

THE WEATHER CLASSROOM[®]

HURRICANES



An Internet Exploration: Flying into the Eye



Let Me Introduce Myself

Hi, I'm the Weatherhead from The Weather Classroom here to make you an offer you can't refuse. How would you like to chase a hurricane with Air Force Reserve's 53rd Weather Reconnaissance Squadron, otherwise known as the Hurricane Hunters? Sound risky? It is but, in the hands of these highly trained professionals, it will surely be the ride of your life!

Of course, you have to undergo some basic training before getting aboard the hunters' WC-130 Hercules aircraft. But that's not so terrible ... just a little "brain exercise"! Now ... get ready ... get set ... go for your Hurricane Hunter Cyberpatch!

This lesson addresses the following National Standards:

Science as Inquiry

- Abilities necessary to do scientific inquiry
- Communicate scientific procedures and explanations
- Understanding about scientific inquiry

Physical Science

- Motions and forces

Earth & Space Science

- Structure of the Earth system
- Earth's history

Science in Personal & Social Perspectives

- Populations, resources and environments
- Natural and human-induced hazards
- Science and technology in local, national and global challenges

Language Arts

Write poetry, make written and oral presentations

Visual Arts

Illustrate development of a hurricane; disaster preparedness brochure

Geography

Place and regions; physical systems; environment and society; the uses of geography

TASK 1

Your Job is...

Learn about hurricanes and hurricane hunting to prepare yourself for a "cybertrip" into the eye of a hurricane with the Air Force Reserve's 53rd Weather Reconnaissance Squadron.

1. Become familiar with hurricane anatomy and development.
2. Map the hurricane hunting ground and track a few for fun.
3. Pick the hurricane hunter job you'd like to have.
4. Check out the National Hurricane Center.
5. Take a "cybertrip" into the eye of a hurricane with a crew from the 53rd Weather Reconnaissance Squadron and earn your hurricane hunter "cyberpatch."

After you finish this job, you'll know a lot more about these awesome storms and how to weather their fury!

TASK 2

Your favorite subject is...

Everyone knows hurricanes are great big storms. But do you know the "who, what, how, when, and where" of hurricanes? Before you go any farther, pit your knowledge against this little quiz on hurricanes by ABCNEWS.com.

ABCNEWS.com — Hurricane Quiz:

http://abcnews.go.com/sections/us/Quiz/hurricane_000824_quiz.html

Now, search NOAA's site for pictures of hurricanes from up close and personal, from far out in space, and from a tracking map.

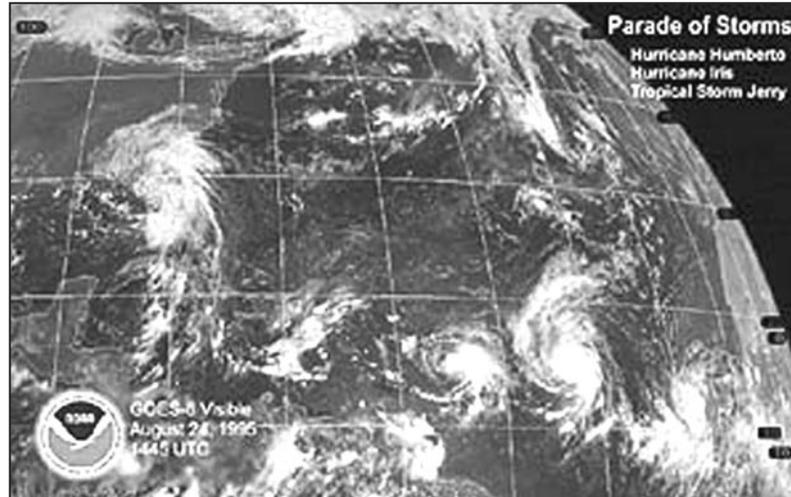
NOAA Photo Library: <http://www.photolib.noaa.gov/>

THE WEATHER CLASSROOM[®]

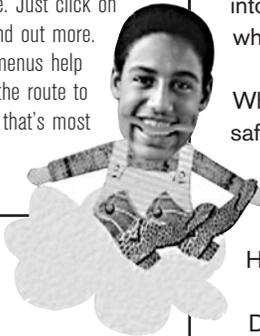
HURRICANES

NOAA Historical Significant Events Imagery for satellite photos:
<http://www5.ncdc.noaa.gov/cgi-bin/hsei/hsei.pl?directive=welcome>.
Choose "Quick Search" on the left, then "hurricanes ..." as the Type of Event.

