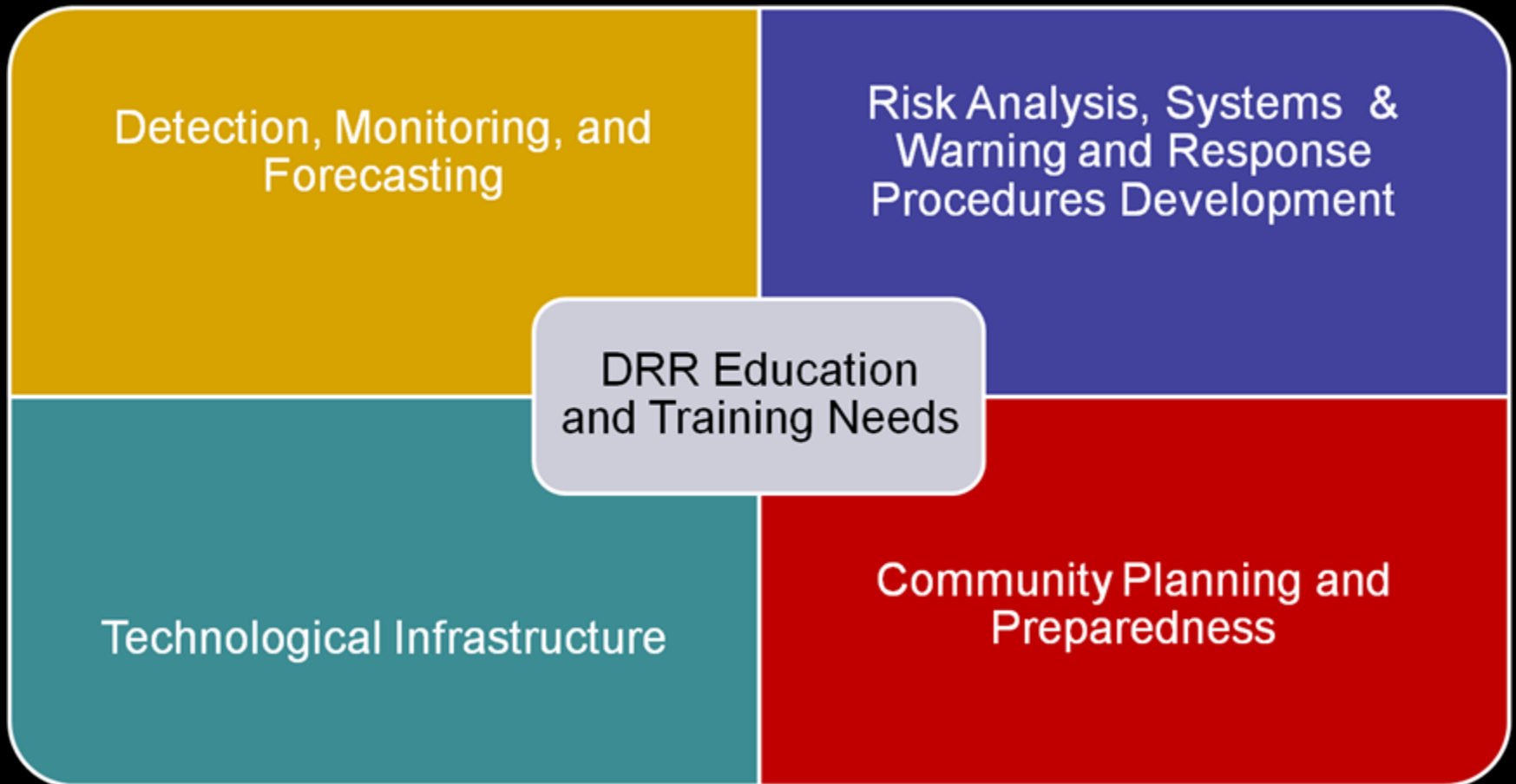




Collaboration among Education and Training Programs: The COMET Program

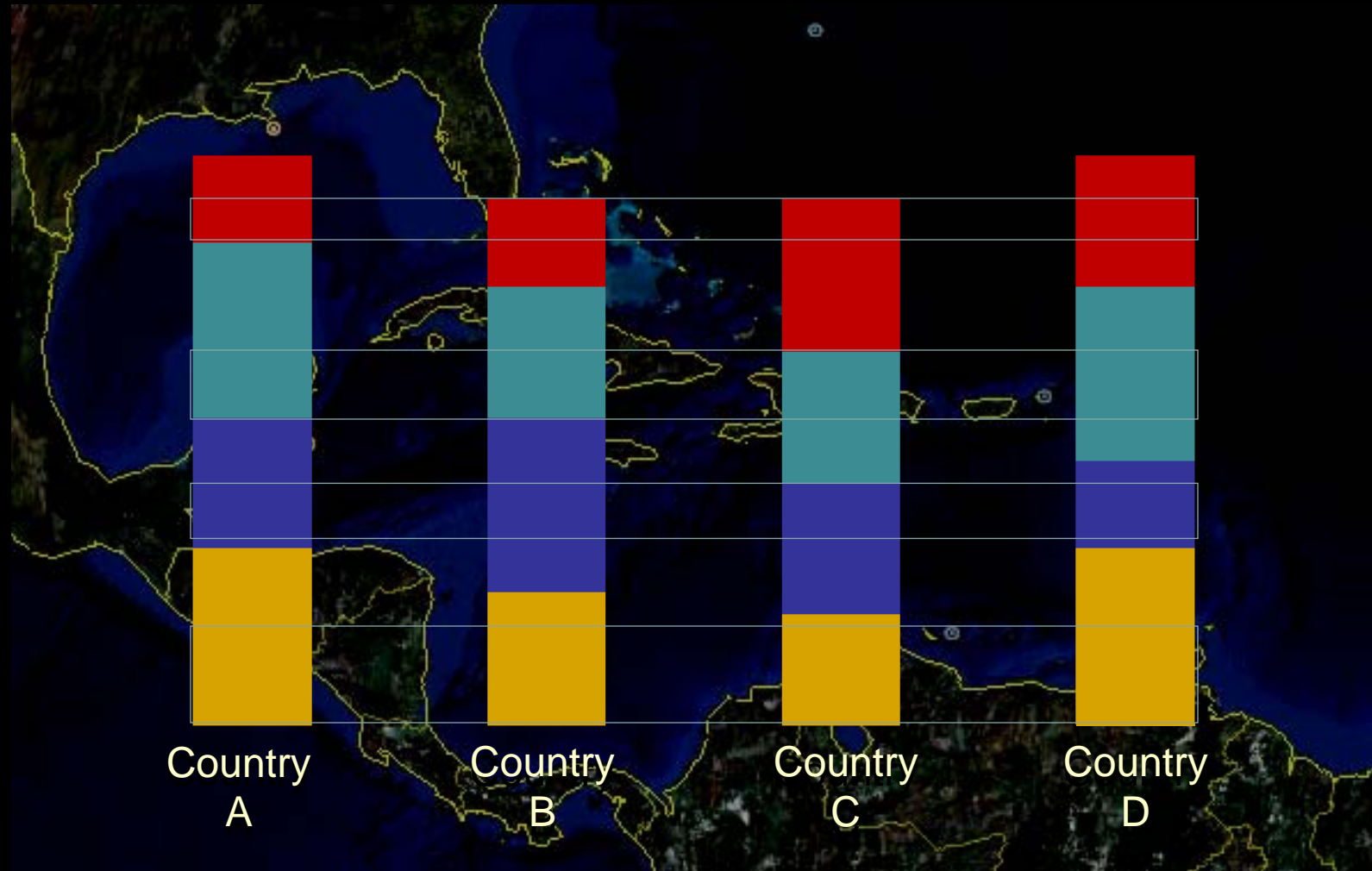
Technical Cooperation Workshop for Development of the Caribbean
Regional Cooperation Programme in Multi-Hazard Early Warning Systems
2-5 November, 2010





A wide range of disciplines!

Unique National Education and Training Needs



COMET Sponsors and Partners

NOAA

- National Weather Service
- National Environmental Satellite Data Information Service
- National Polar-orbiting Operational Environmental Satellite Systems

Military







- Naval Meteorology and Oceanography Command
- Air Force Air Weather Agency

International and Other

- Meteorological Service of Canada
- Australian Bureau of Meteorology
- EUMETSAT
- National Environmental Education Foundation



COMET Fast Facts

-  **Staff of 42, variety of disciplines**
-  **Annual budget \$6.5 million**
