

The AMS DataStreme Education Program:

NOAA's Impact on K-12 TEACHERS

presented by:

John D. Moore
The New Jersey Local Implementation Team
AMS DataStreme Education Resource Teachers

New Jersey Local Implementation Team

Albert Einstein Distinguished Educator Fellow

John D. Moore

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William Huskin

Chief Meteorologist, CBS3 Philadelphia, PA

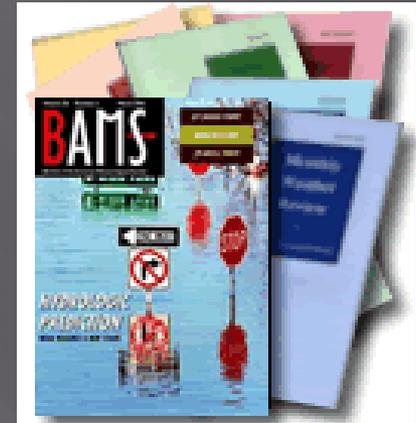
Kathy Orr

NWS Forecast Meteorologist, Mt. Holly, NJ

Robert P. Wanton

about the American Meteorological Society...

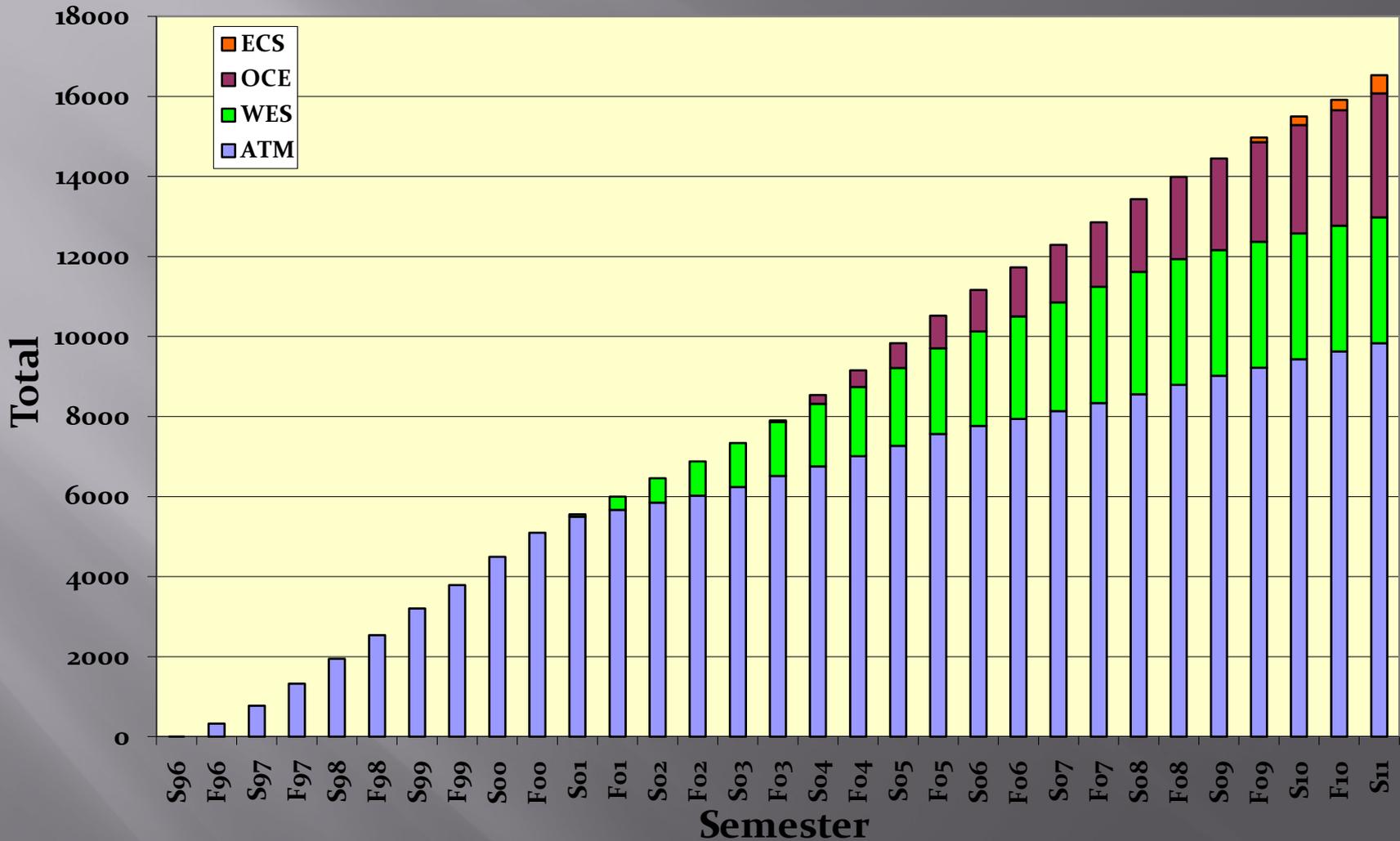
- ❑ Founded in 1919
- ❑ Over 14,000 members
- ❑ Organizes over a dozen conferences annually
- ❑ Publishes nine leading journals
- ❑ Certifies consultants and broadcasters
- ❑ Significant educational activity since 1990
- ❑ Non Profit 501 c3



