A satellite view of Earth's atmosphere and clouds, showing a large-scale weather system with a prominent cyclone or storm system in the center. The text is overlaid on this image.

Introducing an Online Atmospheric Science Course

Teaching & Learning with
Technology in Math and Science
Classrooms

26 June 2003

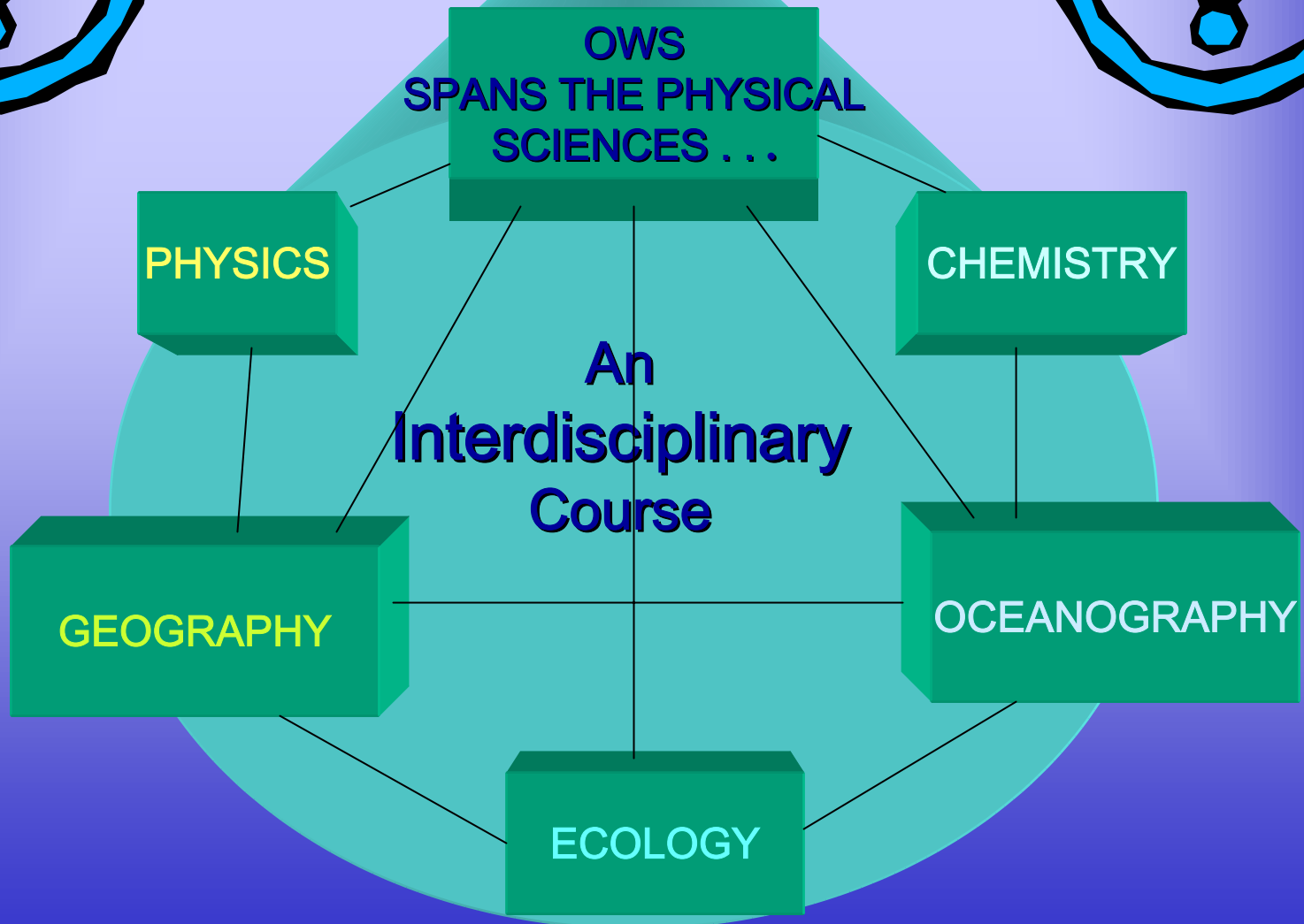
What is *Online Weather Studies* ?