-  **1,135 universities have participated in COMET activities since 1990**
-  **600 hours of online distance learning**
-  **162, 000 registered MetEd users world-wide**
-  **10 weeks of residence courses and virtual courses**

Our Formula



Sound Science



Innovative Instructional Design



Outstanding Graphics



Operational Focus

COMET Modules By Topic as of October 2010

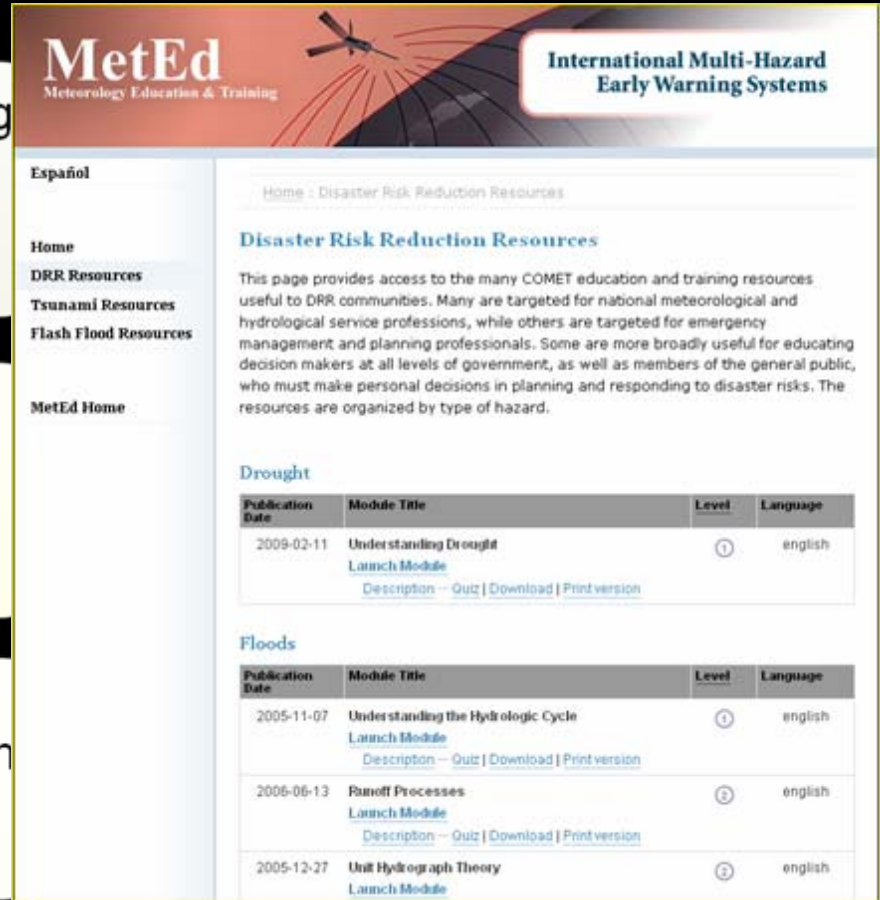
Topic	Modules	Approximate Content Hours
Aviation Weather	44	121
Climate	24	32
Coastal Weather	25	39
Convective Weather	32	93
Emergency Management	22	52
Environment & Society	20	44
Fire Weather	34	42
Fog & Low Stratus	26	57
Hurricane/Tropical	31	63
Hydrology/Flooding	52	67
Marine Meteorology/Oceans	44	70
Mesoscale Meteorology	34	77
Mountain Meteorology	17	29
NWP (Modeling)	73	140
Other	25	62
QPF (Precipitation)	20	28
Radar Meteorology	5	14
Satellite Meteorology	81	126
Space Weather	8	27
Winter Weather	43	94

