



TEACHERS AND RESEARCHERS
EXPLORING AND COLLABORATING

Welcome to *PolarConnect*

with Carol Scott and the Arctic Wetland
Dynamics 2013 PolarTREC Expedition

Thursday, 13 June 2013

9:00 a.m. AKDT

(10:00 am PDT, 11:00 am MDT, 12:00 pm CDT, 1:00 pm EDT)

Blackboard collaborate

Sides will be shown here

Exit the presentation

Click to Talk, Unclick to finish talking

Raise your hand to ask a question

Share with emoticons

List of all participants

Chat with one person or the entire group

The screenshot displays the Blackboard Collaborate interface. On the right, a presentation slide is visible with the text "Welcome to Blackboard Collaborate" and the ARCUS logo (Arctic Research Consortium of the United States). On the left, a control sidebar contains several sections: a "Talk" section with a microphone icon and a "Mute" button; a "Hand" section with two red hand icons; an "Emoticons" section; a "Participants" list showing names and status; and a "Chat" section with a text input field and a "Send" button. Arrows from the text labels on the left point to these specific interface elements.

Please Note:

- Participants using the telephone can mute/unmute by **pressing *6** on the phone.
- Today's event will be recorded and archived.

Participant Introductions

Please type in the chat box:

- ✓ Name
- ✓ Affiliation (School, Institution, Etc.)
- ✓ The number of students and adults participating with you in the same location

What is PolarTREC?

PolarTREC is a professional development experience in which K-12 teachers are paired with researchers for 2-6 week research experiences in the polar regions.

From 2010-2013, nearly 50 teachers from around the United States will join scientists in the Arctic and Antarctica to learn about science, the polar regions, and to share what they have learned with their students and communities.

Questions

During the Presentation:

- Type your question in the text chat box

At the End of the Presentation:

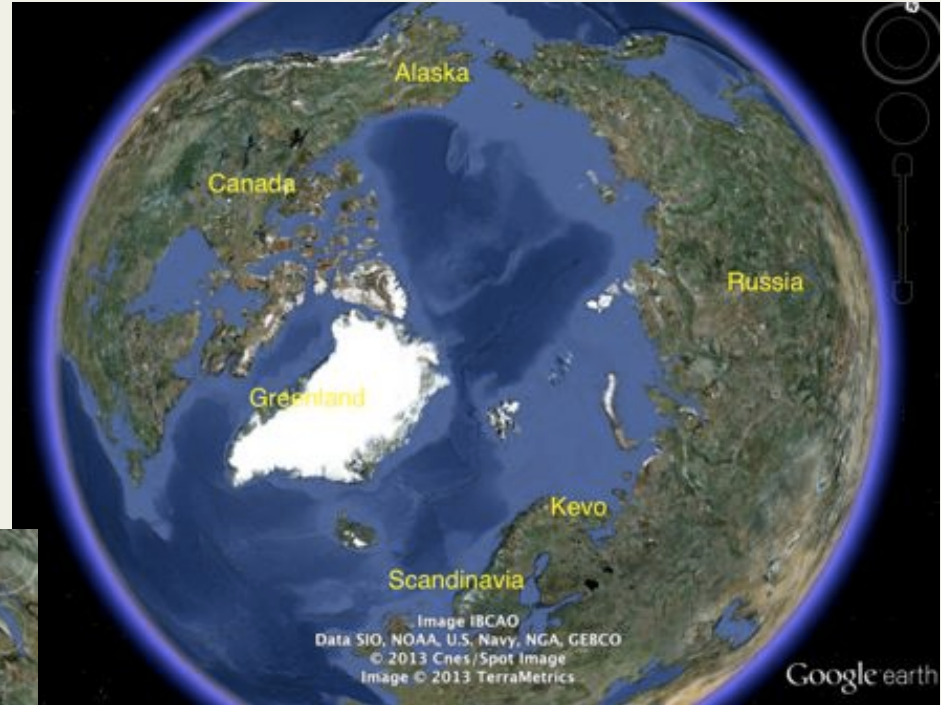
- Raise your hand with the “hand button”.
- PolarTREC staff will call on you.
- Speak loud and clear and directly into the phone to ask your question.

