



Australian Government

Bureau of Meteorology

# Australian Graphical Products

Ashwin Naidu  
Aviation Weather Services  
Bureau of Meteorology



# Graphical SIGMET

- Bureau of Meteorology issues graphical representation of the text SIGMETs.
- The intent is to improve situational awareness.
- The text SIGMETs are still issued and are required to be used for official flight planning purposes.
- 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 AIP Book GEN 3.5.



Australian Government

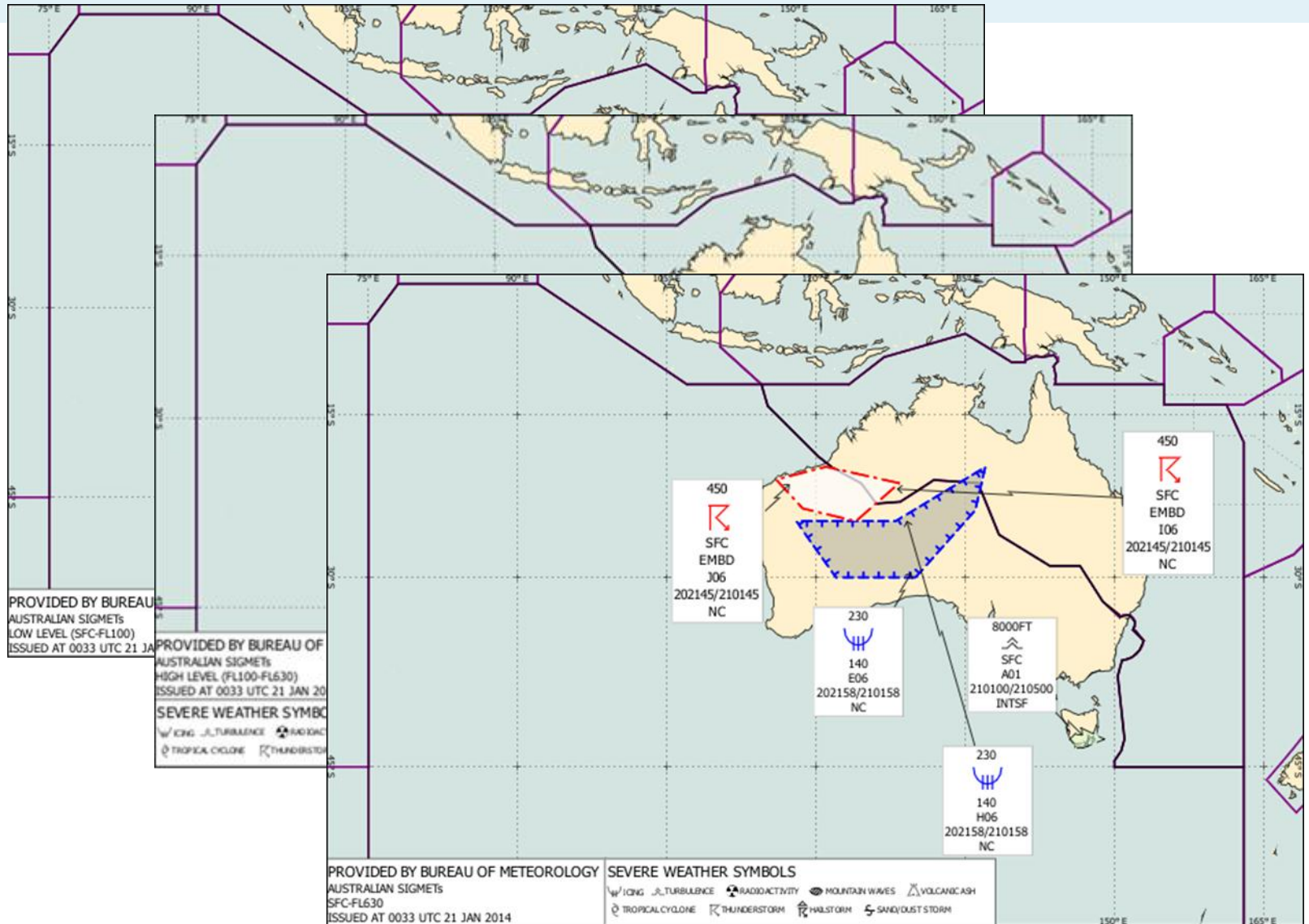
Bureau of Meteorology

# Graphical SIGMET

- The graphical SIGMET product are produced every ten minutes plus whenever a text SIGMET is issued.
- The graphics are produced for:
  - Low level SIGMETs (affecting airspace below FL100)
  - High level SIGMETs (affecting airspace above FL100)
  - All SIGMETs
- When the vertical extent of a phenomenon crosses FL100, the SIGMET are shown on both the Low-level and the High-level graphics.
- Images are issued even if there is no SIGMET current.