COMET® DRR Resources

Offers dozens of education and training modules via the International Multi-Hazards Early Warning Systems site on MetEd.

Designed for NMHS and Emergency Management professions, as well as government decision makers and the general public.

Many modules available in both English and Spanish, some in French.



The screenshot shows the MetEd website interface. At the top, there is a header with the MetEd logo (Meteorology Education & Training) and a banner for "International Multi-Hazard Early Warning Systems". Below the header, there is a navigation menu with options for "Español", "Home", "DRR Resources", "Tsunami Resources", "Flash Flood Resources", and "MetEd Home". The main content area is titled "Disaster Risk Reduction Resources" and includes a brief introduction. Below this, there are two sections: "Drought" and "Floods". Each section contains a table of resources with columns for "Publication Date", "Module Title", "Level", and "Language".

Disaster Risk Reduction Resources

This page provides access to the many COMET education and training resources useful to DRR communities. Many are targeted for national meteorological and hydrological service professions, while others are targeted for emergency management and planning professionals. Some are more broadly useful for educating decision makers at all levels of government, as well as members of the general public, who must make personal decisions in planning and responding to disaster risks. The resources are organized by type of hazard.

Drought

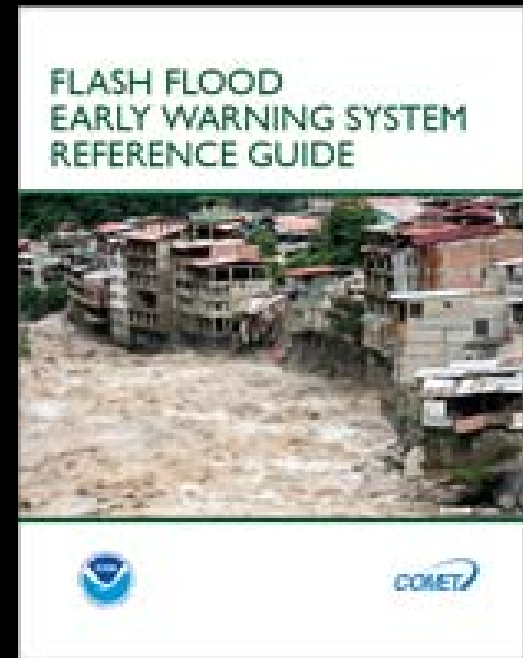
Publication Date	Module Title	Level	Language
2009-02-11	Understanding Drought Launch Module Description Quiz Download Print version	1	english

Floods

Publication Date	Module Title	Level	Language
2005-11-07	Understanding the Hydrologic Cycle Launch Module Description Quiz Download Print version	1	english
2006-06-13	Runoff Processes Launch Module Description Quiz Download Print version	2	english
2005-12-27	Unit Hydrograph Theory Launch Module	2	english

Flash Flood Early Warning System Reference Guide

Developed by NOAA in partnership with
Duke University, this practical reference
guide provides an overview of the operational
flash flood early warning and response
context.



Available today

Emergency Manager Training

COMMUNITY HURRICANE PREPAREDNESS

2nd Edition

BEGIN >>

[Versión en español »](#)

[MetEd Home](#)

[COMET Home](#)

[Print Version](#)

[Download Version](#)

[IS-324.a Exam / MetEd Quiz](#)

