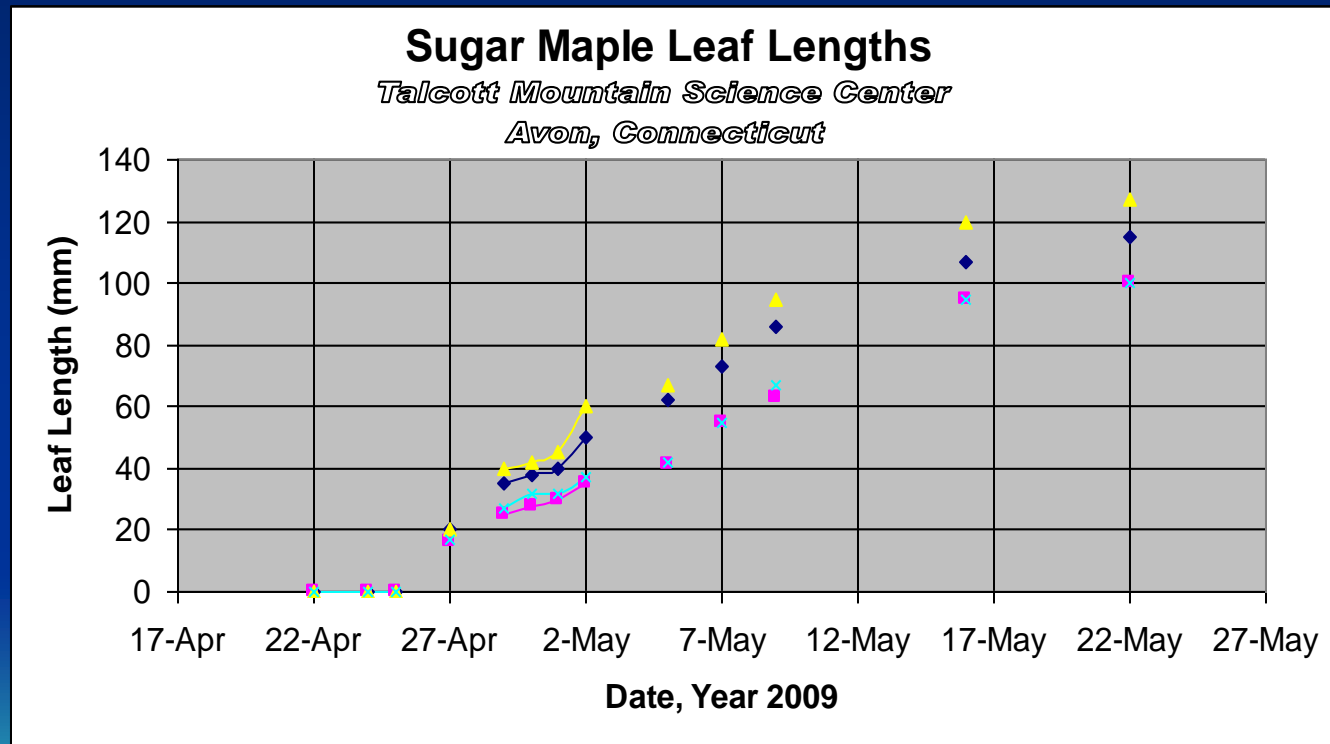
- They recorded their observations in a “Budburst Journal”

- Over the next days and weeks, students observed the change as the twigs responded to the warmer temperatures.

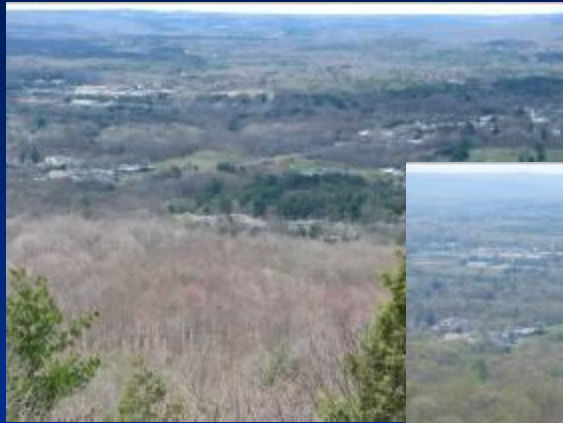


- They recorded their observations in a “Budburst Journal”

- Students also performed the “Green-Up” Protocol observing the natural budburst and taking leaf-length measurements during the green-up period.



