

# Reading Weather: Internet Tools

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The internet is incredibly handy for meteorologists. This article will take a look at weather discussions (synopses), satellite images, the public webpage of Environment Canada and three different aviation weather tools that are technical, but extremely useful for the 12–24 hour forecast: METARs (observations), TAFs (forecasts) and GFAs (area forecast).

## SYNOPSIS

A synopsis is a hand written, technical summary describing weather over a certain area at the time of writing. **Synopsis is no forecast, but is probably the most powerful tool if you want to learn about local weather** and get familiar with technical expressions. Sometimes a synopsis is followed by a forecast or an evaluation of weather models, which is often called a *discussion*.

Unfortunately Meteorological Service of Canada (MSC) does not make their internal synopsis public anymore due to translation costs, but the National Weather Service (NWS) is still producing them for the US and they will be useful for trips along the border. Here are the different NWS offices' synopses:

Pacific Northwest (Seattle, Portland and Spokane): [www.weather.gov/view/prodsByState.php?state=wa&prodtype=discussion](http://www.weather.gov/view/prodsByState.php?state=wa&prodtype=discussion)  
iwin.nws.noaa.gov/iwin/wa/discussion.html  
Juneau: [cwsu.arh.noaa.gov/wmofcst.php?wmo=FXAK67PAJK&type=public](http://cwsu.arh.noaa.gov/wmofcst.php?wmo=FXAK67PAJK&type=public)  
Anchorage: [pafc.arh.noaa.gov/pubfcst.php?fcst=FXAK68PAFC](http://pafc.arh.noaa.gov/pubfcst.php?fcst=FXAK68PAFC)  
Missoula: [weather.noaa.gov/pub/data/raw/fx/fxus65.kms0.afd.mso.txt](http://weather.noaa.gov/pub/data/raw/fx/fxus65.kms0.afd.mso.txt)

If you have trouble with some of the terms they use, try the American Meteorological Society's dictionary at <http://amsglossary.allenpress.com/glossary>.

## SATELLITE IMAGES

Satellite images can be an overwhelming tool. Often they seem intuitive, but there are interpretation traps, so be careful. Learning to read satellite images is easiest in a classroom where one can go through many examples under professional oversight. At the same time, satellite images are super-fun to simply look at and I find them sometimes superior to ocean waves or campfires—you just stare at them and find new swirls, funny shapes and cool phenomena all the time. If that makes me a geek –

so be it! See, if you can withstand their lure: A 1km resolution visible satellite still image from the University of Washington (there has to be daylight to see anything; you can often see coastal and valley fog, the marine layer and forest fires): [www.atmos.washington.edu/~ovens/loops/wxloop.cgi?vis1km\\_west\\_full+1](http://www.atmos.washington.edu/~ovens/loops/wxloop.cgi?vis1km_west_full+1) Here is a mix of visible (yellow tones) and infrared (blue tones) of images from MSC combined into a java loop by the University of Northern BC. This one gives you a really neat 3 dimensional view of clouds: [cirrus.unbc.ca/cgi-bin/loops/SATELLITE\\_IR\\_Goes-W\\_W-Canada-ir-visible](http://cirrus.unbc.ca/cgi-bin/loops/SATELLITE_IR_Goes-W_W-Canada-ir-visible)

## FORECAST

Environment Canada spent a lot of time revamping their website and it has paid off! Navigating through some pages is still awkward, but the information is phenomenal. Go to their public portal at [www.weatheroffice.gc.ca/canada\\_e.html](http://www.weatheroffice.gc.ca/canada_e.html), select your region and then your town of interest and click go.

When looking at public weather forecast there is only one advice to go by:

**Do not ever look at weather symbols.** No icon can describe objectively the progression of weather in a tiny symbol. Weather icons are extremely subjective and a never-ending source of confusion. **Do read the text.** You will spare yourself a lot of grief! Now I want to draw your attention to the blue squares that say “more info”. Check them out and you will find a massive amount of information that the media is usually throwing at us. A very good friend of mine lovingly refers to these data as ‘weather diarrhea’ because they are hard to digest in one glance, and even if you do, they will very quickly leave your memory again.

But in a lot of cases they are very useful: records, yesterday's precipitation, maximum wind gusts etc.

