



Welcome to Live from IPY!

*With PolarTREC Teacher, Craig Beals
and the science team at
Summit Station, GREENLAND*



Tuesday, 10 June 2008

9:00 AM ADT [7:10 AM HDT, 10:00 AM PDT, 11:00 AM MDT,
12:00 PM CDT, 1:00 PM EDT]

www.polartrac.com

Slides will be shown here

Welcome to HorizonWimba

If using VOIP, press here to talk



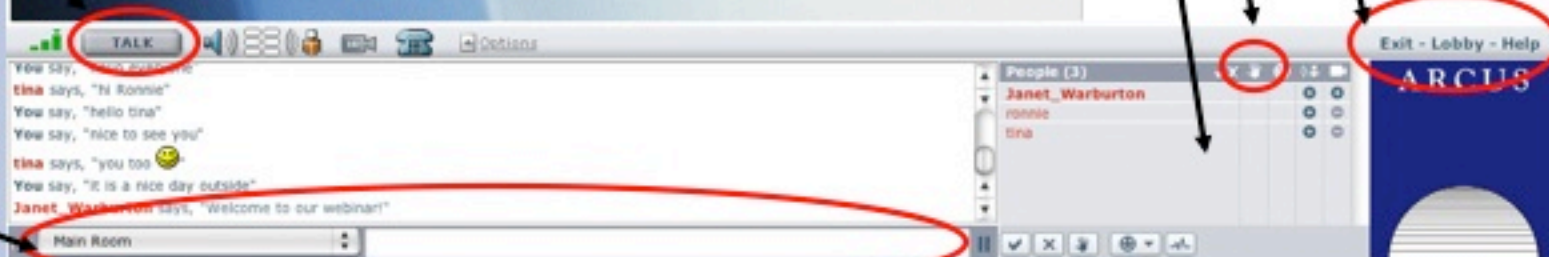
Arctic Research Consortium of the United States

List of all participants

Raise your hand to ask a question

Return to the lobby or exit

'Chat' with one person or the entire group



Please note: Today's event will be recorded and archived at www.polartrec.com.



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.polar trec.com



The PolarTREC Team



Wendy Warnick

PolarTREC PI
Executive Director



Helen Wiggins

Program Coordinator



Janet Warburton

PolarTREC
Project Manager



Kristin Timm

PolarTREC
Project Manager



Katie Breen

PolarTREC
Project Manager



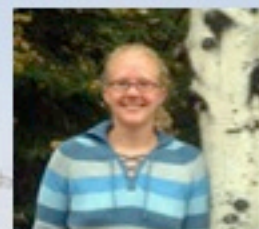
Ronnie Owens

Web Developer



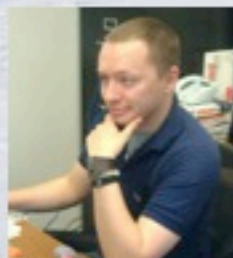
Ben Wade

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



Who are we talking with today?



PolarTREC Teacher
Craig Beals
Billings Senior High



Researcher
Barry Lefer
University of Houston



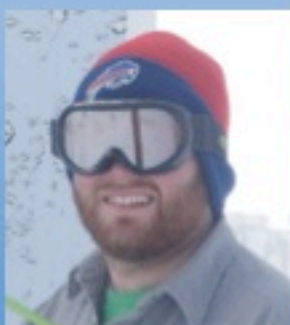
Researcher
Katrine Gorham
University of California Irvine



Researcher
David Turner
Georgia Tech



Camp Manager
Cathy Young
CH2M Hill



Researcher
Luke Ziemba
University of New Hampshire



Researcher
Craig Clements
San Jose State University



Researcher
Jochen Stutz
University of California-Los Angeles



Researcher
Bonnie Reicherdt
Georgia Tech



Researcher
Steve Brooks
NOAA

Goal of the project:

A team of scientists will be working at Summit, Greenland to find out how snow photochemistry (sunlight-driven reactions) affects the composition of the snow and the atmosphere above it by sampling and analyzing reactive chemicals in the snow and in the air, measuring the sunlight in the snowpack, and determining physical properties of the snow.

