GAF and GPWT

How often did you plan a flight and find yourself puzzling over an old-format Area Forecast (ARFOR), back in the days when they were all words and abbreviations, with references to place names that are on the Planning Chart (PCA)?

You'd see "Cold front YJUR/YABA 02Z, YMRW/HDP 05Z, YPYF/YESP 09Z" and you'd have to find the places on the PCA – YJUR is Jurien Bay, HDP is Hood Point – then work out "I'm leaving at midday, which is 04Z, and the front will be between the Jurien Bay-Albany line and the Morawa-Hood Point line, and the thunderstorms will be within 100nm west of the front…" The hard bit was working out which weather applied to your flight, and which you could ignore. If an ARFOR failed the old 5-finger test, as a private pilot you probably just said, "Nah, too hard" and left the aeroplane in the hangar.

The Graphical Area Forecast (GAF) format makes the interpretation a lot easier because you can see at a glance which parts of the forecast apply to your flight. For instance, if you're planning to fly from Northam to Albany during the validity period of the GAF below, you can see pretty quickly that you'll be in Area B, including B1. So you just need to read the conditions for those areas and ignore the rest.

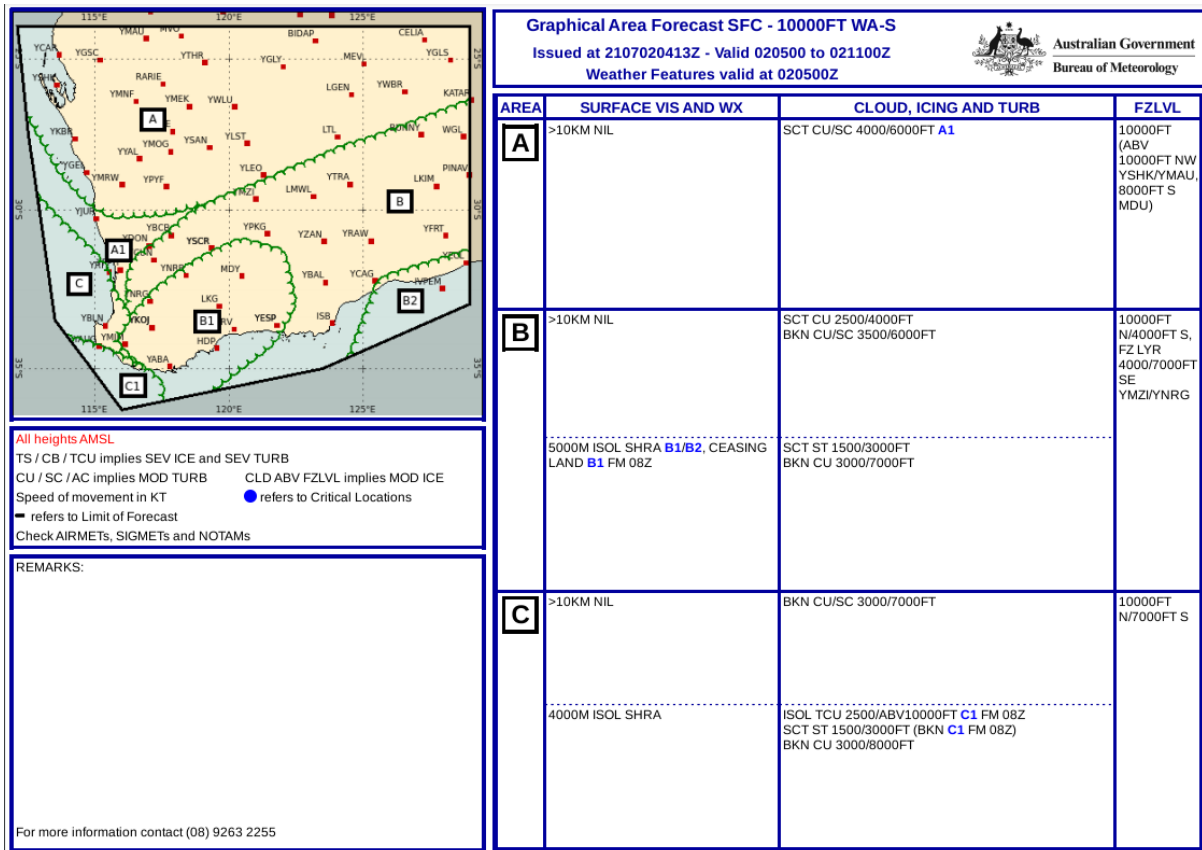For the first part of your flight, in Area B, you can expect:

- Visibility – 10 km or more;
- Weather – nil;
- Cloud – 3-4 octas of CU between 2500 and 4000 ft, 5-7 octas CU/SC between 3500 and 6000 ft. It's looking like a relatively low-level flight.

Once you're in B1 you can expect the same weather as in Area B, with a couple of differences:

- Visibility and weather – 10 km or more **except** that in isolated showers of rain it will be 5000m. The showers will be ceasing from 08Z.
- Cloud – SCT ST from 1500 to 3000 ft, and BKN CU between 3000 and 7000 ft. This is associated with the ISOL SHRA, so it applies in those isolated areas, not the whole of Area B1. That means if you can avoid the isolated showers, your weather will be more or less the same as in the first, Area B, part of your flight.

Note also the right-hand column. We don't tend to think about Freezing Level as much here in WA as they do in the southeast of the continent, where the mountains are higher and the temperatures are lower in winter. But on this GAF it suggests that in the south you'll be thinking about it above 4000 ft. The carby heat may get a bit of use on this flight, and not just in the descent!