Also do not forget about the two most valuable tools when you are in the field and have access to radio or phone. **The ATAD weather radio:** [www.weatheroffice.pyr.ec.gc.ca/atadwxradio\\_e.html](http://www.weatheroffice.pyr.ec.gc.ca/atadwxradio_e.html). And the only 1-900 number my wife does not mind seeing on the phone bill: the **Weather one-on-one**, where you talk to a meteorologist about your weather forecast: [www.msc-smc.ec.gc.ca/weather/oneONone\\_e.html](http://www.msc-smc.ec.gc.ca/weather/oneONone_e.html)

## AVIATION WEATHER TOOLS

When planning trip it is always helpful to check observations taken by professionals. Since most of 21st century meteorology is driven by aviation dollars, the data is geared towards air travel, but it still shows everything we need to know.

## METAR

*MEteorological Terminal Aerodrome Report* If you go to NOAA's Aviation Digital Data Service (ADDS) and select their Metar page at [adds.aviationweather.gov/metars/](http://adds.aviationweather.gov/metars/) you can get them all. You have to know your airport identifier which you can look up here: [adds.aviationweather.gov/metars/stations.txt](http://adds.aviationweather.gov/metars/stations.txt) (*tip: Use Ctrl+F on a PC or Apple+F on a Mac to search for a word within this webpage*). For example Vancouver is CYVR. So, type CYVR in the empty field on the right side of the Metar page and select “translated”. You can also either select “most recent observation” or several hours of past observations. When you are done, hit the submit button and voila: the most recent weather report from Vancouver. If you go several hours back you can see the progression of wind shifts, barometer falling etc. **This is very handy to see fronts approach, fog dissipating etc.**

If you are adventurous select ‘raw format’. Here you can see the progression of weather better but it might be more difficult to read.

Explanation of aviation abbreviations is at: [www.msc.ec.gc.ca/msb/manuals/manab/html/download\\_e.cfm](http://www.msc.ec.gc.ca/msb/manuals/manab/html/download_e.cfm)

## TAF

*Terminal Aerodrome Forecast*

You can use the same tool to find the official aviation forecast for the airport. This will show you much more detail than any “cartoon weather image” of most public services. Go again to the ADDS page, but this time check “TAF”. Type again CYVR for Vancouver in the blank field and select “translated” and “most recent only”. If you hit submit, you will get a detailed aviation weather forecast.

The drawback is that you can only retrieve information from airports that receive forecasts. Some airports close down overnight and only get daytime forecasts. The information in this report is unbelievably useful and includes timing/onset of thunderstorms, precipitation type (hail, freezing rain), fog and when it will develop, winds and cloud heights.

## GFA

### Graphic Area Forecast

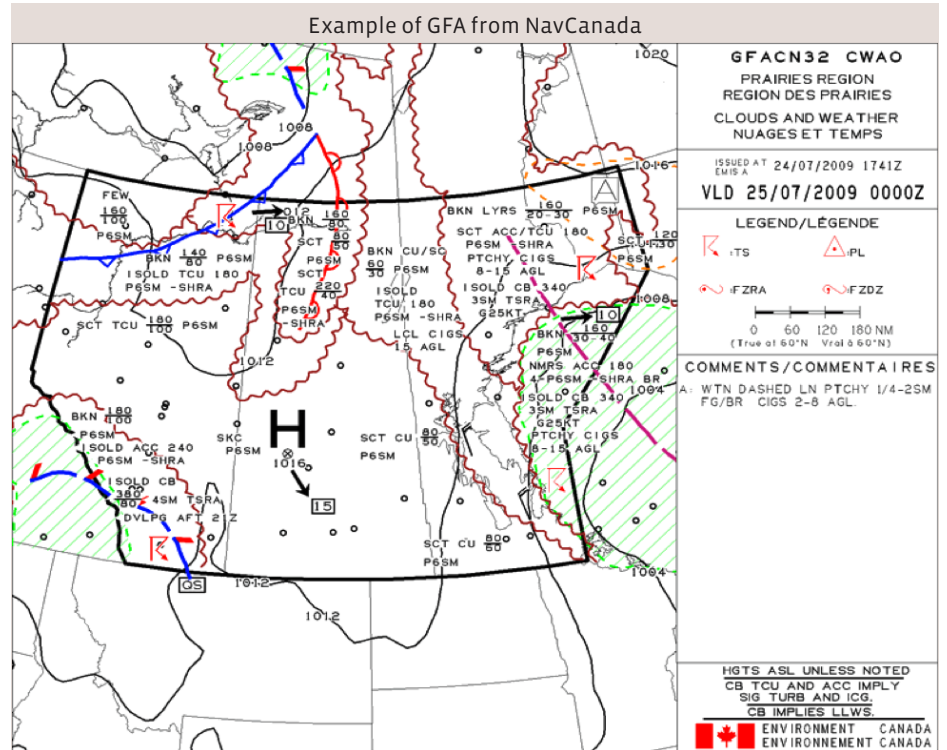
In a previous issue we had already talked about fronts and how they are drawn on a surface analysis by Environment Canada meteorologists. You can find their charts at [http://www.weatheroffice.gc.ca/analysis/index\\_e.html](http://www.weatheroffice.gc.ca/analysis/index_e.html) and my favourite of these is the early morning edition that you can find at [http://www.weatheroffice.gc.ca/data/analysis/935\\_100.gif](http://www.weatheroffice.gc.ca/data/analysis/935_100.gif).