Our Mission:

Promote the development and dissemination of information and education on the atmospheric and related oceanic and hydrologic sciences and the advancement of their professional applications.

AMS DataStreme Participants



16,529 K-12 teachers have participated in a DataStreme Course nationwide
(through Spring 2011)

Our First Mission:

Work with TEACHERS

- Improve teachers' competence and *confidence*
- Provide materials that are standards-based and scientifically accurate
 - *Transformed by teachers into discipline- and age-appropriate lessons*
- Offer free graduate credits (SUNY Brockport)
- Create a structure for *peer-training*
 - *Training impacts felt in schools and communities*
- *Create pathways* for continued communication between trained teachers, scientists, and mentors



AMS Education Resource Associates
(AERAs) at the National Weather Center,
Norman, OK

Rachaele Cianci

Science Inclusion Consultant

Grades 11-12
Integrated Classes

Tammy Tornegard

Science Teacher

Inclusion Biology grades 9-10
ESL Science 1 and 2 grades 9-12

WEST WINDSOR PLAINSBORO HIGH SCHOOL SOUTH



The mission of the *West Windsor-Plainsboro Regional School District*, valuing our tradition of excellence, is to develop all of our students as passionate, confident, lifelong learners, who have competence and strength of character to realize their aspirations and thoughtfully contribute to a diverse and changing world.

Princeton Junction, New Jersey

Action Plan

- ▣ **Lessons of the Climate Record**
 - Incorporate the climate lessons into the new year long Environmental Science course
 - Develop inquiry based lessons to:
 - illustrate each of the climate lessons using on line resources from [NOAA](#), NASA, AMS
 - Use in Biology and Environmental Science
 - Train subject specific colleagues
 - Develop lessons that are compatible for both math and science

