

Navigating the Hurricane Highway: Understanding Hurricanes With Google Earth

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Bridging the Scientific and Educational Communities

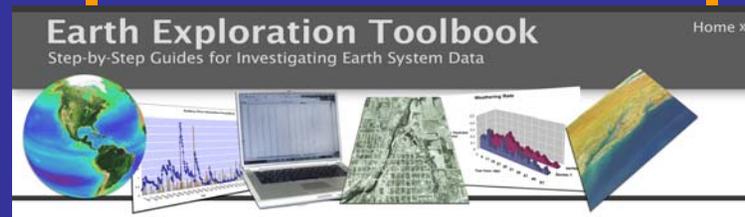
Scientific & Technical Communities

Composed of:

Scientists & Researchers

Data Archives

Analysis Tools



BRIDGE

serc.carleton.edu/eet

Educational Communities

Composed of:

Curriculum Developers

Educators

Students

Purposes of AccessData Workshops

- ***Bridge the gap*** between the technical and educational communities concerning “data resources”
- ***Facilitate the interaction*** of the scientific and educational communities in order to assure that Earth system science datasets and tools
 - are *accessible and usable* by educators
 - are *used in* the development of Earth system science *educational modules*
 - are *available* through digital libraries (NSDL, DLESE, IPY..)



Earth Exploration Toolkit (EET)

<http://serc.carleton.edu/eet>



The EET is a collection of computer based activities that feature Earth science datasets and data analysis tools. (22 live, 15 under development)
It provides step-by-step instructions for using data in educational settings.

Features that facilitate effective growth & use of the EET

EET Chapter Template & AccessData Workshops

<http://serc.carleton.edu/usingdata/accessdata>

Professional Development Programs

EET Workshops: <http://serc.carleton.edu/eet/workshops.html> - short term

DataTools: <http://serc.carleton.edu/eet/msdatatools> - year-long program



Earth Exploration Toolbox (EET)

<http://serc.carleton.edu/eet>

Earth Exploration Toolbox

Step-by-Step Guides for Investigating Earth System Data

Home »



Earth Exploration
Toolbook

How can I use the
EET?

Chapters in the EET

Contribute a chapter

The EET Team

About EET

Earth Exploration Toolbox Chapters

[Help](#)

Results 1 - 10 of **24 matches**

[Annotating Change in Satellite Images](#)

DATA: Landsat Images TOOL: ImageJ SUMMARY: Examine time-series images that show landuse changes in China. Produce a map documenting how human activities have changed the coastline.

Earth System Topics: Surface Processes:Coastal Processes, Human Dimensions
Tools: Image Analysis

[Using GLOBE Data to Study the Earth System](#)

DATA: Student-collected environmental data TOOL: GLOBE Online Graphing Tool - Explore, graph, and compare data from the GLOBE (Global Learning and Observations to Benefit the Environment) Program.

Earth System Topics: Surface Processes:Soils, Atmosphere:Weather
Tools: Online Graphing

[Exploring Seafloor Topography](#)

DATA: Digital Elevation Model Data TOOL: GeoMapApp - Explore a timeline about how we have learned about the oceans. Construct a profile across the Atlantic Ocean and create 3-D visualizations of the ...

Earth System Topics: Solid Earth:Plate Tectonics, Oceans, :Ocean Basin Topography
Tools: Desktop Mapping/GIS

[Is Greenland Melting?](#)

DATA: Thickness, velocity, and annual melt extents of the Greenland ice sheet TOOL: My World GIS - Explore map layers to examine annual melting and long term changes of Greenland's ice sheet.

