May, 2011
Issue 11

Science in the News

TOPIC: Tornado Outbreaks in Southern and Eastern US

Event Dates:

+ Tornado Outbreaks: April 14th-16th 2011 (eastern US) & April 25th-28th 2011 (southern US)
+ April 27th-28th 2011: 266 tornadoes hit in 24 hours (8am-8am EST)

Project website: http://sese.asu.edu/teacher-resources

Event Description

The National Weather Service estimates that between 4/26-4/28, 312 tornadoes hit the southern US. There were over 600 tornadoes during the month of April, (4x April's average) setting a record for total number of tornadoes during any month. The current death toll is over 350, but this number is sadly expected to rise over the next few weeks as clean-up continues. Scientists rate the strength of tornadoes using the Enhanced F-scale. An EF0 tornado is the weakest and an EF5 is the strongest, most destructive tornado. In the recent tornado outbreak two EF5 tornadoes (*with winds over 200 mph!*) have been confirmed, one in Mississippi and one in Alabama. A tornado is defined as *a violently rotating column of air extending from a thunderstorm (a supercell) to the ground* (NOAA). When warm, moist air from the Gulf of Mexico and cool, dry air from Canada meet instabilities form in the atmosphere that can cause large thunderstorms called supercells. Variable wind directions & speeds can cause horizontal spinning in the supercell creating a mesocyclone. In rare cases, updraft tilts the rotating air (horizontal to vertical) creating a funnel cloud (NOAA). Scientists are actively studying tornadoes because details about how tornadoes form, grow, and die is still not well known.

EF4 (winds 166-200 mph) tornado hits Tuscaloosa, AL on April 27th 2011
credit: Dusty Compton, Tuscaloosa News/AP

Lesson Description

-- The goal of this lesson is to understand how tornadoes form --

(1) Introduce the current event by asking students to describe a tornado and then lead into a discussion about the tornadoes that hit the southern US. (2) Show US maps of the locations where tornadoes hit using: tornadomap1.jpg and tornadomap2.jpg (3) Watch two or three eyewitness/news tornado videos and ask students to write down three observations about tornadoes and ask one question about what they observed. (4) Select one of your students questions *(e.g., Why do tornadoes rotate?)* and have students write a hypothesis. (5) As a class, explore multiple interactives provided on the SciNews website and have students write down observations about tornado formation. (6) Have students assess and revise their original hypotheses based upon what their have learned.

Materials:

+ **Student worksheet.pdf:** student use this worksheet to record notes, observations, & their hypotheses on tornadoes.
+ **Tornado maps:** two maps showing the locations of tornado outbreaks.
+ **Tornado videos:** watch amazing footage videos & news broadcasts
+ **Tornado interactives:** interactives exploring how tornadoes form

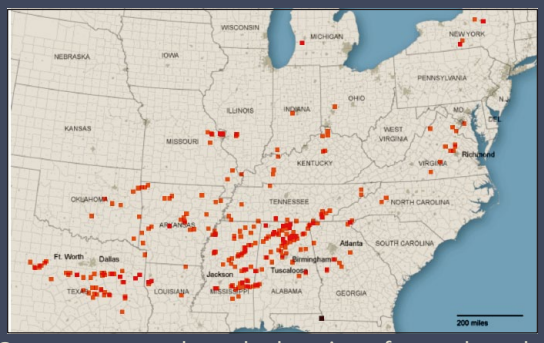
Targeted Arizona State Standards (6th & 7th grade)

(grade 7) Strand 1, Concept 1: Observations, Questions, and Hypotheses (PO1) Formulate questions based on observations that lead to the development of a hypothesis.

(grade 6) Strand 3, Concept 1: Changes in Environments - (PO1) Evaluate the effects of the following natural hazards (tornadoes).

(grade 6) Strand 3, Concept 1: Changes in Environments - (PO2) Describe how people plan for, and respond to, the following natural disasters (tornadoes).

- Location -



Orange squares show the location of tornadoes that touched down between 4/22 and 4/28 (source: nytimes.com)

- Before and After -

Informational Websites: *(links provided on the SciNews website)*

NOAA/NSSL Tornado Information: *www.nssl.noaa.gov/edu/safety/tornadoguide.html*
NOAA/NSSL Tornado Basics: *www.nssl.noaa.gov/primer/tornado/*
Tornadoes for Kids (FEMA): *www.fema.gov/kids/tornado.htm*
Google/GeoEye Before and After Photographs *(online)*
Tornado Outbreak Maps/Tornado Tracks by state *(online)*

Lesson Plan Suggestion: *(links provided on the SciNews website)*

Watch FREE online PBS Video "*Hunt for the Supertwister*" -- teachers guide for video is available for download.

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