Quest Program

Teacher Preparation

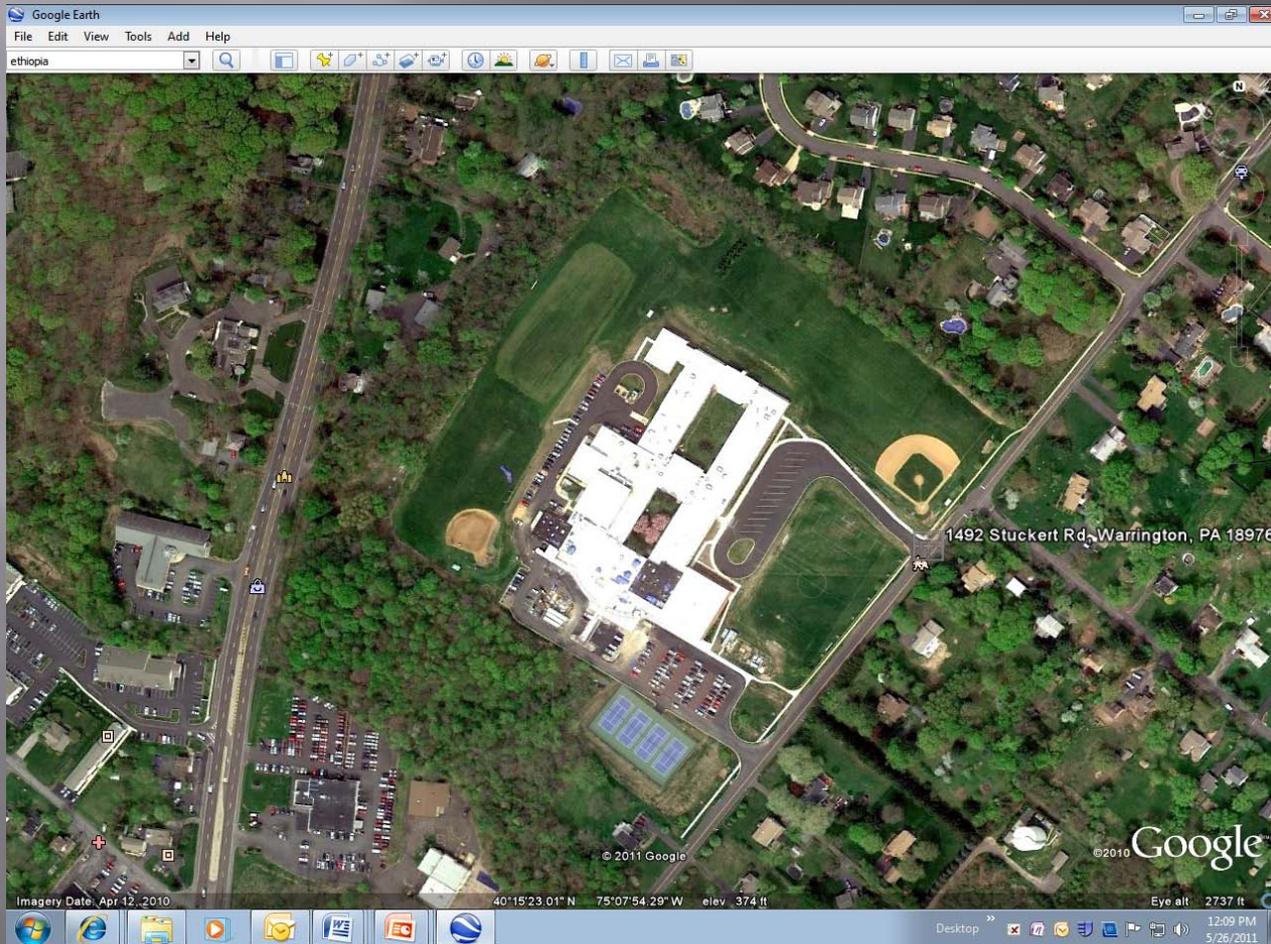
Princeton University

- ▣ an inquiry-based summer institute in science and mathematics for grade K-12 teachers
- ▣ June 27th, 2011
 - ▣ A presentation and demonstration of lessons developed using the climate lessons and on line recourses
 - ▣ Lessons are differentiated and inquiry based
 - ▣ Teachers will trained to use a variety of NOAA, NASA and AMS resources