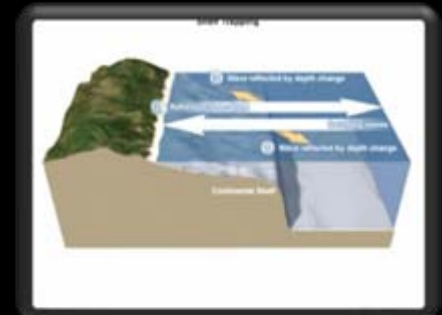
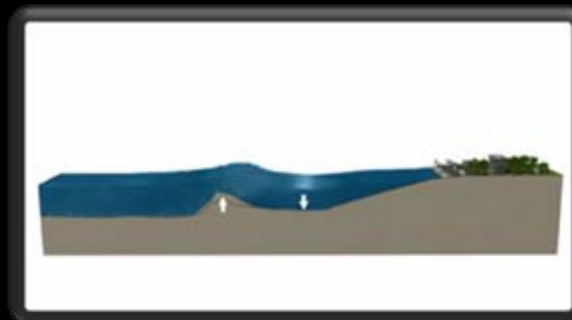
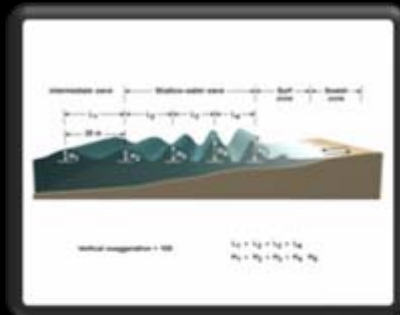
[User Survey](#)

[Contributors](#)

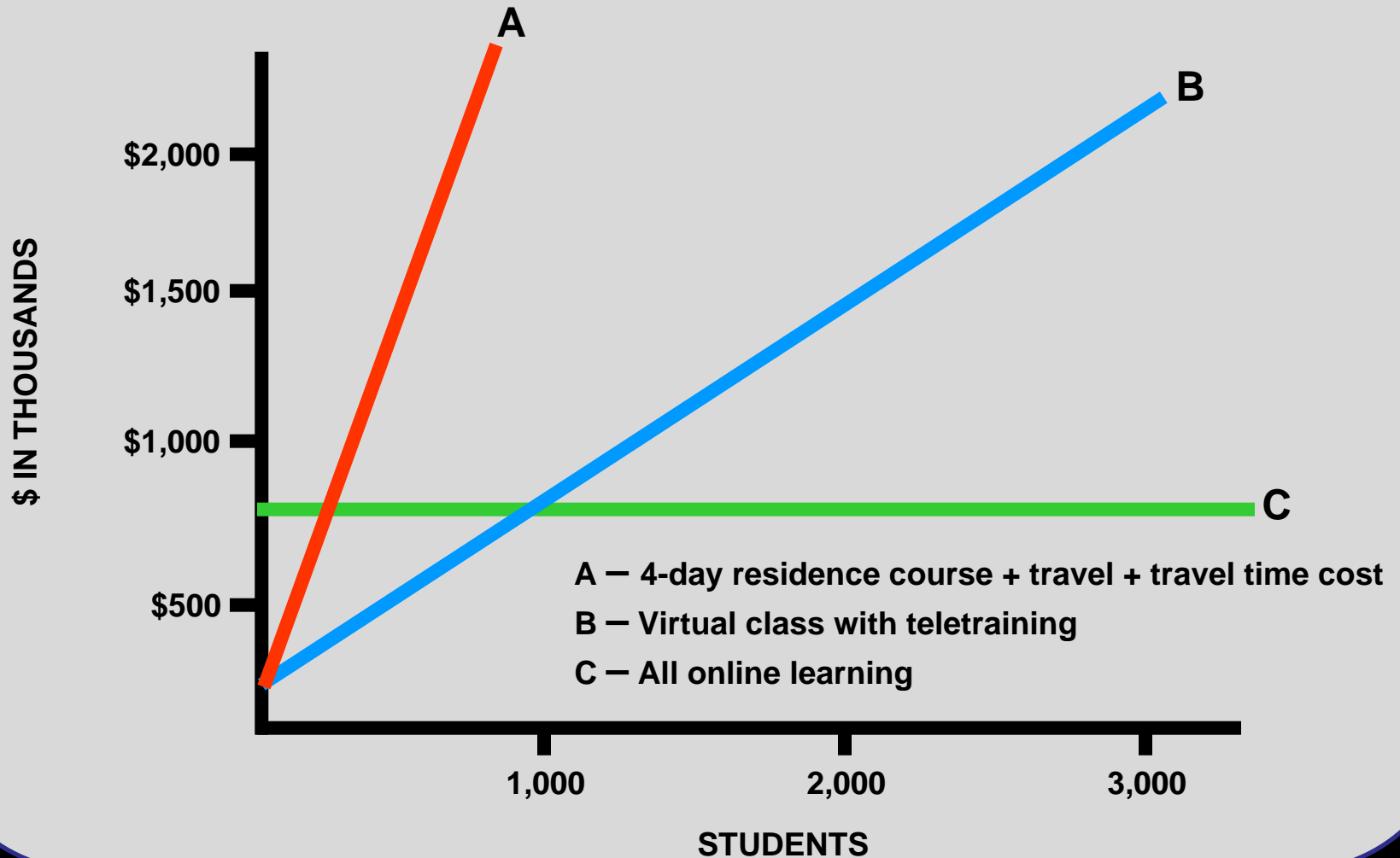
[Tech Notes](#)



Tsunami Education and Training



Why Distance Learning?



