Campbell-Stokes Sunshine Recorder Charts Project

Blue Hill Observatory: Campbell-Stokes Sunshine Recorder Charts Project

Campbell-Stokes Sunshine Recorder Charts Project Poster
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Proposal:

Collect charts from Campbell-Stokes sunshine recorder (located at Blue Hill Observatory, Milton, MA) and scan them into a computer database. Create a database with as many of the chart images as is possible within the deadline; charts date back to 1885 (over 40,000 charts). Analyze these images using image analysis software in order to measure the burn size and acquire a measure for the suns intensity at a given hour on a given day.

Goals:

- Locate charts for Campbell-Stokes sunshine recorder at Blue Hill Observatory (Milton, MA) and archives (Cambridge, MA).
- Scan C-S cards into computer database at BHO.
- Use image analysis software to quantify the amount of chart that was burned each hour of each day.
- Make data set readily available.

Two possible ways:

- Find the center of each burn and measure the radius of the burn holes.
- Measure the amount of burn in a single square of the sheet (one square representing 1 hour) using a burn hole to chart ratio, which yields a percentage that can be compared to the maximum percentage of total sunlight intensity.

(crystal clear day on July 21st would theoretically yield the largest burns).

Deadlines:

- Scan enough charts to make analysis possible, 10 to 25 years.
- Additionally, make sure image analysis software will be effective on C-S chart images (8/31/2010).
- Test and be sure image analysis software works on a large sample, 1 to 5 years (9/31/2010).
- Use image analysis software on full set of charts (10 to 25 years) and organize data set so it can be examined and understood as well as used for scientific research (12/31/2010).