

Live from IPY! with Jo Dodds



1 June 2007 * Summit Station, on the Greenland Ice Cap



Welcome to Wimba!

Slides will be shown here

Raise your hand to ask a question

List of all participants

Return to the Lobby or Exit

'Chat' with one person or the entire group

Connecting to server...
You have connected successfully!
You have entered the lobby.
You have entered 'Arctic Research Consortium of the United States (ARCUS)'.
Your media format is Third-party Conference Call.

Yes No ?

Name Helen_Wiggins

Exit Lobby - Help

ARCUS



What is PolarTREC?

PolarTREC is a professional development experience in which K-12 teachers are paired with researchers in authentic polar research experiences.

In the next three years 36 teachers from around the United States will join scientists in the Arctic and Antarctic in celebration of the International Polar Year!

www.polartrec.com



The PolarTREC Team



Wendy Warnick
PolarTREC PI
Executive Director



Helen Wiggins
Program Coordinator



Janet Warburton
PolarTREC
Project Manager



Katie Breen
PolarTREC
Project Manager



Kristin Fischer
PolarTREC
Project Assistant



Ronnie Owens
Web Developer



Ben Wade
Web Developer



Tina Buxbaum
Electronic Media
Project Manager



Zeb Polly
Systems Administrator



Joed Polly
Video Production

...with help from
the entire staff
at ARCUS





International Polar Year (IPY) *2007-2009*

The International Polar Year (2007-2009) is an exciting scientific campaign focusing on the world's polar regions!

IPY is a time for discovery, science, learning, and awareness about the polar regions with activities for youth, scientists, and the public.

[*www.ipy.org*](http://www.ipy.org)

Who are we talking with today?



Teacher

Jo Dodds

O'Leary Junior High School
Idaho



Researcher

Mary Albert

Cold Regions Research &
Engineering Laboratory
New Hampshire

Snow Structure & Past Climates at Summit, Greenland



Goal of the project:

Conduct a variety of air and snow measurements to better understand past climates and human impacts on the atmosphere.

Dates:

13 May - 9 June 2007

Location:

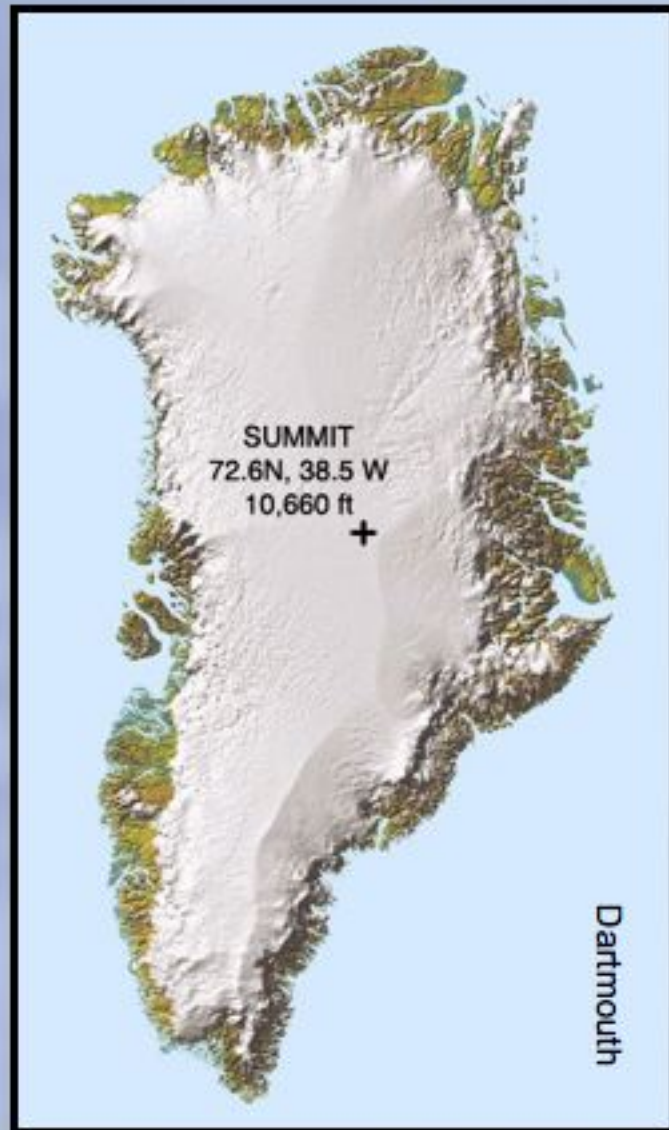
Summit Station, on the Greenland Ice Cap

Elevation: 3200 Meters (10,500 Feet)

Where is Greenland?



Area of Study: Greenland Ice Cap



Live From Summit, Greenland

June 1, 2007

Photochemistry team members: Barry Lefer, Jack Dibb, Jochen Stutz, David Tanner, Katrine Gorham, Luke Ziemba, Dave Lew, Bonnie Reichardt, Justin Juhan, [Pieter Beckman, Roland Von Glasow, Mathias Piot, Stephen Hurlock, Greg Huey, Michael Pastirik, Tony Cummings, and Steve Brooks]



PHOTOCHEMISTRY TEAM



David Tanner
GA Inst of Tech
Bromine



Barry Lefer
U of Houston
Sunlight



Jack Dibb
U of NH
The Captain



Luke Ziemba
U of NH
Bromine



Dave Lew
NOAA engineer
Mercury



Jochen Stutz
UCLA
Bromine



Bonnie Reichardt
GA Inst of Tech
Nitrogen Oxides



Katrine Gorham
UC Irvine
Hydrocarbons



Justin Juhan
Southern Poly
Ozone

Does Snow Make Air Pollution?



What is Air Pollution?



What is Air Pollution?



