

BRISBANE VALLEY FLYER

February - 2018



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Don't Make a Gaffe with Your GAF

By Rob Knight

The new aviator's weather forecast presentations, GAFs (Graphic Area Forecasts), are in, and the old ARFORs are out. But I don't suppose you noticed, unless you were planning a flight somewhere and couldn't find the forecast that you were looking for.

I said it all above, ARFORs are now relegated to the olden days; to replace them we now download Graphical Area Forecasts instead (GAFs to those in the know).

Downloaded in exactly the same manner as I described in the April 2017 issue of this magazine, GAFs are designed to provide pilots with specific meteorological details across all Australia. To do this the details are arranged to cover 10 specified areas across the Australian mainland and Tasmania. Instead of numbered areas to denote the new areas, logically, now the state names identify the forecast areas. While three State forecast areas encompass the entire state, the rest are broken into two or more sub-areas as depicted in the image below.

The screenshot shows the Bureau of Meteorology website interface for Graphical Area Forecasts (GAFs). At the top, there is a navigation menu with links for HOME, ABOUT, MEDIA, CONTACTS, and a search bar. Below the navigation, the breadcrumb trail reads: Bureau Home > Aviation Weather Services > Aviation Forecasts > Graphical Area Forecasts (GAFs). The main heading is 'Graphical Area Forecasts (GAFs)'. There is a link for 'About Graphical Area Forecasts (GAF)'. A section titled 'Select Forecast Area(s)' contains checkboxes for WA-N, WA-S, NT, QLD-N, QLD-S, SA, NSW-W, NSW-E, VIC, and TAS. A 'Reset' button is also present. Below this, there is a 'GAF Area Map' showing a map of Australia with GAF area boundaries. A legend at the bottom left of the map identifies 'AREA DNH Boundaries' (red line), 'Graphical Area Forecast Boundaries' (blue line), and 'Flight Information Regies' (black line). The map shows various GAF areas labeled with state abbreviations and numbers, such as WA-N, WA-S, SA, NSW-W, NSW-E, VIC, QLD-N, QLD-S, and TAS. A red box highlights the 'Select Forecast Area(s)' section, and a red arrow points to the 'About Graphical Area Forecasts (GAF)' link. Another red arrow points to the QLD-S area on the map.

Click here for tutorial on GAFs

To download GAF, click either on desired link,

or

Area representation

Each GAF area is bounded by a blue line separating it from adjacent areas. The red line represents flight information region limits.

GAF downloaders simply select the specific areas desired as depicted above. Let's download the GAF for QLD-S (Queensland (South)).

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The next screen offers two options and the downloader must choose between a 6 hour forecast from the time of issue, or a forecast for the 6 hours following this first forecast.

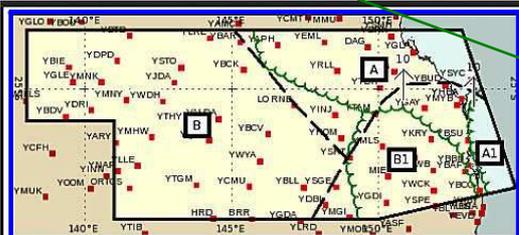
Let's make a 0 to 6 hour selection for QLD-S6 to 12 hour forecast from time of issue. . The first option is for a forecast from the issue time and for a further for 6 hours, the second, a forecast for the six hours following that, i.e. from 6 hours after the issue time to 12 hours after the issue time.

The visual presentation of the GAF is as illustrated below. It is divided into eight panels, each with specific weather related details, and most in easy to read English. One exception might be the *Issue Time* provided in the title box, it contains a full set of indexing details.

Weather features valid for 9th day of the month, at 1700Z
(0300 AEST)

Issue time.
17 12 09 1613Z
Year month day time in zulu

Validity times
On the 9th day of the month, from 1700Z to the 9th day of the month at 2300Z
(0300 AEST to 0900hrs AEST)



All heights AMSL
 TS / CB / TCU implies SEV ICE and SEV TURB
 CU / SC / AC implies MOD TURB
 CLD ABV FZLVL implies MOD ICE
 Speed of movement in KT
 — refers to Limit of Forecast
 ● refers to Critical Locations
 Check AIRMETS, SIGMETs and NOTAMS

REMARKS:

 Remarks box. Note
 HELP phone number

For more information contact (07) 3229 1854

Graphical Area Forecast SFC - 10000FT QLD-S
 Issued at 1712091613Z Valid 091700 to 092300Z
 Weather Features valid at 091700Z