GAF are valid for 6 hours, and there are always two available, to cover consecutive 6-hour periods. The abbreviations are fairly straightforward, with most being the same as on TAFs. Exceptions include MTW (mountain waves) and the cloud amounts for CB and TCU, which are given as ISOL, OCNL and FRQ as opposed to FEW, SCT and BKN. The surface visibility is 10 km or greater except where otherwise stated.

Graphical Area Forecast SFC - 10000FT WA-S

Issued at 2107020413Z - Valid 020500 to 021100Z
Weather Features valid at 020500Z

Australian Government
Bureau of Meteorology

AREA	SURFACE VIS AND WX	CLOUD, ICING AND TURB	FZLVL
A	>10KM NIL	SCT CU/SC 4000/6000FT A1	10000FT (ABV 10000FT NW YSHK/YMAU, 8000FT S MDU)
B	>10KM NIL	SCT CU 2500/4000FT BKN CU/SC 3500/6000FT	10000FT N/4000FT S, FZ LYR 4000/7000FT SE YMZI/YNRG
	5000M ISOL SHRA B1/B2, CEASING LAND B1 FM 08Z	SCT ST 1500/3000FT BKN CU 3000/7000FT	
C	>10KM NIL	BKN CU/SC 3000/7000FT	10000FT N/7000FT S
	4000M ISOL SHRA	ISOL TCU 2500/ABV10000FT C1 FM 08Z SCT ST 1500/3000FT (BKN C1 FM 08Z) BKN CU 3000/8000FT	

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 Critical Locations
➤ refers to Limit of Forecast
Check AIRMETs, SIGMETs and NOTAMs
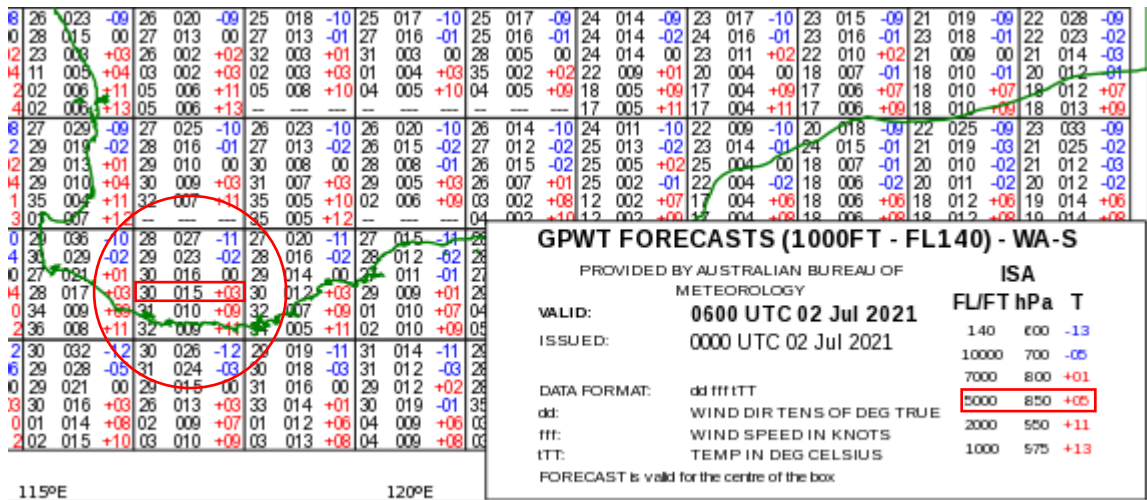
REMARKS:

For more information contact (08) 9263 2255

The only downside of GAF compared with the old ARFORs is that they don't include wind. For that you need to go to the Grid Point Wind and Temperature Forecast (GPWT). The ones for all of Australia show the winds and temperatures for 5° by 5° grids, whereas on the more local ones such as WA-S the grids are 1.5° x 1.5°, so for any given spot the figures may be different on the two forecasts.

The winds and temperatures are for the midpoint of each grid, and the layout is dd fff tTT, meaning:

- dd – wind direction to the nearest 10°, in true. (As for all wind forecasts, if it's written it's true eg. TAF and GPWT, and if it's spoken it's magnetic eg. ATIS and AWIS.)
- fff – wind speed in knots. You need 3 digits because GPWT have been used for upper level forecasts since Pontius was on Pilots Course, and the winds up there are often above 100 kt.
- tTT – temperature, with plus or minus.

The levels are shown on the legend. For instance, on the extract below from a southern WA forecast, in the circled grid, the figures third from the bottom are for 5000 ft AMSL. Wind 300°T, 15 kt, temperature +03.

GPWT FORECASTS (1000FT - FL140) - WA-S

PROVIDED BY AUSTRALIAN BUREAU OF METEOROLOGY

VALID:	0600 UTC 02 Jul 2021
ISSUED:	0000 UTC 02 Jul 2021

DATA FORMAT:	dd fff tTT
dd:	WIND DIR TENS OF DEG TRUE
fff:	WIND SPEED IN KNOTS
tTT:	TEMP IN DEG CELSIUS

FORECAST is valid for the centre of the box

ISA

FL/FT	hPa	T
140	600	-13
10000	700	-05
7000	800	+01
5000	850	+05
2000	950	+11
1000	975	+13

115°E   120°E

Happy flying, and remember if there's doubt about the weather for your flight, then there's no doubt. Stay home!