Recipe for Smog

Nitrogen Oxides + Hydrocarbons + Sunlight = Ozone



Recipe for Smog

Nitrogen Oxides + Hydrocarbons + Sunlight = Ozone



Recipe for Smog

Nitrogen Oxides + Hydrocarbons + Sunlight = Ozone

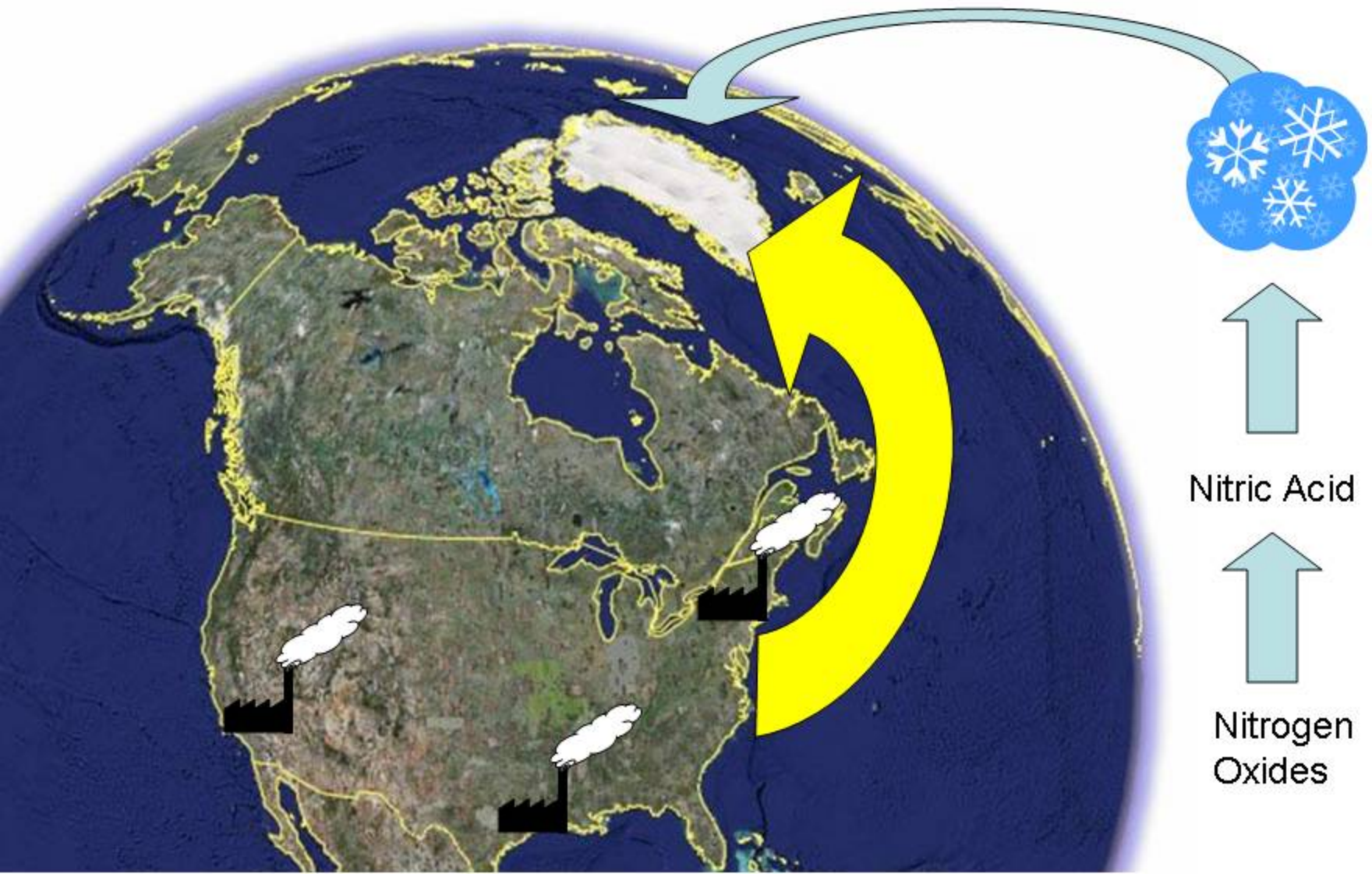


Recipe for Smog

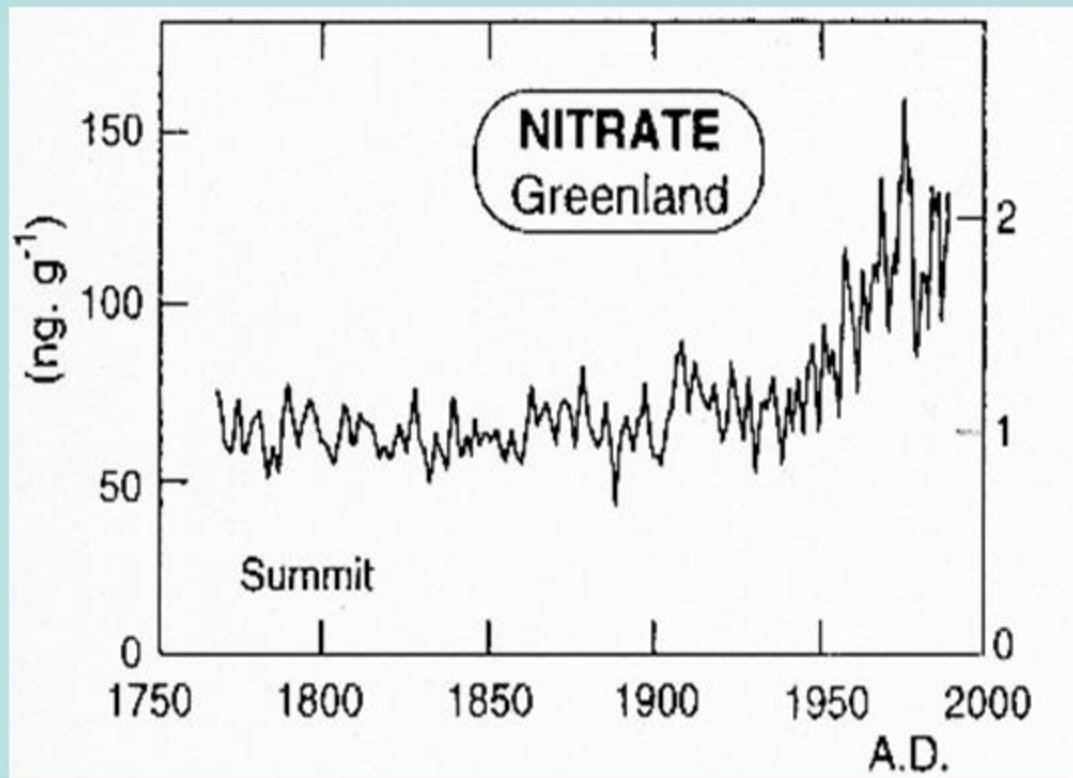
Nitrogen Oxides + Hydrocarbons + Sunlight = Ozone



Transport of Pollution into the Arctic



How do we know that pollution arrives in Greenland?



Dr. Jack Dibb
University of new Hampshire

More and more pollution accumulates
in Greenland snow

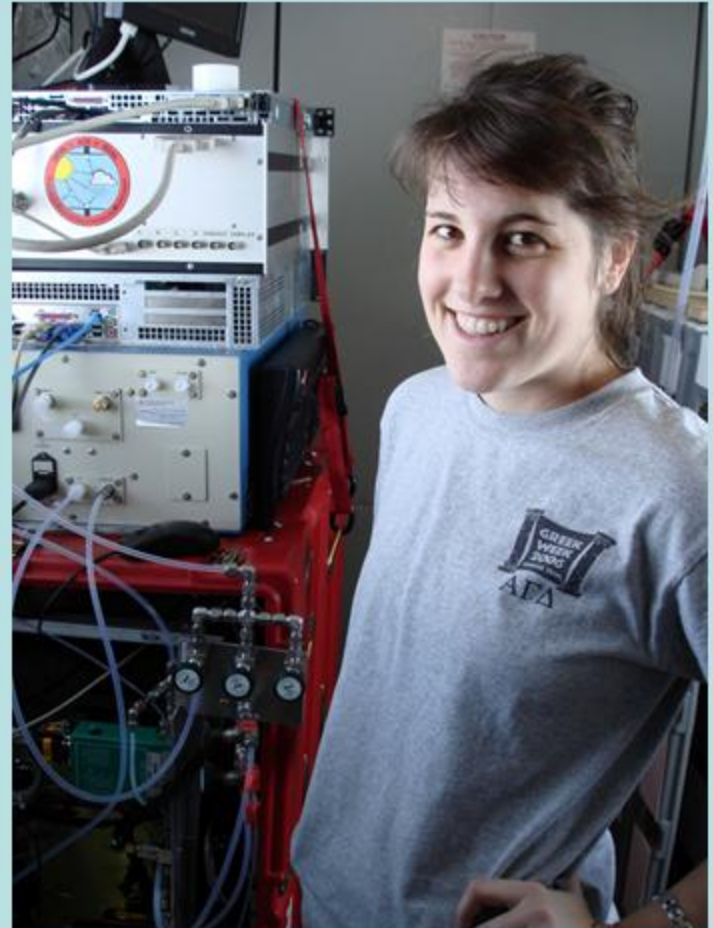
Recipe for Air Pollution Made in Greenland