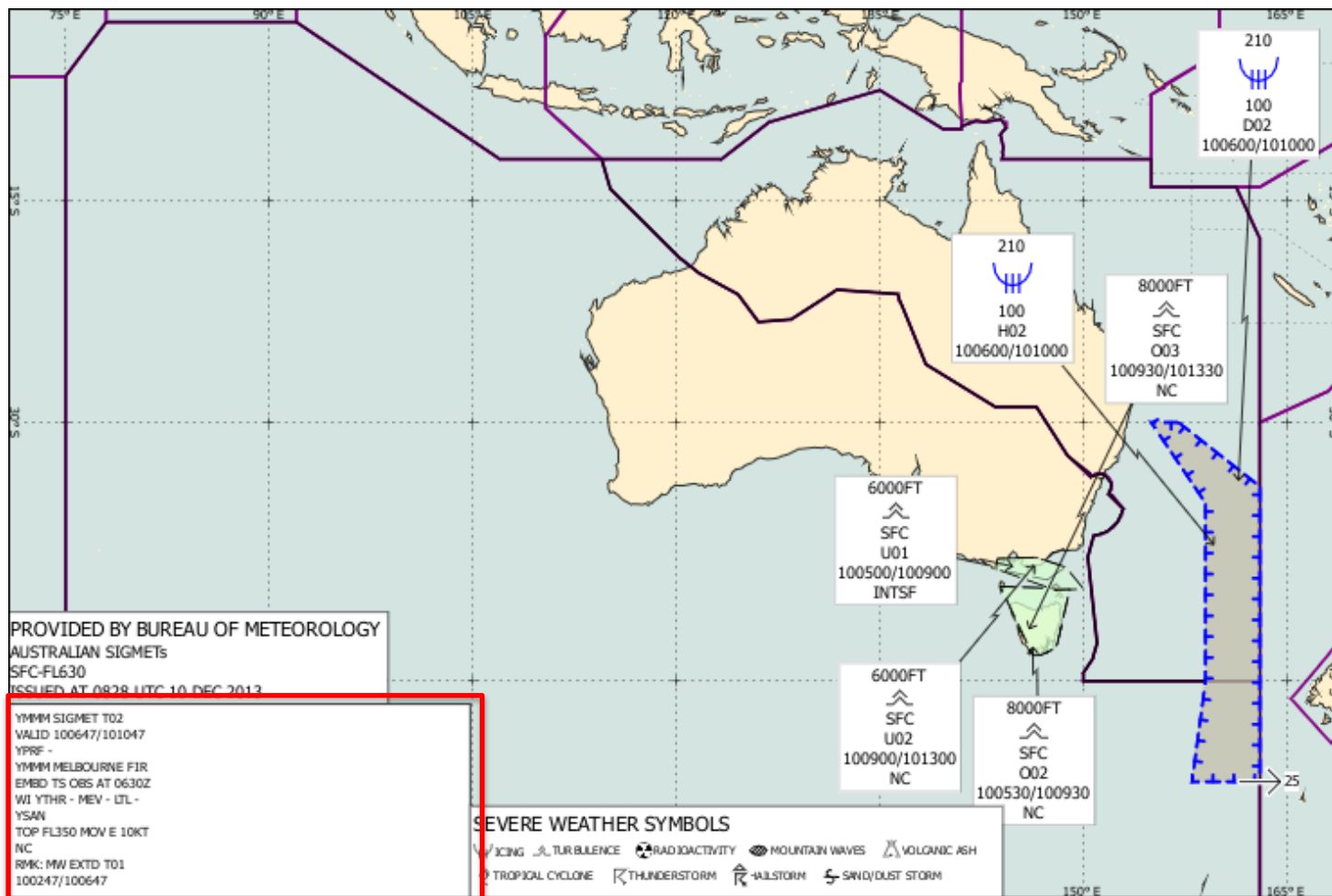
# Graphical SIGMETs





# Graphical SIGMET

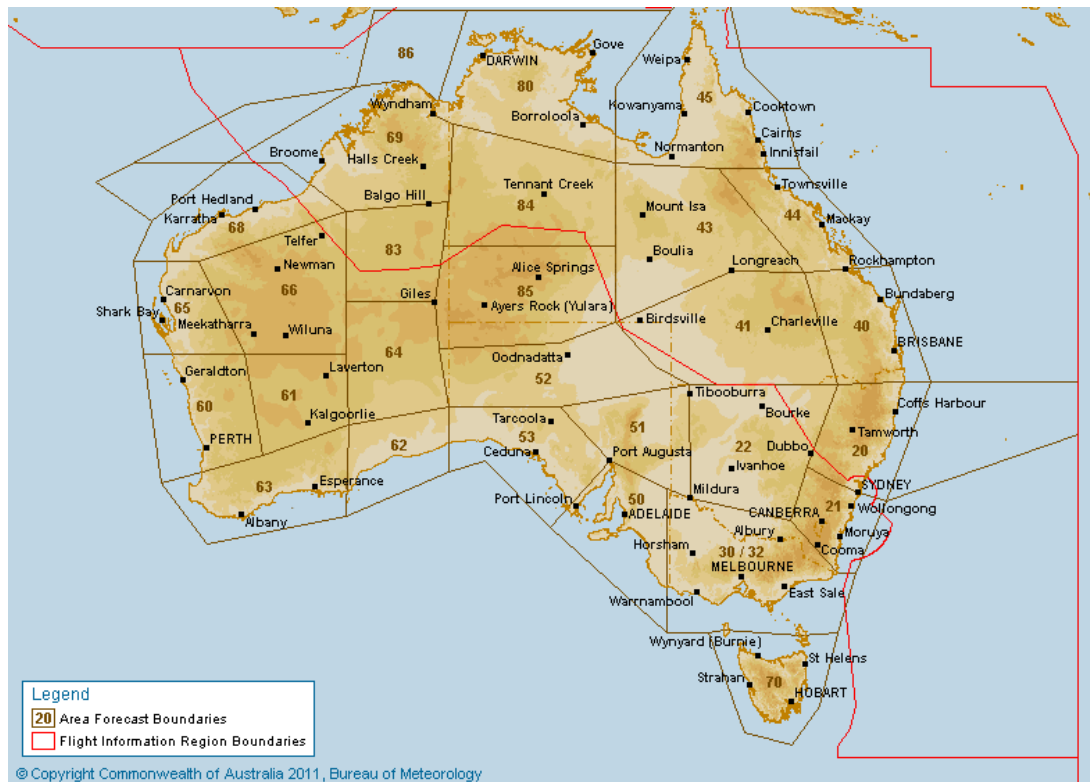
If a text SIGMET cannot be rendered graphically, due to an error in coding, it is displayed in text format on the graphic.





# Graphical Area Forecasts (GAFs)

- The Bureau currently produces text based Area Forecasts for 28 areas across Australia
- Designed to meet the needs of GA and regional operators
- Current Area Forecasts don't meet ICAO requirements
- Industry have shown interest in graphical product for a number of years



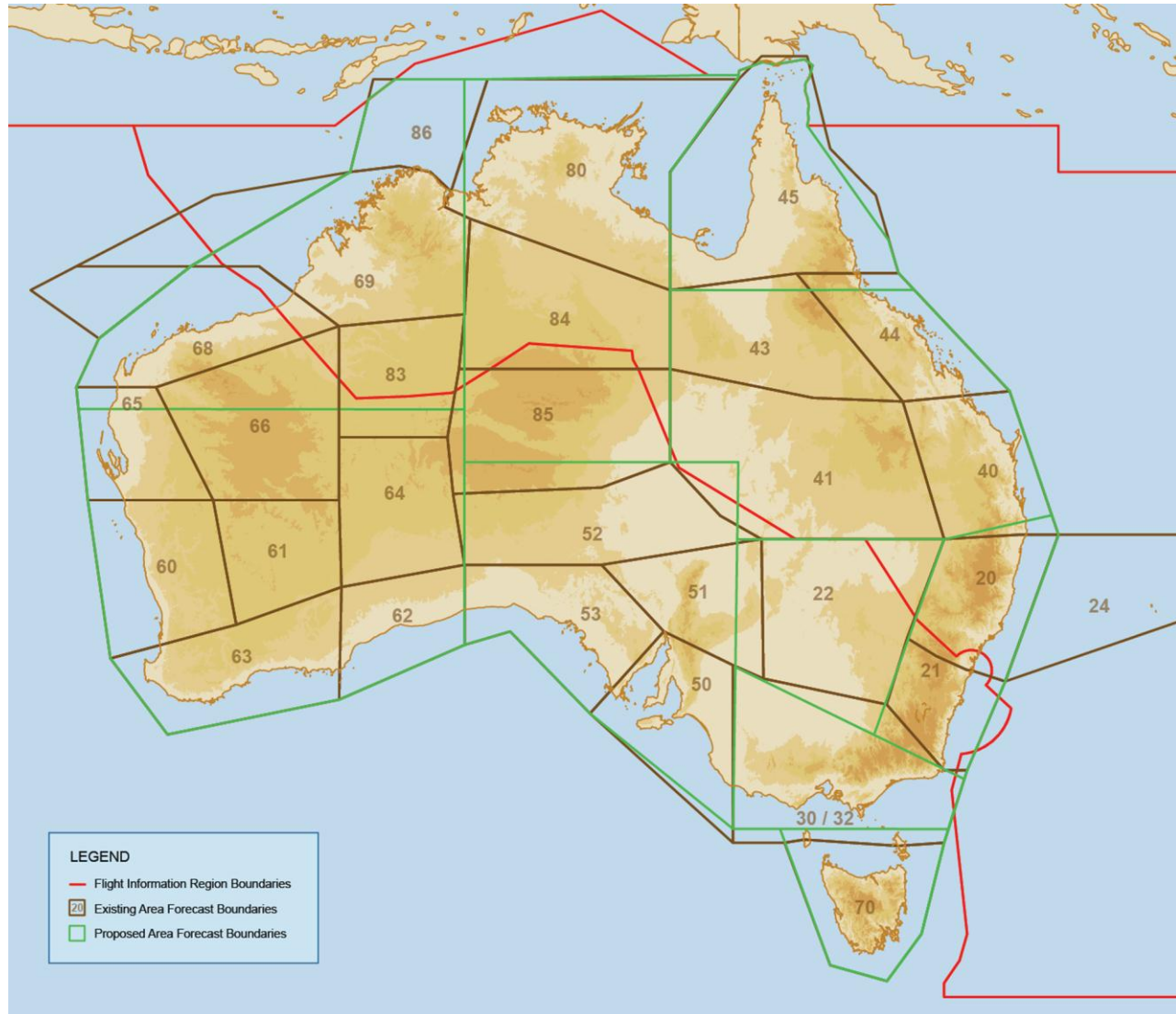


# Working Group

- The Bureau formed a working group with aviation industry representatives and other government organisations to:
  - Review the proposed new area boundaries;
  - Define the features to be contained in Graphical Area Forecasts;
  - Define the data levels, spatial domain and resolution and format of wind and temperature products;
  - Propose issue and validity times for the products;
  - Consider implementation strategies;
  - Identify the user education required; and
  - Propose an implementation schedule.



