Climate and Weather: The Two Go Together

Girl Scouts at the National Center for Atmospheric Research

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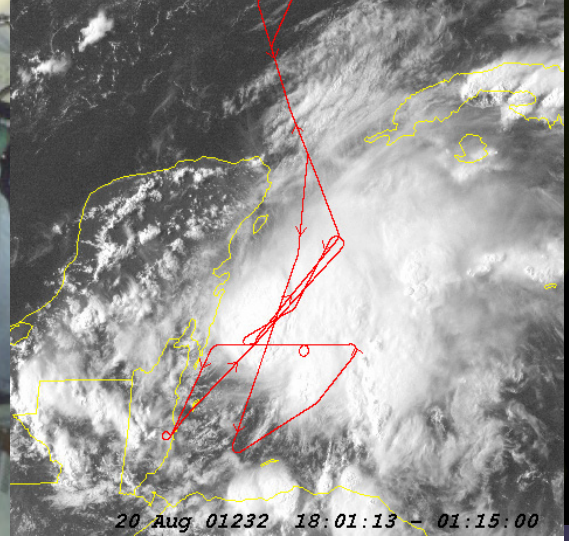
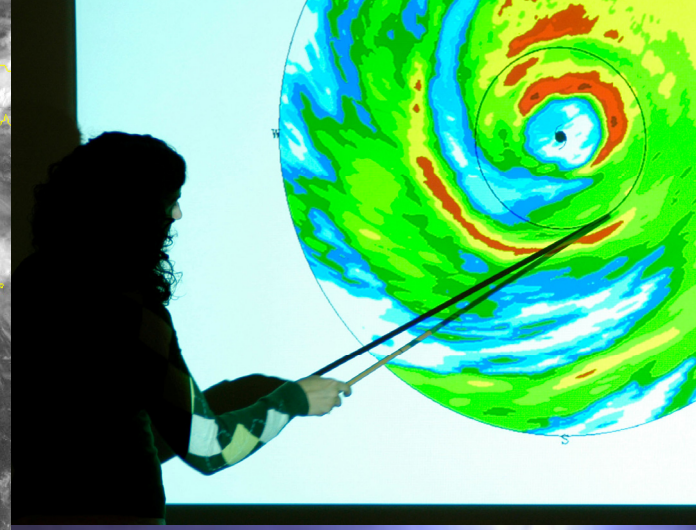
NCAR

Girl Scouts®

The goal of the program is to introduce young women to the atmospheric sciences in a single sex, non-competitive, hands-on inquiry based environment.





The goal is to show young women that female scientists are normal people, with families and hobbies, who are researching relevant and exciting environmental problems.

The program was developed by two post doctoral fellows in the Advanced Studies Program (ASP) at NCAR in cooperation with the Mile Hi Girl Scouts council.

NCAR

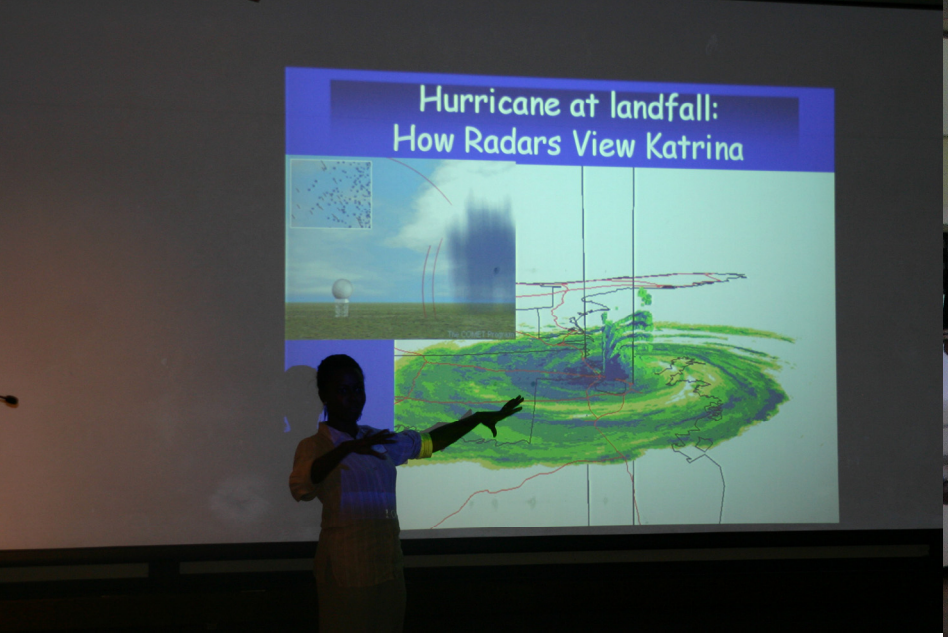
Girl Scouts®

The program brings 50 girls from around the Denver area to the NCAR Mesa Lab in Boulder each fall and spring.