Nitrogen Oxides + Hydrocarbons + Sunlight = Ozone



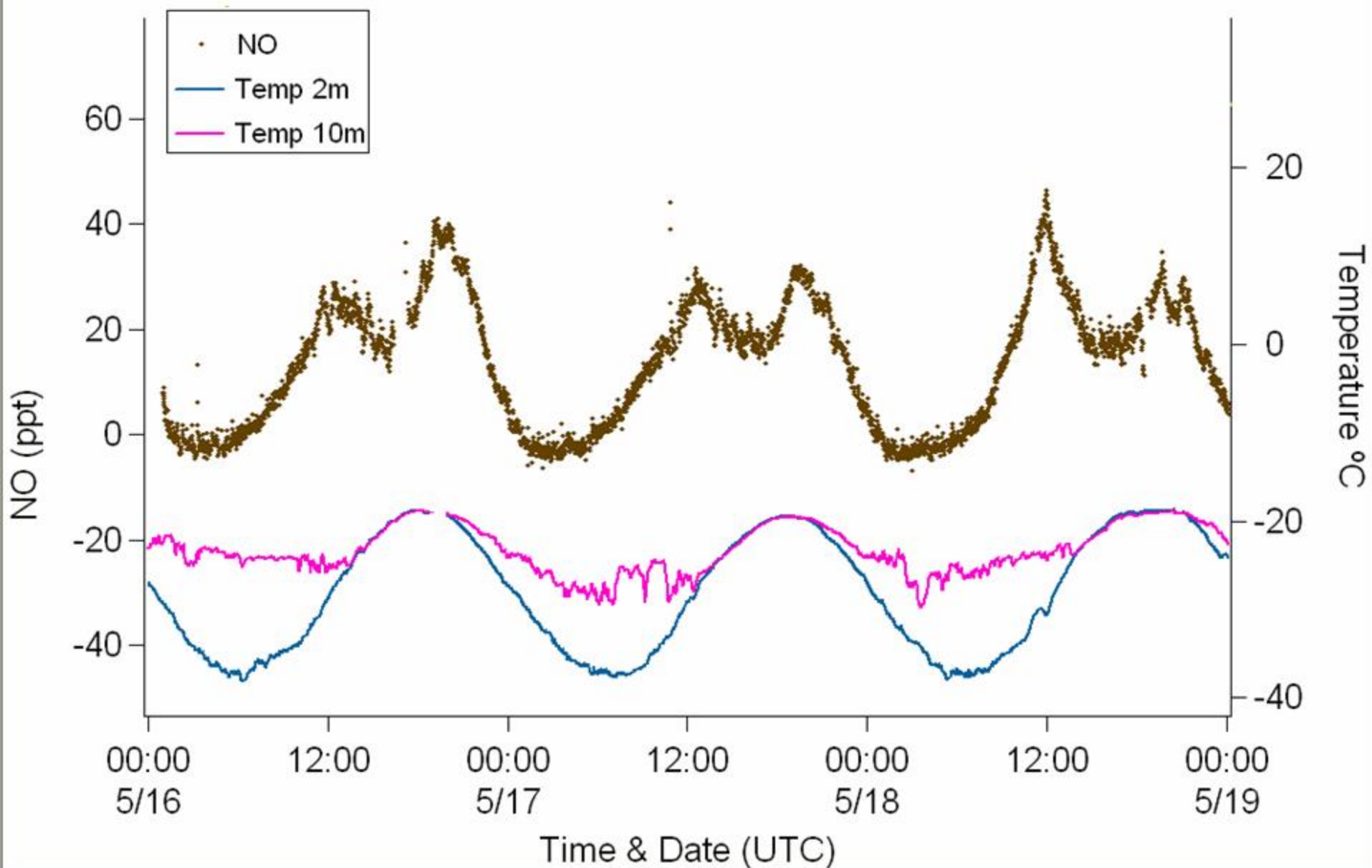
Nitrogen Oxides

- Are there nitrogen oxides at Summit Camp?
- How do we know?
- Where do they come from?