AREA	SURFACE VIS AND WX	CLOUD, ICING AND TURB	FZLVL
A	>10KM NIL	BKN ST 1000/4000FT TL 23Z SCT CU/SC 6000/ABV10000FT (3000/ABV10000FT IN A1 AND SEA/30NM INLAND)	ABV 10000FT
	3000M ISOL SHRA	ISOL TCU 5000/ABV10000FT, BASES 3000FT SEA/30NM INLAND BKN ST 1500/4000FT BKN CU/SC 5000/ABV10000FT	
	2000M ISOL TSRA A1 ONLY	ISOL CB 3000/ABV10000FT BKN ST 1000/3000FT BKN CU/SC 3000/ABV10000FT	
	2000M ISOL FU BLW 10000FT LAND		
	0500M ISOL FG LAND E OF YBTR/YTAM/YGM TL 22Z	SCT ST 1000/4000FT	
B	>10KM NIL	BKN ST 1500/4000FT IN B1 TL 23Z	ABV 10000FT
	2000M ISOL FU E OF YISFYCMU/YGDA		
		MOD TURB BLW 5000FT IN B ONLY	

Key and explanation box

Image box displaying sectors and sub-sectors of the forecast area

Image box displaying sectors and sub-sectors of the forecast area

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It can now be seen what is perhaps the second greatest difference between the old ARFOR and the new GAF. We are accustomed to reading the anticipated arrival and departure times of the various weather predictions.

In the GAF as illustrated on the last page, there are generally no times provided for the various weather events to arrive or depart in the listed sector. Instead, the weather depicted in the three boxes (SURFACE VIZ AND WX, CLOUD, ICING AND TURB, AND FZLVL) indicates the worst weather predicted in that graphical area for the duration of that specific forecast period. Where a variation is noteworthy time-wise, the time frame will be provided. This can be seen in this GAF presentation for AREA B1. In this area, the broken stratus cloud, base 1500 feet/tops to 4000 feet will cease to exist after 2300Z (0900 AEST). Remember – that’s the second greatest difference.

The first greatest difference between old ARFORs and new GAFs is that ARFORs contained the wind velocities necessary for flight planning. GAFs are conspicuously devoid of such frills and wind velocities must now be gathered from the ALSO NEW Grid Point Wind and Temperature Forecast. At the first glance, these GPWTs seem mighty imposing and filled with incomprehensible numbers but that really is not the case. Only one set of numbers is relevant and they are very simple to understand once they are identified.