Dates:

June 1-July 12, 2008

Location:

Summit Station, Greenland

The peak of the Greenland Ice Cap, atop 3200 meters of ice!

<http://www.summitcamp.org/>



SUMMIT CAMP, GREENLAND

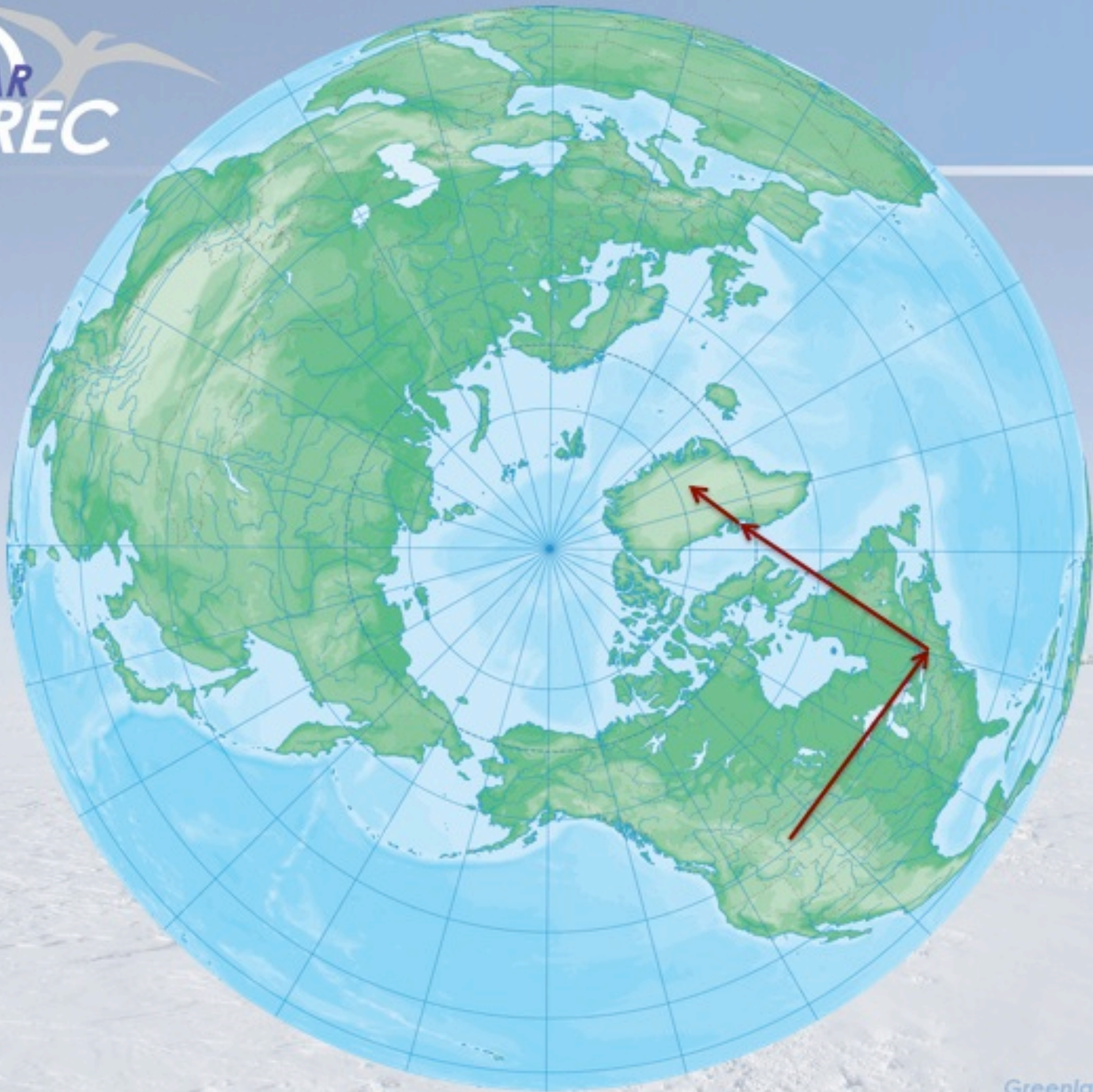


“Radical Chemistry Over Sunlit Snow”
JUNE 1 – JULY 12, 2008

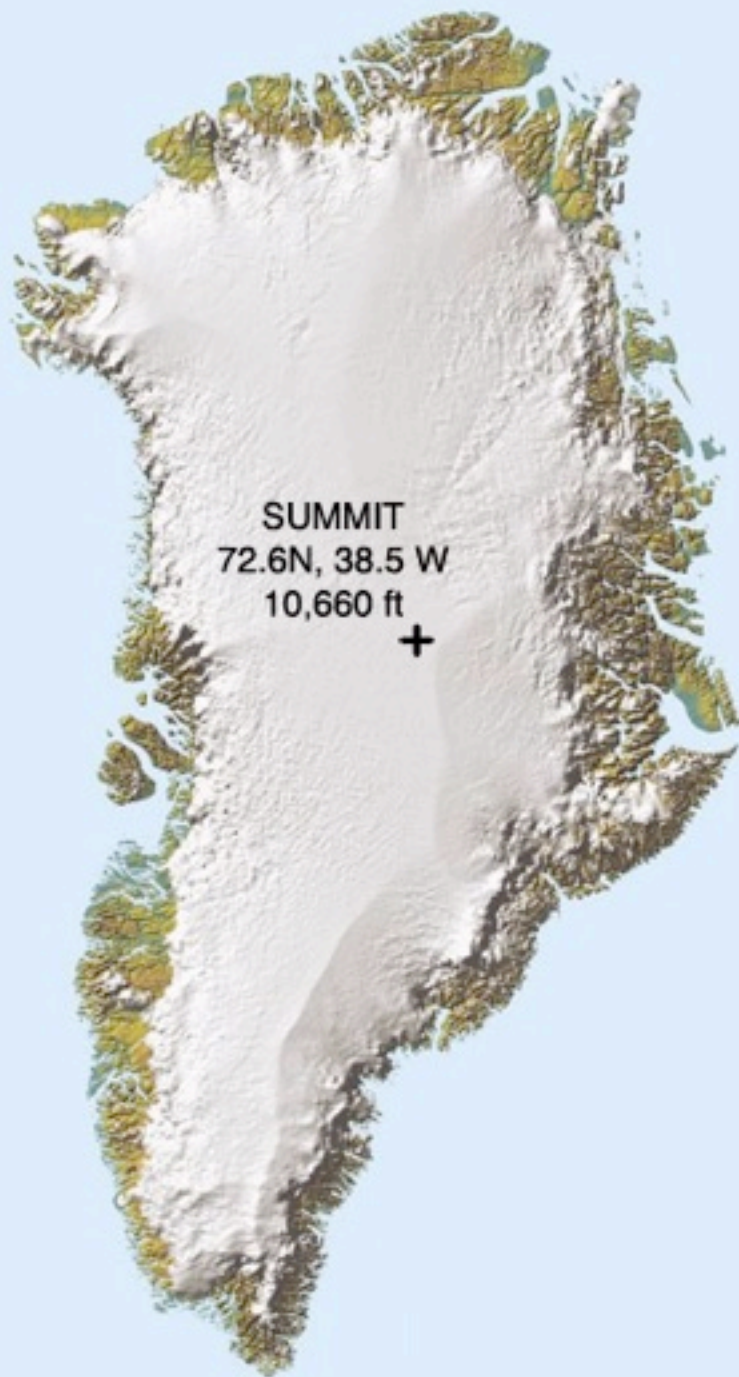
Where Are We?

- **Summit, Greenland**
- **Peak of Greenland's Ice Sheet (10,600 ft)**





Summit Station



How did we get here?



What is it like?



SUMMIT CAMP

This week:

- **Temp: -4 F (-20 C)**
- **Wind: 8 mph**
- **Snowfall: 2 inches**

- **Affects of altitude?**

Where do we eat?



BIG HOUSE

- Kitchen
- Dining Room
- Office

Where do we sleep?



Arctic Oven

- Doubled walled tent
- 40 F sleeping bag
- No heater!