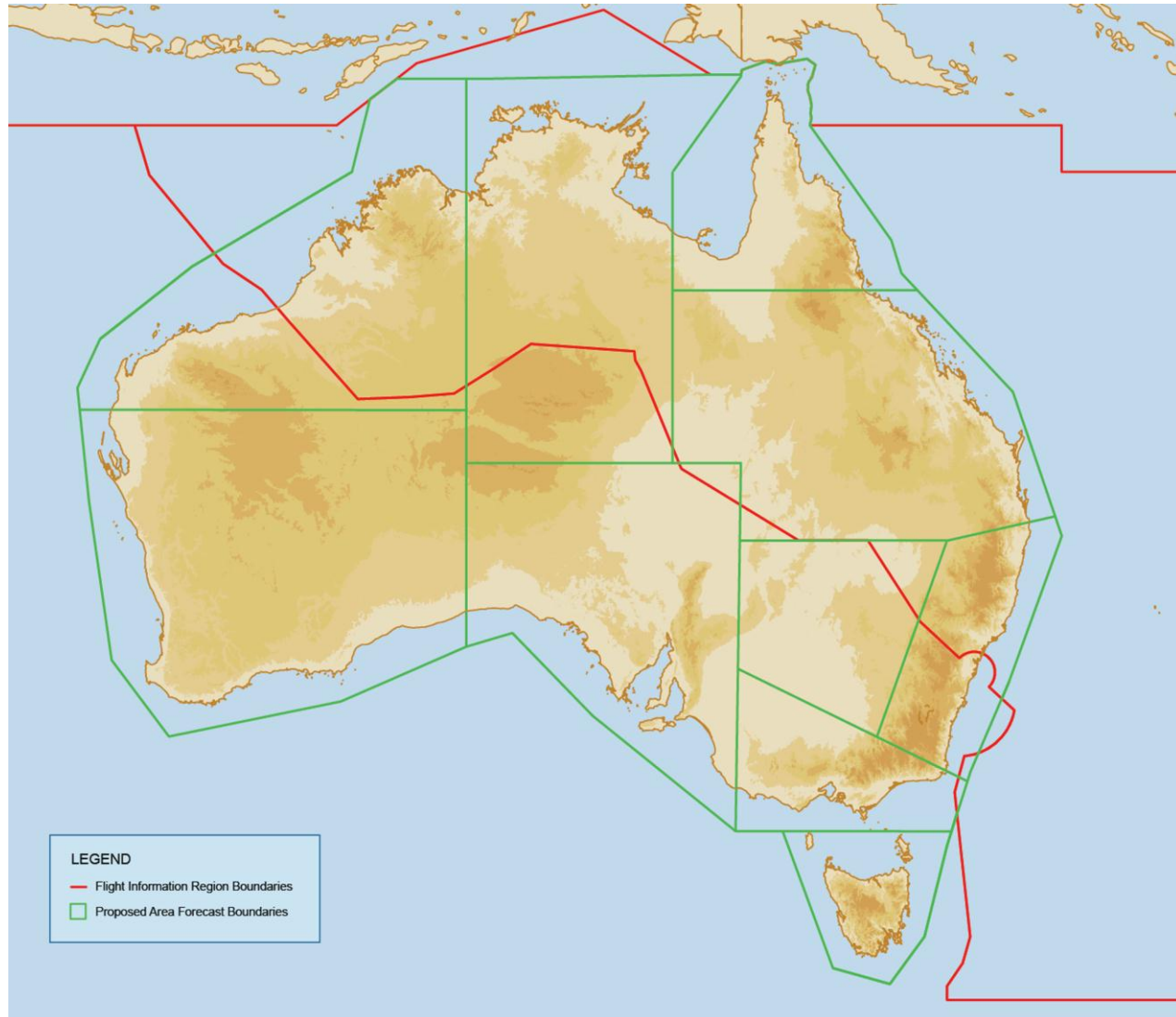
# Current Boundaries







# New Boundaries

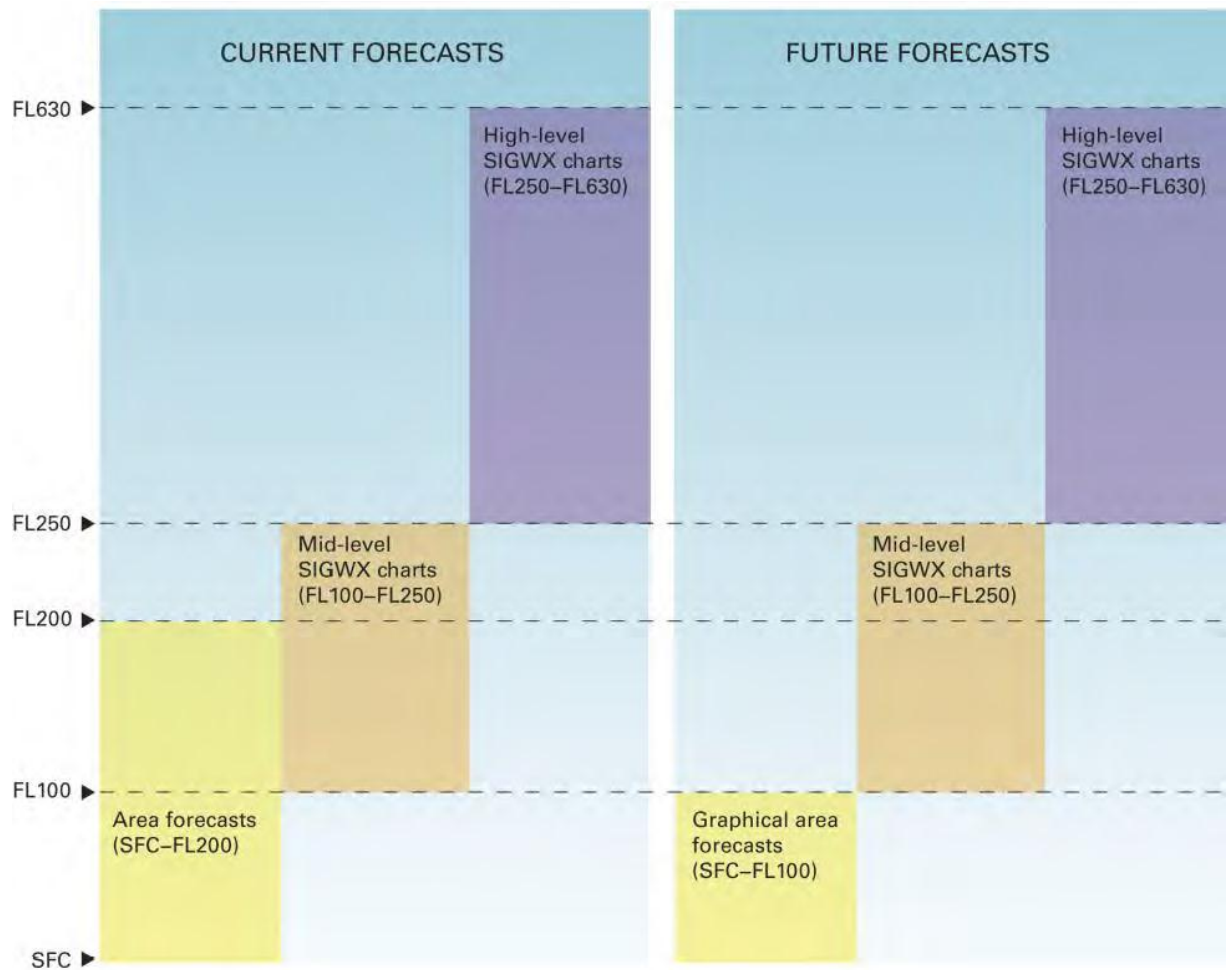




# Vertical extent

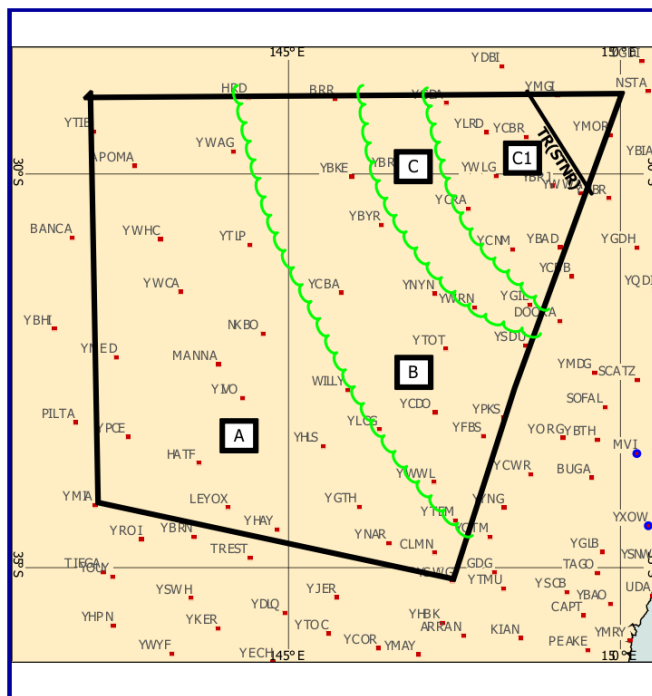
Current Area Forecasts  
up to FL200

Graphical Area  
Forecast up to FL100





# Example of GAF



All heights in 100's of feet above mean sea level. XXX means above chart upper limit.