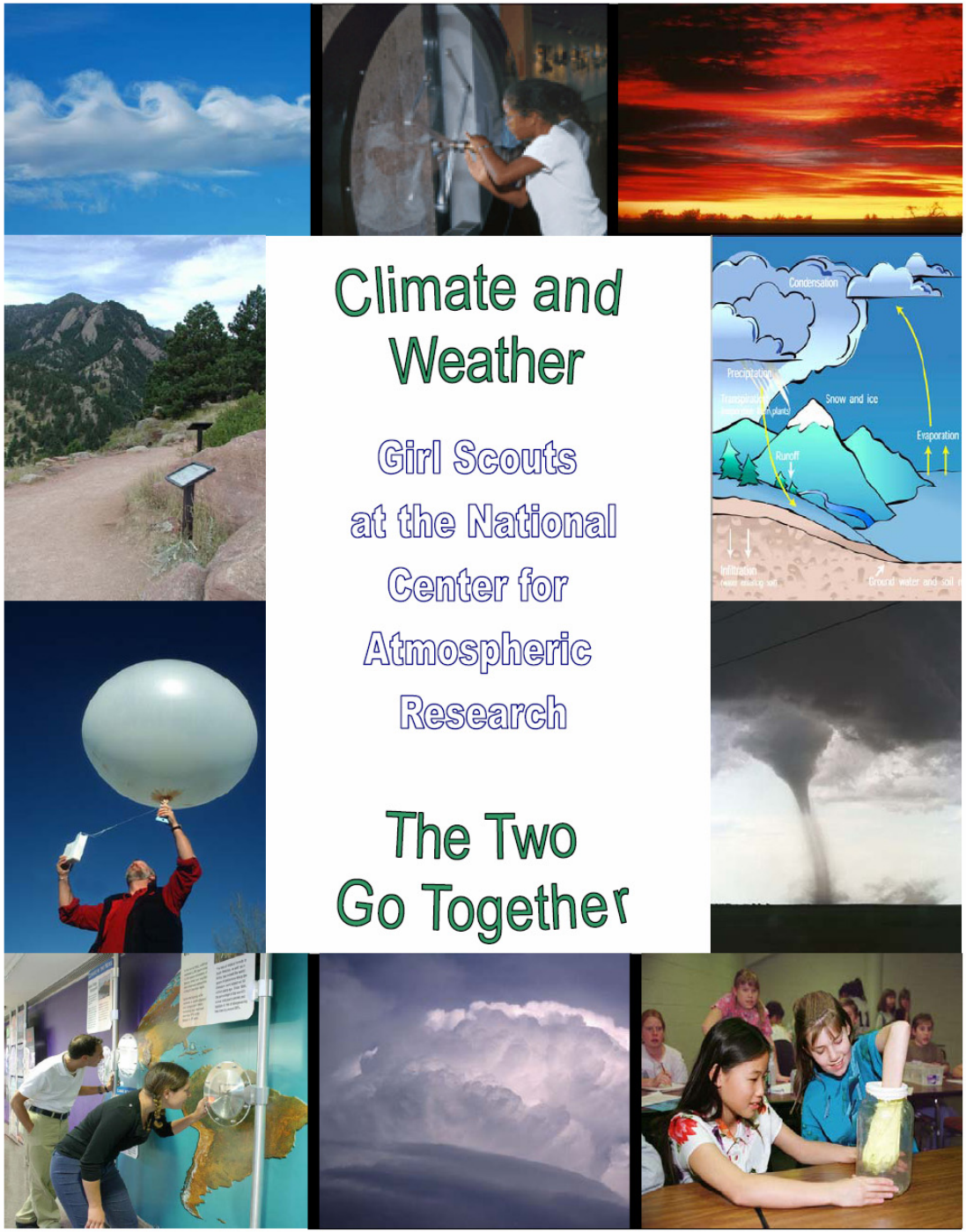
The girls tour the exhibits and computer lab, walk the nature trail and participate in hands-on activities.

The first activity of the day, and one of the highlights of the event, is a live weather balloon launch conducted by Kate Young of NCAR's Earth Observing Laboratory.

The girls learn how and what data is collected in the atmosphere and how it is used to help make better weather forecasts.



Other morning activities include a Water Cycle Game, a tour of the NCAR computer lab and a key note talk by one of the NCAR female scientists on what they research and how they became interested in science.



The afternoon activities are focused around a 50 page, full color workbook designed by the NCAR post docs organizing the event.

The workbooks are free of charge to the Girl Scouts as they are generously paid for by the Advanced Studies Program at NCAR.

Discover Clouds B: How do clouds form?

How do you think clouds are made?