Click on the Talk button to speak.

Unclick when you are done.

Where is Kevo?

The Circumpolar Arctic



Northern Europe, Scandinavia,
Eastern Russia

Kevo is well above the Arctic Circle in Northern Finland



Latitudes: Kevo, Finland = 69.75
 Arctic Circle = 66.56
 Fairbanks, Alaska = 64.83



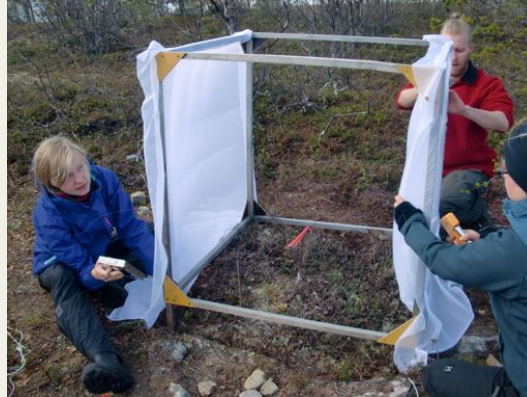
Kevo SubArctic Research Station on Kevojarvi – Kevo Lake



Ongoing Research Projects at Kevo



Long Term
Weather Records



Autumnal Moth Project



Long Term
Insect Collection

Additional long term projects: Rodent trapping, nesting birds and birds of prey surveys, three circumpolar treeline arboretums

Northern Finland = Lapland Rivers, Lakes, Fells





Local



Residents





Since my arrival, Green-Up has occurred, while the weather has been record-setting



Why Finland? Why Kevo?