Geographical area and forecast time

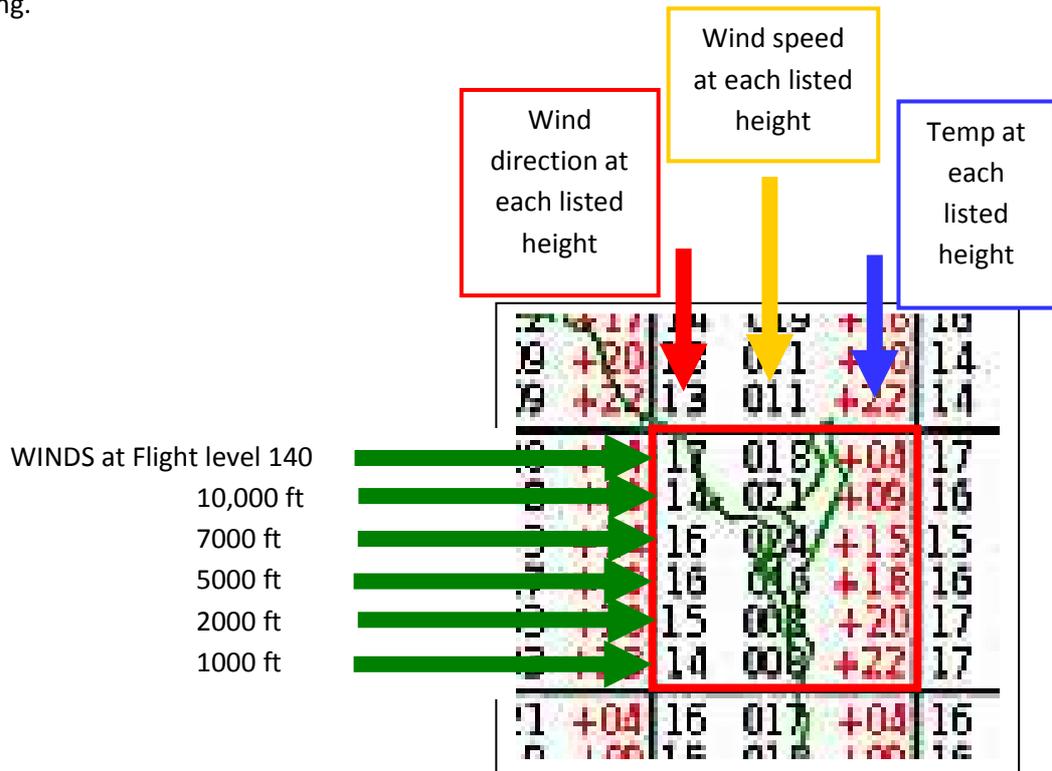
Key to reading each wind box

Height band desired

The screenshot shows the Australian Bureau of Meteorology website. The main content area is titled 'Grid Point Wind and Temperature Forecasts'. There are three tabs: 'Low-level', 'Mid-level', and 'High-level'. The 'Low-level' tab is selected. Below the tabs, there is a list of forecast areas: 'AUS: 00Z | 03Z | 06Z | 09Z | 12Z | 15Z | 18Z | 21Z', 'NSW: 00Z | 03Z | 06Z | 09Z | 12Z | 15Z | 18Z | 21Z', 'NT: 00Z | 03Z | 06Z | 09Z | 12Z | 15Z | 18Z | 21Z', 'QLD-N: 00Z | 03Z | 06Z | 09Z | 12Z | 15Z | 18Z | 21Z', 'QLD-S: 00Z | 03Z | 06Z | 09Z | 12Z | 15Z | 18Z | 21Z', 'SA: 00Z | 03Z | 06Z | 09Z | 12Z | 15Z | 18Z | 21Z', 'VIC/TAS: 00Z | 03Z | 06Z | 09Z | 12Z | 15Z | 18Z | 21Z', 'TMS: 00Z | 03Z | 06Z | 09Z | 12Z | 15Z | 18Z | 21Z', 'WA-N: 00Z | 03Z | 06Z | 09Z | 12Z | 15Z | 18Z | 21Z', and 'WA-S: 00Z | 03Z | 06Z | 09Z | 12Z | 15Z | 18Z | 21Z'. Below this, there is a section for 'Low-level, Queensland – South 00Z'. The main content area contains a grid of forecast data for 'GPWT FORECASTS (1000FT - FL140) - QLD-S'. The grid has columns for time (00Z, 03Z, 06Z, 09Z, 12Z, 15Z, 18Z, 21Z) and rows for latitude (28°S, 27°S, 26°S, 25°S, 24°S, 23°S, 22°S, 21°S, 20°S, 19°S, 18°S, 17°S, 16°S, 15°S, 14°S, 13°S, 12°S, 11°S, 10°S, 9°S, 8°S, 7°S, 6°S, 5°S, 4°S, 3°S, 2°S, 1°S, 0°S, 1°N, 2°N, 3°N, 4°N, 5°N, 6°N, 7°N, 8°N, 9°N, 10°N, 11°N, 12°N, 13°N, 14°N, 15°N, 16°N, 17°N, 18°N, 19°N, 20°N, 21°N, 22°N, 23°N, 24°N, 25°N, 26°N, 27°N, 28°N). The grid contains numerical data for wind speed and temperature. A red box highlights the 'Geographical area and forecast time' section, a green box highlights the 'Key to reading each wind box' section, and a black box highlights the 'Height band desired' section.

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So let's get a wind. How about the wind for Fraser Island in Queensland? First find the box inside which Fraser Island is depicted. This I have extracted and enlarged (see below), and added labels to simplify reading.



From the box, should we want to plan a flight for 5000 ft (AMSL) in this area, we'd be using a W/V of 160°T/16 knots. If we needed an ambient air temperature for calculations, the forecast is temperature +18°

So how hard is THAT?

The last point that I would like to make is that these forecasts are not updated. In the event of changes in the weather from that forecast in a GAF, such changes are broadcast via an AIRMET. AIRMET advices provide pilots with information on the occurrences and/or predicted occurrences of specified weather and are complimentary to the routine issue and amendment of GAFs. Therefore, it is wise to ALWAYS check AIRMETS when downloading GAFs and GPWTs.

How to Download an AIRMET:

1. Return to the first downloads screen and click on Aviation Warnings.
 2. When the dialogue box appears, CLICK on AIRMET.
- See image overleaf

SIMPLE!

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Australian Government
Bureau of Meteorology

HOME | ABOUT | MEDIA | CONTACTS | Enter search terms | Search

NSW VIC QLD WA SA TAS ACT NT AUSTRALIA GLOBAL ANTARCTICA

Bureau Home > Aviation Weather Services > Aviation Warnings > Australian AIRMET

Australian AIRMET

[About AIRMET](#) ?

