International Civil Aviation Organization

FIFTH MEETING OF THE ASIA/PACIFIC METEOROLOGICAL REQUIREMENTS WORKING GROUP (MET/R WG/5) OF THE ASIA/PACIFIC AIR NAVIGATION PLANNING AND MPLEMENTATION REGIONAL GROUP (APANPIRG)

Bangkok, Thailand, 19 – 21 April 2016

Agenda Item 4: Met information required to support end user systems

AUSTRALIAN GRAPHICAL PRODUCTS

(Presented by Ashwin Naidu of Australia)

SUMMARY

This paper presents information on graphical aviation products produced by Australian Bureau of Meteorology.

1. INTRODUCTION

1.1 The Bureau of Meteorology (the Bureau) are producing an increased number of products and environmental data in formats that can be used effectively in a SWIM environment—including graphical products and in XML format.

1.2 This paper presents information on graphical aviation weather products provided to the aviation industry in Australia. The paper also provides information on the graphical products that are planned to be made available to aviation industry in the near future.

1.3 It is to be noted that none of the graphical products are currently available in the Pilot Briefing Package at present.

2. DISCUSSION

CURRENT GRAPHICAL PRODUCTS

2.1 Graphical SIGMET

2.1.1 **The** Bureau issues a graphical representation of the text SIGMETs intended to be used to improve situational awareness.

2.1.2 The text SIGMETs are still issued and are required to be used for official flight planning purposes.

2.1.3 The geographical coverage of the graphical product is the same as the text product, which is limited to those areas in the Australian FIRs given in Australian Information Publication (AIP) Book GEN 3.5.

2.1.4 Separate graphics are produced for:

- Low level SIGMETs (affecting airspace below FL100)
- High level SIGMETs (affecting airspace above FL100)
- All SIGMETs.

The Graphical SIGMET charts are updated every 10 minutes or whenever a text SIGMET is issued.

2.1.5 Example of a Graphical SIGMET

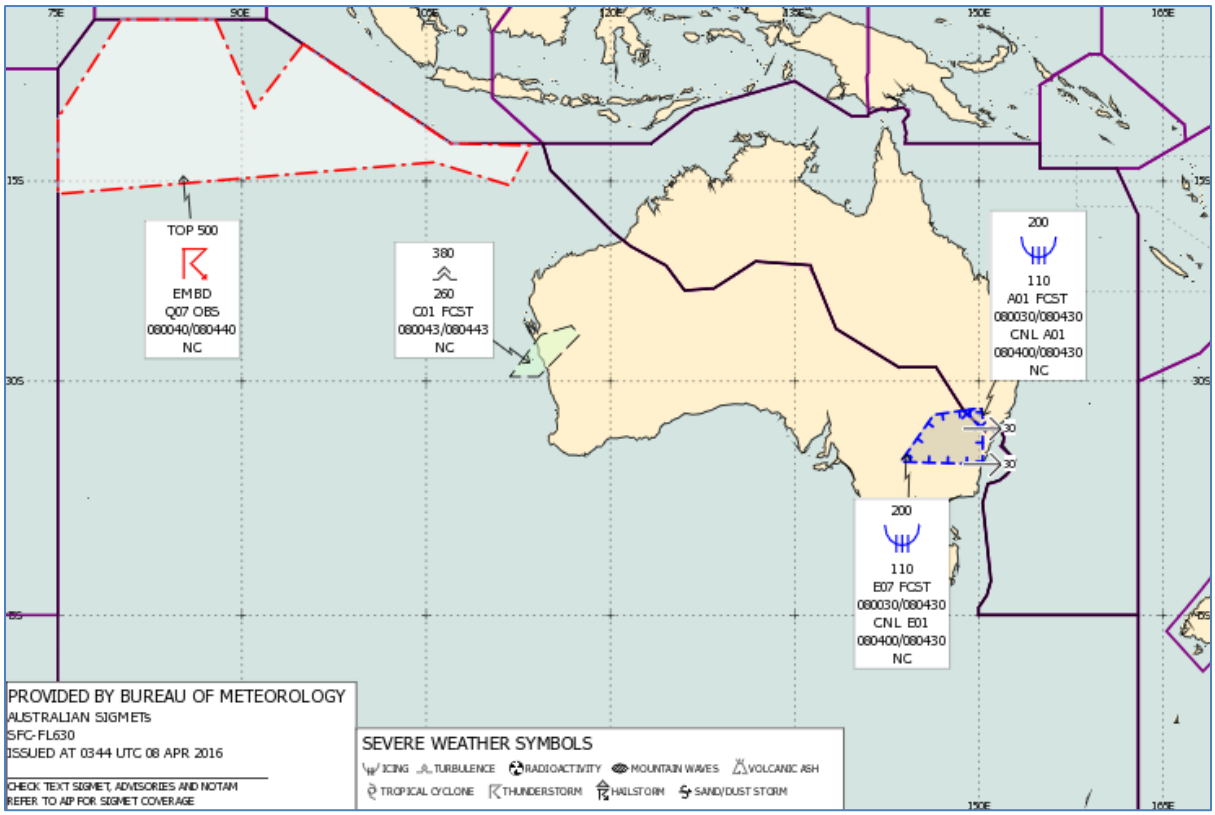


Figure1: Graphical SIGMETs (All levels)

2.1.6 Each polygon describing the horizontal extent of the event is accompanied by a box giving other information contained in the text product.