- The American Meteorological Society's (AMS) effort to expand the offering of geoscience courses to students who are members of underrep-resented groups in Science, Mathematics, and Technology
- The goal is to increase participation by minorities in science careers, including atmospheric sciences and science teaching
- Relies heavily on the use of the latest weather data, maps, forecasts, and satellite and radar imagery delivered via the Internet



What is *Online* *Weather Studies* ?

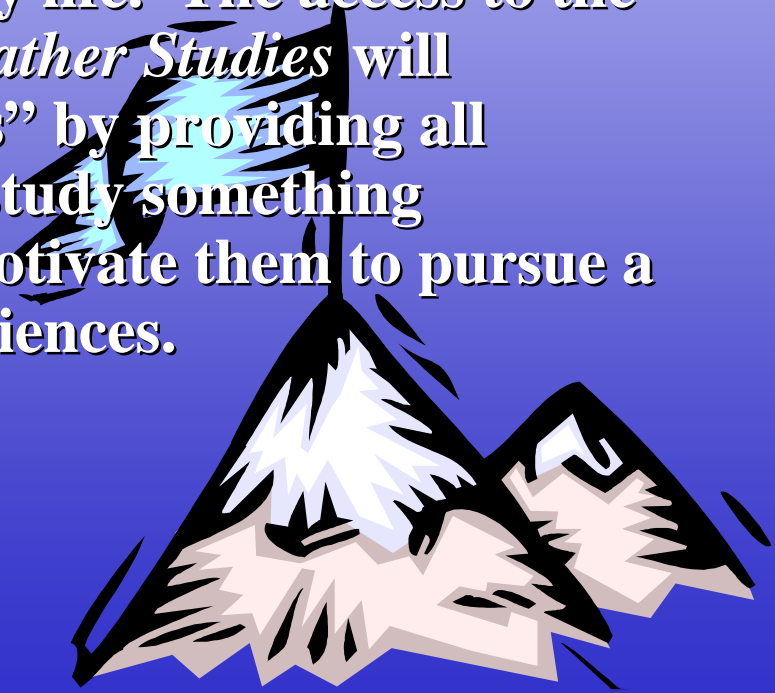


Goals for *OWS* by the AMS

- Short-term goal: to make minority undergraduates more aware of the geosciences and opportunities for internships, summer employment, and more advanced study.
- Long-term goal: for more minorities to enter the workforce as geoscientists or geoscience teachers.

Mission Statement

To provide resources which enables the Department of Physics to enhance its program. The resources and opportunities provided by this course and the American Meteorological Society will allow the department to offer courses and course components that interest the student and will enable the student to study relevant material intimately related to the real world and everyday life. The access to the online material offered by *Online Weather Studies* will “enhance diversity in the Geosciences” by providing all PVAMU students an opportunity to study something meaningful and worthwhile and to motivate them to pursue a career in the geo- and atmospheric sciences.



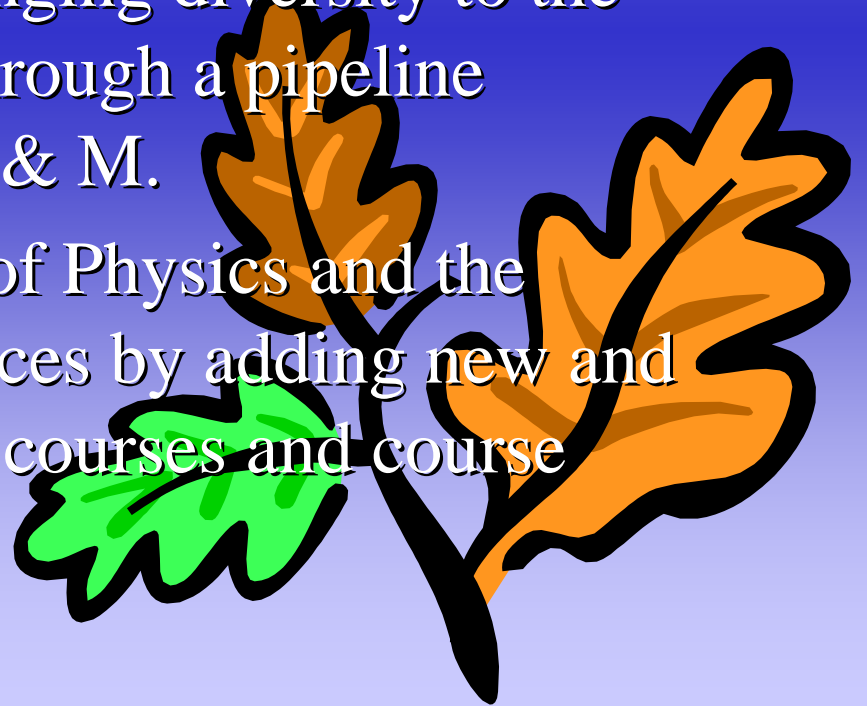
Who is Offering *OWS*?