Distance Learning Advantages



Persistent



Consistent



Cost-effective (especially for large audiences)



Scalable

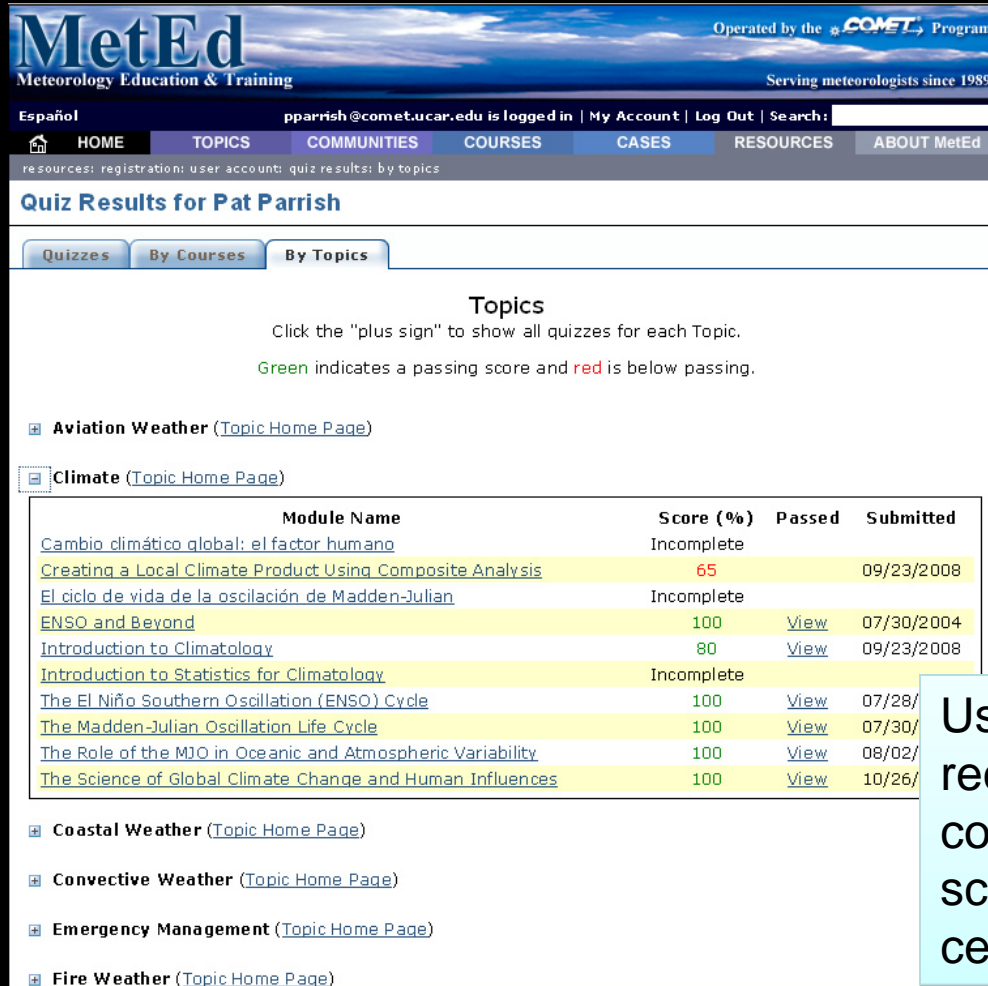


Flexible



Adaptable

Using MetEd Training



MetEd
Meteorology Education & Training

Operated by the COMET Program
Serving meteorologists since 1989

Español pparish@comet.ucar.edu is logged in | My Account | Log Out | Search:

HOME TOPICS COMMUNITIES COURSES CASES RESOURCES ABOUT MetEd

resources: registration: user accounts: quiz results: by topics

Quiz Results for Pat Parrish

Quizzes By Courses By Topics

Topics

Click the "plus sign" to show all quizzes for each Topic.
Green indicates a passing score and red is below passing.

- Aviation Weather ([Topic Home Page](#))
- Climate ([Topic Home Page](#))

Module Name	Score (%)	Passed	Submitted
Cambio climático global: el factor humano	Incomplete		
Creating a Local Climate Product Using Composite Analysis	65		09/23/2008
El ciclo de vida de la oscilación de Madden-Julian	Incomplete		
ENSO and Beyond	100	View	07/30/2004
Introduction to Climatology	80	View	09/23/2008
Introduction to Statistics for Climatology	Incomplete		
The El Niño Southern Oscillation (ENSO) Cycle	100	View	07/28/
The Madden-Julian Oscillation Life Cycle	100	View	07/30/
The Role of the MJO in Oceanic and Atmospheric Variability	100	View	08/02/
The Science of Global Climate Change and Human Influences	100	View	10/26/
- Coastal Weather ([Topic Home Page](#))
- Convective Weather ([Topic Home Page](#))
- Emergency Management ([Topic Home Page](#))
- Fire Weather ([Topic Home Page](#))

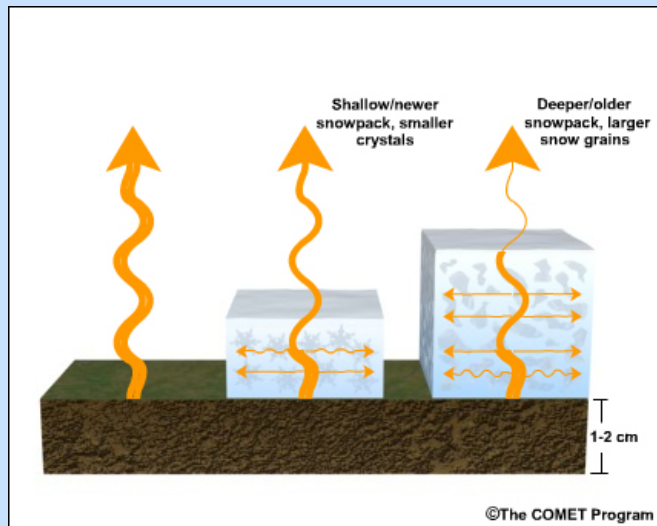
Users can store their records of module completions and quiz scores—and receive certificates.