The problem here is that these fronts are depicted in the past but you may want to know where they will be in the future. Meteorological Service of Canada is creating such charts for Nav Canada several times a day. They are called “graphic area forecasts” or short “GFA” and depict clouds, weather and features over the next 12 hours.

**They contain an immense amount of weather information including winds, thunderstorms, freezing levels etc. and beat any other weather site in accuracy and detail hands down.**

The problem with them is that the room available to describe the weather is limited and thus meteorologists use aviation abbreviations. A few of the more common abbreviations are listed in the table on this page. If you read only the abbreviations, it would sound like a five year old talking with his mouth full of cake. So, it may take a bit

Basic abbreviations used in Aviation Weather Tools	
SKC	Sky Clear
FEW	Few
SCT	Scattered
BKN	Broken
OVC	Overcast
SM	Visibility in Statute Miles (1.6km)
P6SM	Visibility beyond 6SM
KT	Wind speed Knots (1.9km/h)
G30KT	Wind gusting 30 knots
SHRA	Showers of rain
SHSN	Showers of snow
FG/BR	Fog/Mist
RA	Rain
SN	Snow
ASL	Above sea level
AGL	Above ground level
ACC	Alto cumulus castellanus
TCU	Towering Cumulus
CB	Cumulonimbus
TS	Thunderstorm
TSRA	Thunder and rain showers
PL	Ice Pellets
GR	Hail
FRZA	Freezing Rain
Full list at <a href="http://www.msc.ec.gc.ca/msb/manuals/manab/html/download_e.cfm">www.msc.ec.gc.ca/msb/manuals/manab/html/download_e.cfm</a>	



of getting used to, but it is well worth the effort and this article is supposed to give you a start.

I have combined the relevant charts on a small Java loop, that I find more user friendly than NavCanada’s original, try and see for yourself.

The BC Loop: [www.mountainweatherservices.com/links/GFACN31.html](http://www.mountainweatherservices.com/links/GFACN31.html)

The Alberta Loop: [www.mountainweatherservices.com/links/GFACN32.html](http://www.mountainweatherservices.com/links/GFACN32.html)

The originals from Nav Canada are [here](#).

This is how these charts work: First check the time stamp to see when the chart is valid. In the top right it will indicate a valid (VLD) date in Greenwich Mean Time. When the forecasters think that an area will be covered with more than fifty percent cloud, they will use a brown cloud scallop to enclose the area. These areas have either broken (BKN) or overcast (OVC) clouds. If the area has more than fifty percent precipitation, they will use a green envelope. Areas with less cloud than that, will have no scallops, but will still be labeled with Sky Clear (SKC), few (FEW) or scattered (SCT) clouds.

Fronts will be shown in colour and have an arrow with a boxed number showing its direction and speed in knots (1 Knot~1.9km/h). Two numbers on top and below a line (they look like fractions) show the cloud base (bottom) and top above sea level in hundreds of feet. So, an “80” would make eight thousand feet above

sea level. Sometimes space is limited so that meteorologists use text boxes, that are labeled “A”, “B” etc. and their meaning is explained under “Comments” on the right side of the diagram.

If you move forward in time with the charts you can see the fronts and their associated weather move. The GFA is a very powerful but initially often overwhelming tool, so take some time to look at them from day to day and you will slowly get used to the format. A more technical, but better description of the GFA can be found at: [www.msc-smc.ec.gc.ca/msb/manuals/manair/html/chapter4/chap\\_4\\_e.html](http://www.msc-smc.ec.gc.ca/msb/manuals/manair/html/chapter4/chap_4_e.html).

All of these sites are just the beginning of weather information that is available on the internet. It takes a bit of patience to get used to reading the information, so give it a bit of time. It is a skill similar to reading topo maps, once you understand the basics you will be able to unlock a wealth of knowledge. **Checking these links before your trip can help you tremendously in your decision making and tell you what may (or may not) hit you once you are outdoors.**

If for you want to explore further you can start at my personal hyperlink collection at [www.mountainweatherservices.com/links/](http://www.mountainweatherservices.com/links/).