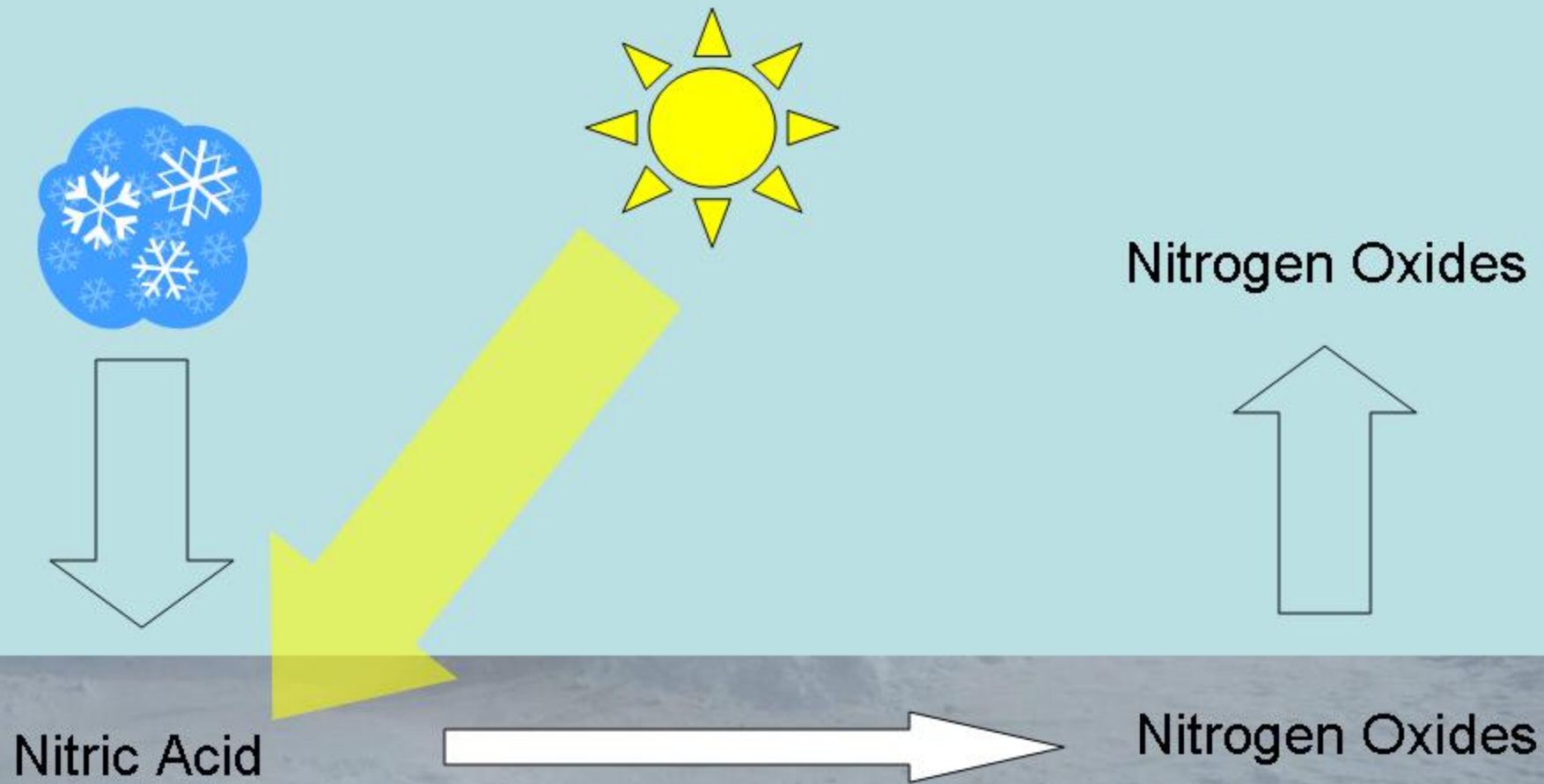


Bonnie Reichardt,
undergraduate student, GA Tech

Nitrogen Oxide over Three Day Period

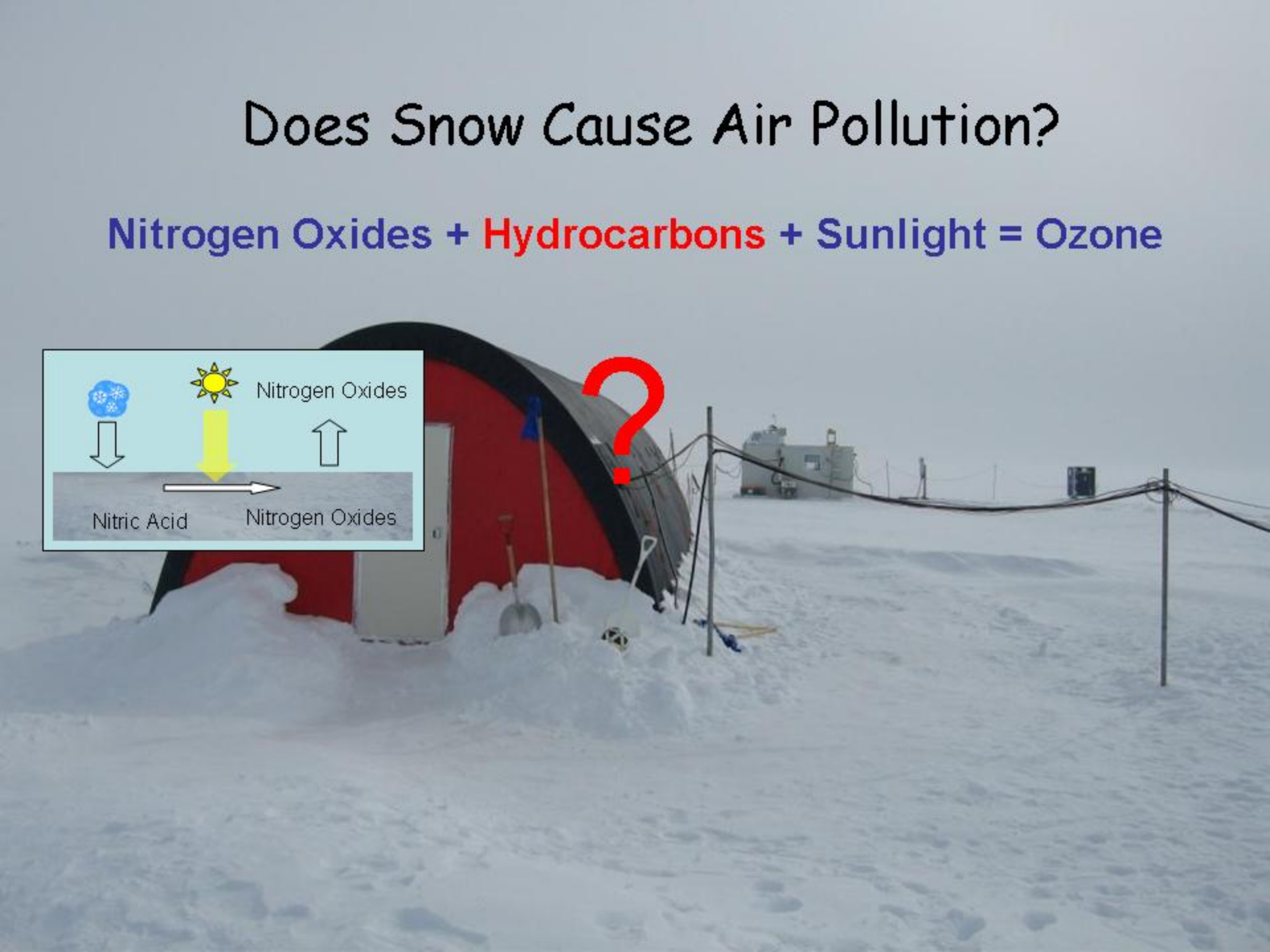
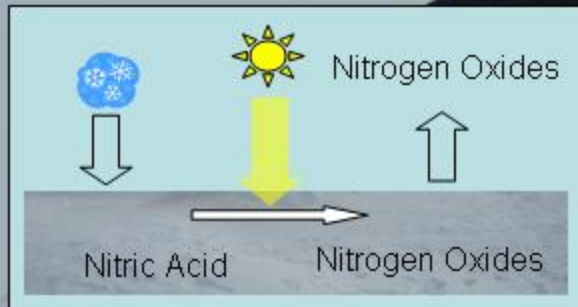


How polluted snow and sunlight make nitrogen oxides



Does Snow Cause Air Pollution?