David Frankel

Tamanend Middle School

9th Grade Earth Science





Plan of Action



- ▣ Using resources such as

http://oceanservice.noaa.gov/education/kits/estuaries/media/supp_estuar10c.html

<http://www.nodc.noaa.gov/cgi-bin/OC5/WOA09F/woa09f.pl>



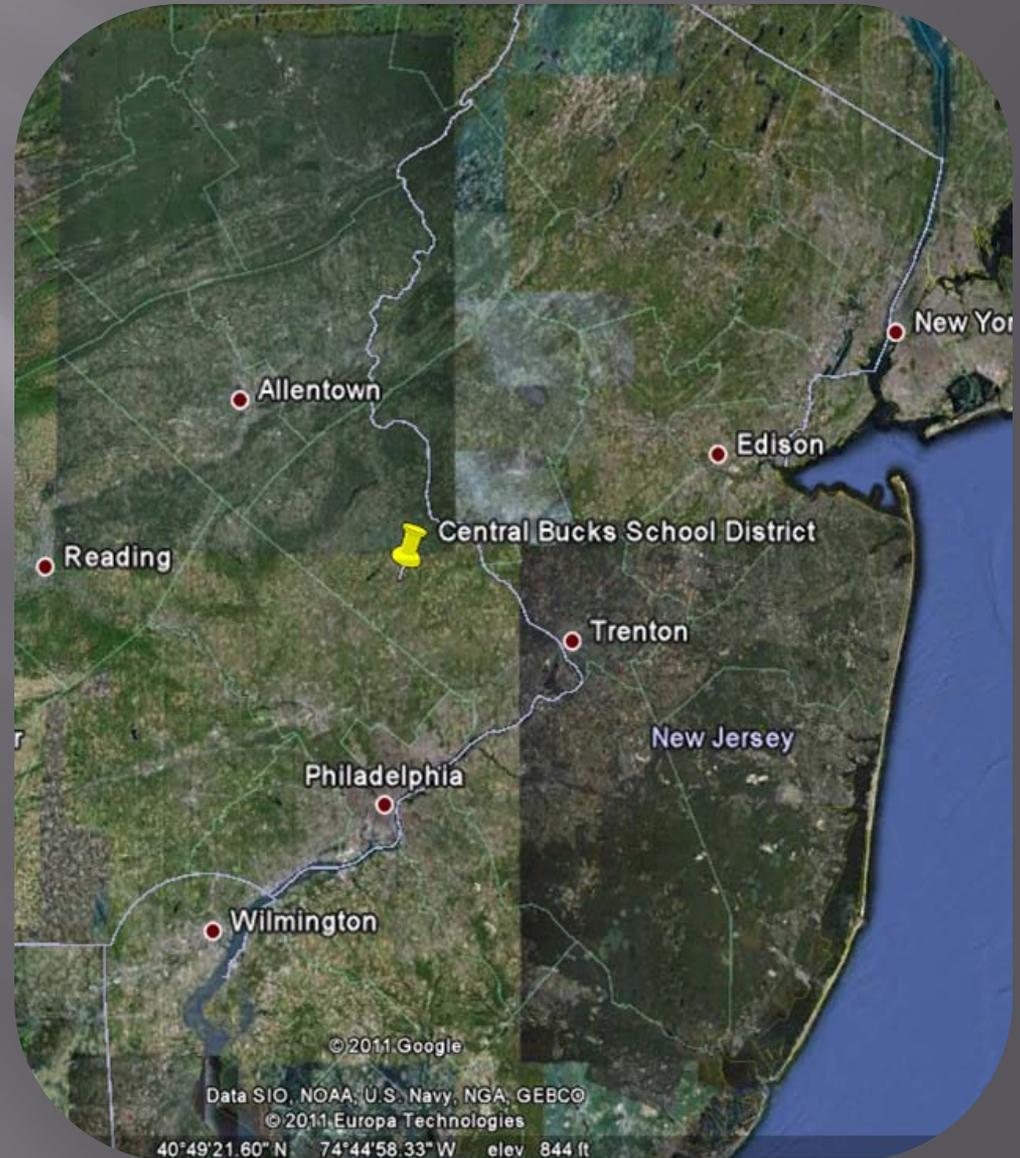
- ▣ **Go-to teacher** in my building for all things Oceanography
- ▣ Highly recommending the Oceanography course offered at the high school



William Licopoli and Tyler Levy

Central Bucks School District

- ❑ 3rd biggest district in PA
- ❑ Suburban Philadelphia
- ❑ 3 high schools
- ❑ Many opportunities for science courses beyond Chem., Phys., Biology
- ❑ Oceanography, Env. Sci., Env. Geology, Forensics, Astronomy



Students discuss importance of latest science data



Alyssa S. to [Oceanography4](#)

This class opened my eyes to a lot of environmental issues. Previously I was unaware of their severity and how widespread and pressing the issue is. In the future, I will vote to preserve the environment and look into greener energy options. I understand the need to think of the future now because the consequences could be much greater if we make the environment our last thought. I will also be more aware of the biases that exist when the issue involves the environment. It is important to get all the facts before formulating an opinion. Now that I am aware of the issues, the topics always seem to be in headlines. I will make sure to stay informed because I feel being educated is possibly one of the best ways to help.

Show Less

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 **adam z.** - i agree that education is the most important weapon in the war for a healthier planet. We need to have lawmakers that are more educated on environmental matters

(55 minutes ago | [Edit](#) | [Delete](#))

 **Dana P.** to [Oceanography4](#)

Discussion from DataStreme COS

[Calendar](#)

[Grades](#) ▾

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[Mr. Licopoli](#)

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Me to Oceanography4, Oceanography1

You have seen many of the problems in our oceans and on our Earth that we are facing (ocean pollution, tsunamis, earthquakes, fracking, volcanoes, etc.) and you will be facing in the future. You have also seen the latest technologies scientists will be using to help solve these issues.

Let's start a discussion on how this will affect your life in the future and the decisions you make based on what you have learned. Please post one 'comment' as well one 'reply' to another student's comment. Remember, nature is never wrong and it is science that attempts to interpret what nature is telling us.

Comment on choices that you may change in your life, how you may vote in the future, interpret what you see on television or in the media, or action you may intend to take. Adults are leasing this planet from you, so you have every right to be concerned about what you will be inheriting.

