# NightVision

***Night Vision* Summary:** Night Vision is a NASA-supported program in which observers quantify the sky glow over their community. Families and teams use hand-held Sky Quality Meters (SQMs) to measure the the amount of light reflected back down to earth from multiple sites. They will manually plot the SQM readings on a county map and create "contour lines" of equal brightness. The baseline map may be used in the future to suggest changes in the local light pollution level. After discussing the trade-offs of lighting technology and the social decisions related to outdoor lighting, participants will report their findings to the community through self-designed presentations.

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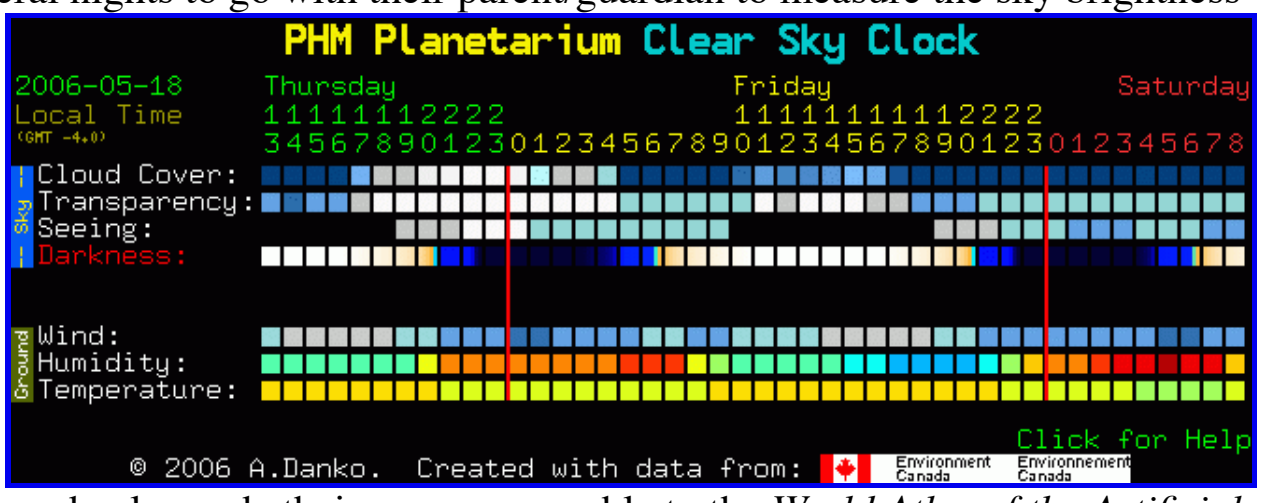
## *Night Vision* Details:

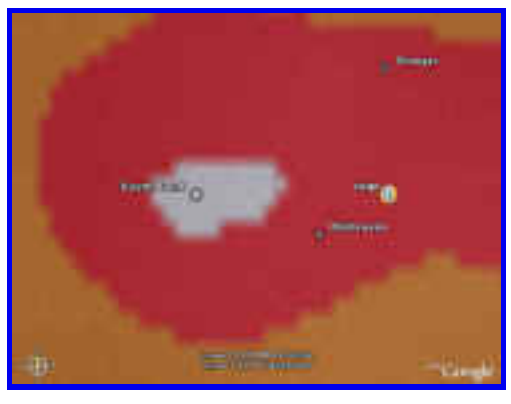
Energy wasted skyward is a global issue; **Night Vision** seeks local solutions. While minimizing light pollution is an emerging priority for the astronomy community, degraded night skies will affect future generations of families who gaze skyward at the stars. Unfortunately, several lighting issues are neither well known to the public nor well documented.

The **Night Vision** project invites families to quantify the sky glow from multiple locations using Sky Quality Meters (SQMs), a new hand-held device that measures the sky brightness in visual magnitudes per square arc-second. The participants will manually affix their data on a county-scale map and draw light “contour lines” connecting equal values of sky glow. Future measurements against this valuable baseline data would indicate change in light pollution levels. **Night Vision** is one step toward preserving the heritage of the night sky.

**Night Vision** invites middle-school- and high-school-age participants from the Boys & Girls Club of St. Joseph County, from Girl Scouts from Singing Sands Council, from AstroCamp at YMCA Camp Eberhart, and others to participate. At an organizational meeting, the Night Vision coordinator will introduce participants to the project and to their respective roles. A parent/guardian must accompany each participant while gathering data at night. All participants and their parents/guardians must agree to abide by nighttime safety practices.

The Night Vision coordinator will host a second meeting at the PHM Planetarium in Mishawaka, IN, to illustrate local lighting issues in detail and to have participants practice using the SQMs, which will be shared through local outlets. Participants will have use of an SQM for several nights to go with their parent/guardian to measure the sky brightness from multiple sites around town. For each SQM measurement, observers must also record time, location, observing conditions, notes, and data from the PHM Clear Sky Clock (http://cleardarksky.com/c/PnnHrMPINkey.html).



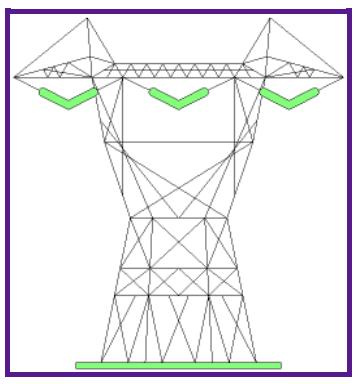



After observations are made, the group will meet to share experiences, observations, and data. They will collectively plot on a local map their SQM values. They will then draw light “contour lines” of equal brightness and color-code their map comparable to the *World Atlas of the Artificial Night Sky Brightness* (www.inquinamentoluminoso.it/worldatlas/pages/fig1.htm). The students will compare and contrast the *Atlas* map with their local sky glow map.

The group will have a dialogue about the relationship between lighting technology and social decisions. Though the concerns of the astronomy community are most obvious, all stakeholders in outdoor lighting will be given consideration. The Night Vision coordinator and the participants will collectively determine how they will use their **Night Vision** experience to generate awareness of lighting issues in the community.


## Night Vision links:

- *Nightwise.org*
- Roles of *Night Vision* participants
- PHM Planetarium Clear Sky Clock
- How to use a Sky Quality Meter (SQM)
- *Night Vision* Observation Form
- What the SQM measures
- "Magnitudes per square arc-second"
- Sample of local SQM readings
- Astronomical Twilight Times
- Finding latitude and longitude
- Ideas for Student-Directed *Night Vision* Projects
- *Sorry Starry Night* student experiment
- Energy Chain
- PHM Planetarium & Air/Space Museum
- Moon Phase Calendars
- Moon Finder Activity
- Observing Highlights & Sky Chart



- St. Joseph County Lighting Ordinance
- St. Joseph County base maps
- St. Joseph County GIS website
- Introduction and tutorial on Geographic Information System (GIS)
- Sky Glow Mapped in Rockland, Maine
- Comments about recent Indiana time issues
- Third-grader offers safe advice about curbing light pollution
- *Globe at Night* star count supports 2009 International Year of Astronomy
- Students investigate lighting issues and share findings with classmates

**Night Vision** project coordinator Chuck Bueter develops informal education programs with support from the planetarium community. Among his projects are *Paper Plate Education* (http://analyzer.depaul.edu/paperplate) and *Transit of Venus* (http://www.transitofvenus.org/). **Night Vision** is supported in part by a PLATO grant from NASA's DePaul Space Science Center for Education and Outreach.

www.nightwise.org