MOD / SEV ICE  $\backslash$ / $\backslash$  MOD / SEV TURB  $\sim$ / $\sim$  TS / CB implies  $\backslash$ / $\sim$

Speed of movement in KT Temperature in DEG C

Check AIRMETs, SIGMETs and NOTAMs

Remarks:

For More Information Contact XXXX

## Graphical Area Forecast Below FL100

Issued at 240056Z - Valid 240600 to 241200Z Dec 14

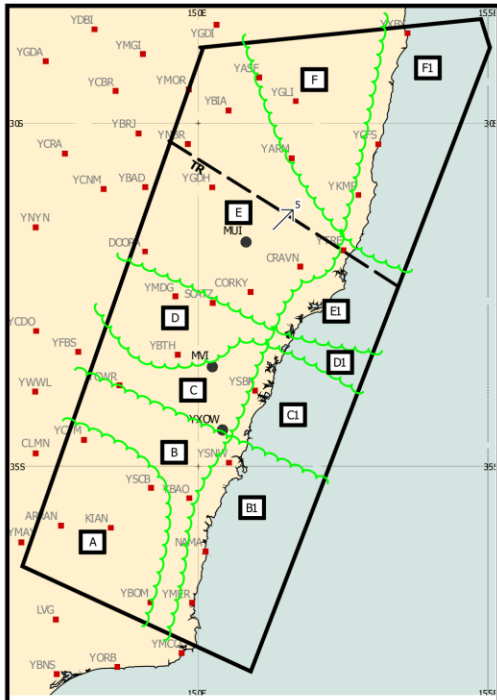
Fronts/troughs valid at 240600Z



AREA	SURFACE VIS AND WX	CLOUD	FZL
<b>A</b>	>10KM NIL	SCT CU/SC $\sim$ 040/XXX SCT AC/AS $\sim$ 090/XXX	160
<b>B</b>	>10KM NIL  4000M ISOL SHRA	BKN ST 005/030 BKN CU/SC $\sim$ 020/XXX OVC AC/AS $\sim$ 090/XXX BKN ST 005/030 $\sim$ BLW 080 IN THE N	150
<b>C</b>	>10KM NIL  4000M SCT RA/SHRA 2000M WSPD +RA C1 ONLY 2000M ISOL TSRA	BKN CU/SC $\sim$ 025/XXX OVC AC/AS $\sim$ 090/XXX BKN ST 005/030  ISOL CB 030/XXX, BKN ST 005/030 $\sim$ BLW 080	140



# Example of GAF (Complex Scenario)



All heights in 100s of feet above mean sea level. XXX means above chart upper limit.  
 MOD/SEV ICE MOD/SEV TURB TS/CB implies   
 Speed of movement in KT Temperatures in DEG C ● refers to Critical Localities  
 Check AIRMETs, SIGMETs and NOTAMs

Remarks:  
 CRITICAL LOCALITIES: [HEIGHTS AMSL]  
 BWL [ELEV 2200FT]: SHRA BKN ST 022 [CLD ON GND]  
 MVI [ELEV 3700FT]: RA BKN ST 037 [CLD ON GND], FM021000 9999 - SHRA BKN ST 050, TEMPO 1310/1314 4000 SHRA BKN ST 040  
 MUI [ELEV 2300FT]: RA BKN ST 2300 [CLD ON GND], PROB30 INTER 1310/1314 3000 TSRA BKN ST 035 SCT CB 050  
 For more information Contact XXXX

**Graphical Area Forecast Below 10000 FT**  
 Issued at 180507Z - Valid 180800 to 181400Z May 2015  
 Fronts/troughs valid at 180800Z

Australian Government  
Bureau of Meteorology

AREA	SURFACE VIS AND WX	CLOUD	FZL
<b>A</b>	>10KM NIL	SCT ST 020/050 BKN CU/SC  050/XXX  BLW 080	XXX
<b>B</b>	> 10KM NIL 4000M ISOL SHRA	SCT ST 020/050 TENDING 005/030 <b>B1</b> BKN CU/SC  050/XXX  BKN ST 020/050 TENDING 005/030 <b>B1</b>  BLW 080	XXX
<b>C</b>	> 10KM NIL 4000M SCT SHRA/RA	BKN ST 020/050 TENDING 005/030 <b>C1</b> TILL 09Z BKN CU  050/XXX TENDING  025/XXX <b>C1</b>  BLW 080	XXX
<b>D</b>	> 10KM NIL 4000M WDSP SHRA /RA 2000M +RA <b>D1</b> ONLY TILL 11Z	BKN ST 020/050 TENDING 005/025 <b>D1</b> TILL 11Z BKN CU/SC  050/XXX TENDING  025/XXX <b>D1</b> BKN AC/AS 090/XXX  BKN ST 020/050 TENDING 005/025 <b>D1</b>  BLW 080 TENDING  IN THE N AND <b>C1</b> (BLW 050)	XXX
<b>E</b>	> 10KM NIL 4000M WSP SHRA/ RA 2000M +RA <b>E1</b> ONLY 2000M ISOL TSRA MAINLY N	BKN ST 020/050 TENDING 005/025 <b>E1</b> BKN CU/SC  050/XXX TENDING  025/XXX <b>E1</b> BKN AC/AS  090/XXX  BKN ST 020/050 TENDING 005/025 <b>E1</b> , BKN TCU  030/XXX TENDING 020/XXX  ISOL CB 050/XXX, BKN ST 020/050 TENDING 005/025 <b>E1</b>  BLW 080 TENDING  IN THE N AND <b>C1</b> (BLW 050)	XXX
<b>F</b>	>10KM NIL 4000M SCT SHRA/RA 2000M ISOL TSRA	BKN ST 020/050 TENDING 005/025 <b>F1</b> BKN CU/SC  050/XXX TENDING  025/XXX <b>F1</b> BKN AC/AS  090/XXX  BKN ST 020/050 TENDING 005/025 <b>F1</b>  ISOL CB 050/XXX, BKN ST 020/050 TENDING 005/025 <b>F1</b>  BLW 080 AND BLW 050 <b>C1</b>	XXX



# Visibility and Weather

- Weather and visibility shown together
- Includes timings (FM or TILL) and extent (eg. ISOL, SCT etc)



- Examples:
  - >10KM NIL – visibility is more than 10KM when not associated with any weather (NIL weather)
  - ISOL 5000M TSRA FM 06Z – Isolated thunderstorms from 06Z with visibility 5000M.



# Cloud

- Cloud below FL100
- All CB and TCU (regardless of height)
- All cloud associated with precipitation (regardless of height)
- If base and/or top of cloud is above FL100, XXX will be used for level
- All cloud associated with precipitation written on one line





# Issue and validity times

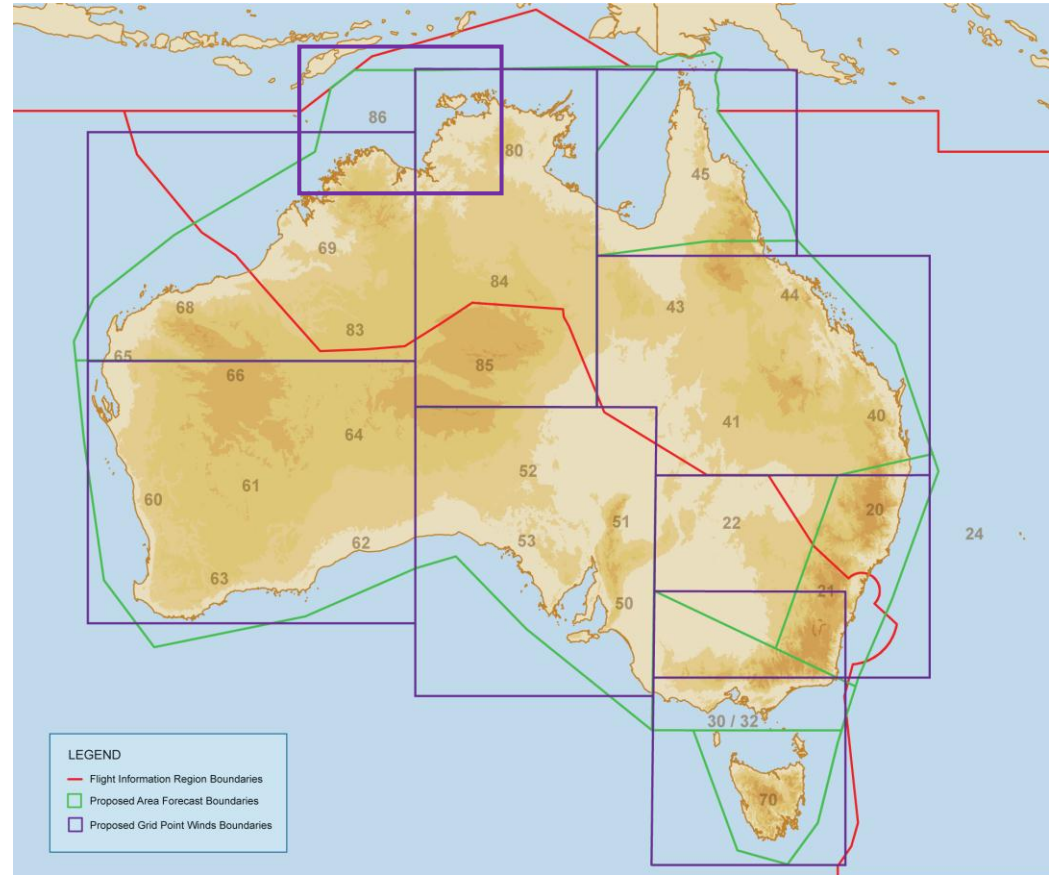
- Issued 6 hourly, at least 1 hour prior to the commencement of validity
  - 2 graphics issued providing up to 12 hours of coverage:
  - Example:
    - By 22Z, 23-05Z and 05-11Z issued
    - By 04Z, 05-11Z and 11-17Z issued
    - By 10Z, 11-17Z and 17-23Z issued
    - By 16Z, 17-23Z and 23-05Z issued
- (note issue times still to be finalised)