2.2 SIGWX Forecast Charts

2.2.1 The Bureau issues SIGWX forecast charts for significant weather expected in the airspace:

- FL250 to FL630 – SIGWX High (SWH) and
- FL100 to FL250 – SIGWX Medium (SWM)

2.2.2 Example of SIGWX

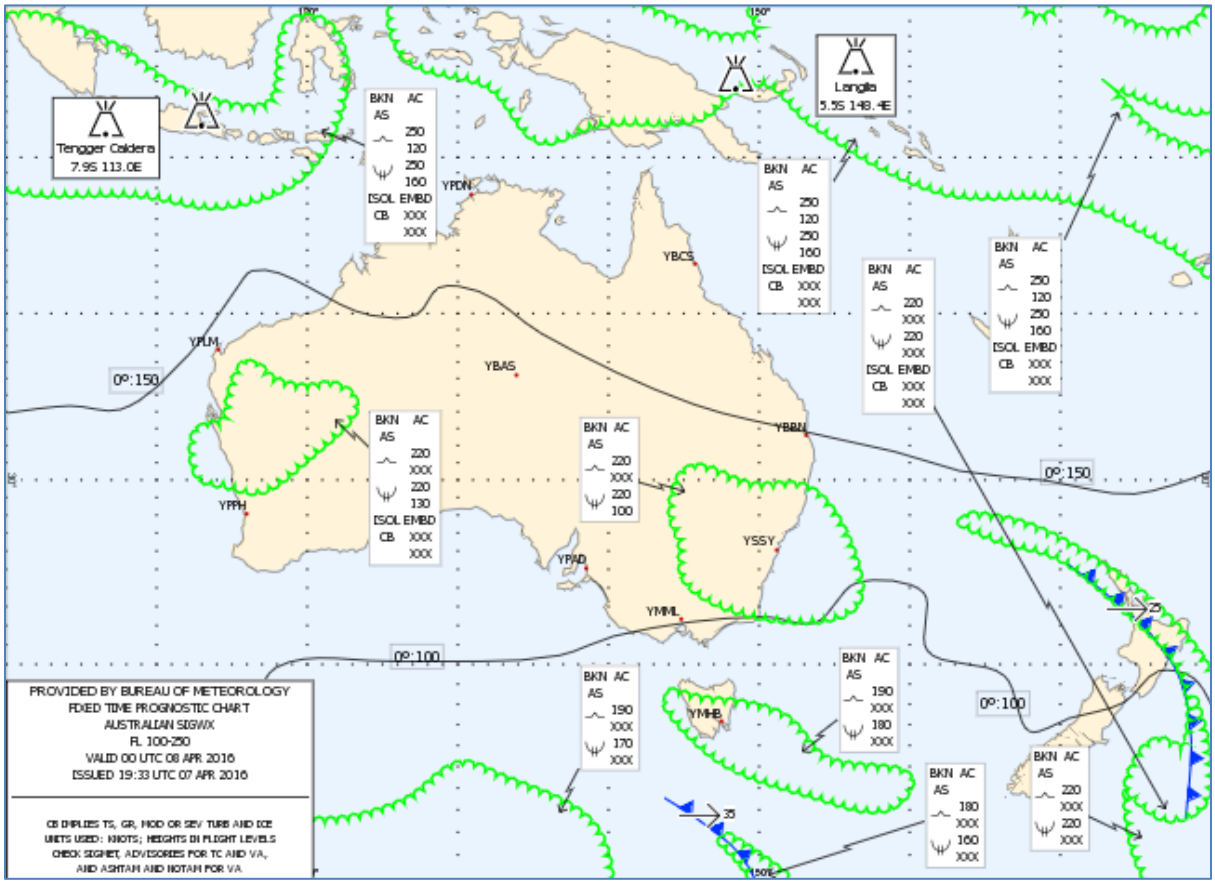


Figure 2: Medium-level SIGWX (FL100 – FL250)

2.3 Volcanic ASH Graphical Advisory

2.3.1 Information on volcanic ash is initially issued by Volcanic Ash Advisory Centres (VAACs) in the form of Volcanic Ash Advisory (VAA) message.

