



## Abstract 2010 NEAIC Talk:

### Measuring light pollution with an all-sky CCD imaging system

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In 2001, the U.S. National Park Service formed the Night Sky Team, with the primary objective of preserving natural dark skies throughout the National Park system of protected lands. A significant technical challenge of measuring the amount of light pollution over the entire hemisphere of the sky was addressed using a wide field CCD camera on a portable robotic telescope mount. Images of the sky taken with a broad-band V filter are processed to extract the extinction coefficient, background sky brightness at two degree resolution, and human-caused light pollution appearing

as skyglow. These measurements are calibrated to a photometric system very close to Johnson V, representing accurately the appearance of the night sky to the human eye. The effect of light pollution on the human visual experience is quantified and reported using various metrics, including an synthetic index that takes into account ability of humans to perceive features in the night sky that are of cultural importance. For locations remote from cities and towns, including many National Parks and Monuments in the western U.S., the impact of individual cities may be measured under varying atmospheric conditions, and this information may be used to verify models of light pollution propagation. Data from over 75 National Park Service areas have been collected, and processing of the raw images is currently underway.