Why are we here?



Smog!

Nitrogen Oxides



Nitrogen Oxides + Hydrocarbons



Recipe for Smog

Nitrogen Oxides + Hydrocarbons + Sunlight



Recipe for Smog

Nitrogen Oxides + Hydrocarbons + Sunlight = Ozone



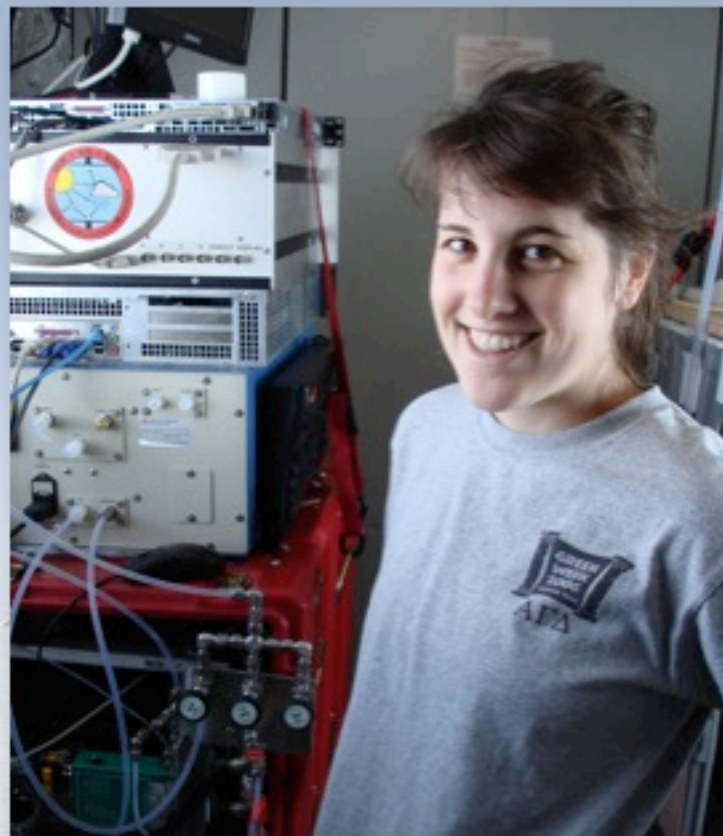
Is there ozone in Greenland?

Nitrogen Oxides + Hydrocarbons + Sunlight = Ozone

YES!