2.3.2 Advisory messages for volcanic ash are also issued in graphical format whenever a text product is issued. The VAG uses all the information from the VAA, and displays the OBS VA CLD and FCST parts of the Volcanic Ash Advisory as polygons in four panels. Different line styles are used to distinguish between the different layers of ash.

2.3.4 Example of Volcanic ASH Graphical Advisory

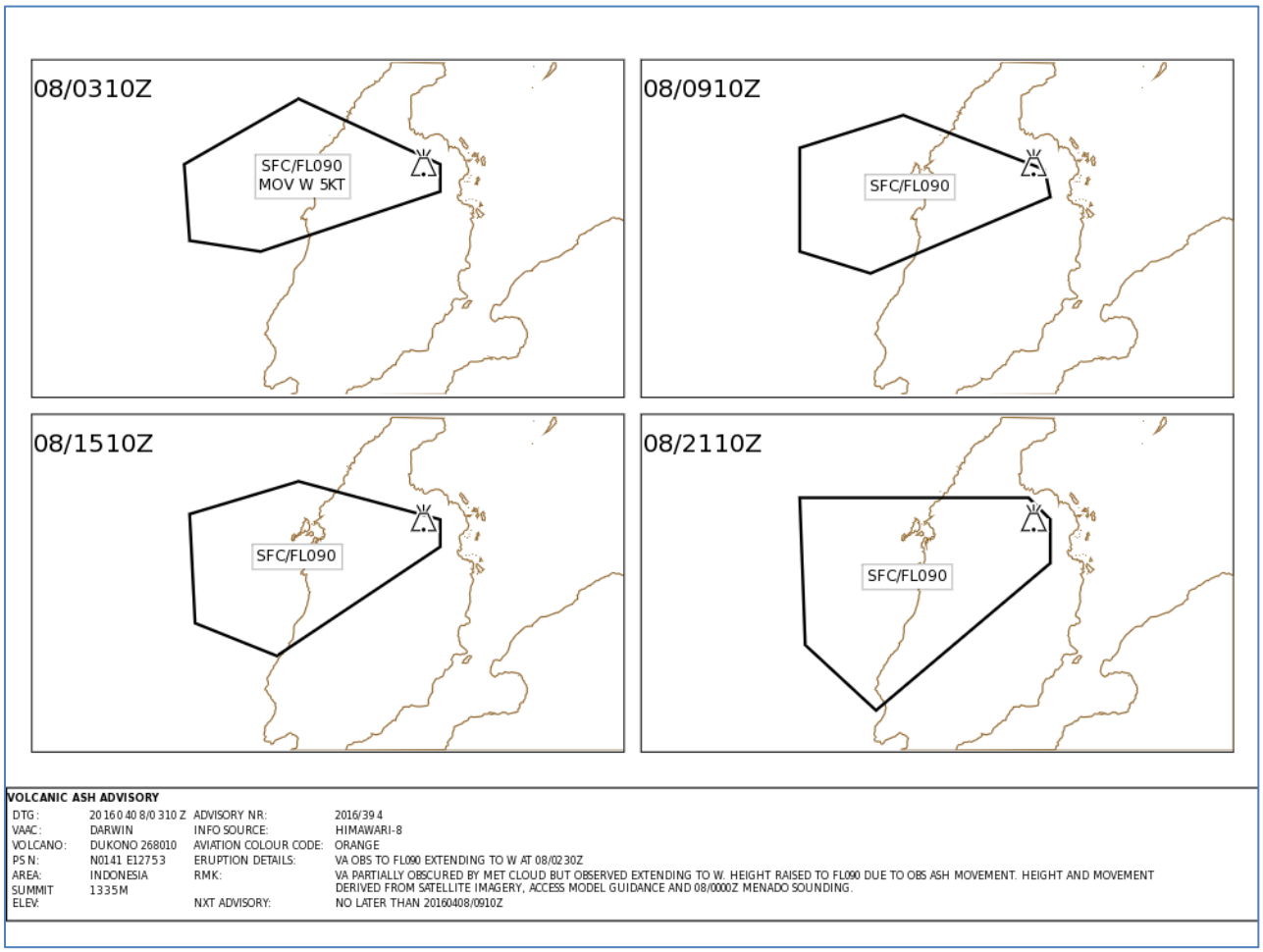


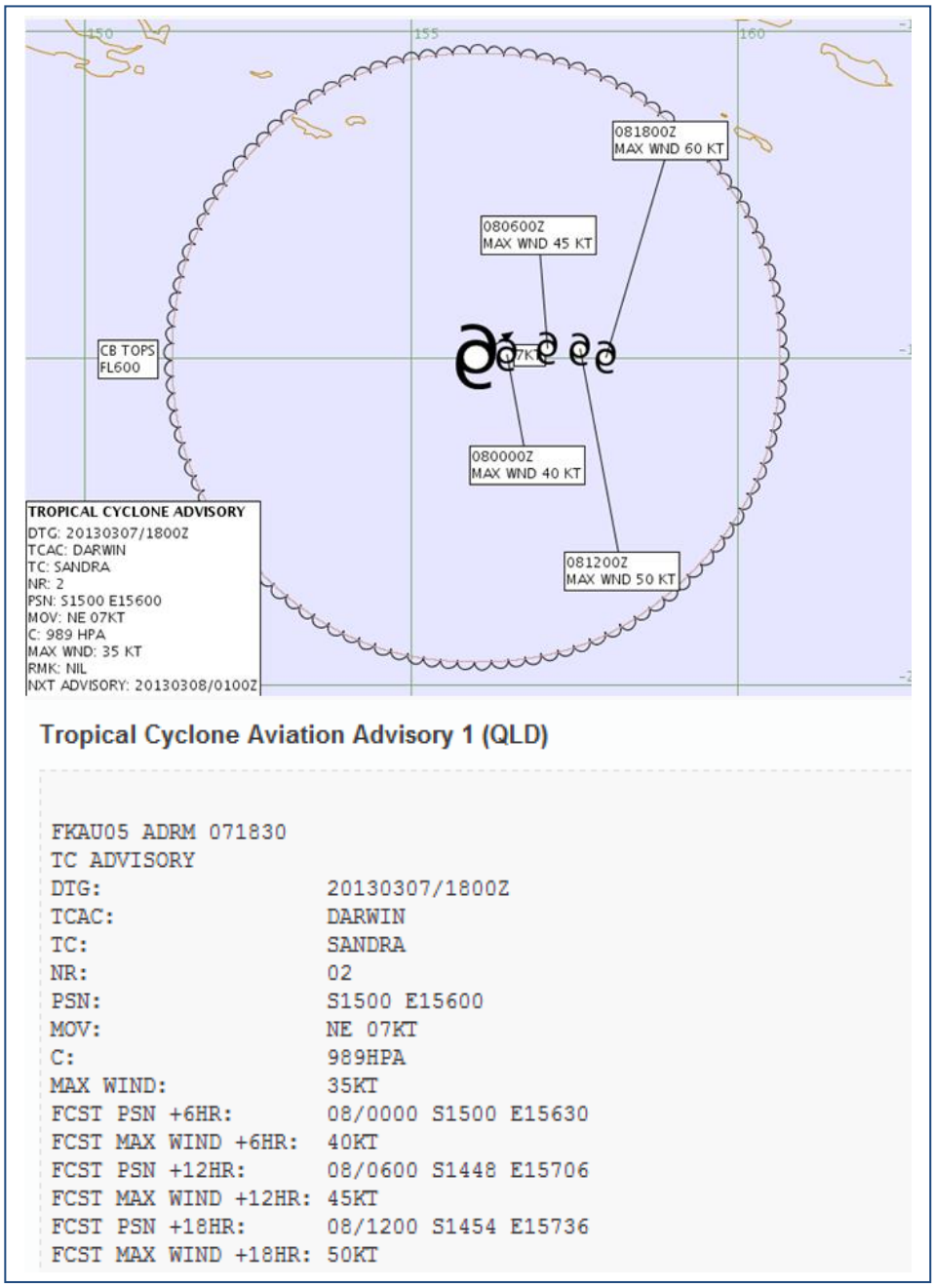
Figure 3: Volcanic ASH Advisory

2.4 Tropical Cyclone Advisory

2.4.1 Tropical Cyclone Advisories (TCA) provide information concerning the position of the cyclone centre, its direction and speed of movement, central pressure, maximum surface wind near the centre and future forecast positions.

2.4.1 Advisory messages for tropical cyclone are also issued in graphical format whenever a text product is issued. The graphical TCA uses information from the TCA

2.4.3 Example of Graphical TCA



Tropical Cyclone Aviation Advisory 1 (QLD)

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FKAU05 ADRM 071830
TC ADVISORY
DTG:                20130307/1800Z
TCAC:               DARWIN
TC:                 SANDRA
NR:                 02
PSN:                S1500 E15600
MOV:                NE 07KT
C:                  989HPA
MAX WIND:           35KT
FCST PSN +6HR:      08/0000 S1500 E15630
FCST MAX WIND +6HR: 40KT
FCST PSN +12HR:     08/0600 S1448 E15706
FCST MAX WIND +12HR: 45KT
FCST PSN +18HR:     08/1200 S1454 E15736
FCST MAX WIND +18HR: 50KT
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Figure 4: Tropical Cyclone Advisory

2.5 Grid-Point Wind and Temperature Forecasts

2.5.1 A grid-point wind and temperature chart provides a text-based display of forecast wind and temperature data for multiple levels.

2.5.2 The Bureau's Aviation Weather Centre Melbourne generates these charts from data sourced from one of the two World Area Forecast Centres (WAFC).