Earth System Topics: Climate, Surface Processes:Glaciers
Tools: Desktop Mapping/GIS

[Exploring Air Quality in Aura NO₂ data](#)

Narrow the View ↴

Earth System Topics

Atmosphere [8 matches](#)
Biosphere [3 matches](#)
Climate [4 matches](#)
Surface Processes [7 matches](#)
Human Dimensions [9 matches](#)
Hydrology [4 matches](#)
Oceans [6 matches](#)
Solar System and Astronomy [1 match](#)
Solid Earth [8 matches](#)
Earth's Cycles [4 matches](#)
Geography [1 match](#)

Tools

Spreadsheets [7 matches](#)
Image Analysis [7 matches](#)
Online Graphing [2 matches](#)
Online Mapping/GIS [3 matches](#)
Desktop Mapping/GIS [10 matches](#)
Data Portals [5 matches](#)

Spectrum of Activities Related to the Earth Exploration Toolkit



Teacher Professional Development

Bridging the Scientific & Educational Communities

EET Telecon-Online Workshops

EET Chapter Template: Facilitates Developing New EET Chapters

<http://serc.carleton.edu/eet/msdatatools/index.html>

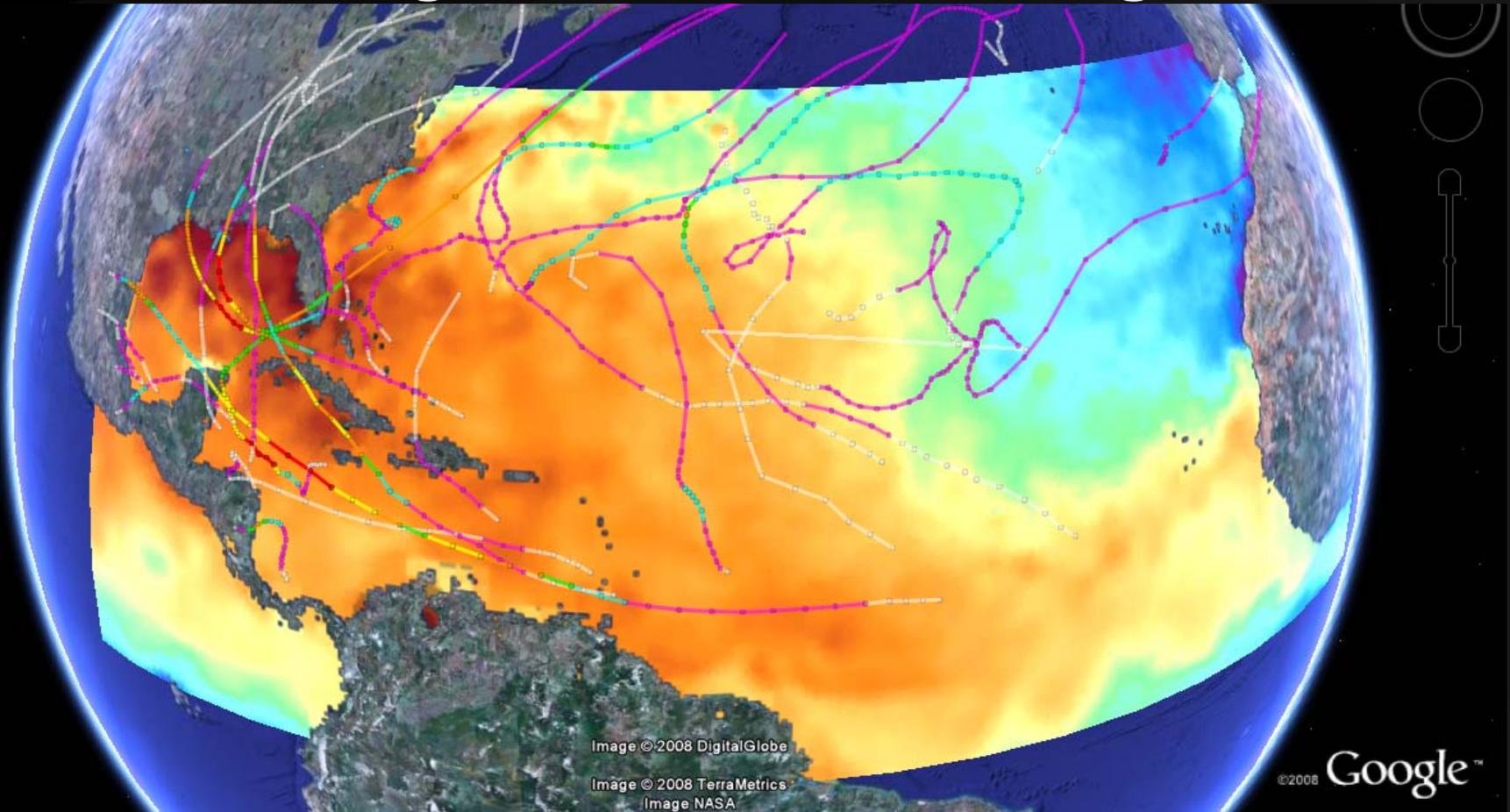


Tools for Data Analysis in the Middle School Classroom

AccessData Workshops



Navigating the Hurricane Highway: Understanding Hurricanes With Google Earth



2005 and 2006 Hurricane Advisories, Daily Sea Surface Temperature (SST),
Seasonal Wind Shear, Total Rainfall, Hurricane Power Calculations, all viewed
in Google Earth