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 **Devon G.** - I actually think that we are more affected by the oceans than any generation before us because we have to deal with the accumulation of all the damage and pollution of all the generations before us. There are emissions in the environment expelled hundreds of years ago that are still in the earth's chemical composition and still affect us. Also, you should watch BBC. because though everyone likes the Daily Show, you needs some real newz too.

([Yesterday](#) | [Edit](#) | [Delete](#))



Me to Oceanography4, Oceanography1

A Transformational Time in Oceanography

 **Turned in (38)** **DUE: May 25, 2011**

Complete the questions for the activity (located in the edmodo library) and submit the file through the edmodo website.

Importance of DataStreme for High School Science

- ❑ *DATASTREME* has provided **relevance** to major concepts in chemistry, physics, biology with access to real time data
- ❑ Students tend to lose their understanding of what science is when they do not see any relevance to their lives
- ❑ Students will become **better decision makers** in their lives based on a better understanding of what science is and how it effects them directly

Plan of Action

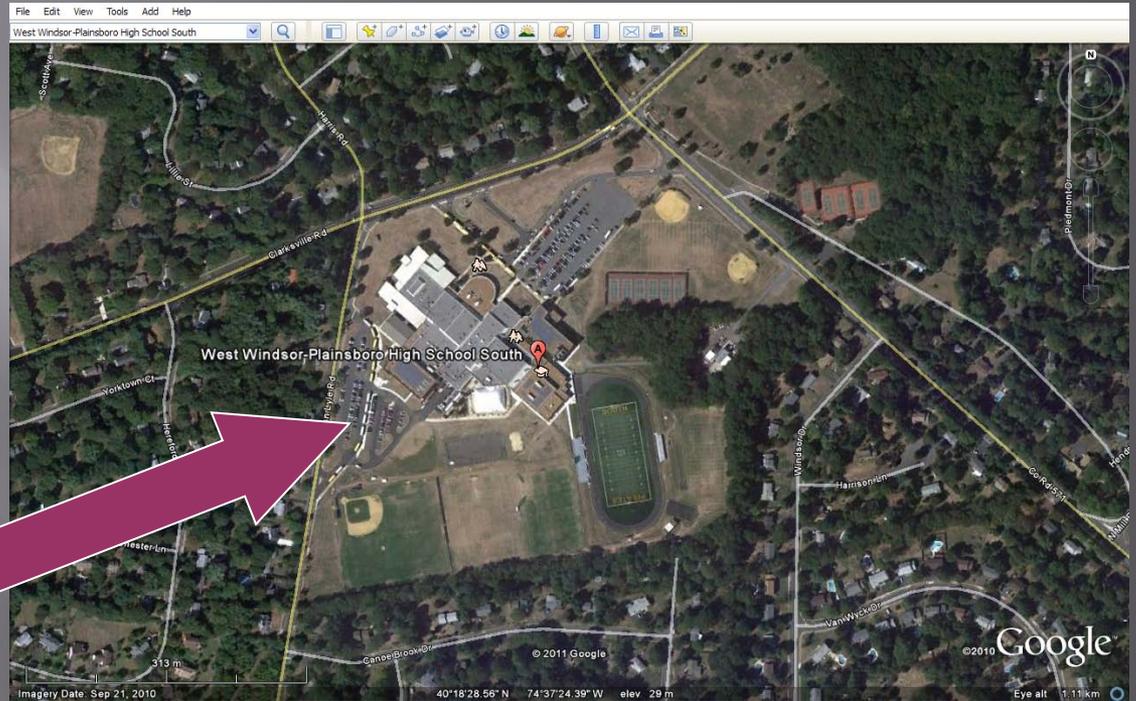
New Course: Atmospheric and Oceanographic Science

- ▣ The students will be able to understand:
 - How humans are affected by our oceans and atmosphere
 - How to live more sustainably
 - How to create less pollution
 - Misconceptions created from society (media and political groups)
- ▣ These concepts are not offered in the more typical physics, chemistry, and biology courses
- ▣ This course will create a better citizen to make more informed decisions for our planet and our economy

Putting the 'Science' Pieces Together

- ▣ We have all the pieces (concepts in chem, physics, bio)
- ▣ We need to put them in their correct place through environmental applications to Physics, Chemistry, and Biology which will provide the relevance they need
- ▣ Needs to be done before high school graduation
- ▣ Not in middle school (too young to understand more complex/abstract concepts)
- ▣ High school students are at an important transition in their lives and will be thinking about how they will live in the future
- ▣ More educated in voting and will help maintain a sustainable economy

