

HOW'S YOUR MET KNOWLEDGE?

By Tui McInnes, MetService meteorologist and pilot



Thinking of taking a few mates away for the day? You book the plane, get your passengers organised, plan the route, calculate your fuel, determine weight and balance, gather your maps and then preflight the plane. But wait! What's the weather doing?

Like anything when planning a flight, a good place to start is with the big picture.

Monitor the weather a few days out from your flight, to get a sense of what the weather's doing. Look at the prognostic MSL (mean sea level) isobaric charts and see what weather patterns are around the country. Are we under a large high or is there a deepening low moving in from the sub-tropics? Are there any fronts moving up the country? These could all affect what you'll encounter on your flight.

Knowing the weather patterns and types of weather associated is crucial. A high means calm, clear, weather right? Well, often it can mean low cloud and fog – even drizzle! A front could mean the difference between VFR conditions or scud running!

Many websites now provide easy and intuitive access to a variety of weather models. These can really help with

painting the bigger picture, but there are limitations. As we all know, New Zealand's terrain significantly modulates our weather. Put a rocky island in the middle of an ocean and you wreak all kinds of havoc for weather models.

Very good weather models still lack capability in many areas and this is where the meteorologists come in. For example, models will systematically under-forecast the strength of wind in and around Cook Strait due to too-low resolution. Low cloud? The raw model data might give an indication of potential, but the physics calculations are still far too primitive for high accuracy.

So always make sure you visit metservice.com and MetFlight to get the latest meteorologist-prepared forecasts.

Once we have our overall picture, let's zoom in and be more specific.

Forecasts

- **SIGMET** – Firstly we'll look at the SIGMETs – either through text or the Graphical SIGMET Monitor (GSM). This will inform us of any severe weather which could impact our decision to fly.
- **Graphical SIGWX** – Next up is the map showing us potential significant weather phenomena which our flight may take us through. This includes turbulence, icing, mountain waves and thunderstorms (CBs).
- **GRAFOR** – So far, so good? We can start looking a bit more at the detail. The GRAFOR will show us any cloud, precipitation and corresponding visibilities around the country and give us an idea of what conditions to expect.

- **Aviation Area Winds (AAW)** – What are the winds doing aloft? Will there be a headwind, or will you be graced with a tailwind?
- **TAF** – Finally, let's look at the airports. The TAF provides a forecast at the airport with specific values for wind, visibility, weather and cloud (valid within an 8 km radius). Don't forget to look at any enroute airports for both the TAF and METAR, and if your departure or arrival locations don't have either, ensure you look closely at the GRAFOR.

Observations

It's not just the forecast that's important. You've got to remember to check the forecast with what's actually happening. As good as meteorologists are, we can't always get things right. There are a number of observation resources on MetFlight:

- **Satellite imagery** – Obtained from a geostationary satellite (a satellite that maintains a fixed position over Earth), there are two main products, visible and infra-red. Satellite images will give you an idea of where there's cloud, how much, how it's moving and even what the cloud top heights are.
- **METAR and AWS (automatic weather station) reports** – These go hand-in-hand with the TAF, providing regular reports of the wind, visibility, weather, cloud, temperature, dewpoint and QNH. Comparing these with the TAF and GRAFOR gives an idea of how the forecasts are performing.

- **Webcams** – MetService operates many webcams around the country (available through MetFlight) and there are many other webcams available online. Using these together with the METAR/AWS, TAF and GRAFOR you can get a true idea of what the weather's currently doing and give you a good mental picture of what to expect.

As we all know, weather can be unpredictable and even the best forecast can change dramatically. Afternoon convection can bubble up from friendly looking cumulus clouds to colossal cumulonimbus with thunderstorms, seemingly in minutes. It's the bane of current generation weather models. Low-pressure systems can vary immensely in tracks, drastically changing the distribution of significant weather.

Why MetService?

While there are many sources of weather information out there, MetService is the national meteorological organisation certificated by the CAA to provide aviation weather forecasts and observations. Ensuring you're using accurate and reliable weather information is critical when you're planning a flight.

If you want to set up an account with MetService's two aviation platforms – MetFlight or MetJet – contact us at aviationsales@metservice.com. ➡

Comments or queries? Email met@caa.govt.nz.

And to help improve your MET knowledge, email publications@caa.govt.nz for a free copy of the Good Aviation Practice booklet, *VFR Met*.



Photo courtesy of MetService

✓ West of Christchurch near Arthur's Pass, at 20,000 ft. Mt Binsler in the left foreground.

The cloud is predominately stratocumulus (the 'bumpier' looking clouds) but there's evidence of mountain wave/lenticular clouds (smoother clouds) with the possibility of a weaker frontal cloud on the horizon. Based on this it's likely that at lower levels the conditions may be slightly turbulent. The mountain waves are what could be the most hazardous, however, as these can appear calm at times and then abruptly produce significant turbulence and downdraughts.