Aviation Weather Services

- Aviation Warnings
 - SIGMET (except VA)
 - Australian VA SIGMET
 - Graphical SIGMET
 - International SIGMET
 - AIRMET**
 - Graphical AIRMET
 - Aerodrome Warnings
 - Wind Shear Warnings
 - Tropical Cyclone Advisories
- Aviation Forecasts
- Aviation Charts
- Aviation Observations
- Volcanic Ash

AIRMET BULLETIN
BUREAU of METEOROLOGY - BRISBANE 06:12 UTC, 31/01/2018

Received at 15:28, 31/01/18
YMMM AIRMET 04 VALID 310527/311000 YMHF-
YMMM MELBOURNE FIR CNL AIRMET 02 310600/311000
RMK: GAF TAS=

Received at 14:59, 31/01/18
YBBB AIRMET 02 VALID 310459/310750 YSRF-
YBBB BRISBANE FIR ISOL TS OBS WI S2950 E15300 - S3040 E15230 - S2850
E15120 - S2820 E15320 TOP ABV 10000FT STNR NC
RMK: GAF NSW-E=

Received at 14:01, 31/01/18
YMMM AIRMET 03 VALID 310401/310700 YSRF-
YMMM MELBOURNE FIR BKN CLD 2000/6000FT OBS MVI STNR NC
RMK: GAF NSW-E=

1. CLICK on Aviation Warnings
2. CLICK on AIRMET
3. Check AIRMET statements for any details relevant to the area of interest

Note that if you have any questions, clicking on this icon will raise an in-depth description of AIRMETS

In my opinion, these new forecast tools are a big improvement on the old ARFORs. The graphical illustration showing the equivalent of a map location is vastly better than mere imagination. I have heard criticism of the need to change forecasts to a GPWT chart for winds but I think this is a good exchange for the much improved availability of variations in wind velocity across the forecast Area as a whole.

I have heard other criticism related to the rounding off of the wind direction to the nearest ten degrees. This is not an issue when considering that most compasses are calibrated in five degree units, and the wind speed has always been rounded off. I didn't mention at the time I heard the criticism that two of the most vocal criticisers couldn't hold a heading within ten degrees anyway. I know – I had flown in aircraft with them.

My advice – don't fear these forecasts – use them and remember, they get easier with use. If you have any questions, call the number provided and you will get all the assistance you require. I have road-tested the system for you!

Last hint: ALWAYS download the High Definition images – they are much easier to examine.

Happy flying

Churchillian misquote:

“Altitude can be a little thing that makes a BIG difference.”

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Performance Analysis on a Heavy Aeroplane on a Hot Day

By Peter Davies

Jeez it's hot. A hot dry day - just what does it do to your performance? Well, in my case, taking off with half tanks the plane seemed to ignore it. Tweety just jumped into the air with all the enthusiasm of a released racing pigeon.



Tweety, at Biggenden, on a less hot day

Returning, for the first couple of touch and goes, she floats a bit but nothing unexpected. But as further fuel burns off she ceases wanting to land. Instead, she just wants to keep on flying down the runway, most of the runway in fact. More runway lies behind me than in front before the wheels kiss the grass. Perhaps 150 meters more runway than I anticipate. The lighter the aircraft, the longer is the landing roll becoming in these circumstances.

I refuel and completely fill both tanks. Now, **WOW** - what a difference. Much more runway appears behind me as my wheels depart the grass. That extra half tank has added nearly 200 more meters to the ground roll on this 35 degree day. (*Note to self, "Do some density altitude calculations when you get back."*) What a slow climb out! Keep the nose down, maintain airspeed, barely 150 feet per minute on the VSI. Keep straight, look how tall those trees are! Boy they have grown tall, and they appear to be dancing in the heat. Look how far from the upwind threshold I am before I can turn!

After a short flight I line up on a bitumen strip. Nice turn onto finals and I set up comfortably astride the centreline. I slide down short finals and flare..... and float, and float, and float, for an eternity. Even though I use my usual IAS for approach, my TAS is sizzling from the high density altitude. Then, adding to all this speed, the heat over the bitumen gets me in a ground effect cushion and holds me off way longer than expect. Even with the full tanks, the higher TAS and the heat has adds well over 200 meters to my flare and float distance. I quickly check my wheels are down by half field so there's still room to stop: my go around option won't be instigated. Wow that is way longer than I anticipate, even after experiencing a longer ground roll on the grass runway.