Making a Difference with NOAA



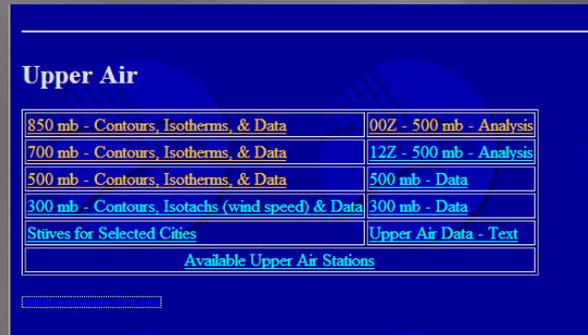
Brian and Jill Patterson

West Windsor – Plainsboro High School South

Science Example

▣ Chemistry – Air Unit

- Students visualize the atmosphere through analysis of temperature, pressure data. Emphasis on molecular motion and density.
- What is **wrong** with a “nice” data set of altitude, temperature and pressure?
- Using upper air data from Atmosphere course site, students analyzed data from two cities with very different climates.



Upper Air

850 mb - Contours, Isotherms, & Data	00Z - 500 mb - Analysis
700 mb - Contours, Isotherms, & Data	12Z - 500 mb - Analysis
500 mb - Contours, Isotherms, & Data	500 mb - Data
300 mb - Contours, Isotachs (wind speed) & Data	300 mb - Data
Stives for Selected Cities	Upper Air Data - Text
Available Upper Air Stations	

[Home](#)

- Memorable, lasting understanding results from using real-time data, not the “textbook simplification.”

NOAA's Interdisciplinary Connections

Principal and teacher quality account for nearly 60% of a school's impact on student achievement, principals alone account for about 25%. (Marzano et al., 2005)

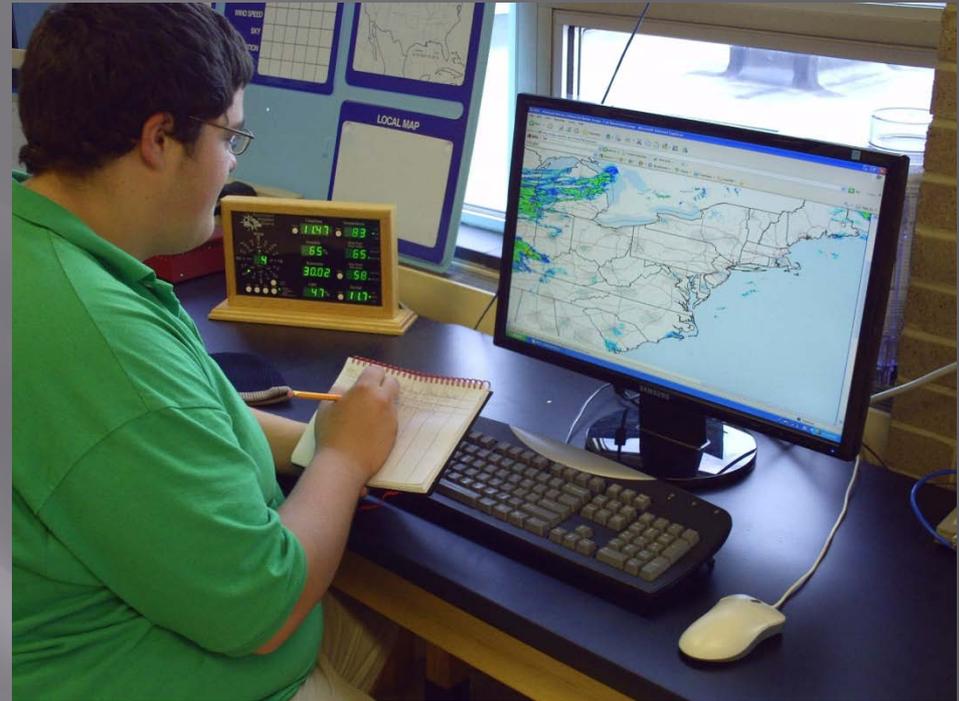
- ✓ Meet NJ Core Curriculum Content Standards for all subject areas
- ✓ Incorporate 21st Century Skills and Knowledge
 - ▣ Technology Integration
 - ▣ Interdisciplinary connections
 - ▣ Infusion of global perspectives
- ✓ Incorporate 21st Century Themes
 - ▣ Civic Literacy
 - ▣ Global Literacy
- ✓ Are based on real-life situations
- ✓ Use inquiry/problem-based approaches
- ✓ Promote higher order thinking skills

Peter Dorofy



Burlington County Institute of Technology





CAREER TECHNICAL EDUCATION

Prepare and Inspire the 21st
Century **WORKFORCE**

other Teacher Stories ...