Nitrogen Oxides + **Hydrocarbons** + Sunlight = Ozone



Hydrocarbons Sampling in Air

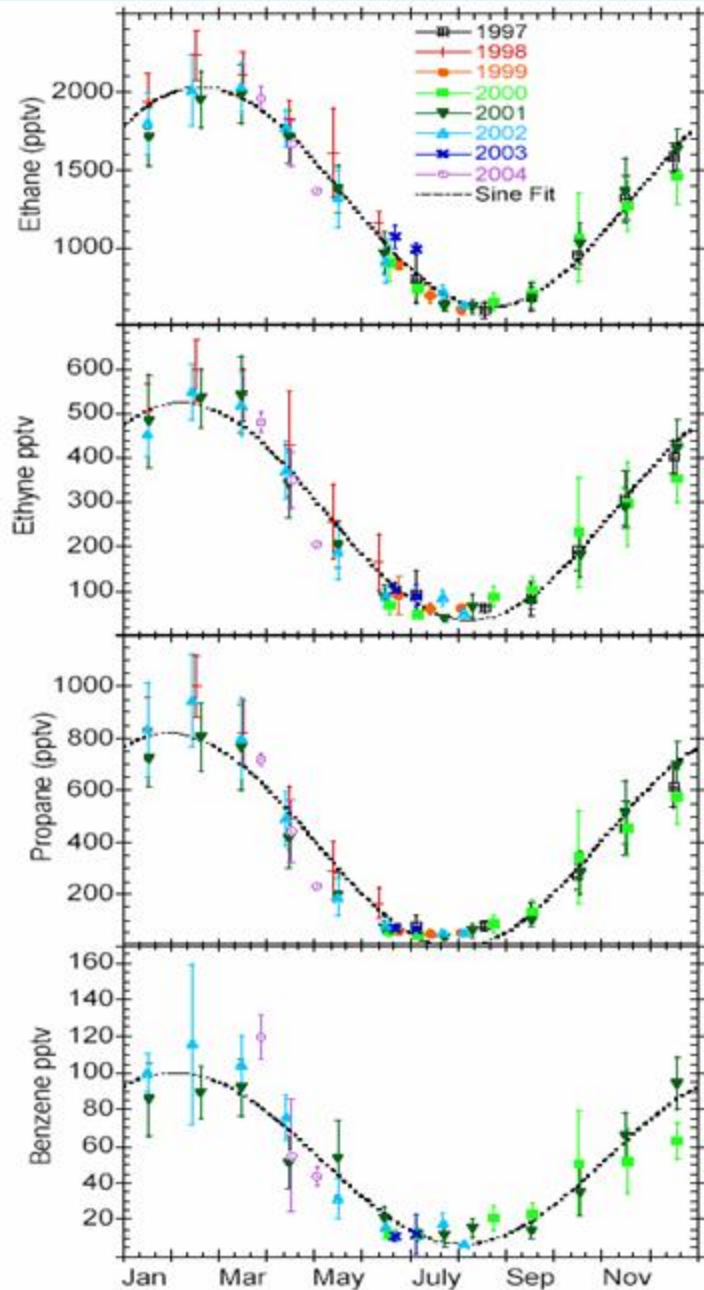


Snakes

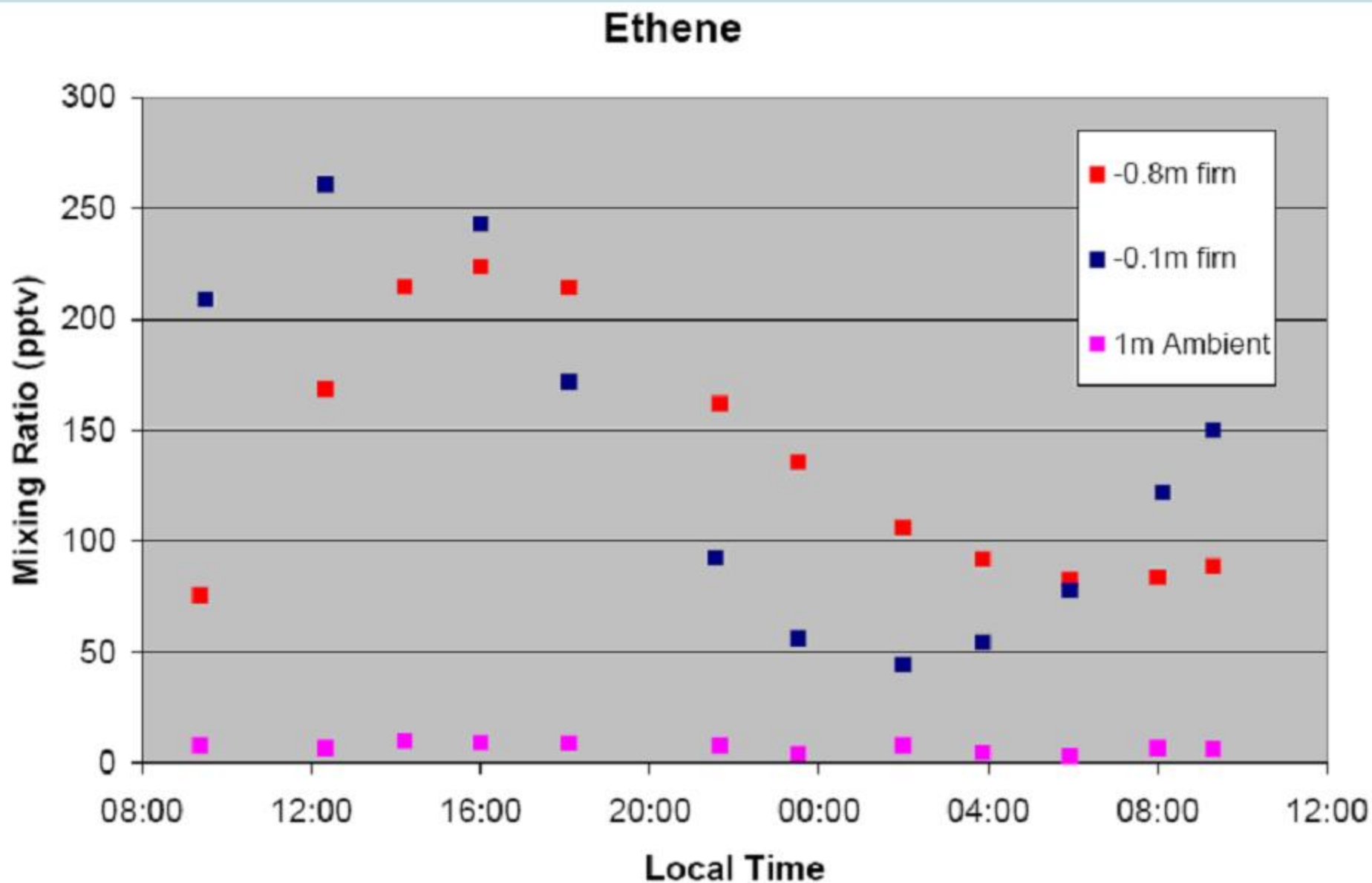


Katrine Gorham
Graduate Student at UC Irvine

How do hydrocarbons change during the year?

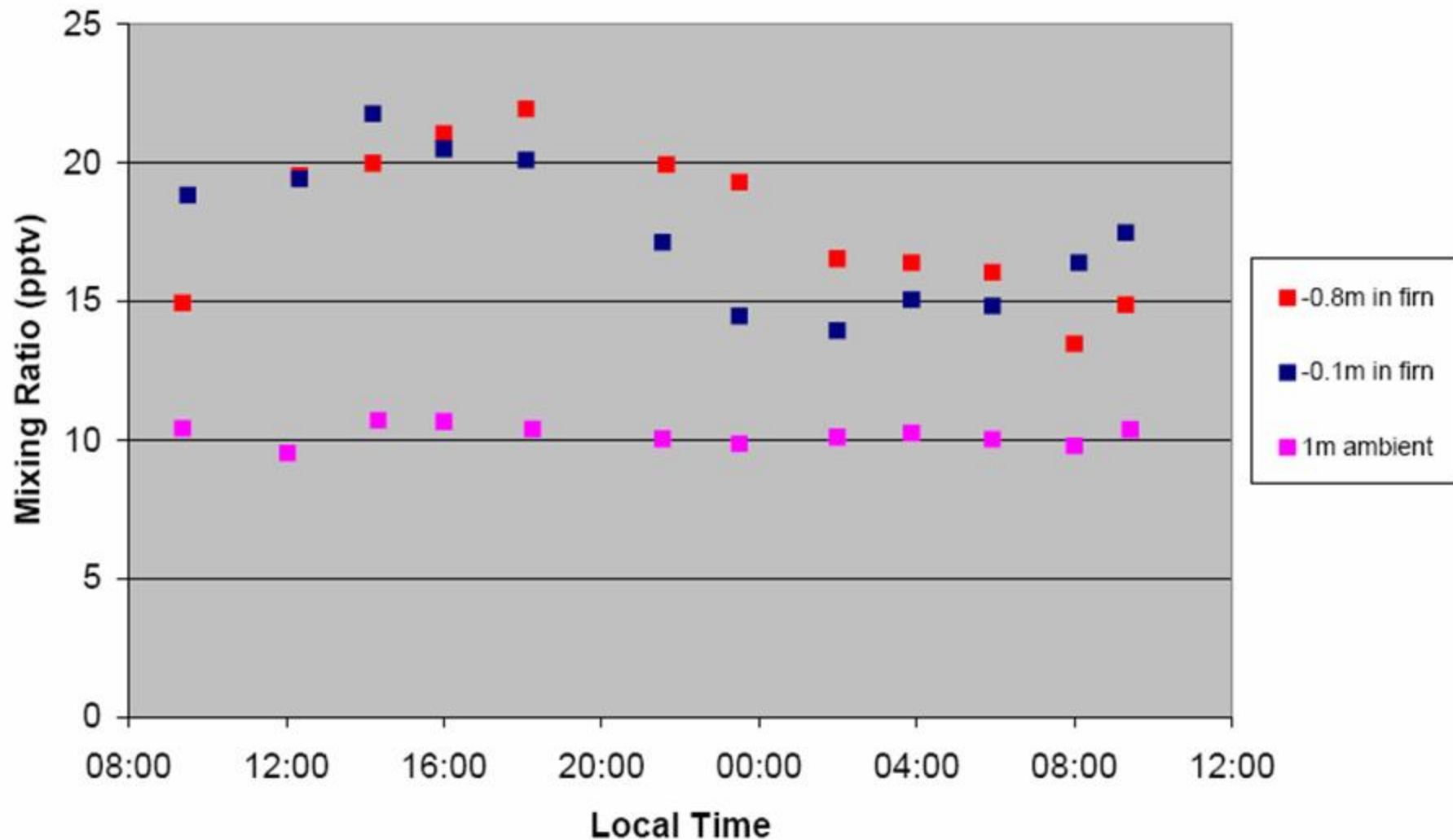


Do hydrocarbons change during a day?



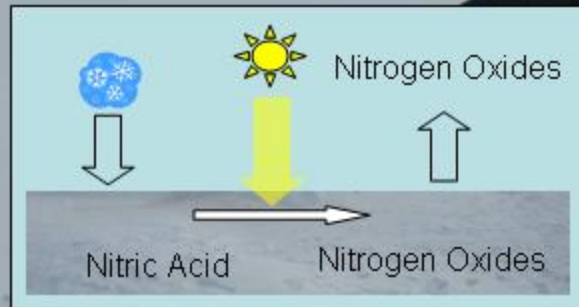
Do hydrocarbons change during a day?

Methyl Bromide



Does Snow Cause Air Pollution?

