

# #10443

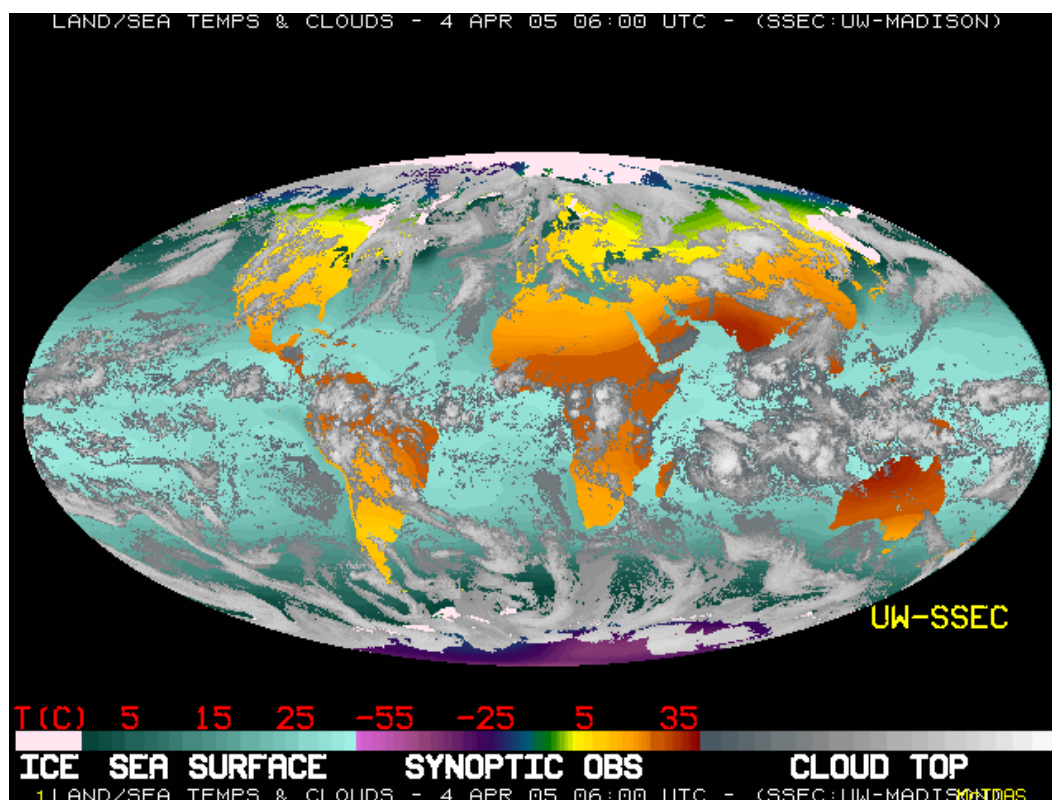
## WEATHER FORECASTING

SVE & CHURCHILL MEDIA, 2003

Grade Level: 7-12

19 Minutes

1 Instructional Graphic Included



### CAPTIONED MEDIA PROGRAM RELATED RESOURCES

[#8950 WEATHER: A FIRST LOOK](#)

# *Weather Forecasting*

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*Intended for Junior High School Students*

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Teacher's Guide © Classroom Video



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# Introduction.....

*Weather Forecasting* explains the scientific process that meteorologists use to forecast the weather and the benefits of an accurate weather forecasting service. The program outlines a brief history of forecasting and investigates modern weather forecasting methods and practices. Also included is a detailed section about computer weather forecasting.

# Learning Objectives.....

After completing the program and participating in discussion and activities, students will be able to:

- Briefly explain the history of weather forecasting;
- Describe the four main steps of the modern forecasting process;
- List the measurements meteorologists take at least once a day;
- Name the advantages of automatic weather stations;
- Understand the function of weather balloons;
- Identify the purpose of ocean buoys;
- Explain how weather data is forwarded to a central location;
- Describe the processes of plotting and analysis;
- List the three major factors that affect the weather; and
- Identify the seven attributes used to describe the atmosphere and the seven equations used to calculate these attributes.

# Intended Audience.....

This program is intended for junior high school (grades 7 through 9) students.

# Presenting the Program.....

You may wish to follow this procedure in presenting the program.

1. Preview the program and familiarize yourself with this teacher's guide and the reproducible master(s). Review the

learning objectives, discussion starters, and review questions.

2. Next, introduce students to the program, using the discussion starters to relate the upcoming information to their prior knowledge.
3. Have students complete the program in its entirety the first time.
4. Check for understanding by discussing and reviewing the program's content and concepts, using the review questions in this teacher's guide as an outline.
5. If time permits, allow students to complete the program a second time, pausing for discussion at points of interest.
6. Assign one or more of the enclosed reproducible master(s) for guided and independent practice. Students may complete the activities alone, with a partner, or in a cooperative learning group. Choose the activities appropriate to your objectives and your students' levels of understanding. Be creative and integrate some activities of your own design that are based on the program's concepts.

## Discussion Starters.....

Begin a discussion about weather forecasting. What are some of the ways meteorologists predict the weather? What observations do they make? What attributes of the atmosphere do meteorologists study to predict the weather? How do they measure those attributes?