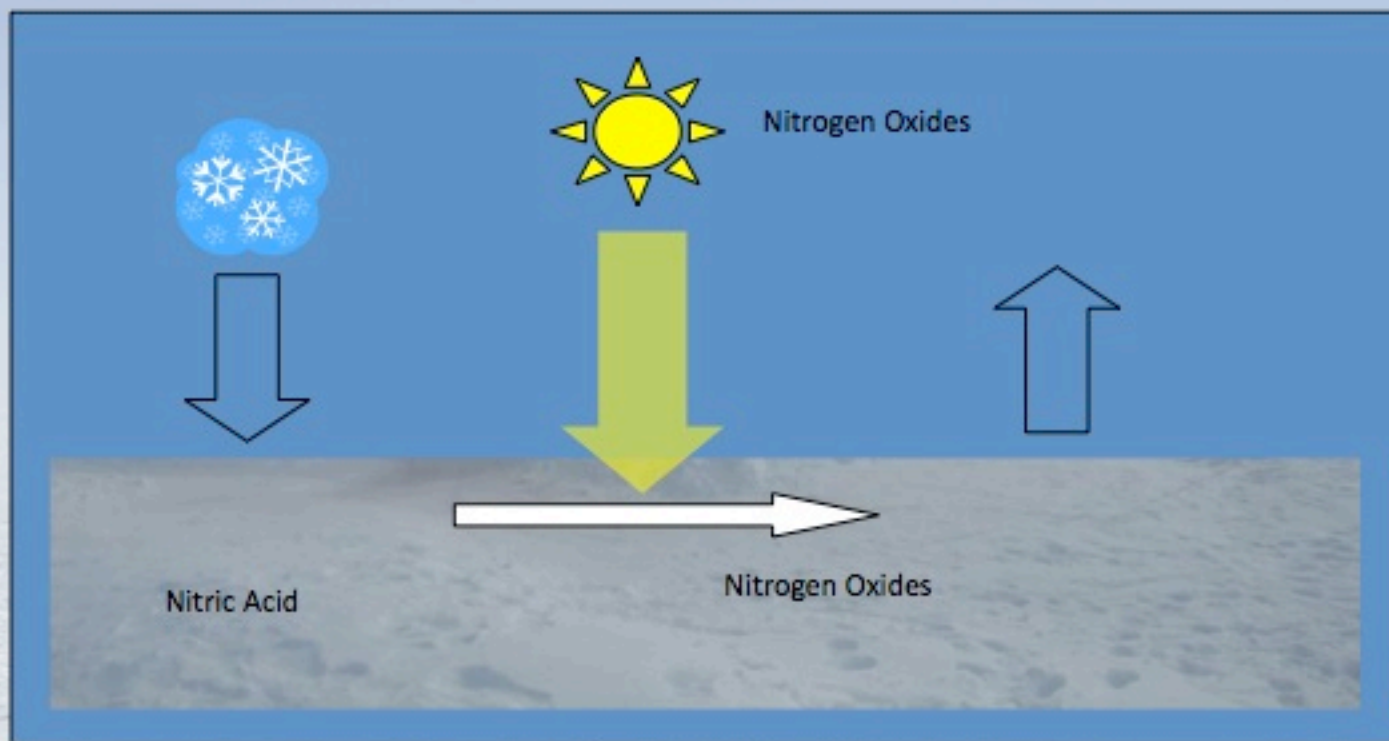
Are there nitrogen oxides in Greenland?



- **Bonnie Reicherdt** – Georgia Tech
- **Undergraduate student**

Are there nitrogen oxides in Greenland?

Nitrogen Oxides + Hydrocarbons + Sunlight = Ozone



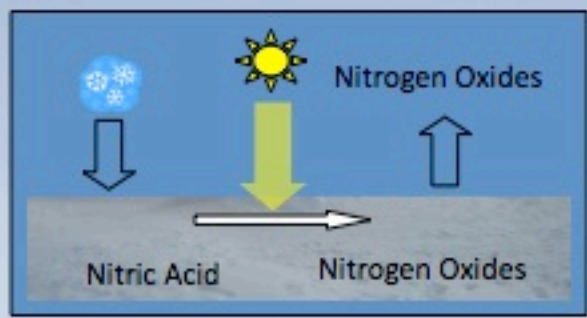
Are there Hydrocarbons in Greenland?



- **KATRINE GORHAM** – *University of California - Irvine*
- **Research: Snow Photochemistry**

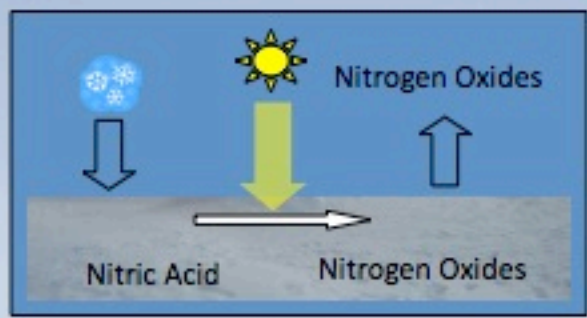
Does snow cause air pollution?

Nitrogen Oxides + Hydrocarbons + Sunlight = Ozone



Does snow cause air pollution?

Nitrogen Oxides + Hydrocarbons + Sunlight = Ozone



Is there a lot of sunlight in Greenland?



- **DR. BARRY LEFER – University of Houston**
- **Research: Photochemistry**

...but something doesn't add up!