Benefits of an Earth Browser (e.g, Google Earth)

Standardized markup language (KML) with relatively simple tags

With a few examples, users can see how to build their own applications with KML (anything you see in Google Earth you can save as KML)

Outreach, Sharing Layers, Discovery

What does your data contribute? Data from other Earth users can be interfaced (layered) with yours

Visibility

The Wii of the GeoWeb: Familiarity of application through large installed user base of free version

University of Wisconsin - Madison



Margaret Mooney, CIMSS/SSEC/UW-Madison, WI
Facilitator - Educator

Amato Evan, CIMSS/SSEC/UW-Madison, WI
Scientific Researcher – Data Provider & Software Tool Specialist

Joe Turk, Naval Research Laboratory-Monterey, CA
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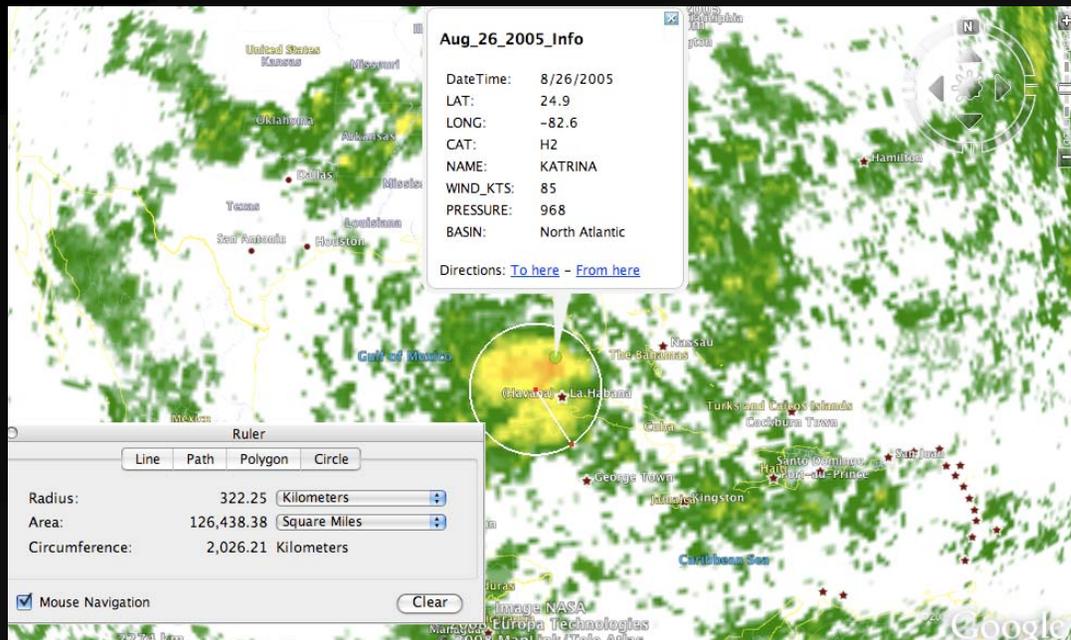
Steve Kluge, Fox Lane High School, Bedford, NY
Educator- Curriculum Developer – Kayak Builder

Image © 2008 DigitalGlobe

Image © 2008 TerraMetrics

Image NASA

A directed study of historical hurricane data will help students discover some of the factors involved in determining seasonal hurricane activity in the Atlantic Basin.



Data sets will include daily and seasonal average SSTs, daily and seasonal wind shear charts, total precipitation, and hurricane advisory information.