2.5.3 Grid-point wind and temperature charts are issued for:

- High-level (FL180–450) charts are issued for the Australian and Tasman regions.
- Midlevel (FL050–240) charts are issued for the Australian, Northeast, Southeast, West and Tasman regions.

2.5.4 Example of Grid-point Wind and Temperature charts

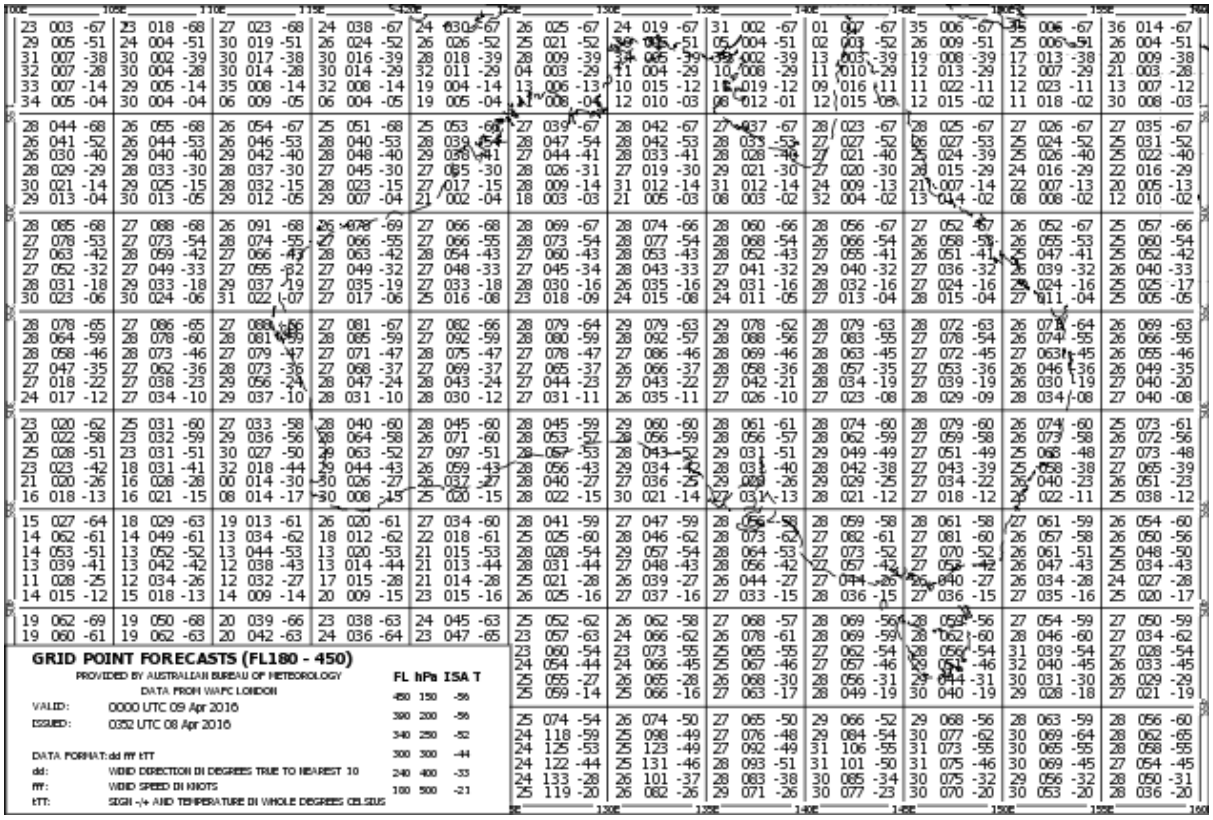


Figure 5: High-Level Grid-point Wind and Temperature Chart for Australia

2.6 Wind and temperature Charts

2.6.1 A wind and temperature chart provides a graphical display of forecast wind and temperature data for one flight level.

2.6.2 The Bureau's Aviation Weather Centre Melbourne generates these charts from data sourced from one of the two World Area Forecast Centres (WAFC).

