How do I read it?

Summary: In the rows labeled "sky conditions", find a column of blue blocks. You can probably observe then.

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 Ottawa is -4.0 hours from GMT.)

Cloud Cover

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.

CMC's text page explaining this forecast is here.

Transparency

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 independant 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.

A forecast color of white formally means that CMC didn't compute the transparency forecast because the cloud cover was over 30%. So it may be possible to observe during a white transparency forecast, but the real transparency is usually yucky. CMC's text page explaining this forecast is here.

Seeing

The line, labeled **Seeing**, forecasts astronomical seeing. (It's an experimental forecast.) 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.

Bad seeing can occur during perfectly clear weather. Often good seeing occurs during poor transparency. It's because seeing is not very related to the water vapor content of the air.

The excellent-to-bad seeing scale is calibrated for instruments in the 11 to 14 inch range. There are some more details in CMC's seeing forecast page.

There are gaps in the line of seeing blocks because CMC's seeing model does not consider daytime heating, so the forecast is only available for the night. Seeing is forecast for 3-hour blocks, so triples of seeing blocks will show the same color. A white block on the seeing line means that there was too much cloud (>80% cover) to calculate it.

Note also that you may observe worse seeing though your telescope than what a perfect seeing forecast would predict. That is because tube currents and ground seeing mimic true atmospheric seeing. You may also observe better seeing than predicted here when observing with an instrument smaller than 11 inches.

You can help improve the seeing forecast by submitting observations to the Astronomical Seeing Observations program.

Darkness

-4 -3 -2 -1 0 1.0 2.0 3.0 3.5 4.0 4.5 5.0 5.2 5.4 5.6 5.8 6.0

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.

It is based on Ben Sugerman's Limiting Magnitude calculations page. It takes into account the sun's and moon's position, moon phase, solar cycle and contains a scattering model of the atmosphere. It doesn't consider light pollution, dust, clouds, snow cover or the observer's visual acuity. So your actual limiting magnitude will often be different.

Wind

>72 km/hr | 46 to 72 km/hr | 28 to 45 km/hr | 19 to 27 km/hr | 9 to 18 km/hr | 0 to 8 km/hr

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

<25% | 25% to 30% | 30% to 35% | 35% to 40% | 40% to 45% | 45% to 50% | 50% to 55% | 55% to 60% | 60% to 65% | 65% to 70% | 70% to 75% | 75% to 80% | 80% to 85% | 85% to 90% | 90% to 95% | 95% to 100%

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.

Since there are many different levels in this forecast, with similar looking colors, it's best to activate the "explain colors when you mouse over" to interpret the colors.

Temperature

< -40C	-40C to -35C	-35C to -30C	-30C to -25C	-25C to -20C	-20C to -15C	-15C to -10C	-10C to -5C	-5C to 0C	0C to 5C	5C to 10C	10C to 15C	15C to 20C	20C to 25C	25C to 30C	30C to 35C	35C to 40C	40C to 45C	> 45C

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.

How do I see the full maps?

To see CMC's full map for a particular hour, click on a colored block. The CMC map your browser will load will be the map closest to the hour you picked. The time on the CMC map might look odd because it's in GMT, while the blocks on the chart are in local time.

It's worth checking a few of the full maps before committing to a long drive out to an observing site.