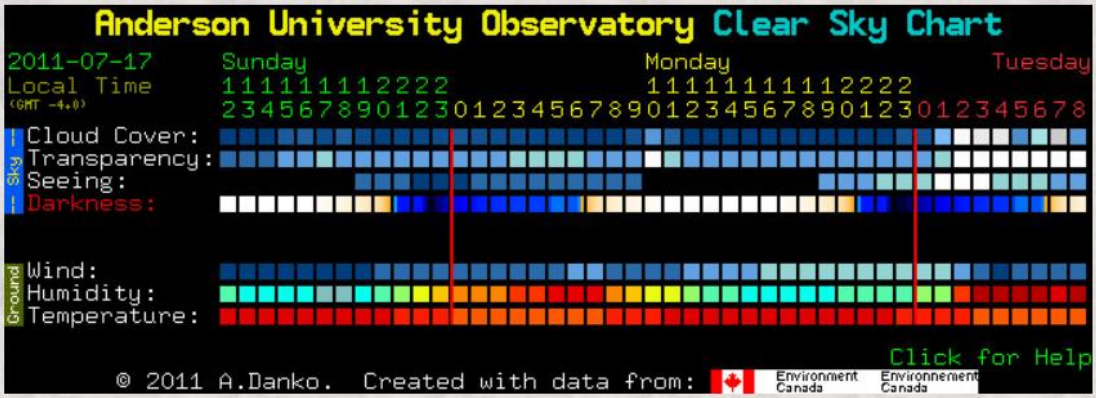
Indiana Astronomical Society

How to read the Clear Sky Chart

Clear Sky Chart Example



Details:

Read the image from left to right. Each column represents a different hour. The colors of the blocks are the colors from CMC's forecast maps for that hour. The two numbers at the top of a column is the time. A digit 1 on top of a 3 means 13:00 or 1pm. It's local time, in 24hr format. (Local time for Indianapolis is -5.0 hours from GMT.) In the rows labeled "sky conditions", find a column of blue blocks. You can probably observe then.

Cloud Cover:

Overcast	90% covered	80% covered	70% covered	60% covered	50% covered	40% covered	30% covered	20% covered	10% covered	Clear

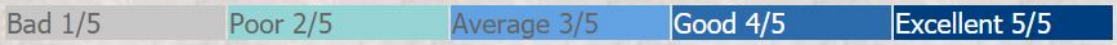
The line, labeled **Cloud Cover** forecasts total cloud cover. The colors are picked from what color the sky is likely to be, with Dark blue being clear. Lighter shades of blue are increasing cloudiness and white is overcast. This forecast may miss low cloud and afternoon thunderstorms. When the forecast is clear, the sky may still be hazy, if the transparency forecast is poor.

Transparency:

Poor	Below Average	Average	Above average	Transparent

The line, labeled **Transparency**, forecasts the transparency of the air. Here 'transparency' means just what astronomers mean by the word: the total transparency of the atmosphere from ground to space. It's calculated from the total amount of water vapor in the air. It is somewhat independent of the cloud cover forecast in that there can be isolated clouds in a transparent air mass, and poor transparency can occur when there is very little cloud. Above average transparency is necessary for good observation of low contrast objects like galaxies and nebulae. However, open clusters and planetary nebulae are quite observable in below average transparency. Large globulars and planets can be observed in poor transparency.

Seeing:



The line, labeled **Seeing**, forecasts astronomical seeing. Excellent seeing means at high magnification you will see fine detail on planets. In bad seeing, planets might look like they are under a layer of rippling water and show little detail at any magnification, but the view of galaxies is probably undiminished. Bad seeing is caused by turbulence combined with temperature differences in the atmosphere. This forecast attempts to predict turbulence and temperature differences that affect seeing for all altitudes.

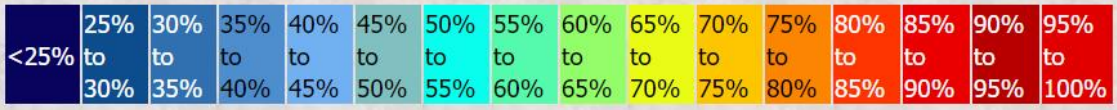
Darknesss:

The line labeled **darkness** is not a weather forecast. It shows when the sky will be dark, assuming no light pollution and a clear sky. Black is a dark sky. Deep blue shows interference from moonlight. Light blue is full moon. Turquoise is twilight. Yellow is dusk and white is daylight. For those who prefer numbers, the scale is also calibrated. The numbers are the visual limiting magnitude at the zenith. (The brightness of the faintest star a standard observer can see straight up.) Mouse over a darkness block for details.

Wind:

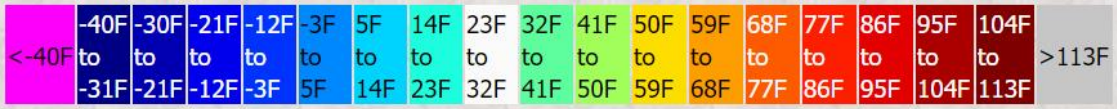
This forecasts wind speed at about tree-top level. The wind forecast won't determine whether or not you can observe, but it may affect your comfort and the type observing you might be limited to. In particular, long-focal length astrophotography, or observing with large Dobsonians require light wind conditions. High wind may be particularly dangerous for larger truss-tube Dobsonians which must be disassembled in the vertical position.

Humidity:



This forecasts ground-level relative humidity. Humidity variations can indicate the likelihood of optics and eyepieces dewing. But dewing is not simply correlated to relative humidity. Dewing tends to happen when the sky is clear, the temperature is dropping and there isn't much wind. Being on a hilltop or in a small valley can make the difference between no dew and dripping telescopes. Unfortunately, the humidity forecast does not have the spatial resolution to know about small hills, valleys, or observatory walls. All of which can reduce dewing. A sudden spike in the humidity forecast, an hour or so after the cloud forecast predicts a sudden transition from cloudy to clear, is a good indication that ground fog will form. This is especially true if the transparency is good. Also, when the cloud forecast is opaque and the humidity forecast is 95%, rain is likely: a good time to cover the telescopes.

Temperature:



This forecasts temperatures near the ground. While temperature variations won't determine if you can observe, the forecast can be handy choosing clothing for cold observing conditions. (In general, dress as if it were 20 degrees F or 10 degrees C **colder** than the forecast.) Observers with thick primary mirrors should take note of falling temperature conditions because their mirrors may require additional cooling to reach equilibrium and so prevent tube currents.