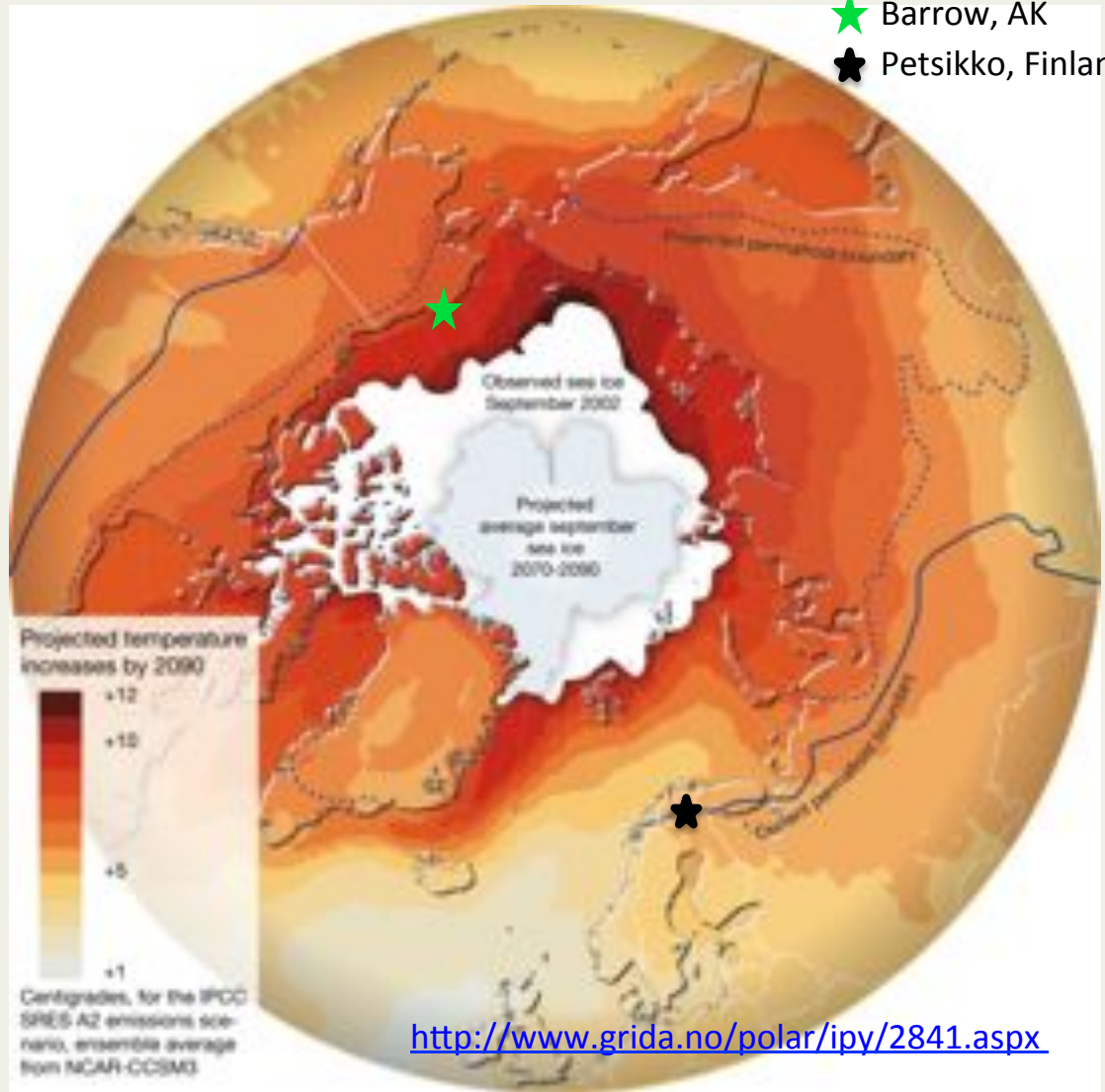
FULBRIGHT



Climate Change

★ Barrow, AK
★ Petsikko, Finland

- Dramatic temperature increases projected (shown: by 2090)
- Resulting changes in permafrost, landscape features (ie. lakes), and soil moisture (Smith et al. 2005)
- Uncertain feedback responses

