Supporting Upper-level Earth Sciences Coursework at Universities: Supplemental Laboratory Packages and Webinars from The COMET® Program

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Webinars

Hydrometeorology Webinar Overview

In spring 2015, the University of Oklahoma’s upper-level hydrometeorology course included a virtual session on Atmospheric Rivers. This flat-fee, 90-minute interactive webinar was conducted using GoToWebinar.

The presentation served as a pilot session for larger UCAR and COMET initiatives that will support university classrooms beyond their use of freely-available modules from MetEd, as well as an opportunity for students to engage with UCAR/NCAR scientists and NOAA contributors.

Webinar Features

- **Fundamental Concepts Linked to Latest Research**
  - COMET instructors and meteorologists consulted with leading AR researchers in NOAA and NCAR, integrating the newest findings into the presentation.

- **Interactive Polling Questions and Expert Q&A**
  - Instructors administered real-time polling questions to gauge student understanding and opinion. Questions were asked and answered via the chat window during the webinar, and in a post-presentation, expert Q&A session. Current AR events were also discussed.

Similar Offerings

- **Webinar Series & Virtual Courses for Fee**
  - Over the last two years COMET has added series of webinars and virtual courses, which include robust course websites and technical support, for fee. Presenters include COMET staff as well as leading content-area experts from across the globe.

Synoptic Lab Series Overview

In another pilot effort to broaden UCAR and COMET’s support of University classrooms, the fall semester of 2015 saw the University of Oklahoma’s senior-level synoptic meteorology laboratory course using supplementary lab activities developed by COMET.

Students paid a laboratory fee to access a virtual course website that included 6 new COMET lab modules, along with customized sets of existing COMET module materials and relevant current weather data and links.

Lab Module Features

- **Background and Pre-Lab Interactivity**
  - Each module contains topical background material embedded with interactive questions to test student understanding. HTML5 drawing tools and labeling systems allow the student to practice various types of analysis before completing the formal classroom lab exercise.

- **Classroom Lab Printouts and Question Sets**
  - Print-quality map and case data sets for analysis, written question sets, or both are available for work in the classroom. Instructors can choose to assign any number of the case studies/map collections and their questions.

- **Solution Sets**
  - Fully-analyzed maps and written solutions sets accompany each lab module.

Selected Labs in Series

- **Isentropic Analysis**
  - This lab covers the fundamentals of isentropic thinking and allows students to analyze pressure and moisture advection on isentropic surfaces, and compare their results to standard isobaric chart methods.

- **QG Omega Equation Lab**
  - This widget features interactive adjustment of the right and left-hand terms of the QG Omega equation. Question sets explore how the variables interact to produce ascent and descent for different phase shifts of 500hPa and 1000hPa waves.

- **Satellite Vorticity and Deformation Analysis**
  - This lab allows students to explore and practice identifying vorticity centers and deformation zones using satellite water vapor imagery with online drawing tools and hand analysis.