# Winds and Temperatures

- Low level Grid Point Winds and Temperature (GPWT) charts to replace winds on text Area Forecasts
- Levels (FT):

14000  
10000  
7000  
5000  
2000  
1000







# GPWT Example

- Resolution:
  - 1.5° regionally
  - 5° nationally
- Issued: 6 hrly
- Valid 3hrly times steps

141°E			144°E			147°E			150°E			153°E																	
02 004 -07	34 006 -06	16 003 -07	33 006 -07	34 019 -07	35 021 -07	36 013 -07	02 008 -05	35 012 -05	05 008 -01	05 014 -01	07 011 -01	06 019 -01	04 023 -01	04 011 -01	04 012 00	04 003 00	08 005 +01												
05 013 +06	04 017 +07	07 014 +07	04 017 +06	05 021 +06	07 017 +06	04 011 +07	06 020 +07	09 016 +06	05 015 +11	05 008 +10	08 012 +10	05 012 +10	06 020 +10	06 018 +10	04 019 +10	07 023 +09	09 016 +08												
05 020 +18	05 017 +16	06 017 +15	05 021 +15	05 016 +16	05 024 +14	07 017 +14	11 008 +18	13 011 +12	05 017 +18	07 012 +17	08 012 +17	06 015 +16	08 015 +17	06 018 +16	08 008 +16	-- --	18 007 +14												
05 003 -07	35 006 -08	34 010 -08	05 010 -07	02 012 -07	34 019 -07	33 010 -08	31 009 -06	35 007 -05	29 012 -02	33 010 00	35 014 00	02 013 -01	03 011 -02	05 008 -02	02 009 00	03 001 -01	12 005 -01												
36 009 +05	36 004 +05	04 004 +05	02 018 +05	03 019 +06	04 014 +06	02 010 +06	03 005 +07	08 012 +05	03 014 +10	04 013 +09	05 013 +09	03 018 +08	03 017 +09	02 010 +09	02 008 +09	07 016 +10	08 010 +08												
04 025 +18	04 021 +17	05 014 +16	06 017 +16	04 018 +16	02 016 +15	08 012 +15	-- --	11 008 +14	06 026 +18	07 021 +17	07 014 +17	08 016 +17	09 015 +16	06 014 +16	-- --	-- --	16 007 +16												
01 006 -09	02 006 -08	35 016 -07	35 010 -07	36 011 -07	00 010 -08	32 014 -07	30 013 -06	30 008 -04	35 007 00	31 008 00	34 014 -01	35 018 -02	35 015 -02	34 013 -01	33 012 -01	34 005 -02	25 005 -02												
34 010 +04	35 013 +04	02 010 +04	36 015 +05	02 012 +06	06 006 +05	05 006 +06	11 005 +06	06 004 +04	36 014 +09	03 018 +08	03 013 +08	03 016 +09	05 014 +09	06 010 +09	06 007 +09	08 016 +08	06 008 +07												
03 023 +17	06 020 +16	06 019 +16	06 021 +16	07 017 +15	03 014 +16	10 006 +13	-- --	06 009 +14	05 021 +18	07 018 +16	07 023 +17	08 015 +14	11 012 +13	09 007 +15	-- --	-- --	05 007 +16												
00 014 -09	03 013 -08	04 014 -08	35 011 -08	33 007 -07	34 010 -07	32 013 -07	30 013 -06	34 009 -05	35 012 00	06 008 -01	35 018 -01	35 020 00	34 012 -01	29 009 00	30 013 +01	29 013 00	28 008 -01												
36 006 +04	33 011 +03	35 011 +03	35 016 +04	31 012 +06	28 018 +06	29 014 +06	30 016 +05	28 007 +04	36 011 +08	34 010 +08	01 008 +08	36 007 +08	29 005 +09	24 012 +08	33 008 +07	03 009 +06	27 001 +06												
03 022 +16	03 013 +16	05 012 +15	07 011 +15	05 017 +13	07 011 +12	07 011 +12	11 007 +12	11 007 +12	05 020 +15	06 016 +17	06 017 +16	07 019 +14	07 010 +12	-- --	-- --	19 003 +08	12 007 +15												
01 013 -09	36 017 -09	34 014 -09	29 013 -09	27 013 -08	28 012 -07	30 014 -07	28 017 -07	30 015 -07	35 016 00	36 012 +01	36 014 +01	34 010 00	28 011 00	26 015 00	29 015 +01	31 009 +01	27 012 +01												
29 016 +03	31 017 +03	32 021 +03	34 011 +05	28 009 +05	33 007 +04	03 010 +03	01 007 +03	29 006 +03	30 008 +07	30 015 +06	31 014 +07	30 010 +08	17 005 +08	35 009 +05	02 007 +06	00 005 +06	28 006 +05												
01 008 +14	03 015 +13	03 013 +13	06 012 +13	24 006 +11	07 008 +08	30 002 +06	33 007 +11	08 001 +12	03 014 +15	05 017 +14	05 015 +14	08 020 +14	09 008 +11	-- --	-- --	27 007 +12	08 002 +14												
00 014 -08	36 009 -08	30 009 -09	26 011 -09	28 012 -08	33 013 -07	31 010 -08	29 013 -07	29 011 -07	00 014 -01	01 019 00	01 014 00	31 009 -01	25 009 -02	26 010 -02	29 010 +01	30 005 +01	31 004 +01												
33 009 +02	34 012 +02	36 016 +05	36 009 +06	30 007 +05	05 004 +05	36 006 +04	01 003 +05	07 007 +06	34 009 +06	32 011 +05	33 014 +07	01 009 +09	00 006 +08	11 002 +06	09 003 +05	01 010 +05	32 008 +03												
006 +10	006 +10	006 +10	006 +10	09 004 +09	-- --	-- --	-- --	34 004 +11	010 +10	009 +09	009 +09	00 006 +08	09 004 +09	-- --	-- --	00 005 +08	34 004 +11												
010 +10	009 +09	009 +09	009 +09	00 006 +08	-- --	-- --	-- --	35 003 +14	006 +10	006 +10	006 +10	006 +10	006 +10	006 +10	006 +10	006 +10	006 +10												
<b>GRID POINT FORECASTS (FL010 - 140)</b>												<b>FL hPa ISA T</b> 140 600 -13 100 700 -05 070 800 +01 050 850 +05 020 950 +11 010 985 +13																	
PROVIDED BY AUSTRALIAN BUREAU OF METEOROLOGY VALID: 1800 UTC 17 May 2015 ISSUED: 0559 UTC 18 May 2015 DATA FORMAT: dd fff tTT dd: TENTHS OF WIND DIR IN DEG TRUE fff: WIND SPEED IN KNOTS tTT: TEMP IN DEG CELSIUS GRID POINT FORECAST is valid for the centre of the box												006 -10 003 -01 006 +06 012 +08 007 +08 --- ---			29 007 -09 19 007 -01 10 002 +06 24 002 +09 --- --- --- ---			34 008 -08 32 002 -02 05 004 +04 35 003 +08 07 007 +11 02 007 +10			02 003 -08 33 007 00 12 004 +03 21 001 +05 09 004 +10 36 008 +11			29 005 -08 34 005 00 28 005 +04 18 005 +06 33 006 +10 32 006 +12			30 008 -08 34 004 00 32 008 +05 32 006 +06 31 006 +10 33 006 +13		



# Amendments

- AIRMETS will be used to amend GAFs
- More information on AIRMETS will follow.