_____

_____

_____

Experiment:

1.) Position the lamp so that it shines through the jar towards you.
2.) Pour a small amount of warm water into the jar.
3.) Stretch the rubber glove over the jar and secure it with a rubber band.

4.) Insert your hand into the glove, quickly pull the glove outwards without disturbing the seal.

Describe what happens inside the jar: _____

_____

How do you think the pressure and temperature changed in the jar?

_____

_____

5.) Quickly push your hand back down into the jar. Describe what happens inside the jar now.

_____

_____

How do you think the pressure and temperature changed in the jar now? _____

_____

The workbook contains the instructions for and questions about the hands-on experiments the girls will conduct with the guidance of NCAR female scientists.

Kristen Corbosiero

Current Position: Postdoctoral Scientist

Education: B.S., M.S. & Ph.D. in Atmospheric Science

How I became an atmospheric scientist?
"I always loved math and science and when we first got cable TV I started watching the weather channel all the time! I was fascinated by all the different types of weather systems (lows, highs, hurricanes, thunderstorms) and how they moved across the map"

What I like about my job?
"I love getting to work on some of the most interesting questions about our atmosphere with the best scientists in the world here at NCAR"

Other Interests: Reading, Hiking, Gardening, Sewing.

Vani Cheruvu

Current Position: Postdoctoral Scientist

Education: Ph.D. in Applied Mathematics

How I became an atmospheric scientist?
"I strongly believe that applied mathematics is the bridge between mathematics and engineering."

What I like about my job?
"I like the way I can put use my mathematical skills to solve real world problems. I can see where my research is getting applied to. "

Other Interests: Reading, Singing

The workbook also contains the pictures and biographies of all the NCAR volunteers the girls have interacted with.

Without fail, the girls always ask for us to sign our autographs next to our pictures at the end of the day!

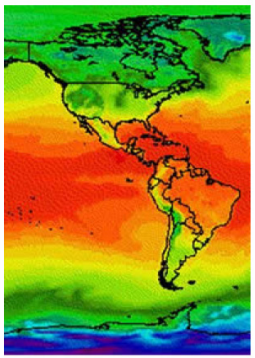
More On Climate:

What Is the Difference Between Weather and Climate?

It's a sweltering midsummer day. "It must be global warming," mutters someone. But is it the Earth's changing climate that has made the day so warm? Or, is it just the weather that is so unbearable?

Weather is the mix of events that happen each day in our atmosphere including temperature, rainfall and humidity. Weather is not the same everywhere. Perhaps it is hot, dry and sunny today where you live, but in other parts of the world it is cloudy, raining or even snowing. Everyday, weather events are recorded and predicted by meteorologists worldwide.

Sunset Through the Clouds



NCAR Climate Model Output

Climate in your place on the globe controls the weather where you live. Climate is the average weather pattern in a place over many years. So, the climate of Antarctica is quite different than the climate of a tropical island. Hot summer days are quite typical of climates in many regions of the world, even without the effects of global warming.

Climates are changing because our Earth is warming, according to the research of scientists. Does this contribute to a warm summer day? It may, however global climate change is actually much more complicated than that because a change in the temperature can cause changes in other weather elements such as clouds or precipitation.

What Is Climate and Climate Change?

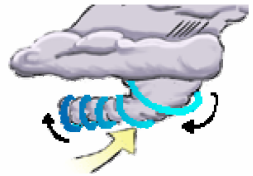
Our weather is always changing and now scientists are discovering that our climate does not stay the same either. Climate, the average weather over a period of many years, differs in regions of the world that receive different amounts of sunlight and have different geographic factors, such as proximity to oceans and altitude.

Above content is an excerpt from UCAR's Education and Outreach Website: http://eo.ucar.edu/

How do Tornadoes Form?

Tornadoes are associated with large (supercell) thunderstorms that often grow to over 40,000 feet. A column of warm humid air will begin to rise very quickly.

How the column of air begins to rotate is not completely understood by scientists, but one way the rotation appears to happen is when winds at two different altitudes blow at two different speeds creating wind shear. For example, a wind at 1000 feet above the surface might blow at 5mph and a wind at 5000 feet might blow at 25mph. This causes a horizontal rotating column of air.



If this column gets caught in a supercell updraft, the updraft tightens the spin and it speeds up (much like a skater's spins faster when arms are pulled close to the body. A funnel cloud is created.

The rain and hail in the thunderstorm cause the funnel to touch down creating a tornado.

Above content is based on UCAR's Web Weather for Kids Website: http://eo.ucar.edu/webweather/

The workbook also contains information on weather and climate, and links to web pages where the girls can get more information on science and technology.

The event is now entering it's third year, is under it's second generation of leadership and will have it's fourth event this September.

With funding from the ASP office, volunteers of female scientists and help from the NCAR Education and Outreach office, over 120 girls have visited NCAR and participated in the event.