

Investigation of Idabel, Oklahoma Ozone Concentration Pre- and Post-Frontal Passage

Alexander Kotsakis, Veronica Fall

Departmental Affiliation: Geography and Meteorology
College of Arts and Sciences

Fifty-eight ozone profiles from Oklahoma State University's Kiamichi Forestry Research Station in Idabel, OK have been collected over the last three years. This has been made possible through funding from the Texas Commission for Environmental Quality. The data has provided an opportunity to see what was happening meteorologically that affected ozone concentrations. With ozone being the primary cause of short and long-term respiratory issues, the impact of weather on air quality is something that is still being researched. Ozone pre-cursor emitters such as Dallas, Oklahoma City, Longview, and Texarkana surround Idabel. Meteorological conditions such as temperature, wind speed, and direction all affect ozone transport and creation. While it is known that ozone is present in this area, it is not known how frontal passage affects ozone concentrations. Several case studies will be investigated to examine how the synoptic weather pattern and frontal passages affected the concentrations and transport of ozone at Idabel. Archived surface analyses, ozone concentration maps, and air parcel trajectories will be used in addition to the data from the ozone profiles.

Information about the Authors:

Alexander Kotsakis is from Palatine, Illinois while Veronica Fall is from Wauconda, Illinois. Both will graduate in May 2013 with a B.S. in meteorology. Alex and Veronica both plan to attend graduate school, where Veronica will pursue research related to climate change and policy while Alex may continue research with air-quality and low-level ozone concentrations. The students became interested in this project because of the large amount of data from the launches that was already available, which offered many opportunities for different conclusions to be made. Additionally, the students were able to make a trip to Oklahoma and Texas over spring break to learn more about air quality and the different factors that influence ozone concentrations near Idabel in southeast Oklahoma.

Faculty Sponsor: Dr. Gary Morris

Student Contact: veronica.fall@valpo.edu