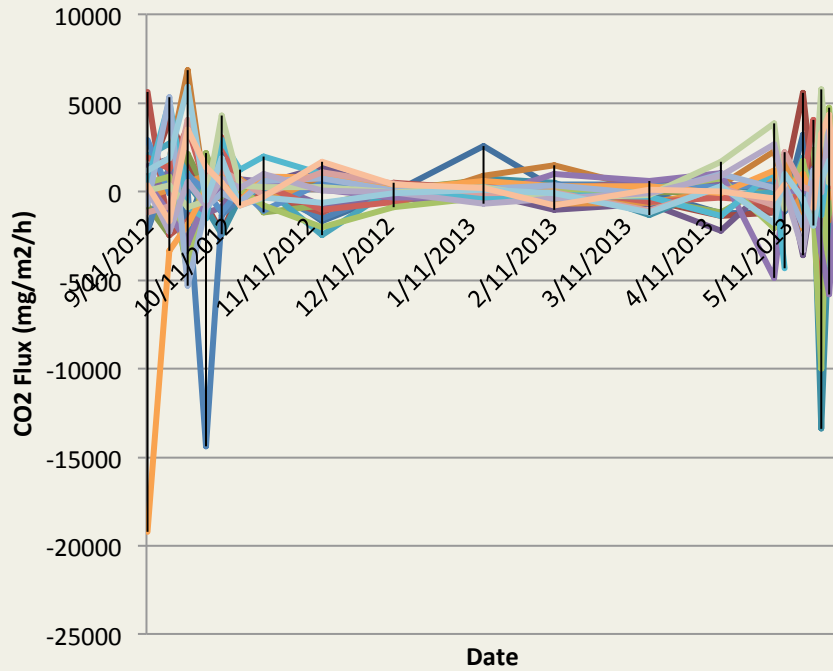


Methane and Carbon Dioxide Gas Fluxes

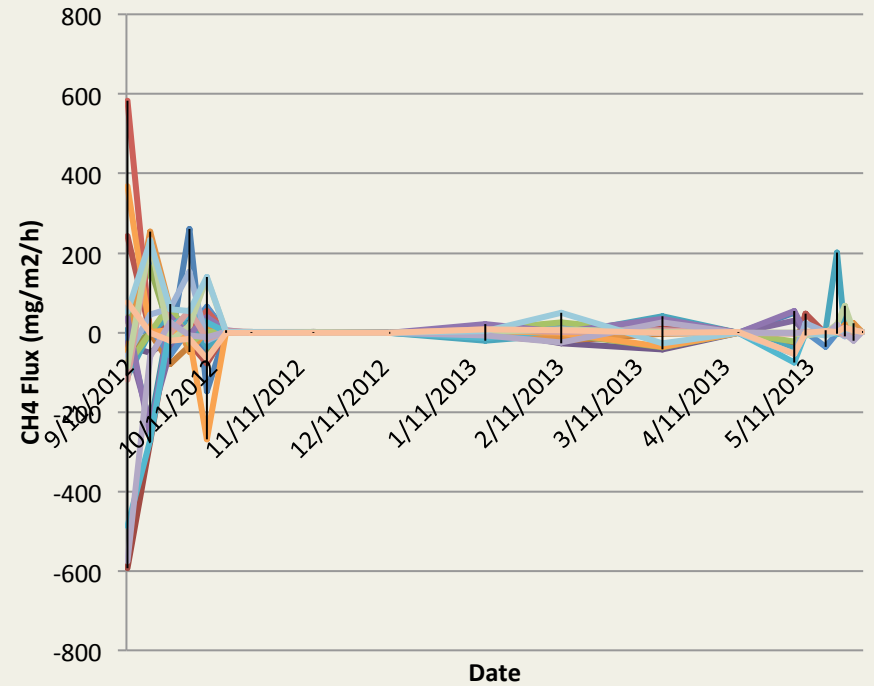


Petsikko Flux Results so far

CO₂ Flux 2012-13



CH₄ Flux 2012-13



The Experiment

Purpose: To determine the effect of disrupting soil chemical conditions on greenhouse gas-producing microbial populations