Nitrogen Oxides + Hydrocarbons + **Sunlight** = Ozone



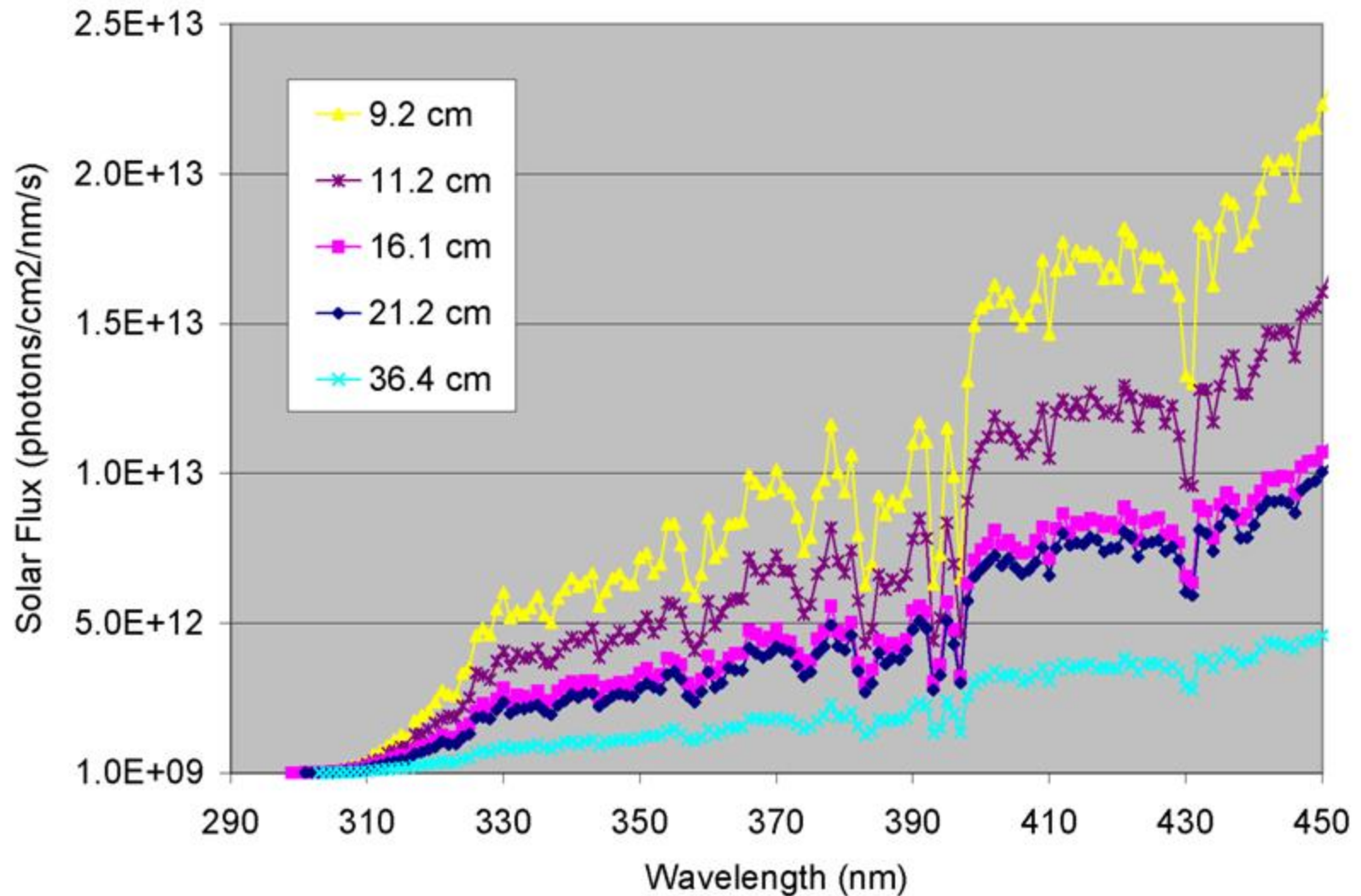
How deep does sunlight travel in snow?



Prof. Barry Lefer, University Houston

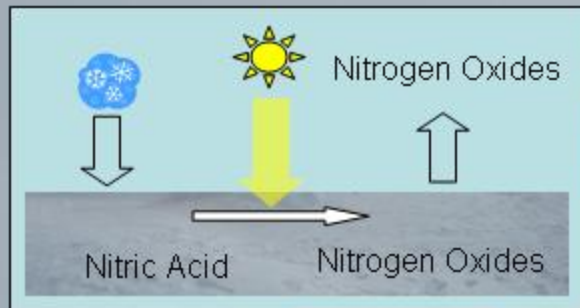
Sunlight In Greenland Snow

26 May 2007, 09:00 LT



Does Snow Cause Air Pollution?

Nitrogen Oxides + Hydrocarbons + Sunlight = Ozone



**But we are not
making enough ozone!
We must be missing
something!**

**Maybe something
is destroying ozone!**



Captain Jack

**But we are not
making enough ozone!
We must be missing
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**Maybe something
is destroying ozone!**

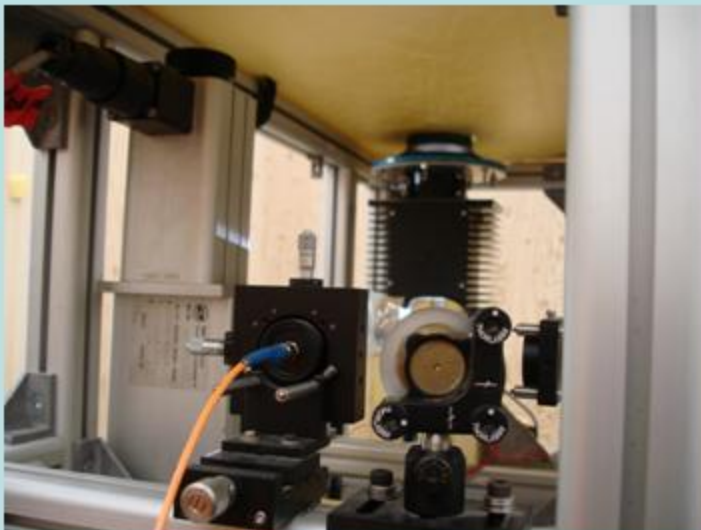
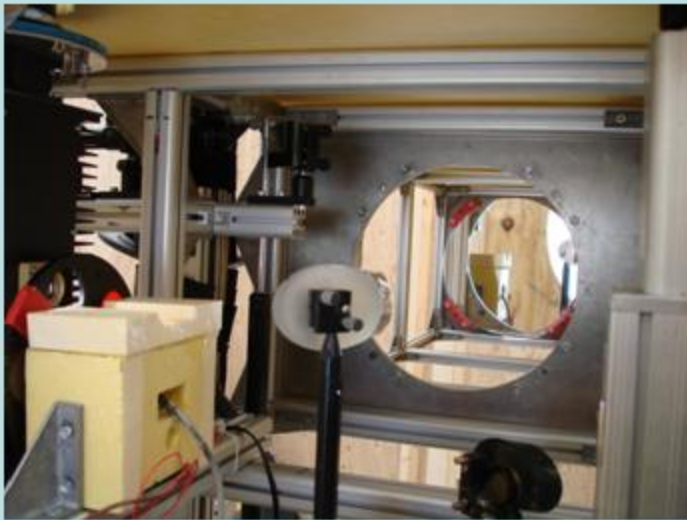