2.6.3 The charts are issued every 6 hours for various regions and flight levels.

2.6.4 Example of Wind and temperature Chart

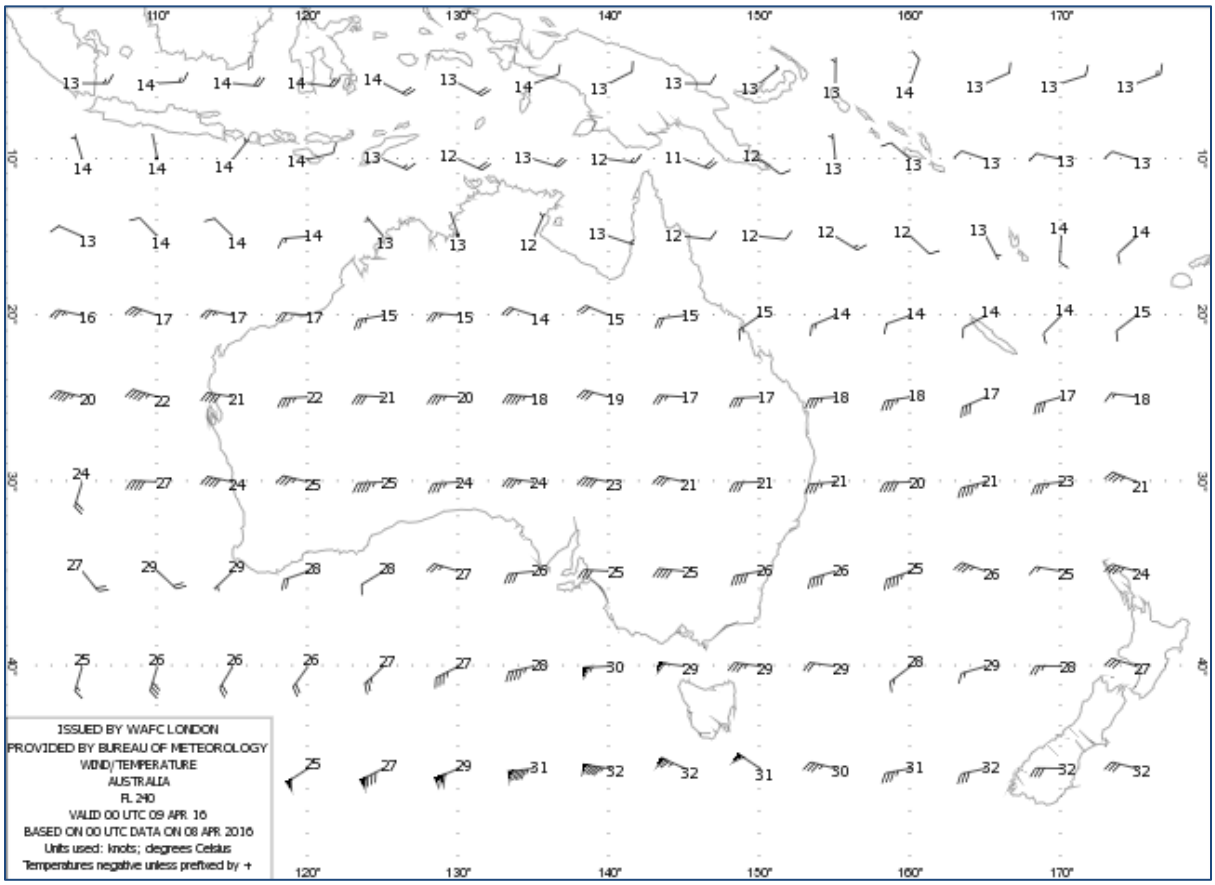


Figure 6: Wind and Temp Chart for Australia at FL240

FUTURE GRAPHICAL PRODUCTS

2.7 Graphical AIRMETs

2.7.1 The Bureau will be introducing changes to its AIRMET format in November 2016. Most of these changes are being made to align the AIRMET with the International Civil Aviation Organization's (ICAO) Annex 3 specifications.

2.7.2 In addition to text-based AIRMETs, the Bureau will produce a graphical representation of AIRMETs, similar to graphical SIGMETs.