- Over one hundred colleges and universities nationwide with the American Meteorological Society (AMS) to introduce a highly innovative online course in which their students are introduced to the science of meteorology by studying weather as it happens.
- Mr. Brian Cudnik of the Department of Physics attended a one-week faculty workshop at the National Weather Service Training Center in Kansas City, MO, May 2002, as part of the course implementation effort.
- The course, *Online Weather Studies*, was developed by the AMS with funding from the National Science Foundation (NSF) and makes use of the latest weather data, maps, forecasts, and satellite and radar imagery delivered via the Internet.



Benefits to PVAMU

- Provide resources to attract students to the Physics Department.
- Provide an avenue for bringing diversity to the nation's meteorologists through a pipeline partnership with Texas A & M.
- Enhance the Department of Physics and the College of Arts and Sciences by adding new and technologically advanced courses and course components



Use of the Material at PVAMU

- The course material has been used as a unit in existing courses
- Weather topics most relevant for the Southeast Texas climate were selected for use within this unit
- The students exposed to this unit enjoyed the experience



Use of the Materials as a Stand- Alone Course



PHSC 3223, Introduction to Atmospheric
Sciences:

- This course will soon be taught as a stand-alone, atmospheric sciences course
- The course will include more depth than a 1000-level course and will be geared toward prospective science teachers

Other Uses of *OWS*

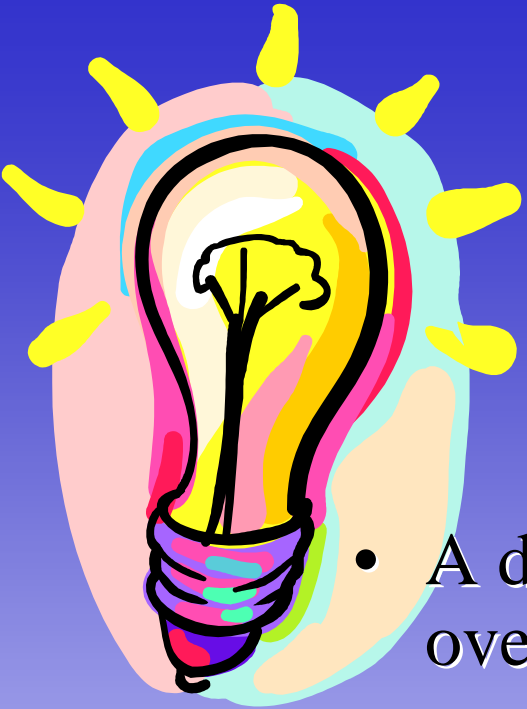
- **As an independent study course**
- **As an exercise for Pre-College Institute students**
- **In the Science Education Laboratory as lab exercises for science education majors**
- **In other student recruitment events**



How the Course is Presented

- Can be taught either as an entirely on-line course, with little or no face-to-face interaction
- Can be taught entirely inside the classroom, with little computer use
- May be taught as a balance between interactive classroom time and on-line experience*





Technological Advantages and Real- time Weather Data

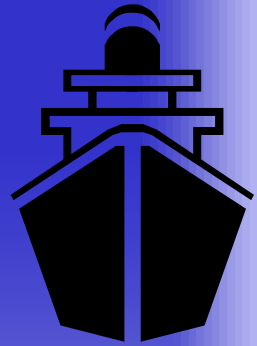
- A demonstration of how the course is taught over the Internet . . .
- Current weather data is presented along with exercises analyzing this data in areas relevant to the material being covered at the time
- A daily weather briefing can be included to keep students informed of the current state of the weather

Critical Thinking and OWS

- The course enhances the students' learning experience through critical thinking
- In addition, diversity issues are explored in the critical thinking component
- The scientific method is central to the course; students do science in investigating online weather data