**Chlorine?
Bromine?**



Captain Jack

Searching for Bromine: DOAS Telescope

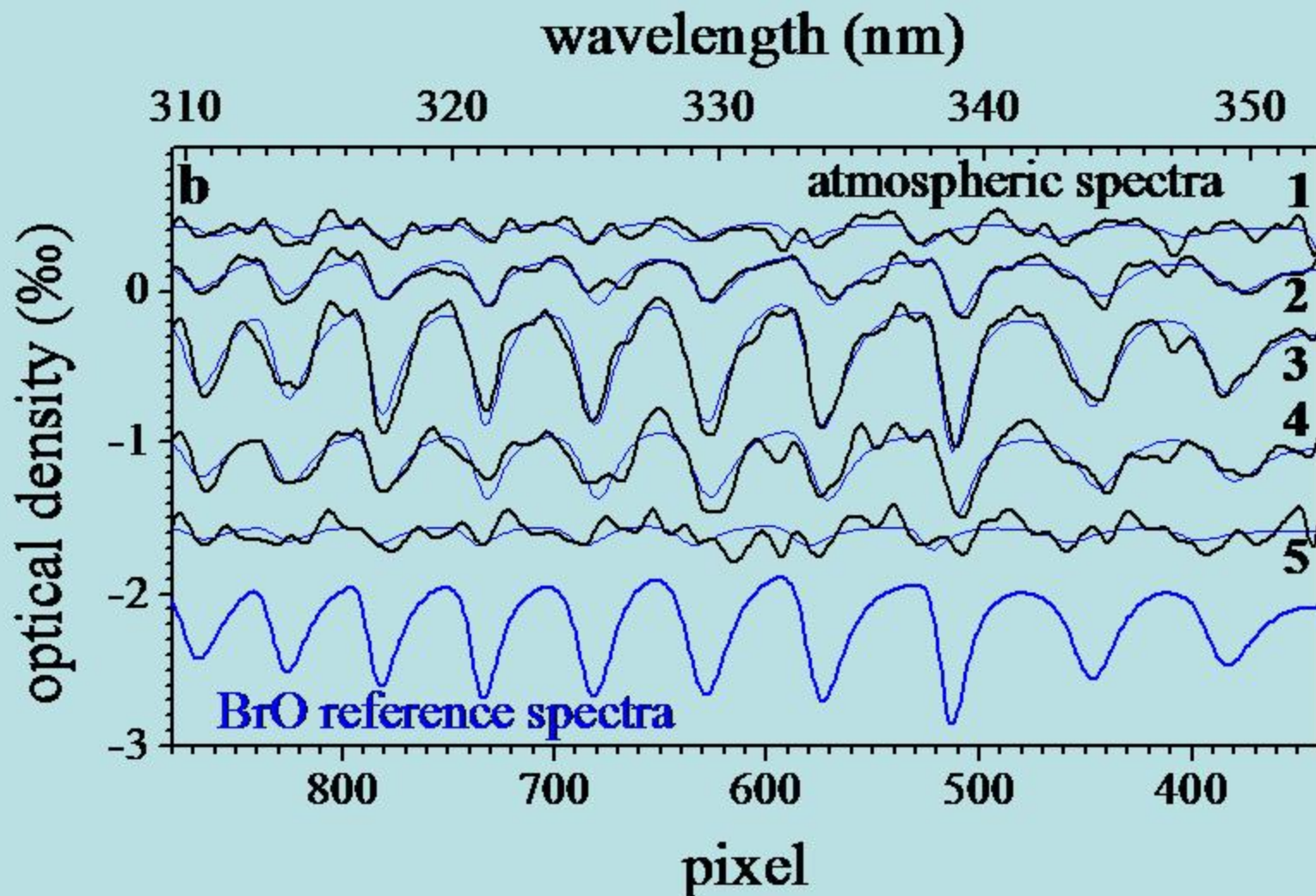


Prof. Jochen Stutz,
UC Los Angeles

Reflector and beam of light



Identification and quantification of Bromine



Others search for bromine too

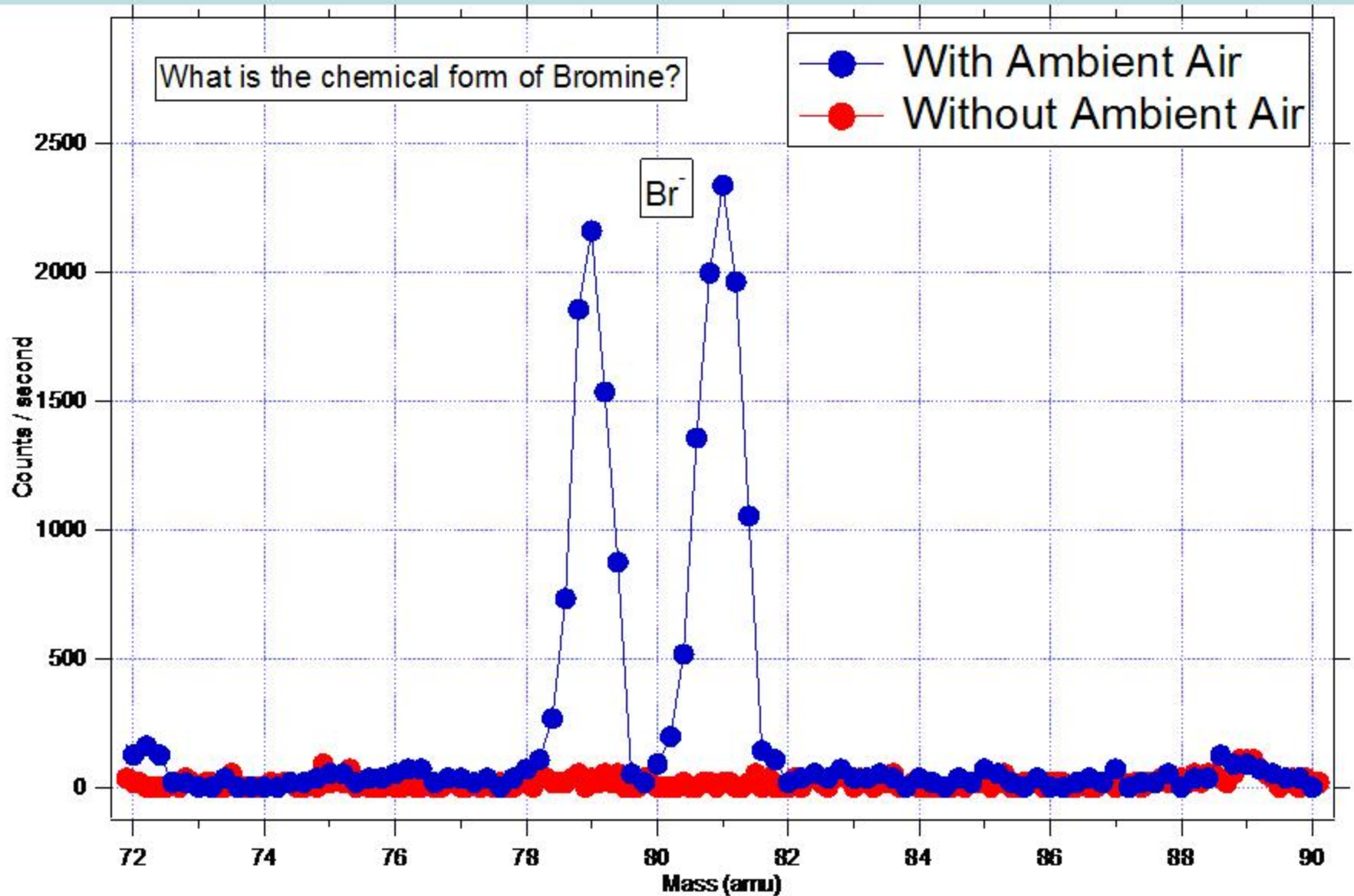


Justin Juhan
Southern Poly

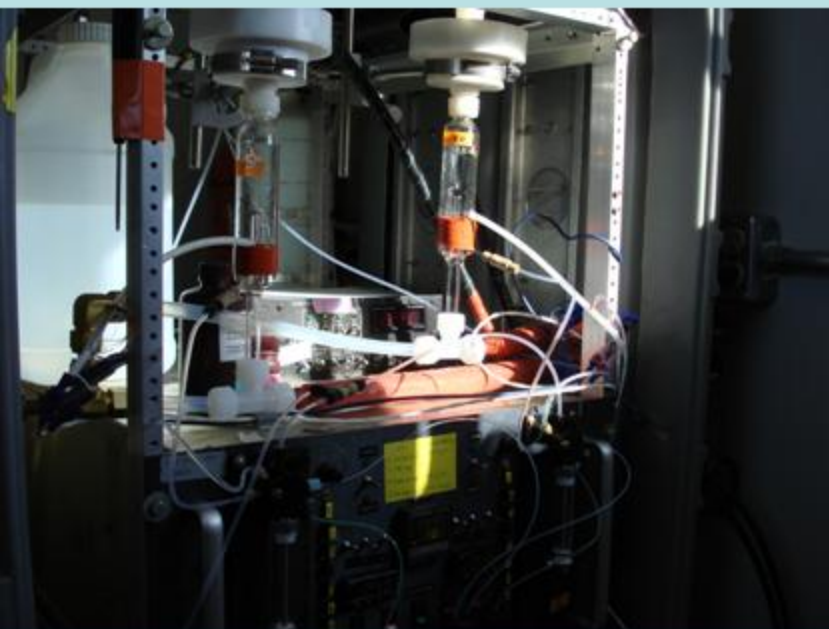


David Tanner
Georgia Tech

The CIMS counts bromine atoms



Dissolving bromine in water

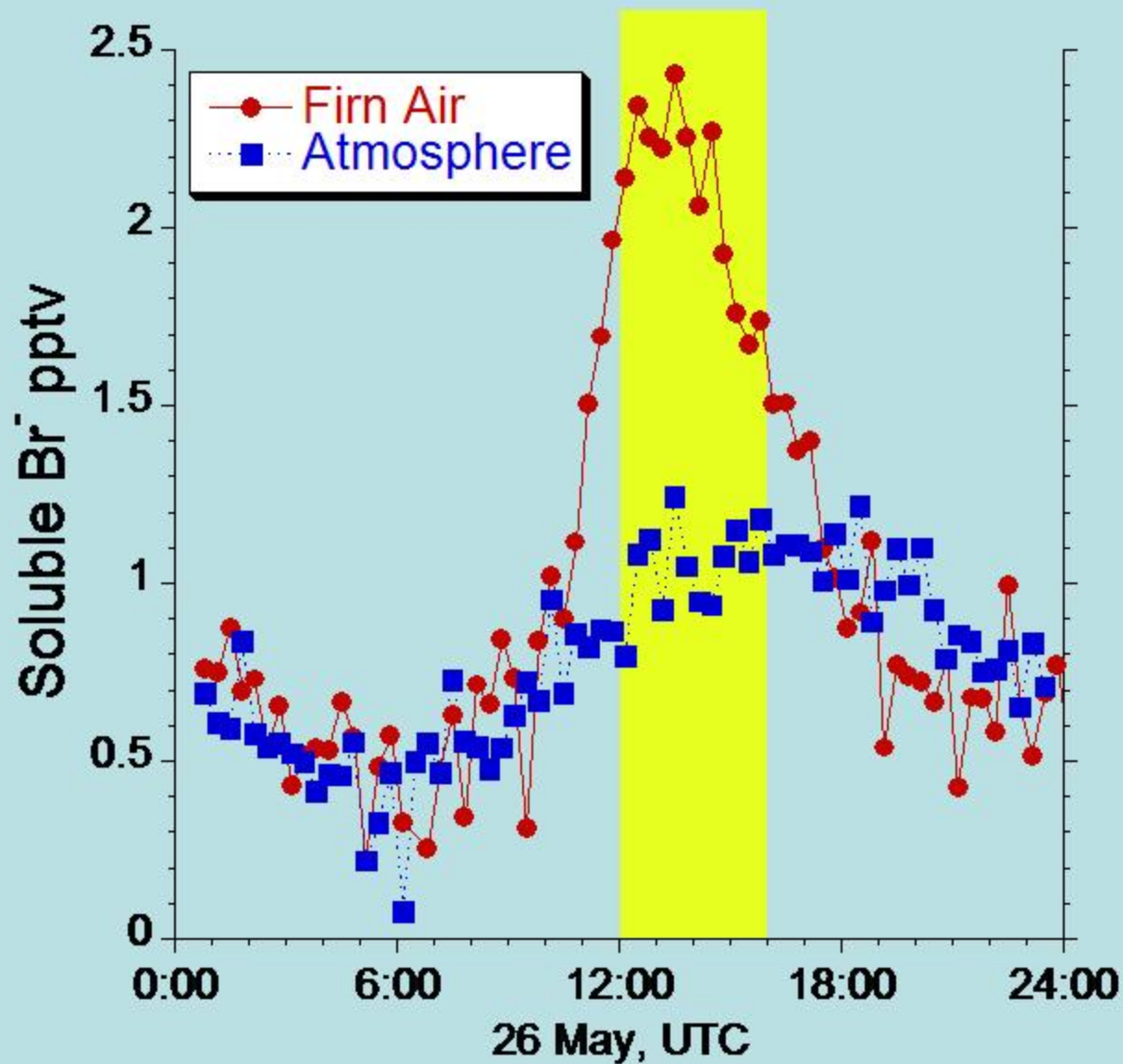


The mist-chamber



Luke Ziemba
Graduate student, Univ. New Hampshire

Bromine at Summit



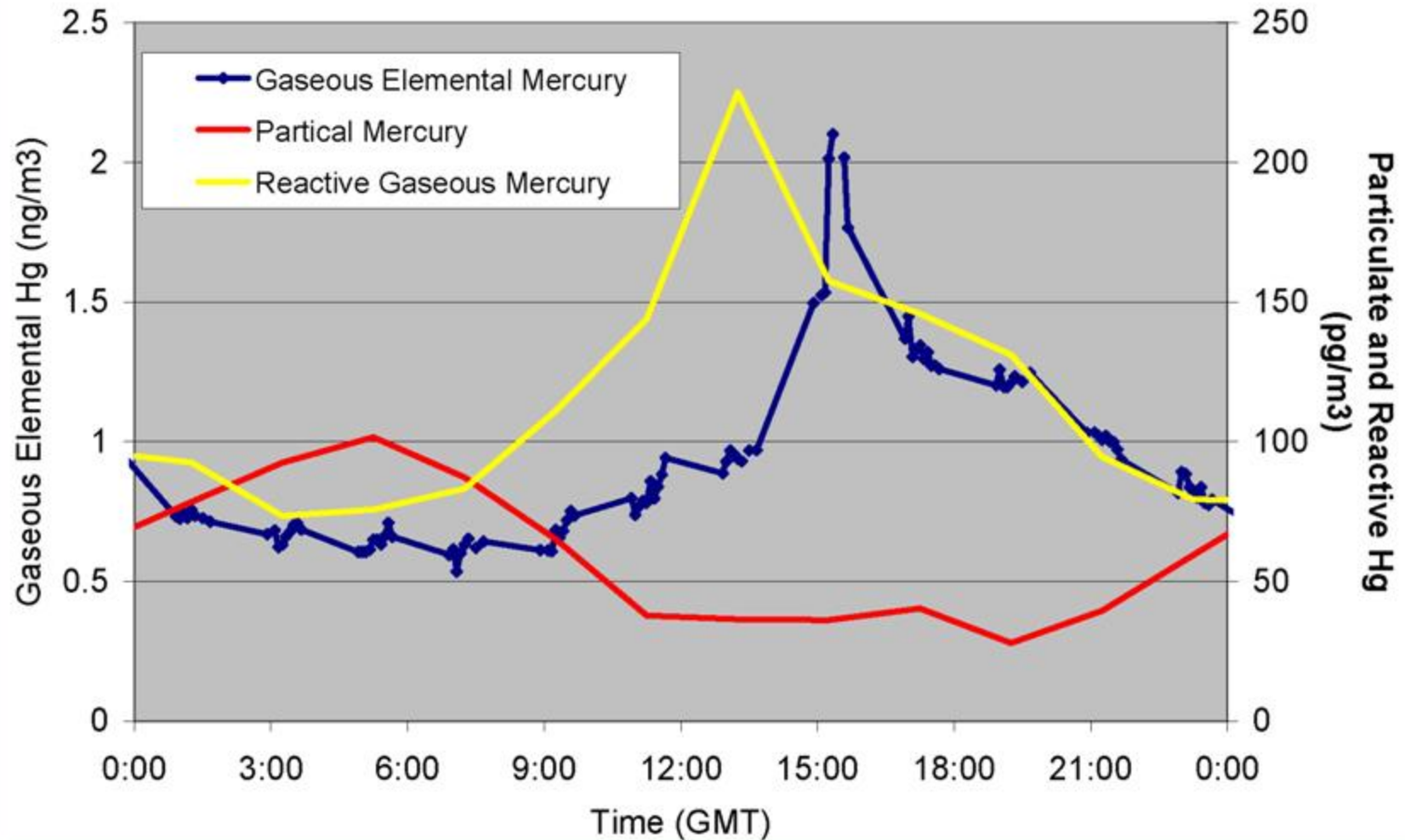
If Bromine is there, shouldn't mercury go away?



David Lew
National Oceanic and Atmospheric Administration

Mercury cycles because of Br

18 May 2007 - Mercury at Summit Greenland



What happens next?



Once everyone is home the thinking starts:

Do we get the ozone right now?

Do we see enough bromine?

Does the bromine matter?

Where is the bromine coming from?

Back to Summit next year!



Check out and register for upcoming events!



INTERNATIONAL POLAR YEAR
2007-2008

Live from IPY!

www.polartrec.com

Thank
You!



*If you have further questions,
please contact us at
info@polartrec.com or call
1-907-474-1600*