2.7.2 Example of Graphical AIRMET

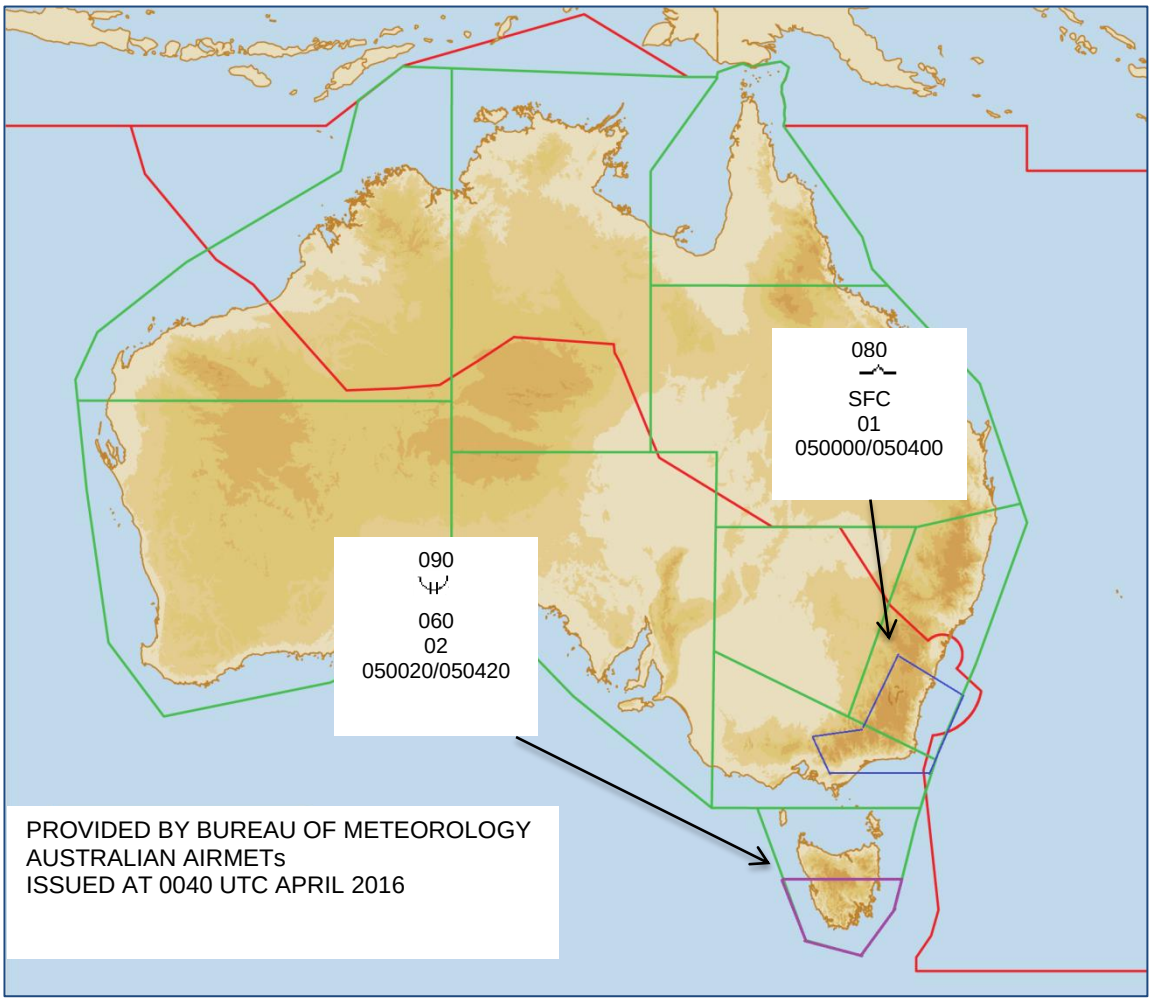


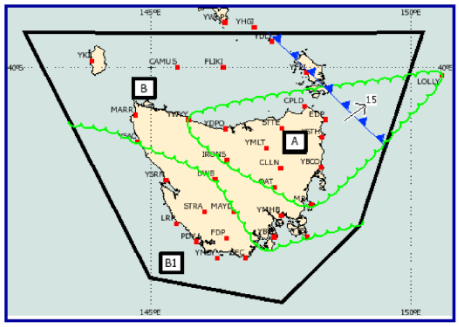
Figure 7: Graphical AIRMET

2.8 Graphical Area Forecasts (GAFs)

2.8.1 The Bureau currently produces Area Forecasts (ARFORs) for 28 areas across Australia. These ARFORs are provided in a text format and consist of an overview detailing the general meteorological situation followed by sections giving more detailed forecasts of various meteorological parameters.

2.8.2 The format of Australian ARFORs does not comply with ICAO Annex 3 specifications. In addition, the Australian aviation industry has provided feedback that they would prefer Area Forecasts in a graphical format. In order to align the format with international best practice and to meet industry needs, the Bureau has progressed work in reviewing the requirements to support the implementation of Graphical Area Forecasts (GAF).

2.8.3 Example of a Graphical Area Forecast (GAF)



Graphical Area Forecast Below 10000 FT - TAS

Issued at 081000Z - Valid 081700 to 082300Z Feb 16

Fronts/troughs valid at 081700Z

Australian Government
Bureau of Meteorology

AREA	SURFACE VIS AND WX	CLOUD, ICING AND TURB	FZ LVL
A	>10KM NIL	SCT CU/SC ~ 035/100, BECMG FEW 040/100 FM 21Z	040
		^ BLW 080	
B	>10KM NIL	SCT CU/SC ~ 035/100	040S/050N
	6000M WDSPR -SHRA	SCT ST 020/035 BKN CU/SC ~ 035/100	
	4000M ISOL SHRA	SCT ST 015/025 OVC CU/SC ~ 030/XXX	
	4000M ISOL SHSN AVB 025 LAND **B1** ONLY	BKN ST 015/025 OVC CU/SC ~ 030/XXX ISOL TCU 025/XXX	
	2000M ISOL TSRA **B1** ONLY TILL 21Z	ISOL CB 025/XXX BKN ST 015/025	
		^ BLW 080 BECMG ~ SEA FM 21Z	

Figure 8: Graphical Area Forecast for Tasmania

2.9 Grid Point Wind and Temperature (GPWT) Charts (Low-Level)

2.9.1 The low-level wind information is currently provided in an Area Forecast. However, with the implementation of Graphical Area Forecast (GAF) the wind information will not be included in the GAF product.