# Implementation Plan

- Forecaster training/education
- User education
- Documentation and procedural changes
- Proposed Implementation date - Nov 2016



Australian Government

Bureau of Meteorology

# AIRMETS

- The current format of the Bureau's AIRMETS does not fully comply with ICAO Annex 3 requirements.
- In order to align the format with international best practice, the Bureau has progressed work in reviewing the requirements to support the implementation of ICAO compliant AIRMET.
- ICAO compliant AIRMET is planned to be implemented in early 2016.



Australian Government

Bureau of Meteorology

# AIRMET

It is proposed the coding format of an AIRMET be changed to follow the ICAO Annex 3 format, including the following specifics:

- Use of approved ICAO abbreviations. In addition AIRMETs will be issued to notify of any significant changes in freezing level (“FZ LVL”);
- Introduction of sequence numbers – two digit number providing sequential count of the number of AIRMET issued per FIR since 0001 UTC in the day concerned;
- The validity period of an AIRMET should not exceed 4 hours; and
- Inclusion of a remark ('RMK') line, to list the identifiers of ARFOR/GAF that are impacted by the AIRMET as well as any remarks or additional information deemed necessary.



Australian Government

Bureau of Meteorology

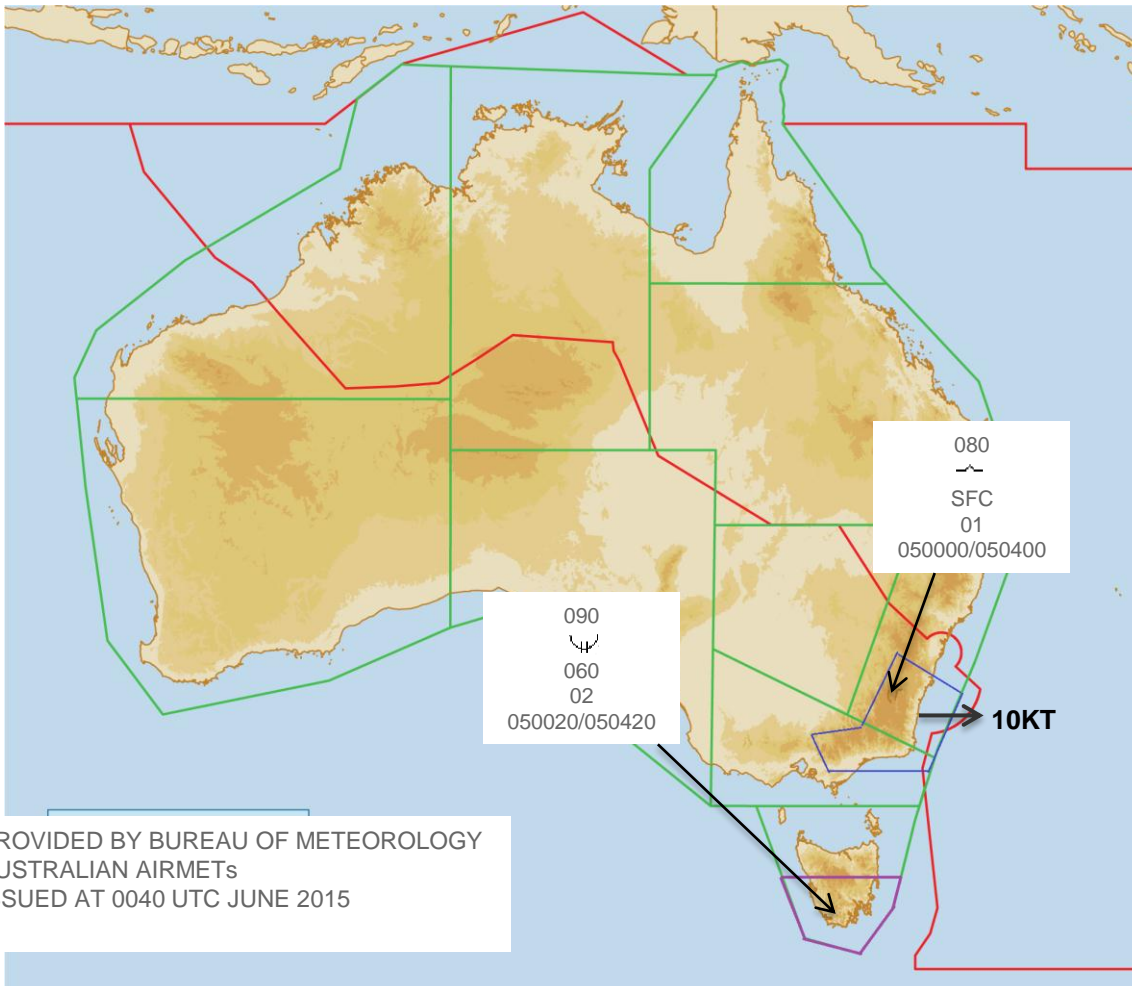
# Comparison of the current and proposed AIRMETS

Current AIRMET	Proposed AIRMET
<p>Example 1: AIRMET for Fog</p> <p>AIRMET 231400Z AREA 21 VALID 231400/232300 FOG FORECAST WITH VISIBILITY BELOW 1000M FROM 1400Z E RANGES. AMEND AREA FORECAST FOLLOWS.</p>	<p>YMMM AIRMET 01 VALID 231400/231800 YSRF – YMMM MELBOURNE FIR FG FCST WI YORG – KIAN – YBOM – YSCN SFC/2000FT STNR NC RMK: AREA 21</p>
<p>Example 2: AIRMET for Freezing Level</p> <p>AIRMETS currently not issued. However, ARFORs are amended for change of freezing level by 2000 FT or more.</p>	<p>YMMM AIRMET 01 VALID 230800/231200 YMHF – YMMM MELBOURNE FIR FZ LVL FCST S OF 40S FL060 STNR NC RMK: AREA 70</p>
<p>Example 4 - Cancel AIRMET for Example 1 above</p> <p>AIRMETS currently not cancelled but superseded by next issue of ARFOR.</p>	<p>YMMM AIRMET 04 VALID 231700/231800 YSRF – YMMM MELBOURNE FIR CNL AIRMET 01 231400/231800 RMK: AREA 21</p>