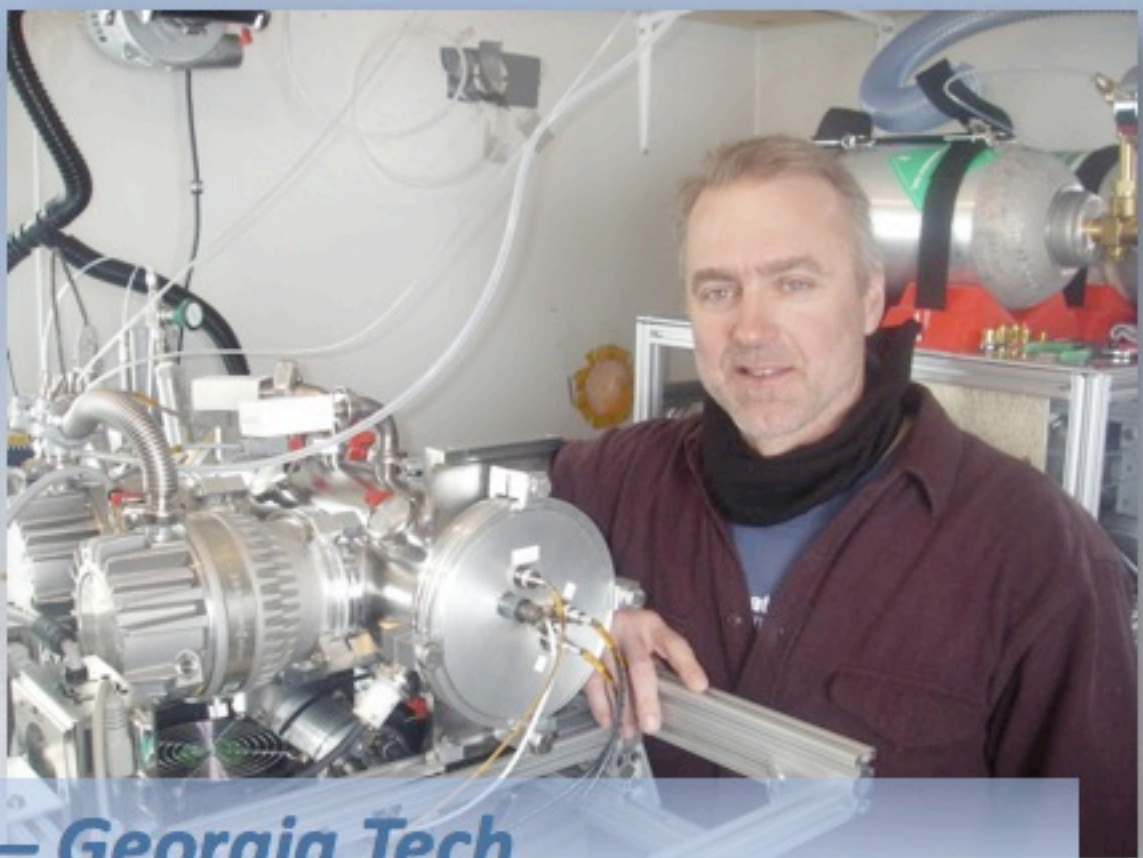
Nitrogen Oxides + Hydrocarbons + Sunlight = Ozone

Based on this recipe, the **ozone levels in Greenland are lower than expected!**

How do we answer this question?