- We supplemented the activity with camera shots from our fantastic vista on Talcott Mt



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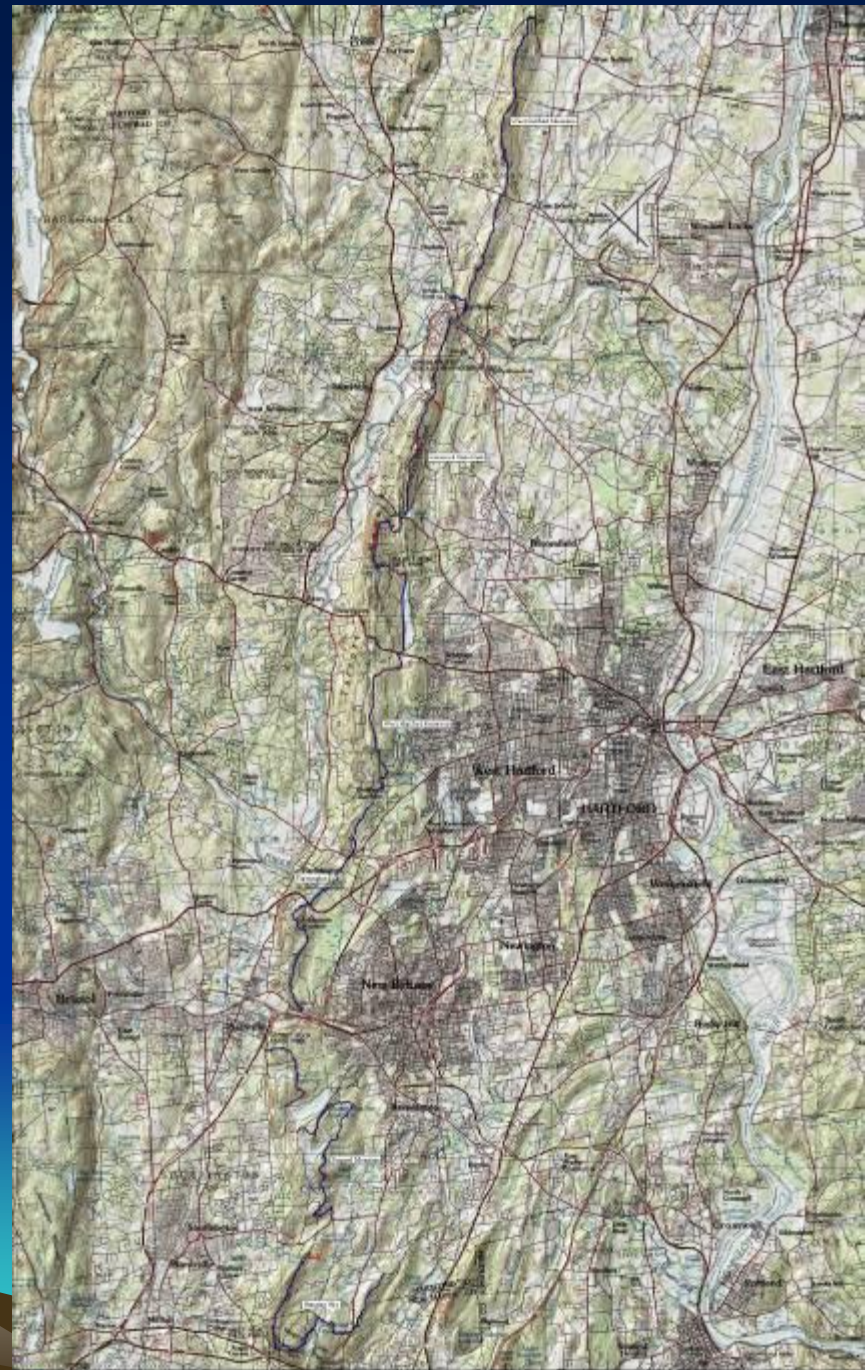


- Each day
- At Noon
- From April 26
- Through May 26

Project Three:

Metacomet Ridge Interdistrict Academy

- Students interdistrict teams perform environmental studies using GLOBE protocols at different sites along the ridge comparing and contrasting changes they observe.



- Talcott Mountain has supported this GLOBE Stars Program since it's implementation in the late 1990's.

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- - training teachers in the GLOBE protocols



- Talcott Mountain has supported this GLOBE Stars Program since it's implementation in the late 1990's.
- - offering assistance during student field trips to the various site along the ridge



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Thank You

Sincerely,

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