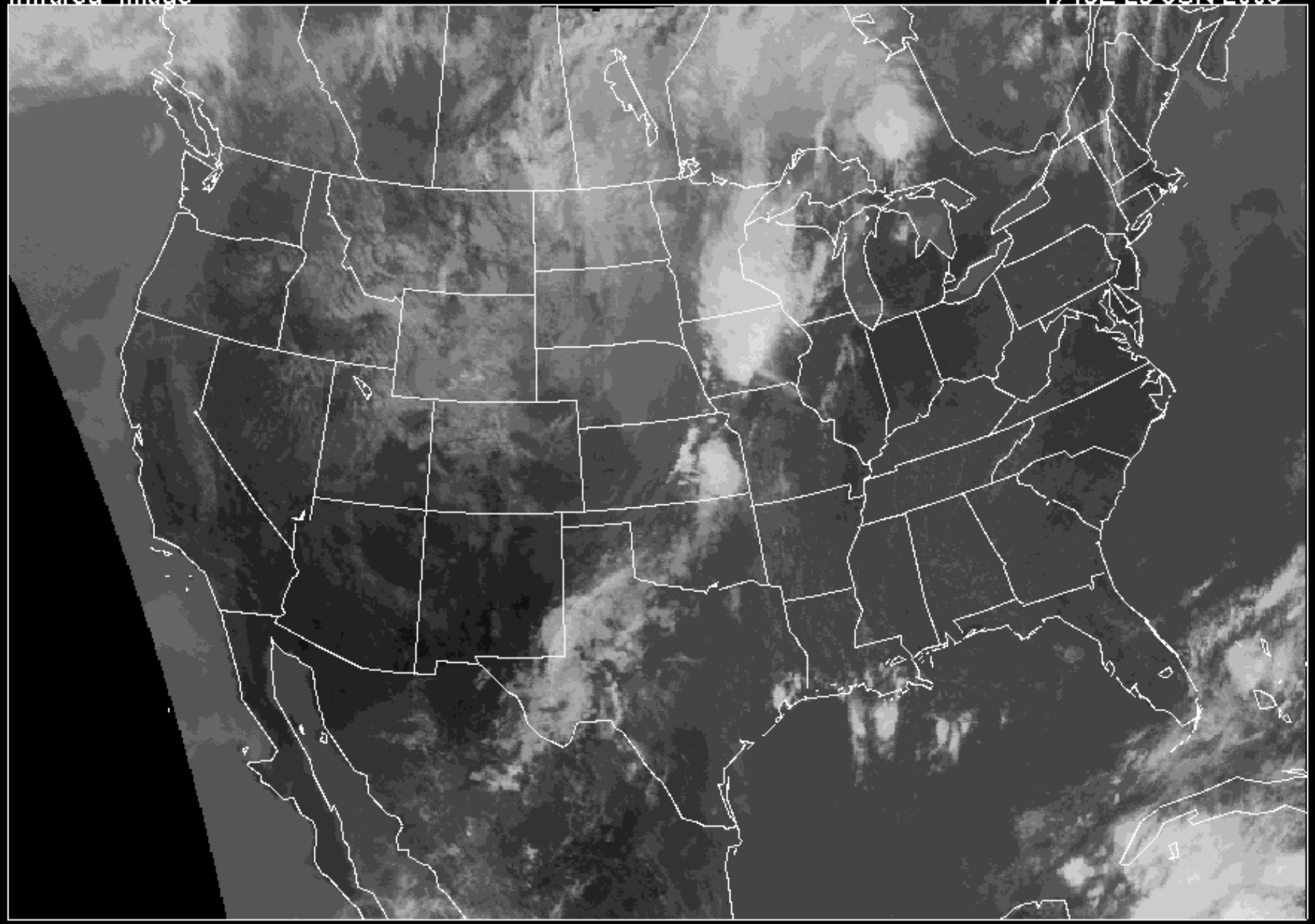
A Tour of the Student Home Page of the Online Weather Studies Course



- Located at <http://www.ametsoc.org/amsedu/online/onlinewx/>
- It is password protected, such that only students actually taking the course can have access to the information
- The page contains a wealth of weather information and exercises...