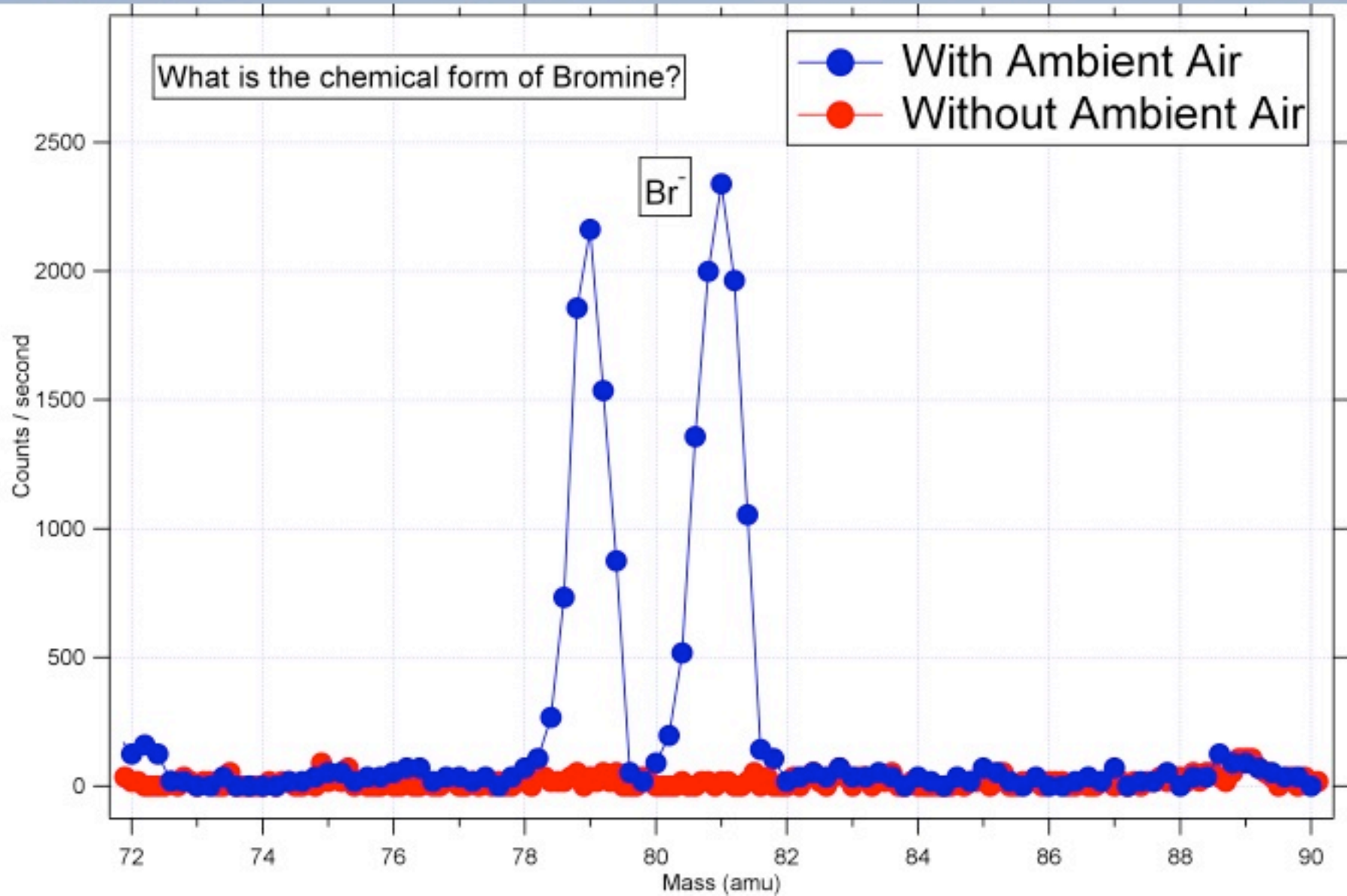
✓ **Look for **ozone** destroying gasses like Chlorine and Bromine**

