

## The 2007 Oklahoma State Science and Engineering Fair

March 30<sup>th</sup>...

COCAMS Treasurer, Kit Wagner, and I headed to Ada, Oklahoma, to serve as judges at the 2007 Oklahoma State Science and Engineering Fair (OSSEF). We arrived bearing two COCAMS-sponsored NOAA weather radios to give deserving students. We were also honored to serve as representatives of the national organization, awarding two certificates on behalf of the American Meteorological Society (AMS).

Judging of Division II (Junior High) projects ran from 9 am to 12 pm. We needed at least that much time to interview each student and size up the wealth of creative ideas each presented. We poured over 11 projects, most of which were entered in the Earth and Space Science category. Each student would make a brief presentation before fielding our questions. Kit and I were impressed at the passion many of these students showed toward their subject matter; many expressed a desire to one day work in the atmospheric sciences. But while everyone had clearly applied the scientific method, it was their understanding of core concepts, experimental design, and the ability to expand on their ideas that set the winners apart.

The NOAA weather radios were awarded to two students who investigated different aspects of climate change, by far the dominant theme in the Division II projects. In "The Effect of Green House Gases Upon the Absorption of Heat Within the Atmosphere," Keeton Storts isolated carbon dioxide, methane, and ambient air, respectively, under a heat lamp, and recorded temperature traces. In another study titled "Ice is Nice for Most on the Coast," Victor Trautmann built a scale model of two continents separated by an ocean. He showed us video of his experiment which simulated glacier melt on one continent and the subsequent sea level rise on the other. Both of these students demonstrated unique use of materials in constructing their experiments.

In the afternoon session, Division I (Senior High) produced only one Earth science entry, "Hurricane Meltdown, Part II: Weakening Hurricanes with Large-Scale Dispersion of Liquid Nitrogen." This intriguing project was certainly worthy of an AMS certificate. Jonathon Michael and Jason Stanton worked with both the National Center for Atmospheric Research and Dr. Kerry Emanuel of the Massachusetts Institute of Technology. They tested a simple one-dimensional model of wind speed at a point in a hurricane. Their results indicate that applying a heat sink such as cold liquid nitrogen beneath a hurricane may lead to a temporary weakening of wind speed as substantial as two categories on the Saffir-Simpson Scale. More research will be needed to see whether this is a practical approach to hurricane mitigation in three dimensions.

For the second AMS certificate, we again reached into the rich pool of Division II projects, and awarded Mackenzie Coffey. Her project, "The Application of Frequently Used Meander Parameters to a Small-Scale Stream Model," fit well with the hydrological interests of the AMS and its members. In what was a very creative and nicely designed experiment, Mackenzie forced scaled down streams of varying width into meander

patterns that were not consistent with theory to see if the streams would naturally adjust toward the theoretical patterns. Although the streams did not adjust as much as hypothesized, Mackenzie's data pointed to the need to test a larger range of stream widths over longer times.

Interaction with the students at the OSSEF was refreshing and inspiring. Our only regret was that there weren't more projects to judge and more awards to give away! We would certainly encourage other agencies to sponsor awards across the various scientific disciplines represented at the OSSEF. COCAMS looks forward to participating for many years to come!

- Patrick Burke  
COCAMS President