Explain to students that the program they are about to watch explores the ways meteorologists forecast the weather. Students will discover the steps involved in predicting the forecast, how meteorologists analyze the data, factors that affect the weather, and how the development of computers have made weather forecasting faster and more accurate.

## Review Questions.....

Use these questions and discussion topics to review the program material.

1. Name three things that are affected by the weather.
2. Why was the invention of the telegraph important for weather forecasting?
3. Who was Robert Fitzroy? What did he establish to help sailors? What problems did he face while making his predictions?
4. Which six things does a weather observer measure?
5. What are the advantages of automatic weather stations?
6. How many times a day are weather balloons released to measure weather patterns? What do they measure?
7. What is the name of the central point to which the observations are forwarded?

8. How do weather observers relay their information?
9. What is the role of computers in relaying weather information?
10. Name the three major factors that affect the weather.
11. What is an isobar? Why are they important?
12. What is a front?
13. How do computers predict the weather?
14. What are the seven attributes that describe the atmosphere?
15. For how many days ahead will the Bureau of Meteorology issue forecasts?
16. How are the forecasts compiled?
17. Name the three sections in the forecasting center.
18. What is the role of the forecasting center in reducing or limiting forest fires?
19. Access one or more of the Web sites cited in the “Web Resources” section of this guide by going to your school or library computer lab. As a group, go to one of the sites and explore the subject in more detail.
20. Assign the enclosed worksheet(s) to reinforce the skills students have learned from the program, the review questions, and the discussion activities.

## Web Resources.....

*The following Web sites may be helpful for both teachers and students in learning more about meteorology. Additional Internet resources may be found using such common search engines as Google and Yahoo. The Web is constantly evolving, so some of these sites may have changed locations or may no longer be available.*

[http://ww2010.atmos.uiuc.edu/\(Gh\)/guides/mtr/fcst/home.rxml](http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/fcst/home.rxml)

This informative site features information about surface features and provides tips about forecasting temperature and precipitation.

<http://www.nws.noaa.gov/>

Find current conditions, forecasts, maps and models, educational links, and other weather information with this useful site from the National Weather Service.

<http://www.wildwildweather.com/>

This site, designed by an Alabama meteorologist, features forecasting information, weather quizzes, puzzles, and

geography resources designed for kids between 6 and 16 years old, parents, and teachers.

**<http://www.intellicast.com/>**

This site is another resource for accurate weather conditions, forecasts, satellite information, pollen reports, travel planning, and more.

**<http://www.fi.edu/weather/activity.html>**

This creative site features classroom activities, weather forecasting lessons, instructions to build tornado and lightning exhibits, and much more.

**<http://www.wxduke.com/>**

The Weather Channel meteorologist Nick Walker's site contains weather basics, meteorology topics from A to Z, weather songs, stuff for kids, resources for teachers and parents, quizzes, and much more.

**<http://polar.gsfc.nasa.gov/VLM/edu.html>**

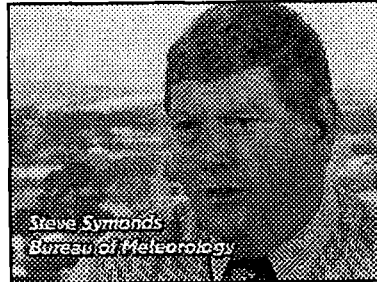
This extensive site features links to weather information, curriculum, activities, articles, books, and more.

**<http://sln.fi.edu/tfi/hotlists/weather.html>**

Search links to weather maps, climate pages, weather glossaries, FAQs, severe weather safety guides, El Niño resources, activities, and more.

# Notes

# Weather Forecasting



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The Bureau of Meteorology



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To enhance your understanding of the program, answer the following questions on a separate sheet of paper. Question #12 can be completed at home. Use the library or Internet for further research.

1. What instrument is used to measure water vapor content of air?
2. What instrument is used to measure air pressure?
3. How is a cold front defined? How can you recognize a cold front on a weather map?
4. True or False. Cold air is drier than warm air.
5. What is a stationary front and how is it symbolized on a weather map?
6. Which equation is used to relate pressure to the density and temperature of the air?
7. Which equation requires that all air must be accounted for?
8. Why can't the Bureau of Meteorology issue forecasts for more than seven days in advance?
9. What kind of weather conditions are usually present when the Severe Weather Team issues a fire weather warning?
10. How can a fire weather warning prevent a fire or allow the authorities to keep it under better control?
11. Look up the word convergence. What does it mean in atmospheric science?
12. Make your own weather forecast for the week for a location of your choice. Include a weather map. Use the following guidelines to help you with your forecast.
  - What is the climatology (average high/low temperature) of your location? Climatology is rarely a correct forecast for a given day, but you might think twice about forecasting a high that is 20 degrees higher than your average high.
  - What is the weather like in your location today?
  - Can you estimate the speed of movement of air masses, fronts, and high and low pressure systems? Find the current location of the air mass that you expect to be over the forecast site tomorrow. This will help you make a low and high temperature forecast for tomorrow.
  - To predict precipitation, first consider what season it is. Is there usually rain in this area in the summer? Does it snow in the winter? Are spring thunderstorms common?
  - When predicting your temperature, consider that the high temperature generally occurs during the late afternoon. What is the high temperature for the air mass moving into your area?

Share your forecasts with the class and explain how you came up with your predictions.