Infrared Image

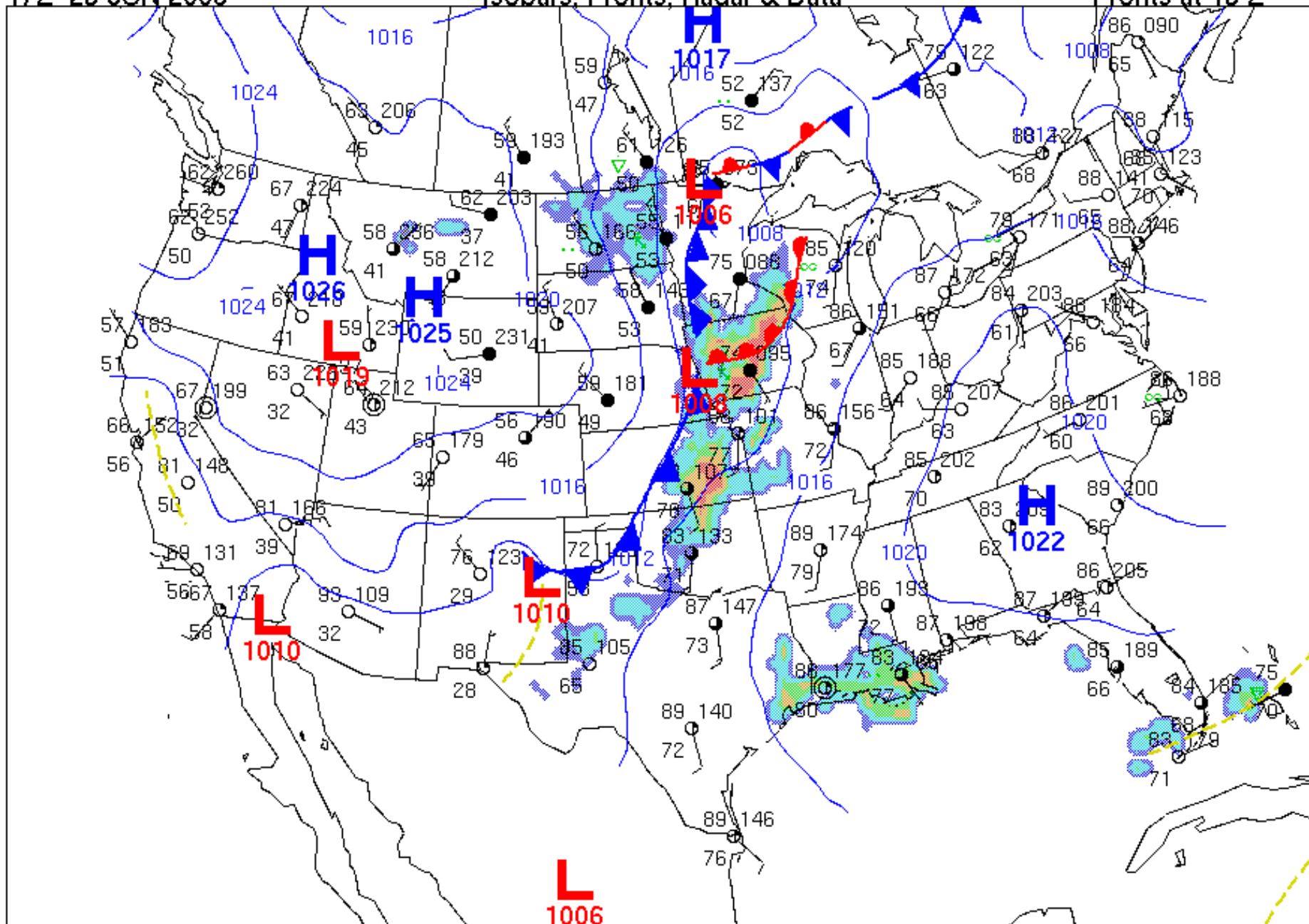
1715Z 25 JUN 2003



17Z 25 JUN 2003

Isobars, Fronts, Radar & Data

Fronts at 15 Z



Echo Intensities: 1 2 3 4 5 6

Blue - Isobars (4 mb)

In Conclusion...



- Online Weather Studies provides an excellent forum for interdisciplinary science studies in a real-time environment
- OWS has a critical thinking component which conditions the students to think “outside the box”
- OWS promises to enhance the curriculum offering of the Department of Physics