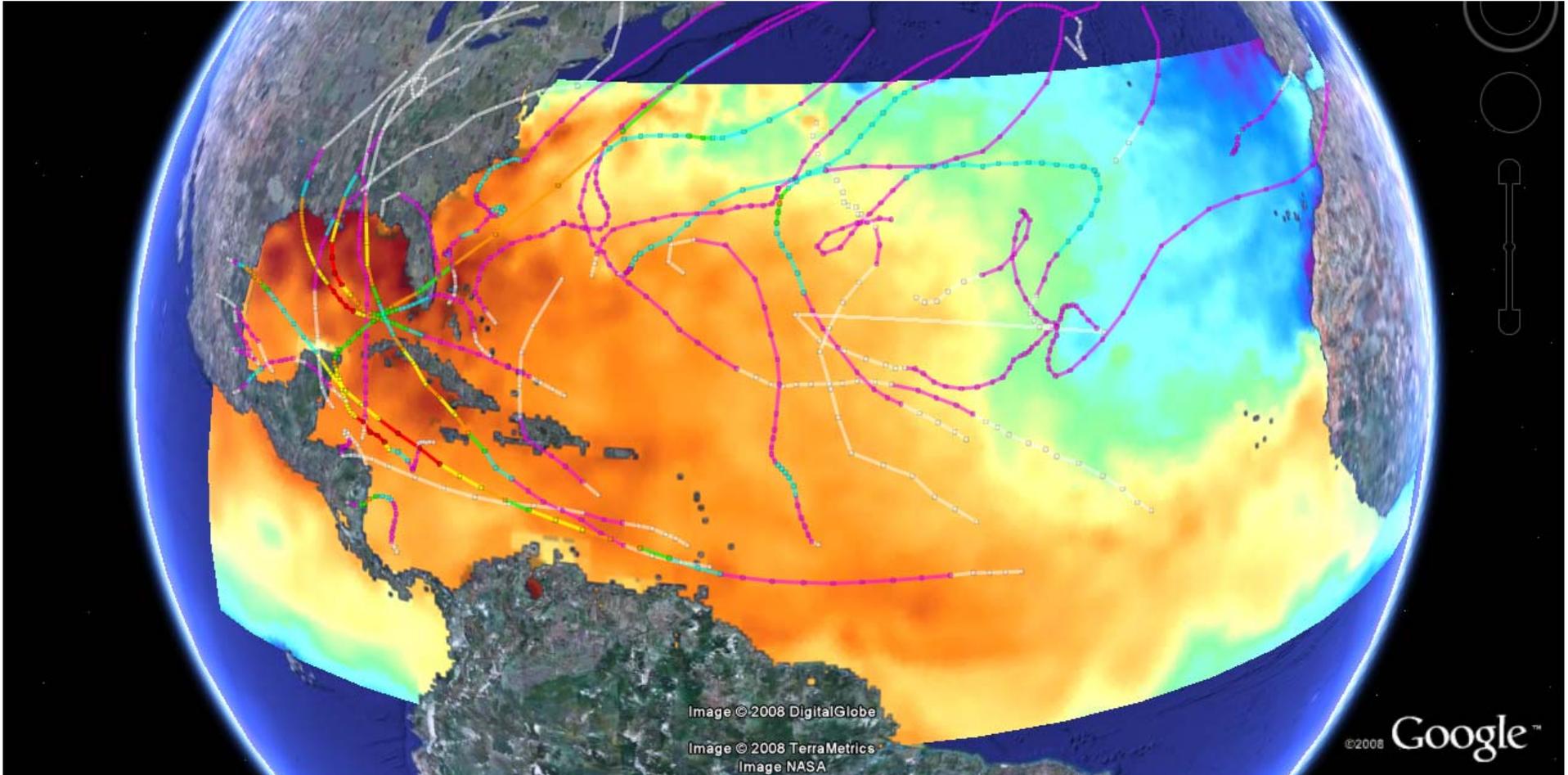
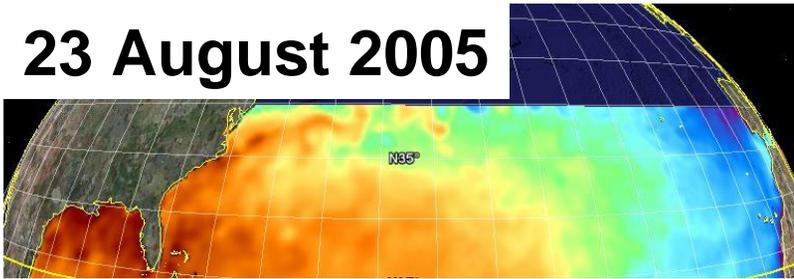
Students Will:

- Describe AND explain the conditions that favor or inhibit hurricane development.
- Calculate the wind and heat energy at different stages of storm development
- Explore real-time data to identify areas of potential hurricane development.

23 August 2005

AccessData 2008 UW-Madison

Sea Surface Temperature Variability



How to Demonstrate?

Seasonal Animation of Hurricane Tracks with underlying SST





Opportunities

- **Bridging the Scientific and Educational Communities**
Enable broad access to scientific data by educators and students through the creation of EET chapters featuring that data through:
 - AccessData Workshops (Spring 2008 and 2009)
 - Project Focused Workshops
 - Individual scientist or scientist team collaboration with EET Team
- **Teacher Professional Development**
Facilitate integration of data and skills featured in EET chapters into curriculum and classrooms through:
 - Telecon-online and face-to-face EET chapter workshops
 - Extended professional development programs e.g. Data Tools program



For more information

Earth Exploration Toolkit (EET)

<http://serc.carleton.edu/eet>

Don't miss it!

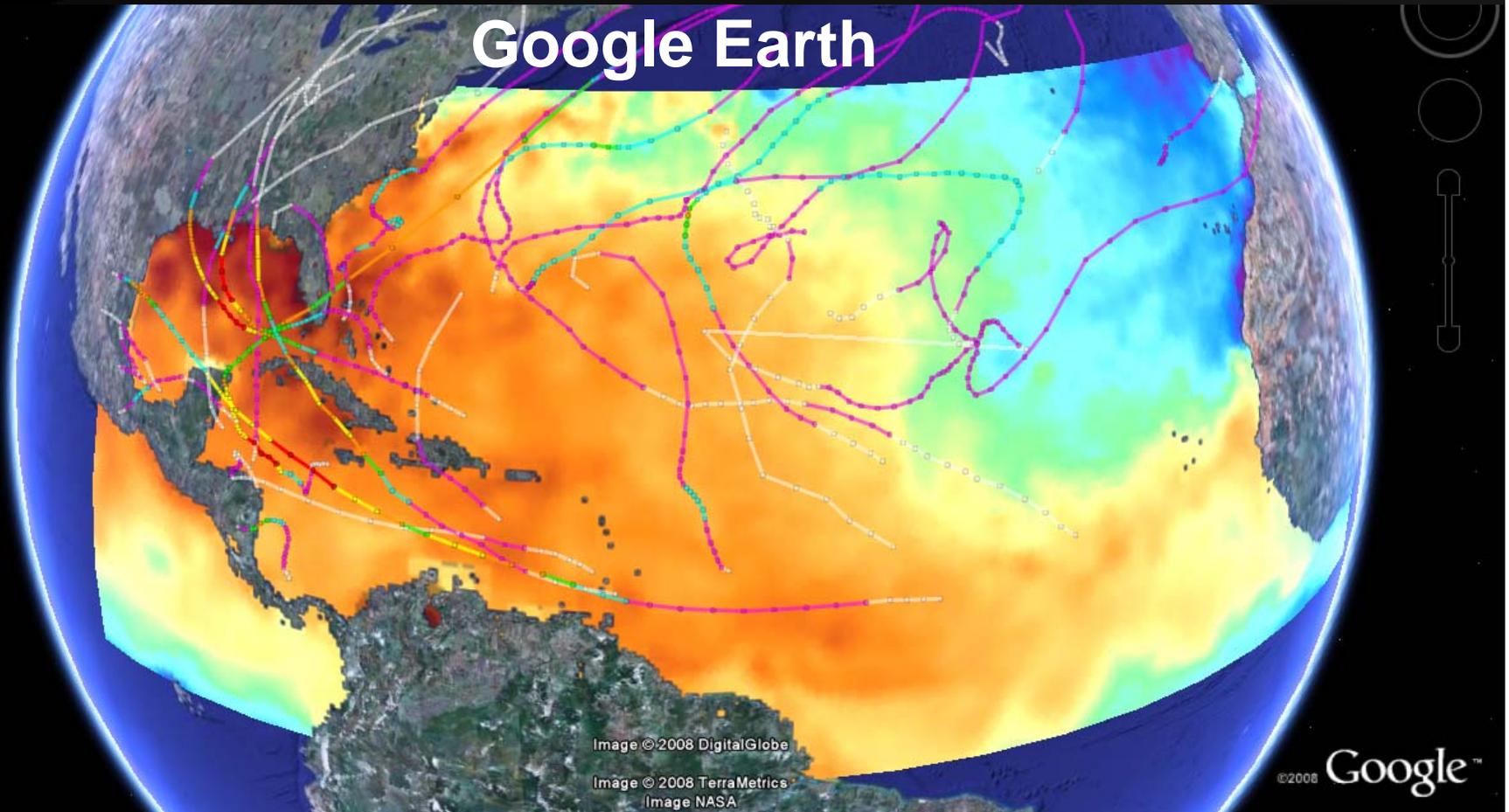
16th SatMet Joint Session 19:

***Use of Virtual and Digital Globes for Visualizing
Satellite Data and Mashups***

Thursday 1:30-3:00 PM

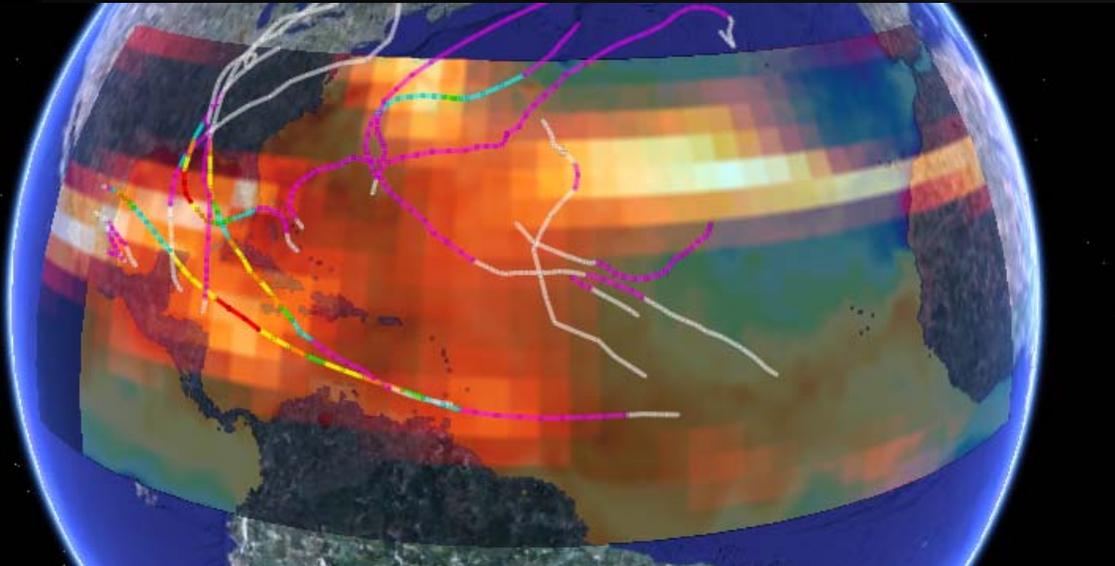
Room 121BC

Understanding Hurricanes and Hurricane Prediction With Google Earth



2005 and 2006 Hurricane Advisories, Daily SST, Seasonal Wind Shear, Total Rainfall, (What's the image Lindsay is measuring) all viewed in Google Earth

Directed study of historical hurricane data will help students discover some of the factors involved in determining seasonal hurricane activity in the Atlantic Basin.



Data sets will include daily and seasonal average SSTs, daily and seasonal wind shear charts, total precipitation, and hurricane advisory information.

- Describe AND explain the conditions that favor or inhibit hurricane development.
- Calculate the wind and heat energy within the storm
- Explore real-time data to identify areas of potential hurricane development.