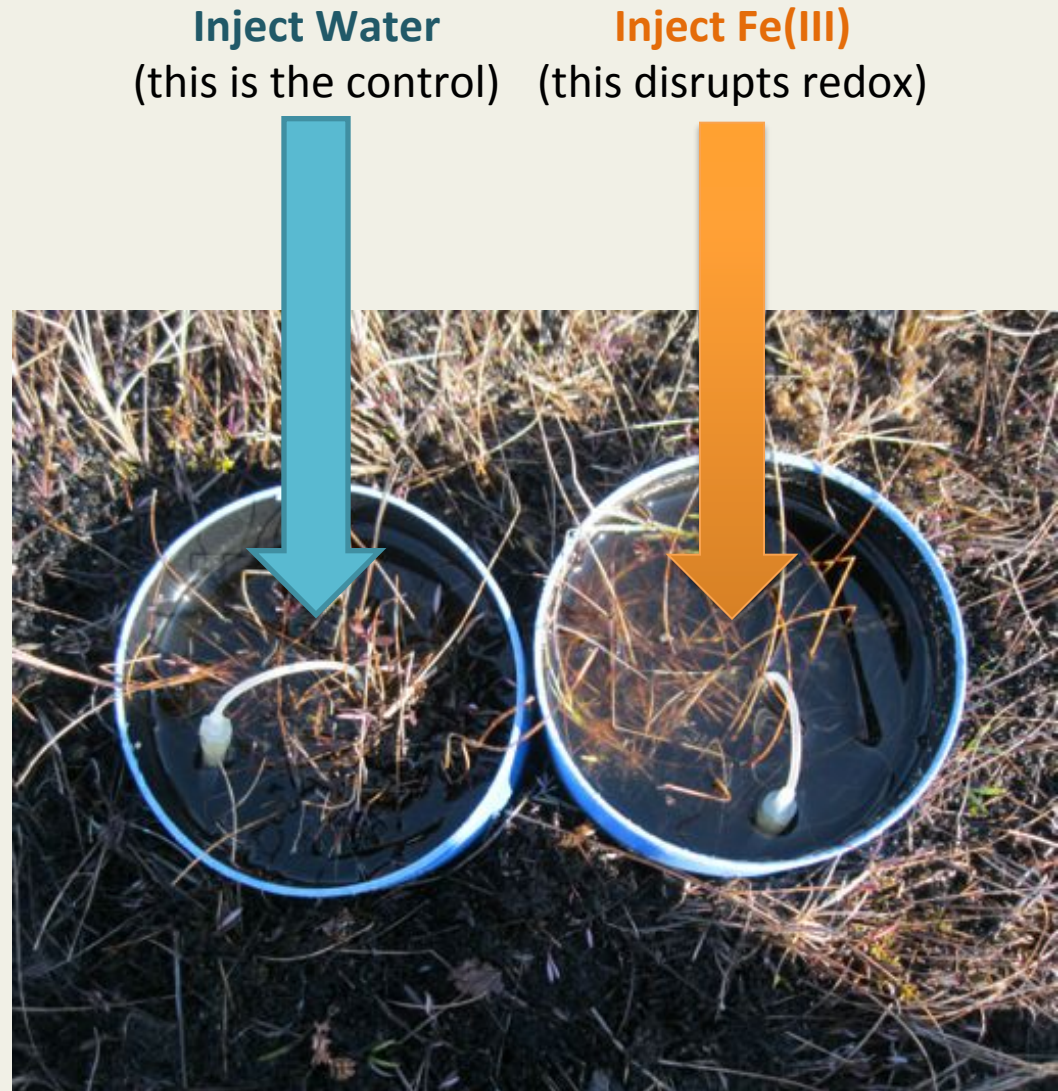
A note about Control:

We have multiple types of 'controls' in this experiment:

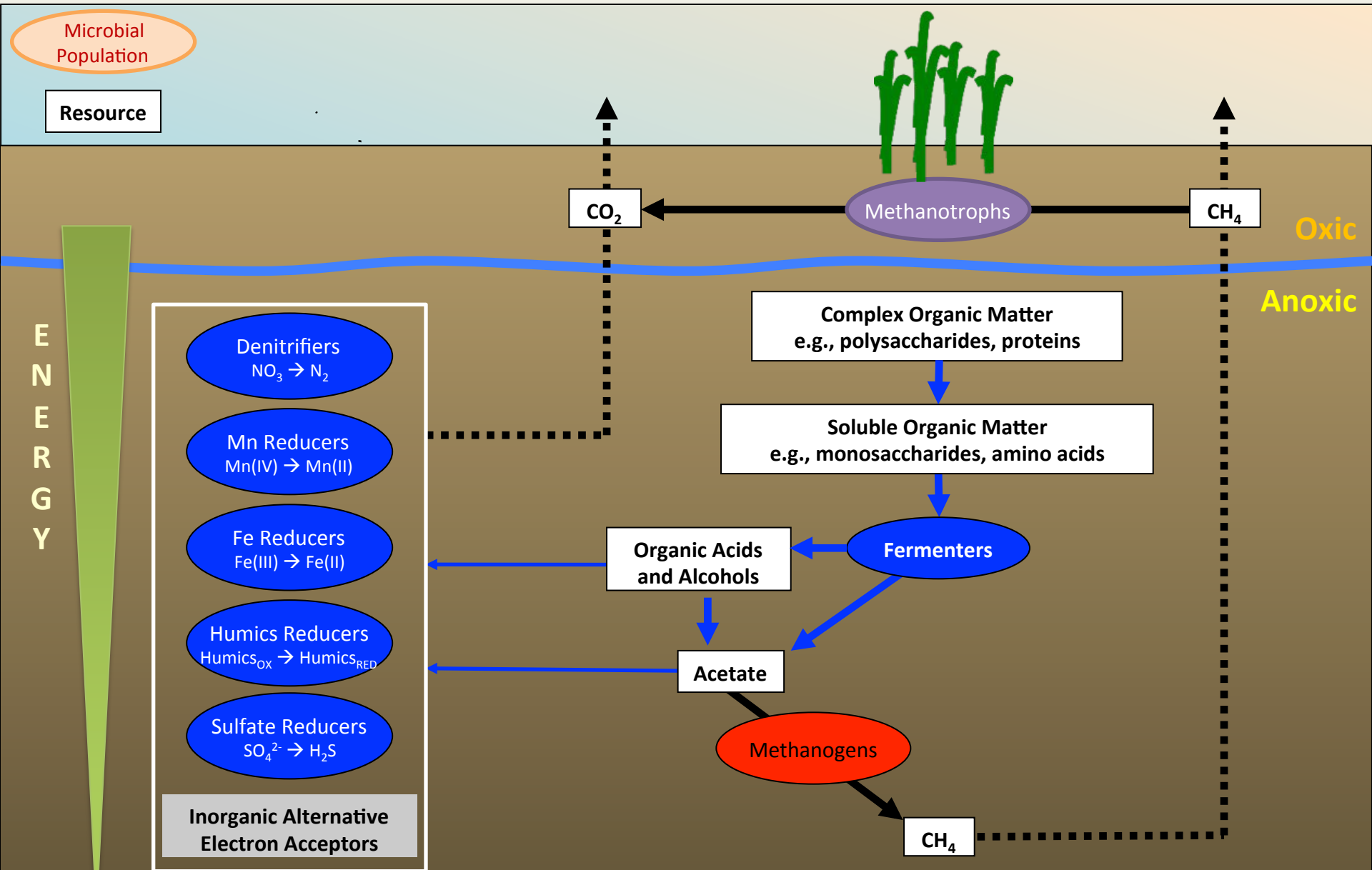
- 1) Before-and-After
- 2) Side-by-Side
- 3) Control treatment

Expected Results:

Adding Fe(III) will stimulate the Fe-reducing microbes, which will outcompete the methane-producing microbes, hence, decreasing methane production and emissions!