A picture is worth a thousand words. Study NOAA's photographs and list any information you can glean from these pictures about these monster storms.



Remember, Weatherhead always says: "When you're inside a site, explore. Just click on "blue" to find out more. Pull down menus help you select the route to information that's most direct."



TASK 3

Now that you know what you don't know, it's time to prepare yourself for your flight into the eye of a hurricane. Start with the basics: the "who, what, how, when, and where" of hurricanes. Just check the Internet ...

Whoa! Hold up! Have you surfed the Internet before? Do you know about "staying safe" online? If so, go on to Task 4. Otherwise, before you go any further, take the Internet Safety Quiz at:

<http://apps.disney.go.com/global/quiz/quiz.cgi?def=doug1>.

How did you do? Do you need to know more? If so, check these sites:

Disney's Doug's Safety Tips
(<http://disney.go.com/disneytelevision/onesaturdaymorning/doug/tips/dougtips.html>)

CyberNetiquette Comix (<http://disney.go.com/cybersafety/index.html>)

Do you want your younger brother or sister to find out more about online safety? Help them learn more with Mickey Mouse and Disney at "Surf Swell Island."
(<http://disney.go.com/family/surfswell/index.html>)

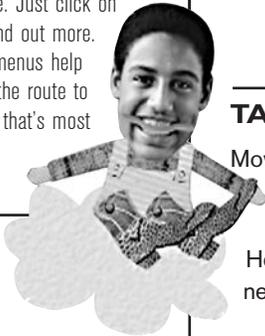
TASK 4

You are ready to learn all about the life of a hurricane. Start with "who" — naming hurricanes.

THE WEATHER CLASSROOM[®]

HURRICANES

Remember, Weatherhead always says: "When you're inside a site, explore. Just click on "blue" to find out more. Pull down menus help you select the route to information that's most direct."



Who?

How do hurricanes get their names and why do they have names anyway?

FEMA For Kids: Hurricane Names: <http://www.fema.gov/kids/hunames.htm>

Reasons to Name Hurricanes: <http://www.aoml.noaa.gov/general/lib/reason.html>

Have some fun!
Take FEMA's Hurricane
IQ game on hurricane names at
<http://www.fema.gov/kids/hunames.htm>

TASK 5

Moving right along ...find out the "what, how, and when" of hurricane formation.

What, How, and When?

Here are the important ingredients for a hurricane. Why do hungry hurricanes need these ingredients?

INGREDIENT	WHY THE HURRICANE NEEDS IT
1. Warm waters must go to a depth of about 200 feet.	
2. Ocean waters must be about 80° F (26.5° C).	
3. Winds at the surface must converge.	
4. At the surface there must be a low-pressure area.	
5. Pre-existing winds must come from the same direction at similar speeds at all altitudes.	
6. Air in the lower atmosphere must be warm and humid.	
7. In the upper atmosphere, there must be an area of high pressure.	

Put the steps below in the right order to explain how a hurricane uses the ingredients to become a monster.

- The warmed air becomes lighter and rises.
- Latent heat is released as rising warm air condenses into water droplets as it reaches cooler air above.
- This continuous exchange of heat in the atmosphere creates wind.
- The released heat warms the cooler air around it.
- Warm, humid air rises from the warm ocean water of the tropics.
- The rising warmer air is replaced by more warm, humid air that flows up from the warm ocean water.

THE WEATHER CLASSROOM[®]

HURRICANES

When?