# Graphical AIRMETs

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

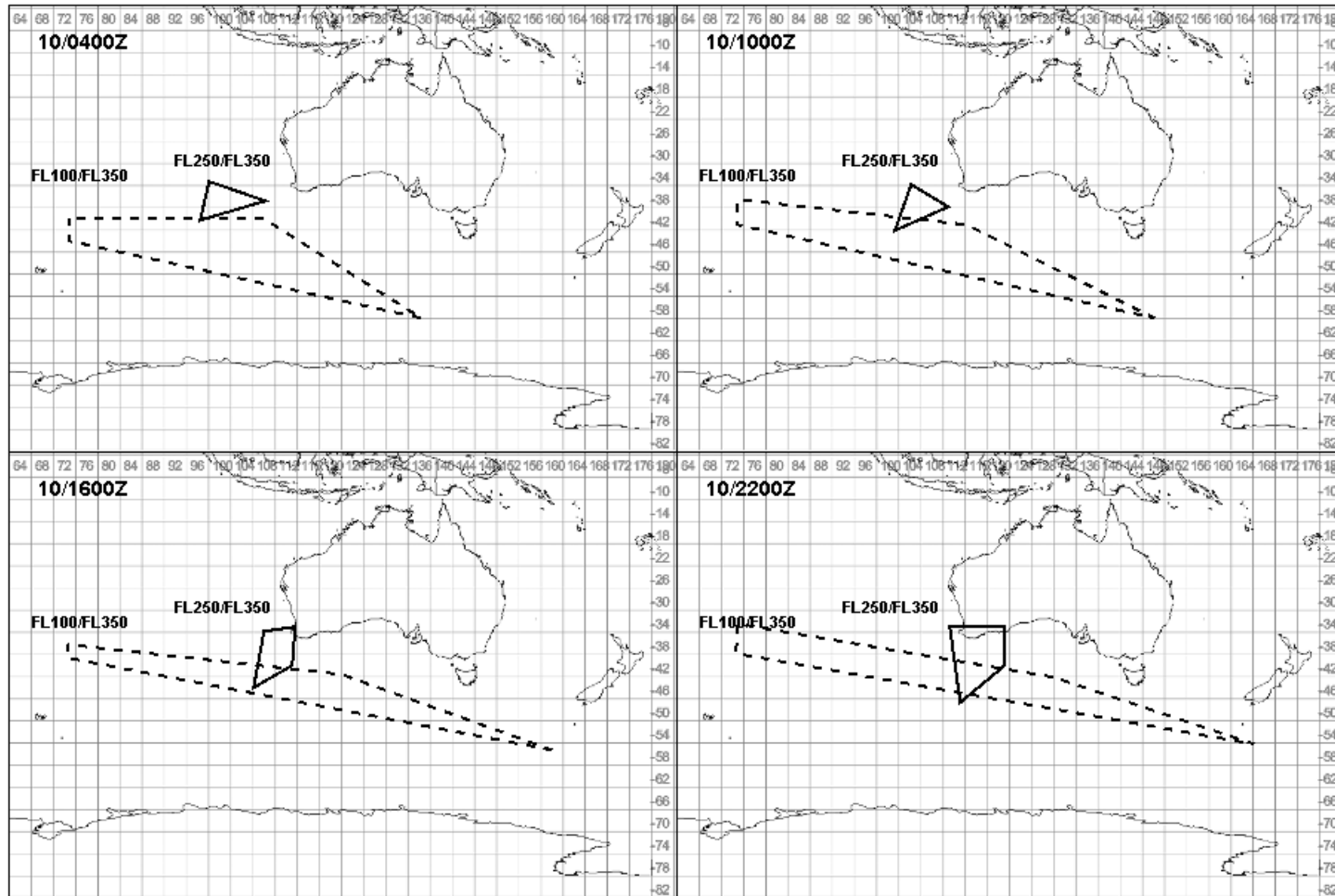




Australian Government

Bureau of Meteorology

# Volcanic ASH Graphical Advisory



VOLCANIC ASH ADVISORY  
 DTG: 20110610/0406Z  
 VAAC: Darwin  
 VOLCANO: Cordón Caulle 1507-  
 141  
 AREA: Chile C

SUMMIT ELEV: 1798M  
 ADVISORY NR: 2011/11  
 INFO SOURCE: MTSAT, TOULOUSE VAAC  
 AVIATION COLOUR CODE: RED  
 ERUPTION DETAILS: HIGH LEVEL ERUPTION, ASH  
 MOVING EAST

RMK: VAA LIMITED TO VAAC DARWIN AREA. FOR W OF E07500 SEE TOULOUSE VAA  
 FVXX01. ASH NEAR SW AUSTRALIA ABOVE FL250 MOV E.  
 NXT ADVISORY: NO LATER THAN 20110610/0600Z



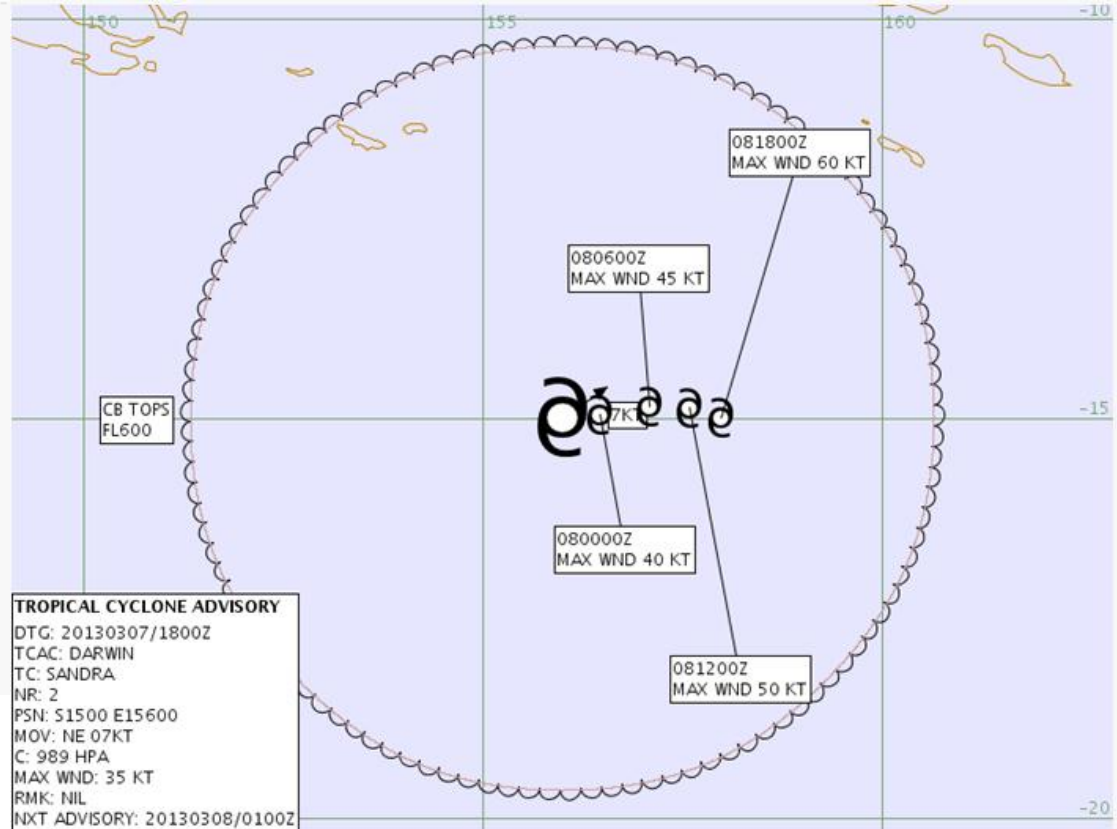


Australian Government  
Bureau of Meteorology

# Tropical Cyclone Advisory

## Tropical Cyclone Aviation Advisory 1 (QLD)

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  
FCST PSN +24HR: 08/1800 S1500 E15800  
FCST MAX WIND +24HR: 60KT  
RMK: NIL  
NXT MSG: 20130308/0100Z

