



Survey of Light Pollution in the Rogue Valley, Southwest Oregon, St. Mary's School, Medford, Oregon



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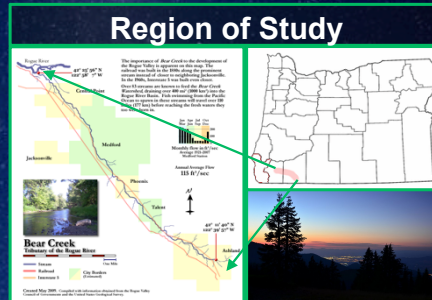
What did we do? Established a light pollution map for the Rogue Valley, Oregon.
Why did we do it? To increase awareness of light pollution in the hopes of limiting it during population growth.

ABSTRACT & CONTEXT

Rural areas in Oregon, including the Rogue Valley, are renowned for beautiful dark skies. Electric light came to Medford, Oregon, the largest town in the Rogue Valley, in 1894. During the past 100 years the Rogue Valley grew from 2,500 individuals in 1895 to a population of 76,462 and a metropolitan area population of 208,545 in 2012. The increased population density resulted in increased light pollution. A light pollution chart using DMSP (Defense Meteorological Satellite Program) data was published in 2006, but did not show the spatial variation in detail. In the spring of 2014, the 9th grade physics and astronomy students, as well as members of the Astronomy Club from St. Mary's School conducted the first detailed night sky survey. The purpose of the survey is to create a baseline of the variations in light pollution in the Rogue Valley.

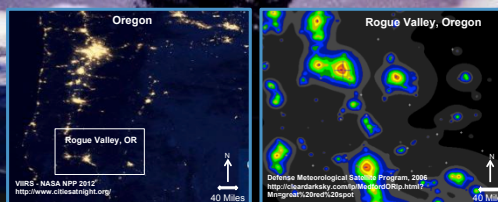
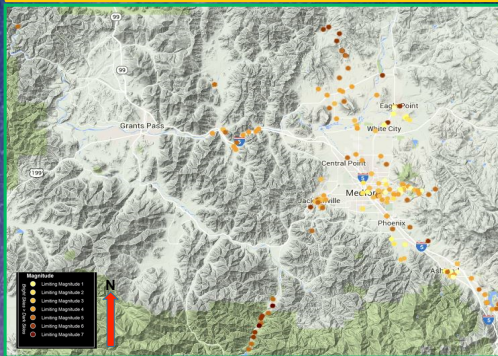
The project started with a talk by Steve Bosbach, former Texas IDA (International Dark-sky Association) coordinator, on the topic of light pollution and how it affects our lives and the environment. Groups of students were given the tasks of measuring the night sky brightness in the Rogue Valley, doing a light audit in an area of their choice, and researching what light pollution is and its effects on the environment. From this they created a presentation for a final physics grade. The basis for this project, along with procedures can be found on the Globe at Night (www.globeatnight.org) website. The light audit and research portion were developed from the Dark Sky Rangers section (www.globeatnight.org/dsr/) of the website. In the fall of 2014, astronomy students and club members extended this study to the town of Ashland and the Southern Oregon University campus, areas of the Rogue Valley not surveyed in the Spring.

This survey will increase awareness of light pollution in the Rogue Valley, as well as educate developers and city planners on the impact that light pollution has on the environment in Southern Oregon. It will help determine areas of concern and areas of dark sky compliant lighting, which could spur appropriate regulation regarding outdoor lighting.



WHAT WE ACCOMPLISHED
158 DATA POINTS IN 2014!!

Globe at Night
2014 Globe at Night Light Pollution Map of the Rogue Valley



Acknowledgments

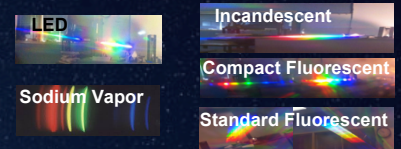
For their encouragement and help putting this poster and abstract together, we would like to thank Dr. Panos Photinos, Steve Bosbach, Dr. Luisa Rebull, and Dr. Connie Walker, we are forever in your debt. Thanks as well to the 2014 Ninth grade Physics Class and the Astronomy Club for collecting sky magnitude data.

SOUTHERN OREGON UNIVERSITY LIGHT AUDIT

Why? Evaluate the efficiency of the Southern Oregon University campus lights. Determine the quality of the lights used on campus:

- Shielded or unshielded lights;
- Glare;
- Enhance campus features;
- Sustain safe environment.

Take spectrum -- determine the type of light bulb used in each fixture.



Pre-2000 Construction

- Concerns - Unshielded
- Glare
- Inefficient use of energy
- Does not enhance campus or increase safety



Post-2000 Construction

- Praise - Less light pollution
- Greater enhancement
- Increased safety
- Less glare

RECOMMENDATIONS

- Retrofit all non-compliant light fixtures with shields and high lumen/low wattage bulbs.