

2008 Oklahoma State Science and Engineering Fair

On March 28th, Heather Moser and I served as special award judges for the 2008 Oklahoma State Science and Engineering Fair in Ada. Our chapter sponsored NOAA weather radios to be awarded to the most outstanding projects, along with AMS Certificates of Outstanding Achievement.

We judged 13 Division II (Grades 7-9) projects from 9 am to 12 pm and four Division I (Grades 10-12) projects from 1 to 3 pm. This included all 12 projects in the Earth and Space Science category, along with five projects in the Environmental Science, Physical Science, and Engineering categories that utilized some aspect of atmospheric and/or related hydrological/oceanic sciences. Each student gave a presentation describing their project before answering our questions. Nearly all students expressed a desire to have a career in a scientific field, with a few students indicating a specific interest in atmospheric science. The greatest weight in the overall score was given to the use of scientific thought and creativeness of the project, with additional scoring given on the skill, clarity, and thoroughness of the exhibit display.

For Division II, we awarded two NOAA weather radios and four Certificates of Outstanding Achievement. The recipients of both a weather radio and certificate were Sadie Woodall, a 9th grader from Aline (near Enid), and Morgan McCalmon, an 8th grader from Norman. Sadie's project was titled "Darn It! It Rained" and involved investigating different types of soil permeability. The impetus of the project came from the slipping and sliding of horses riding at her family's stable after heavy rain events. Although their existing soil was primarily made up of clay, she found that using a mixture of dirt and sand resulted in higher permeability (and thus better footing for the horses). She claimed that either a mixture of 25% sand or 50% sand worked nearly as well, but that the dollar-cost of a mix with 25% sand would be most effective. Sadie that said she plans to use the results of her project to purchase a better soil mixture for their stable. Morgan's project was titled "Up Up and Away!". Her inspiration came from watching a hot air balloon festival in Tulsa where the balloons had difficulty ascending during a hot summer day. Her hypothesis asked "Does surrounding air temperature affect the buoyancy and lift of a helium-filled balloon?" Her application of the scientific method was particularly impressive, as she attempted to remove all unknowns from her testing, except for temperature. Her testing locations were also unique in that she utilized a local warehouse to test temperature ranging from -13 to 34° C inside freezers and heated rooms.

Two additional certificates were awarded in Division II to Justin Yu, a 9th grader from Bartlesville, and Kevin Cabe, a 9th grader from Oklahoma City. Justin's project was titled "Is Trapping Heat CO₂'s Feat?" His experiment involved adding CO₂ from dry ice into a vacuum-sealed bag and comparing temperatures of that to a vacuum-sealed bag of regular air. He also provided comparisons of various carbon footprint levels in the U.S. Kevin's project was titled "Wind is Power (Phase 2)". His project was a follow-up to last year's in which he tested different pitch angles for maximizing power from a miniature

wind turbine. This year's project involved testing different materials at that optimal pitch. He utilized Oklahoma Mesonet data for his uncontrolled wind experiments.

Other notable Division II projects included: 7th grader Claire Delsigne who has an interest in becoming a meteorologist and who created a tornado simulation machine; 7th grader James Reeves who attempted to relate sunspots to changes in the UV Index; 7th grader Megan Kelly who looked at how solar flares form and how they might affect space weather; and 8th grader Parker Stambaugh who used Oklahoma Mesonet data to relate traffic accident injuries to frozen/non-frozen precipitation occurrences.

For division I, we awarded one NOAA weather radio and Certificate of Outstanding Achievement. The recipient was a repeat-winner, Keeton Storts, a 10th grader from Ada. Keeton's project was titled "Impact of Atmospheric Aerosol Particles on Ultraviolet Radiation Absorption." He placed various aerosol particles inside a box with UV illuminator and sensor to track absorption. He found that dark soil, closely followed by wood ash, had greater rates of UV radiation absorption compared to light soil, water, or steam. Keeton also expressed an interest in becoming a meteorologist someday.

Other notable Division I projects included: 11th grader Sarah Reiss who attempted to relate population to the intensity and path of tornadoes, and 10th grader Sarah Burkinshaw who has an interest in becoming a meteorologist and who calculated her family's carbon footprint while exploring various ways to reduce it.

- Jeremy Grams
COCAMS/NWA Secretary