2.9.2 Low-level winds and temperatures will be provided in a Grid Point Wind and Temperature (GPWT) format as produced for mid and high-level flights. The low-level GPWT chart will provide wind and temperature information for vertical levels of 1000FT, 2000FT, 5000FT, 7000FT, 10,000FT and 14,000FT.

2.9.2 Example of GPWT Forecasts (low-Level)

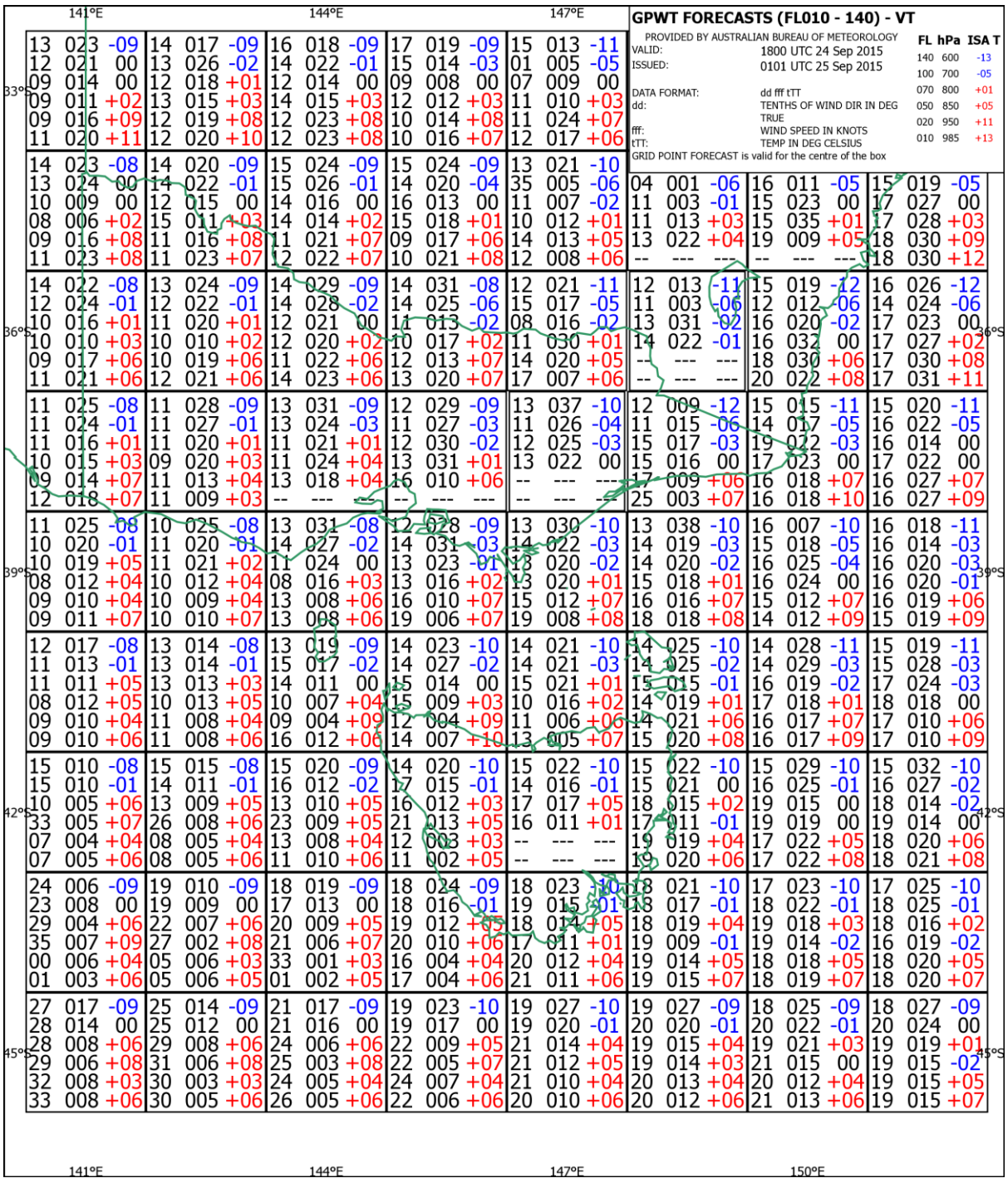


Figure 9: GPWT (low-Level) Forecasts for VIC and TAS area.

3. ACTION REQUIRED BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this papers; and

b) discuss any relevant matters as appropriate.

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