Searching for Bromine



- **DAVID TURNER– Georgia Tech**
- **Research: Snow Photochemistry**

Proof of Bromine at Summit

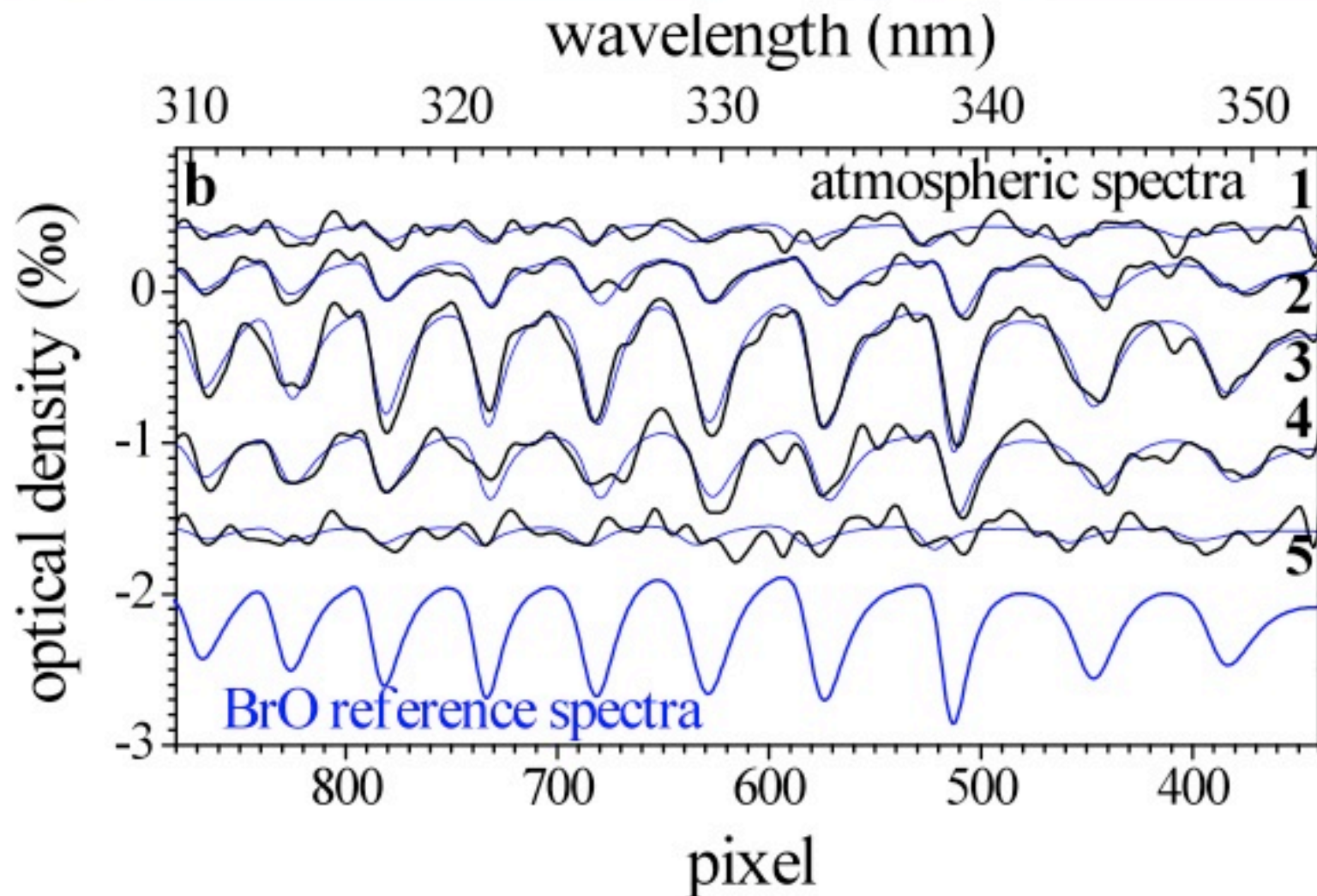


More evidence of Bromine



- **DR. JOCHEN STUTZ**– *University of California-Los Angeles*
- **Research: Snow Photochemistry**

More evidence of Bromine



Even MORE evidence of Bromine



- **DR. JACK DIBB and Luke Ziemba– University of New Hampshire [Aerosols and soluble gases]**

Even MORE evidence of Bromine



- **DR. STEVEN BROOKS– NOAA**
- **Research: Atmospheric Mercury**

The next question is:

**Where is the bromine
coming from?**

Where does the Bromine come from?



- **DR. CRAIG CLEMENTS**— *San Jose State University*
- **Research: Meteorology**

...more things to think about?



Do we get the ozone right now?

Do we see enough bromine?

Does the bromine matter?



Watch our every move @:



www.polartrec.com/greenland-atmospheric-studies

Questions?



Check out and register for upcoming events!



June 18—IPY Day Event: *Land and Life*

July 10 2008—Elizabeth Eubanks in Barrow, Alaska

Register for these events and watch for others at www.polartrec.com!

Thank You!



**For more information, please
visit www.polarrec.com**

Or Call 907-474-1600

Email: infr@polarrec.com



ARCUS