Reusing COMET Materials

3.2.2 Attenuation by Scattering

Snow cover and its properties have a strong influence on the amount of microwave radiation reaching a satellite sensor. Ice has a very different structure than liquid water and most soil and rock. For this reason, the upwelling radiation emitted by the sub-snow surface is altered significantly by changes in the snowpack over time. Understanding how microwave emissions correspond to the dynamics of the snowpack allows us to probe beneath the surface.

In this visualization, we can see how snow grains, which form as the snowpack ages and/or deepens, are large enough to become effective scatterers of microwave radiation. Snow grains are ice crystals that undergo a transition (or metamorphosis) from snowflakes to larger particles through a thermodynamic process that begins almost immediately after snowflakes accumulate on the ground. As the snowpack ages, snow grains become more dominant than snow crystals and grow in size, making them even more effective scatterers. Due to this scattering effect, snow covered soil appears to emit far less microwave energy (and appears colder when looking at brightness temperatures) than bare soil at the same temperature.



[\(Click to view animation\)](#)

Use COMET “Print Versions” to easily grab graphics, animations, and text.

Adapting COMET Modules

MULTISPECTRAL SATELLITE APPLICATIONS: MONITORING THE WILDLAND FIRE CYCLE

- 1 Introduction
- 2 Satellite Imagers
- 3 Pre & Post Fire
- 4 **Active Fires**
 - Detecting Fires
 - SW vs. LW Imagery
 - Sub-pixel Effect, 1
 - Sub-pixel Effect, 2
 - Limitations
 - DMSO OLS/Night Fires
 - True/False Color Prod.
 - False Color Products
 - False Color & A/C Data
 - Hazard Mapping Sys.
 - WFABBA/Rapid Resp.
 - USFS Active Fire Map
 - Section Summary

- 5 Smoke & Aerosol
- 6 Fire Product Suite
- 7 Case Study
- 8 Module Summary

- Quiz
- Product PDF
- Print Version
- Contributors
- Submit Survey

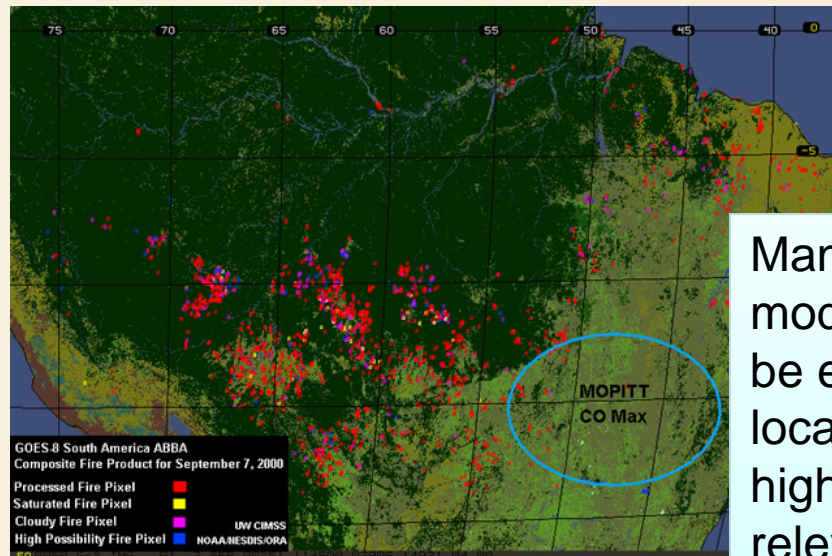
Section 4: Fire Detection and Monitoring

4.11 WFABBA and MODIS Rapid Response System

- Automated systems (e.g., WFABBA) are used to monitor large areas
- Routinely detect hundreds of fires at a time
- Animation depicts detected fires over a 24-hour period against a land cover map
- Loop starts at night when can see red dots representing the fires, but not smoke; during daytime, smoke appears
- WFABBA products are available every 15 to 30 minutes
- WFABBA generates fire data for the Western Hemisphere
- Provides raw data for estimating smoke emissions, which enables smoke transport to be forecast

1:08 / 1:21

Locator Map



Many COMET modules can be easily localized for higher relevance in other regions of the world.

Summary

- ▶ **Cooperative ventures can meet even large needs**
- ▶ **COMET offers over 600 hours of free material**
- ▶ **Materials borrowed or adapted**
- ▶ **COMET has capacity to develop new or custom DL materials and workshops**
- ▶ **20 years experience with international and interagency collaboration**



www.meted.ucar.edu

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International Projects,

The COMET[®] Program

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Distance Learning vs. Classroom Learning

An Ongoing Comparison

- Recent meta-analysis* of 232 comparison research studies from 1985 to 2002 showed
 - Small effect *favoring* DL in achievement of learning objectives
 - Small effect favoring classroom learning on attitude toward instruction
 - Variability was wide on both measures
 - Indicates quality course design is more important than medium

* Bernard, R. M., et al. (2004). How does distance education compare with classroom instruction? A meta-analysis of the empirical literature. *Review of Educational Research*, 74(3), 379-439.