I pick up my passenger and prepare myself for a long take off roll on the hot bitumen, and a low climb rate to follow. But the ground roll is even longer than I thought likely, and I have to fly at 15 feet to gather flying speed to safely clear the trees along the upwind boundary. I use almost all the runway accelerating, before I can at last stagger to the level of the tree tops. My passenger, blissfully ignorant of the fact, has added another HEAP of metres to the take off distance. Over the trees my degraded climb rate keeps my adrenalin levels high and I have to consciously relax my fingers around the stick. While two up in better air regularly gives me 900 fpm climb, now I can't even get 120 fpm and I am at the best speed for it. I would like to turn but I continue straight ahead - I can hear my trusty old flight instructor talking inside my head, "You can climb, or you can turn, but you can't always do both". Right now I can barely do one.

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At home, and on reflection, with full tanks and a passenger, I had added at least 300 meters to my take off roll and 200 meters to my landing distance. I calculate the density altitude at my home airstrip (elevation 170 ft AMSL) as being 3580 feet on this 35-degree day.

In Australia during the hot summer when we are flying low performance aircraft, we shouldn't take density altitude for granted. It significantly degrades aircraft performance and makes a lot of airstrips we might normally use without a second thought far too short for safety.



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FLY-INS Looming

11 March	Clifton	Lone Eagle's Annual Fly-In
21-22 April	Caboolture	TAVAS Great War Flying Display

Mystery Aircraft (February Issue)

What's this?



Mystery Aircraft (Last Issue)



A Barkley Grow T8P aircraft. First flown in 1937, only 11 were built and most were taken to Canada where they provided good service as bush planes. Alas – there were no takers for this mystery aircraft over the last period.

A Clergyman was invited to attend a house party. Naturally he was properly dressed and wearing his clerical collar. A little boy stared at him for the entire evening. Finally the clergyman asked the little boy what he was staring at. The boy pointed at his neck and the clergyman realised what the boy was staring at.

“Do you know why I wear that”, he asked?

“Yes”, replied the boy, nodding his head. “It kills fleas and ticks for three months”.

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Keeping up with the Play

(Test yourself – how good are you, really?)

1. Aeroplane overbank in a descending turn is caused predominantly by which option(s) below?
 - A. Additional airspeed over the outer wing.
 - B. A higher angle of attack affecting the outer wing.
 - C. A lack of appropriate pilot co-ordination.
 - D. A and B are correct.
2. Which of the following will cause an increase in the aeroplane's stall speed?
 - A. Climbing out excessively steeply after take-off.
 - B. Carrying out a steep climbing turn.
 - C. Approaching at too low an airspeed.
 - D. Entering a full glide without power.
3. Which of the following will lower the stall speed of an aeroplane?
 - A. Exiting a turn.
 - B. Leveling out after a steady and sustained climb
 - C. Flying with a higher airspeed.
 - D. Entering a steep dive.
4. Considering an aeroplane in a steady glide:
 - A. Lift is less than weight.
 - B. Drag is less than apparent thrust.
 - C. Aircraft weight is reduced because some of the weight is acting rearwards.
 - D. Lift = Weight.
5. In the recovery process from a wing-drop stall, how much rudder is required?
 - A. Sufficient to unstall the wings.
 - B. Sufficient to pull the nose back to the original reference point.
 - C. Sufficient to stop any further yaw.
 - D. Sufficient to stop the wing dropping further.

ANSWERS: 1. D, 2. B, 3. A, 4. A, 5. C

If you have any problems with these questions, call me(in the evening) and let's discuss it! Editor.

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Aircraft Offered for Reluctant Sale



My Colby-503, a single-seat, one-off aircraft, based on the highly successful American Pioneer Flightstar. Currently flying most weekends, it has around 200 hours airframe total time and under 30 hours on a rebuilt Rotax 503 power plant. STOL, this aircraft cruises at anything between 45 and 60 knots, depending on the power setting and can comfortably exceed its VNE in a climb. It holds 40 litres in a belly tank and a further 10 behind the seat. A 95-10 aircraft, its rego is 10-1918, valid until July 30 2018.



A sale would include a purpose-built trailer (uncovered and unregistered), a spare 503 engine (disassembled), and a ground handling tow bar. There are some other assorted spare parts such as a strut, control surface tubing, fuel pump, spark plugs etc.

I currently use a hand-held radio mounted in the cockpit with a head set and PTT fitted on the side-mounted stick.

I am putting my aeroplane up for sale only on the advice of my health professional.

\$5,800.00

So, if you fancy owning and flying a totally unique aircraft, the ONLY one of its type in the world, contact Rob Knight, on 0400 89 3632, or email me at kni.rob@bigpond.com.