“This course builds on the other two AMS courses. I have found that the online resources to be the most interesting and very beneficial aspect of the course as they relate the concepts in the book directly to our planet. These online resources will enhance my student’s understanding of both global and local change and what they can do to help” - Danielle Bugge

“I teach 125 8th grade students at my school. There are four other teachers, and together we reach about 600 students. I have been trying to get through to everyone in the department the need to focus on real time issues and the use of the scientific process in class. I have already seen an increase interest in students by directing them to the DataStreme site.” - Jeremy Fogle

**“I plan to participate in the NJ Earth Science Teacher’s Conference and participate in local environmental education programs sponsored by the Environmental Commission and the Pinelands Preservation Alliance”
- Kim Serdyski**

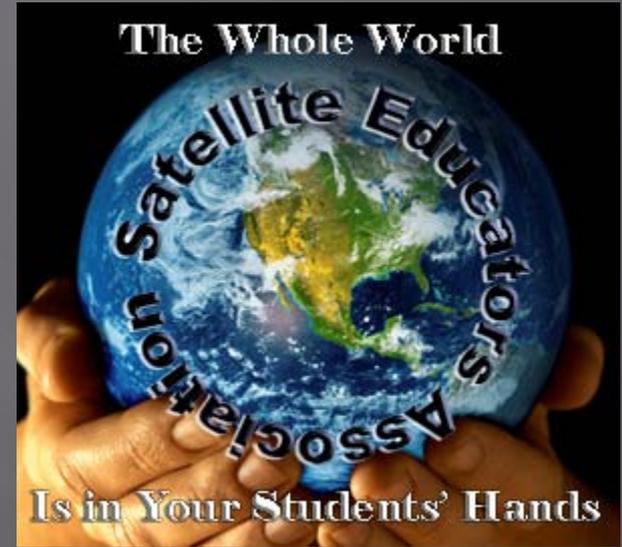
more Teacher Stories ...

“I teach at an alternative high school for at-risk students in Lower Bucks County. I want wish to express my thanks to the AMS for making DataStreme possible. I teach with a ZERO budget and must supply most classroom materials and equipment with my own funds ... I am most appreciative of your kindness and support” - Judy Foulke

“I teach in an alternative education program that services at-risk youth. During the summer I teach science enrichment lessons at the county’s juvenile detention facility. Over the summer I usually teach 60-80 students. I would LOVE to take another DataStreme course next year!” - Jocelyn Crosby

“Currently our school district does not have a high school Earth Sciences course. I will presenting the Ocean Science Literacy brochure and the Ocean in the earth Systems teacher’s guide to my science colleagues, department chair, and administrators during an in-service.” - Gerald Ott