What is Elearning?

Can be synchronous or asynchronous

Delivered via the internet

Computer-based instruction

Features of Online Multimedia Instruction

Self-paced

Individualized path

Every student is forced to interact

**Instruction is available anytime,
anywhere**

**Instruction has longevity to reach a large
audience without ongoing delivery costs**

An Option: The Virtual Course

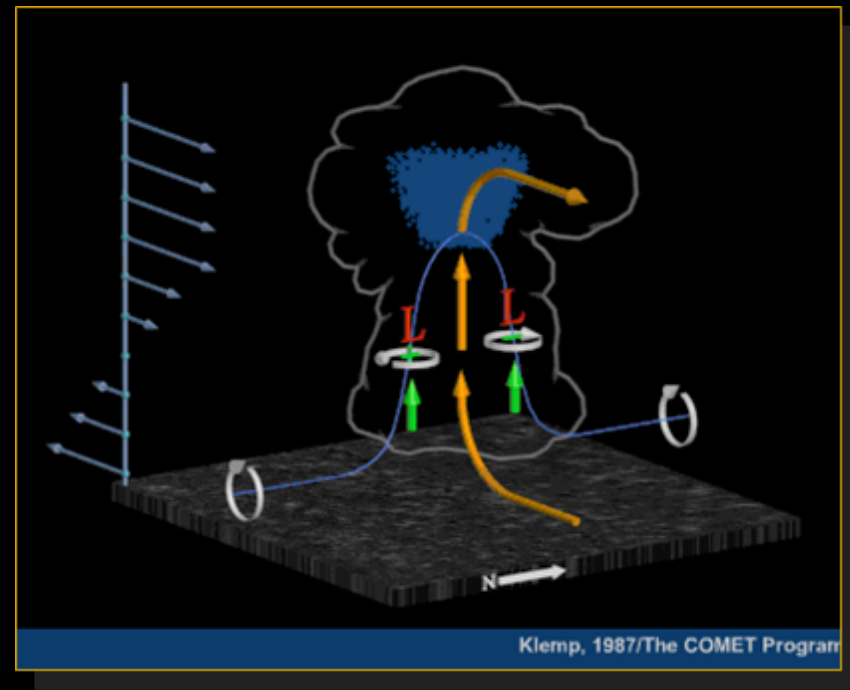
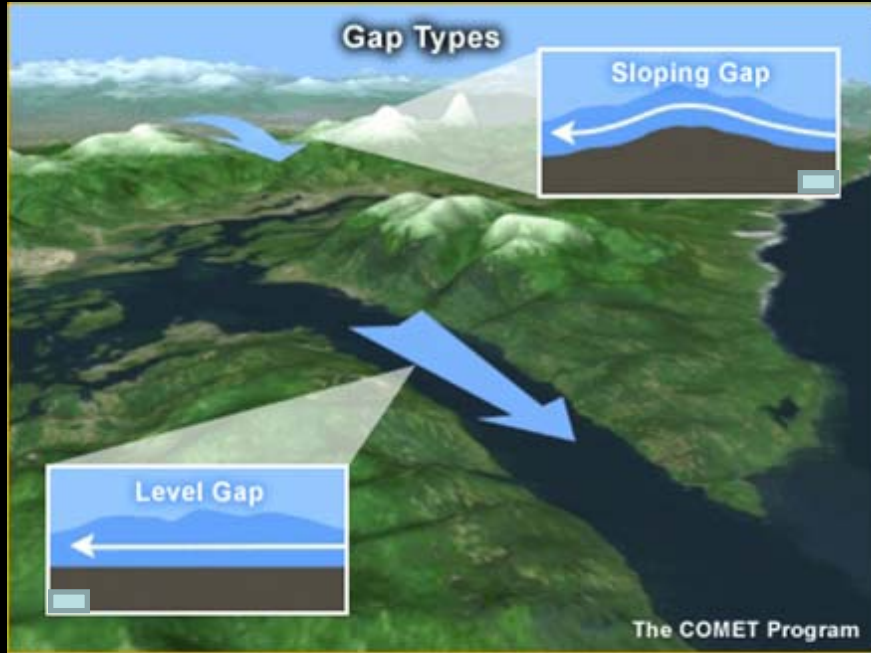
Synchronous Instruction on the Internet

Blended with Computer Based
Instruction

The Future: Enhanced Design

- Simulations
 - Put the learner in a realistic environment
 - Use computer gaming for instruction
- Decision Support
 - Assist the Mayor of New Orleans to choose the path of least regret for the next hurricane like Katrina
- Risk Management
 - Provide a wide range of potential outcomes
- Teach response to rare events
 - Expand the range of familiar situations

Outstanding Graphics



Operational Focus

FLASH FLOOD

Case Studies

Produced by the COMET[®] Program

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[COMET Home](#)

[Course Home](#)

[Contributors](#)

[Tech Notes](#)

[User Survey](#)

[Module Quiz](#)

[Download](#)

Begin



NOAA / Nicole Belk

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Case Studies

Introduction Fuels Topography Weather Q&A Fire Behavior Limiting Factors

The Ojo Feliz Wildfire

This case study examines a fire that occurred on April 17th, 2006 in north-central New Mexico. The fire burned in the transition zone between the east slopes of the Sangre de Cristo mountains and the high plains.