Wetland Soil Microbe Interactions



The Big Picture

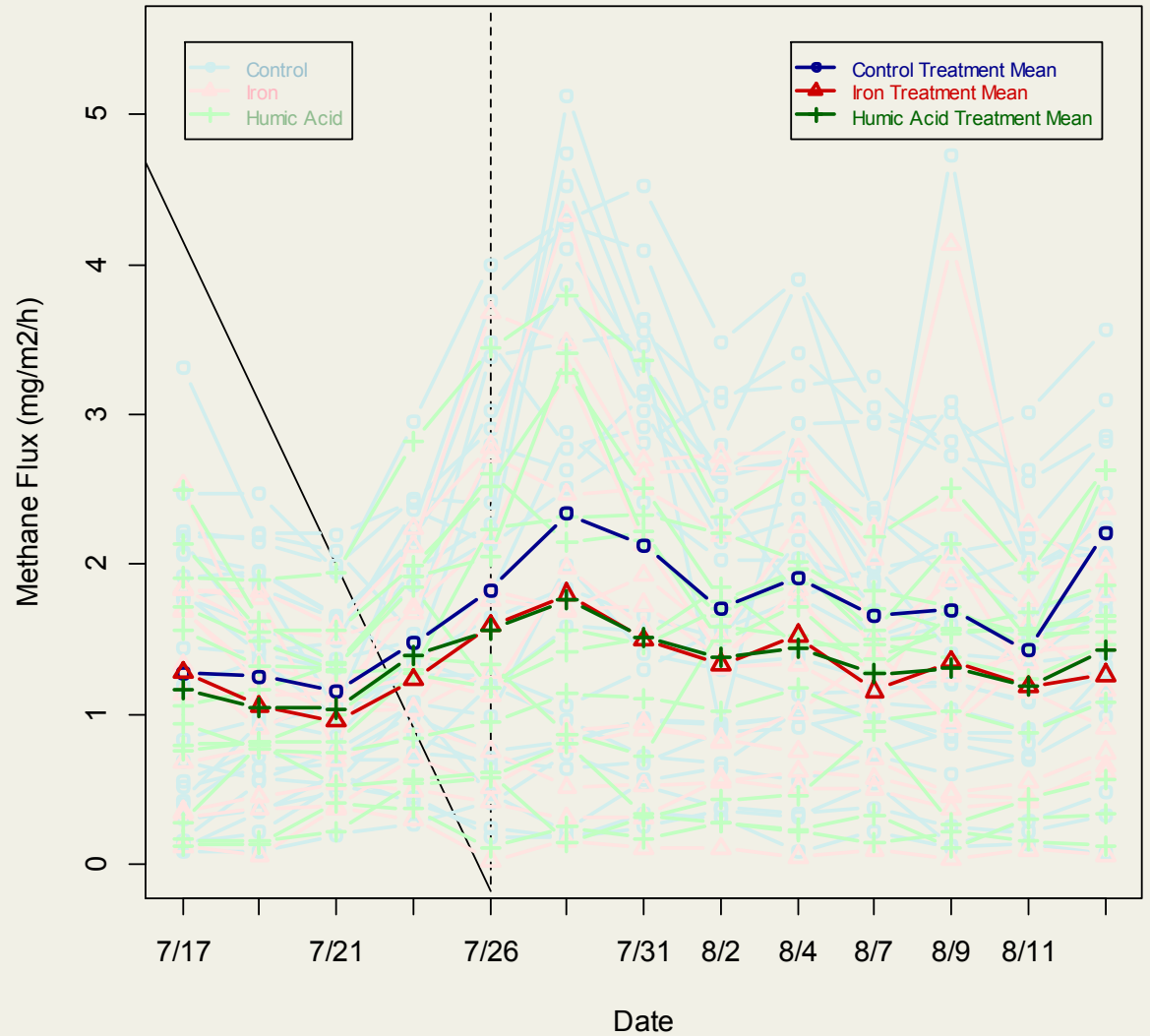
Kevo, Finland



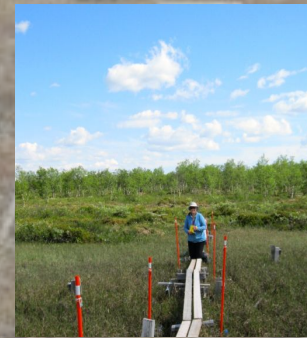
Barrow, Alaska



Alaska 2012 Methane Flux Time Series:
Individual Collars and Treatment Averages



Petsikko Wetlands



But this is the Beginning...



- Student Field Science Program
- Lesson Plans
- Collaborate & Share with Other Teachers
- Maintain Active Research Connections

Teachers: Join PolarTREC!

www.polartrec.com/about/join

Every teacher can participate in different ways:

- **Following Expeditions**
- **Participate in PolarConnect Events**
- **Join the Polar Education Email List**
- **Take Online Professional Development Courses**
- **Become a PolarTREC Teacher!**



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Upcoming Events

Watch for and register for upcoming events at [www.polartrec.com!](http://www.polartrec.com)

Thank You!

An archive of the event will be available shortly.

<http://www.polar-trec.com/polar-connect/archive>