Based on your information, when would you expect to be on duty with the 53rd Weather Reconnaissance Squadron? Why?

The Weather Channel — Hurricanes, The Eye of the Storm:

<http://www.weather.com/newscenter/specialreports/hurricanes/index.html>

Discovery Channel — Create a Hurricane:

<http://www.discovery.com/stories/science/hurricanes/create.html>

Hurricane: Storm Science from the Miami Museum of Science

<http://falcon.miamisci.org/hurricane/hurricane0.html>

TASK 6

Last but not least, where do hurricanes typically prowl?

Where?

Where will you and your team of air force daredevils search for hurricanes? Surf the internet and examine historic tracking charts to discover your hurricane hunting territory. Based on the tracks of hurricanes over the years, mark the area you and your crew will patrol.

NOAA – Hurricane Tracking Chart for the Southern Atlantic and Caribbean Oceans

http://lumahai.soest.hawaii.edu/Tropical_Weather/atlantic_track.gif

Weather Underground – Atlantic tropical cyclones since 1886:

<http://www.wunderground.com/hurricane/hurrarchive.asp>

A Practical Guide to Hurricane Tracking: <http://stormcarib.com/guide.htm>

Tracking a storm's movement is one of the tasks of the hurricane hunters.

Use a tracking map from the National Hurricane Center

(<http://www.nhc.noaa.gov/>) to track Hurricane Dennis with the coordinates below.

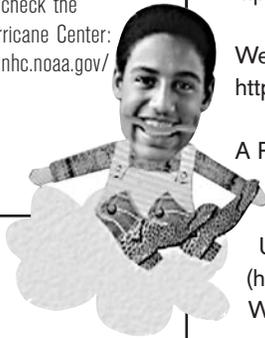
Where do you think this storm will hit?

But what about hurricanes in the southern Pacific?

I know ... check the

National Hurricane Center:

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



Do you need help plotting the hurricane's location? Practice your tracking skills here: Tracking Hurricanes: <http://www.miamisci.org/hurricane/instructions.html>

DATE	LATITUDE	LONGITUDE	WIND PRESSURE (MB)
08/24/99	23.2 N 71.4 W	45	1008
08/25/99	24.5 N 74.1 W	55	1000
08/26/99	24.5 N 74.1 W	70	989
08/27/99	26 N 76.3 W	70	991
08/28/99	28 N 77.6 W	90	969
08/29/99	31.8 N 78.2 W	90	965
08/30/99	34.7 N 74.2 W	80	966
08/31/99	35.1 N 73.3 W	65	983
09/01/99	35.5 N 74 W	50	988
09/02/99	34.7 N 74 W	50	990
09/03/99	33.1 N 73.9 W	50	985
09/04/99	33.5 N 75 W	50	986

THE WEATHER CLASSROOM[®]

HURRICANES

TASK 7

Congratulations! You have completed the first part of your basic training for hurricane hunting. Take a moment to visit with the brave men and women who pierce the eye of the monster. Read Rookie in the Super 'Foon
<http://www.hurricanehunters.com/dot.htm>.

Still want to fly with the hurricane hunters? Check out the jobs aboard the plane; then, choose the job you'd like the best. Write an e-mail to one of the hurricane hunters with a couple of questions about the job and his or her experiences.

TASK 8

The hurricane hunters report their findings to the National Hurricane Center. Do your homework about the company you're flying with. Surf the Center's web site for the following information. National Hurricane Center: <http://www.nhc.noaa.gov/>

1. Differences between the terms "Hurricane Warning" and "Hurricane Watch."
2. How hurricane storm surges threaten life and property.
3. The Mission of the National Hurricane Center.
4. The GOES Imager.
5. Reading the data that is sent from the plane to the NHC.

TASK 9

You're ready to fly. Put your wings on, buck up your courage and go meet your flying mates in the 53rd Weather Reconnaissance Squadron. Your plane is waiting. When the flight is done, wear your badge proudly on your computer. In the words of the hurricane hunters: you've earned it.