Click the **Fuels**, **Topography**, and **Weather** tabs (above) to learn about the environmental conditions for this fire.

Then, click the **Fire Behavior** tab to make a prediction about the types of fire behavior you would expect for the given conditions. Once you have made this prediction, the **Limiting Factors** tab will become active; click it to answer a summary question about the limiting factors for this fire.



Brent Wachter



New Mexico

Approximate Fire Location

Santa Fe

Bartley RAWs

Las Vegas

Sangre de Cristo Mountains

Teas

Cimarron RAWs

Raton

Clayton

Farmington



Distance Learning Courses

Unit 3: Creating the Forecast

- [Fire Weather Climatology](#) | [Quiz](#)

[description](#) (click to show/hide)

- [Stability, Smoke Management, and Fire Weather Forecasting](#) | [Quiz](#)

[description](#) (click to show/hide)

- [Fire Model Matrix](#) | No Quiz

[description](#) (click to show/hide)

- [Fire Behavior](#) | [Quiz](#)

[description](#) (click to show/hide)

- [Mesoscale Meteorology Effects on Fire Behavior](#) | [Quiz](#)

[description](#) (click to show/hide)

- [Fire Weather Grid Techniques: Relative Humidity and Dewpoint Temperature](#) | [Quiz](#)

[description](#) (click to show/hide)

Unit 4: Issuing Fire Weather Forecasts - *Optional*

- [Fire Weather Forecasting: Clear Communications](#) | [Quiz](#)

[description](#) (click to show/hide)

Virtual Conference

All NWS employees taking the S-591 course as a requirement for their position, must participate in the virtual conference. For more information on the conference, please contact your Regional Fire Weather Program Manager.

NOTE TO NWS and other NOAA EMPLOYEES: The modules in this course are available in the NWS Learning Center (<https://doc.learn.com/noaa/nws>). Please access the module quizzes through that system in order to get credit.

The Future

- New Technologies
 - Mobile Devices
 - Social Media
 - Variety of distribution venues

Virtual Courses

Welcome to the **NEW** COMET® Program's new Classroom website

The COMET Classroom website is used in support of COMET residence and virtual courses. Unless you've been invited to enroll in a course, access is restricted. Course dates are listed on the right hand side of the page and descriptions can be found by clicking on the title. Access to past COMET courses hosted on the old website can be found via the "COMET Classroom Archives" link on the left hand side of the page.

Calendar

◀ January 2010 ▶

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Resources and Links

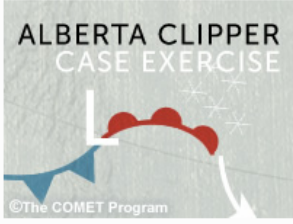
COMET/METED Links

- [COMET Home](#)
- [MetEd Home](#)
- [Classroom Archives](#)

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Latest MetEd publication

Alberta Clipper Case Exercise



ALBERTA CLIPPER CASE EXERCISE





©The COMET Program

This case study focuses on a snow and blowing snow event in the Canadian prairies and LIS northern high plains on

Course categories

-  **2010 Courses**
 -  **COMET Courses**
 - [COMET/MSC Winter Weather Residence Course 2010](#) 
 - [Flash Flood/QPE Residence Course 2010](#) 
 - [2010 Satellite Curriculum Development Workshop](#) 
 - [COMAP Residence Course 2010](#) 
 - [QPF for Hydrologic Modeling Virtual Course 2010](#) 
 - [Boundary Layer Symposium 2010](#) 
-  **2009 Courses**
 -  **COMET Courses**
 - [COMET/MSC Winter Weather Residence Course 2009](#) 
 - [Climate Variability and Change Virtual Course 2009 \(CVCVC\)](#) 
 - [QPF Virtual Course](#) 

Upcoming Events

-  [Climate Variability and Change Virtual Course \(CVCVC\) 2010](#)
 Monday, February 8, 08:00 AM
 ▶ Friday, February 12, 04:00 PM
-  [Flash Flood/QPE Residence Course 2010](#)
 Tuesday, March 9, 08:00 AM
 ▶ Thursday, March 11, 04:00 PM
-  [2010 Satellite Curriculum Development Workshop](#)
 Tuesday, May 18, 01:00 PM
 ▶ Friday, May 21, 05:00 PM
-  [COMAP Residence Course 2010](#)
 Monday, June 7, 08:00 AM



Myth 1

- Distance learners don't work as hard as classroom students

Truth

- Distance learning activities can be designed to include substantial challenge and require a high degree of effort

Myth 2

- Distance learning students and instructors feel isolated

Truth

- Always-available online communications and social networking tools can make online learning **MORE** socially engaging for **MORE** students

Myth 3

- Teaching at a distance always takes more time

Truth

- Instructors can establish time constraints and limit one-to-one communication with group discussion tools

Myth 4

- Distance learning instructors don't know whether students are learning

Truth

- The Internet supports many ways for students to demonstrate their learning

Myth 5

- Distance learning students don't get sufficient feedback

Truth

- Students often ask more questions and get more rapid feedback in distance learning

Seven Principles Of Good Practice

Good instructional practice

- Encourages student-faculty contact
- Encourages cooperation among students
- Encourages active learning
- Gives prompt feedback
- Emphasizes time on task
- Communicates high expectations
- Respects diverse talents and learning styles