NETWORKING



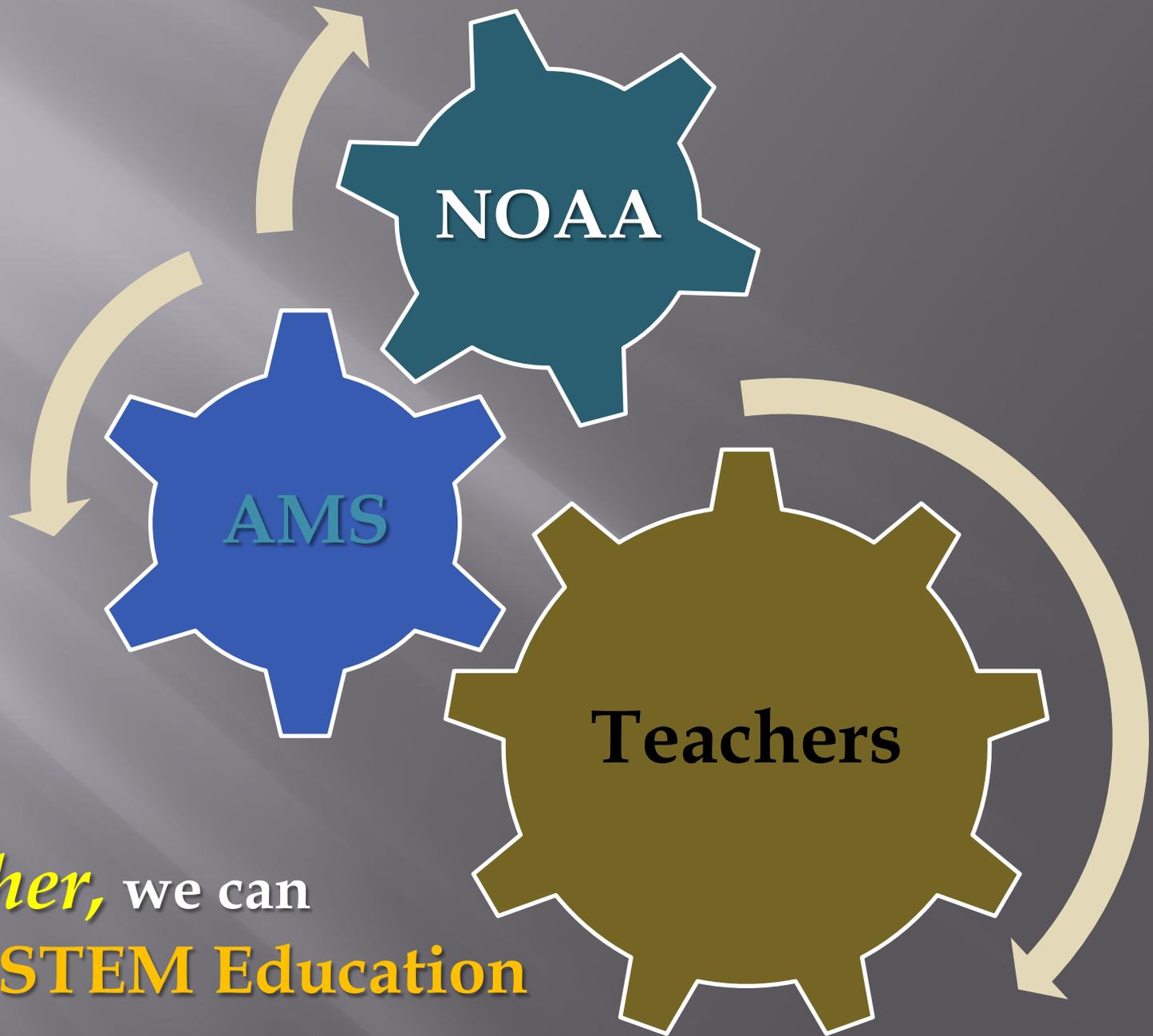
EDUCATION * MEDIA * GOVERNMENT * SAFETY



SINCE 2001

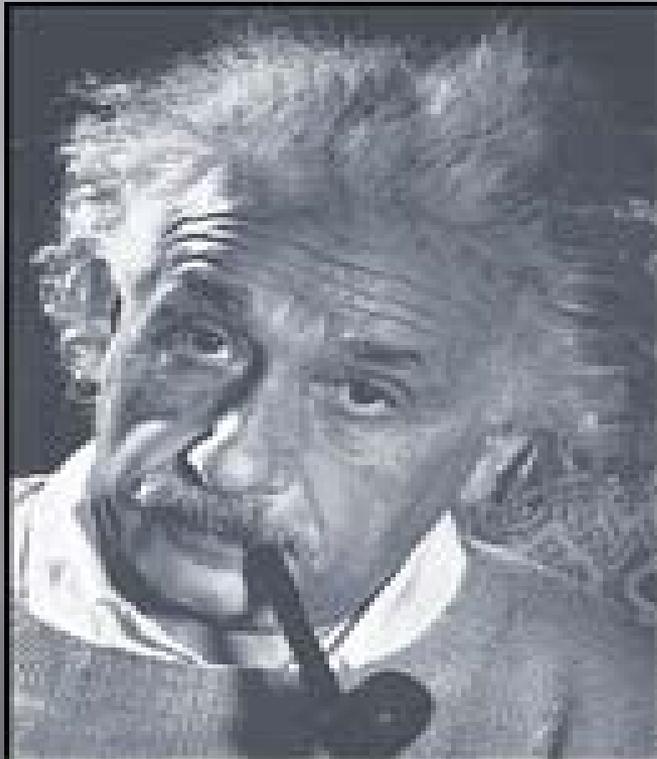
The GLOBE Program





Together, we can
change **STEM Education**

It is a miracle that
curiosity survives formal
education. *Albert Einstein*



THANK YOU!

CONTACT

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