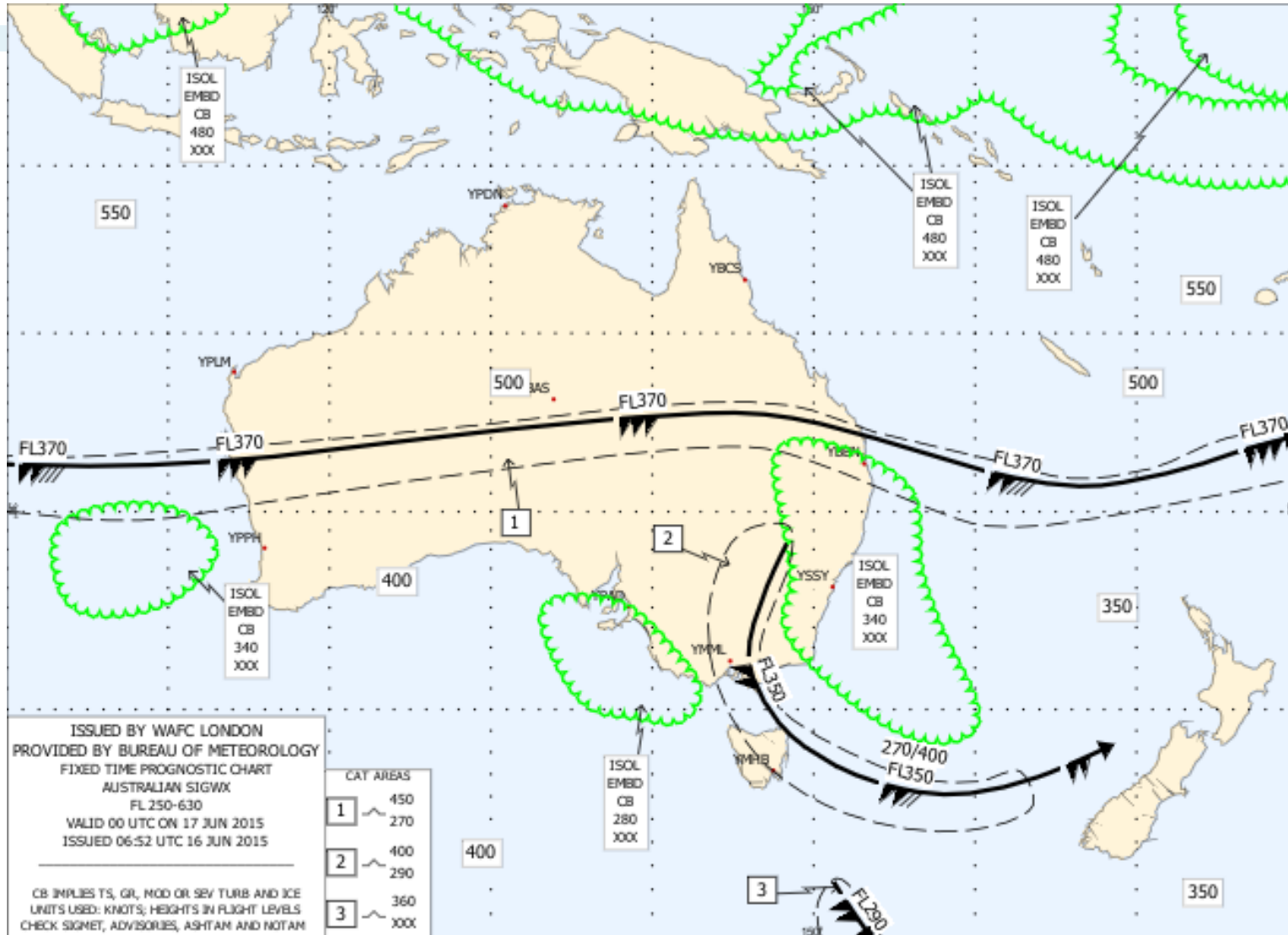




Australian Government

Bureau of Meteorology

# Others – SIGWX Charts





# Grid Point Wind and Temp (GPWT) Charts

Australian Government

Bureau of Meteorology

	105° E	110° E	115° E	120° E	125° E	130° E	135° E	140° E	145° E	150° E	155° E	
00	031 -67	35 027 -67	33 024 -67	32 016 -68	24 019 -67	27 011 -68	28 011 -68	30 033 -68	32 027 -68	32 030 -68	34 025 -68	30 015 -67
34	026 -53	34 028 -53	35 025 -53	34 029 -53	31 019 -54	26 020 -53	28 021 -53	31 029 -52	32 028 -53	32 028 -52	33 030 -53	32 023 -52
35	016 -40	36 013 -41	32 010 -41	27 017 -40	24 024 -41	25 017 -40	28 021 -40	28 018 -40	32 024 -40	31 025 -39	33 020 -40	34 017 -40
29	007 -30	24 011 -30	23 015 -30	23 020 -30	22 014 -30	25 011 -30	25 014 -29	28 015 -29	29 020 -29	31 020 -29	26 010 -30	28 011 -30
16	005 -14	22 008 -14	24 011 -14	22 010 -14	22 007 -14	23 010 -13	25 010 -14	28 012 -13	25 011 -13	29 009 -14	29 010 -13	31 004 -13
26	005 -05	03 002 -04	10 005 -05	09 005 -05	15 010 -05	13 009 -04	17 009 -05	18 006 -05	35 006 -04	32 007 -04	23 003 -04	21 004 -04
29	040 -68	29 043 -68	27 048 -68	26 056 -68	26 063 -68	26 054 -66	27 047 -66	28 045 -67	29 057 -68	29 058 -68	29 057 -68	30 053 -68
30	048 -53	30 052 -53	29 052 -53	28 053 -53	28 059 -53	28 062 -53	27 050 -53	28 042 -53	28 052 -53	29 060 -53	29 058 -52	29 055 -53
30	044 -40	29 049 -40	28 053 -40	28 056 -40	27 059 -40	27 057 -40	27 052 -41	27 047 -40	28 048 -40	29 054 -40	29 052 -40	28 050 -40
28	037 -30	28 037 -31	27 042 -31	26 048 -31	26 052 -31	26 050 -31	26 048 -30	27 050 -30	28 052 -30	28 049 -29	29 051 -30	28 044 -30
25	035 -15	24 042 -15	24 041 -15	25 044 -15	26 042 -16	26 043 -14	26 048 -14	26 049 -14	27 048 -14	27 042 -14	27 038 -16	27 028 -15
26	027 -05	27 029 -07	28 027 -06	28 018 -07	25 020 -07	24 027 -07	25 026 -06	27 026 -07	29 027 -06	28 026 -06	27 024 -05	29 020 -06
27	083 -67	27 088 -67	27 095 -67	26 104 -67	26 105 -67	26 094 -65	26 094 -65	26 099 -65	28 099 -66	28 099 -67	28 086 -65	28 079 -66
28	088 -52	28 095 -52	28 099 -52	27 102 -52	27 105 -53	27 103 -52	27 110 -53	27 114 -52	27 111 -51	29 099 -52	29 093 -53	29 092 -53
28	091 -39	28 093 -40	28 095 -40	27 100 -40	27 102 -40	27 102 -40	27 106 -41	27 111 -40	27 111 -40	28 106 -40	28 096 -41	28 091 -40
27	089 -31	27 091 -32	27 091 -31	26 094 -33	26 091 -33	26 091 -31	26 097 -31	27 098 -32	28 103 -31	28 103 -31	28 093 -31	28 086 -31
26	084 -16	26 085 -16	26 075 -17	27 049 -22	28 056 -22	25 051 -22	27 046 -22	27 054 -22	27 070 -21	27 062 -21	28 065 -19	28 051 -21
27	052 -09	28 046 -10	29 052 -11	30 045 -10	25 038 -11	26 029 -11	24 030 -09	27 030 -10	26 037 -10	29 039 -10	29 041 -11	30 029 -10
27	104 -61	27 120 -62	27 121 -63	27 131 -62	26 109 -61	26 095 -63	26 093 -58	27 086 -56	28 084 -56	28 092 -58	28 098 -60	28 118 -64
27	127 -49	27 132 -49	28 140 -50	27 149 -53	26 141 -51	26 124 -52	26 092 -54	26 093 -51	27 089 -48	29 108 -47	29 126 -49	29 129 -51
27	133 -39	27 139 -39	28 125 -41	28 085 -50	26 095 -49	25 078 -49	26 066 -52	26 071 -50	27 072 -49	29 090 -45	29 099 -47	29 125 -44
27	120 -33	27 104 -35	29 073 -40	28 047 -41	27 044 -42	26 048 -42	26 054 -43	26 055 -44	25 067 -42	29 081 -40	30 051 -42	28 058 -39
26	065 -26	28 062 -27	30 065 -25	29 040 -25	28 033 -26	26 037 -26	24 043 -26	25 045 -28	25 059 -27	30 075 -26	31 042 -24	30 041 -25
26	045 -15	29 045 -15	31 055 -14	31 042 -14	27 023 -14	27 020 -12	24 029 -13	23 034 -15	24 039 -17	32 067 -18	31 043 -13	30 028 -14
26	059 -54	27 051 -54	28 065 -56	28 073 -57	26 065 -59	26 062 -56	26 058 -55	27 052 -53	28 047 -52	29 055 -54	28 062 -56	29 067 -60
26	052 -49	27 052 -50	29 055 -52	30 069 -58	27 077 -60	25 068 -60	25 060 -56	26 052 -53	27 042 -49	31 052 -47	30 070 -57	28 066 -56
26	020 -51	29 014 -54	30 038 -51	30 070 -55	27 056 -55	25 066 -55	25 071 -54	25 053 -55	23 045 -50	33 056 -46	32 064 -54	28 040 -54
02	006 -46	33 003 -46	30 027 -46	33 067 -45	26 040 -44	24 049 -45	25 062 -40	25 055 -46	22 061 -46	35 063 -42	32 062 -43	29 030 -43
19	009 -29	35 013 -30	30 030 -31	32 049 -28	26 022 -28	25 037 -29	26 054 -31	25 056 -31	20 031 -33	33 039 -33	33 045 -25	30 028 -26
17	013 -16	00 014 -18	32 024 -18	31 027 -18	26 015 -15	23 025 -17	25 040 -18	25 036 -19	20 023 -20	32 023 -21	33 043 -14	33 030 -15
26	028 -54	27 027 -54	30 033 -55	28 042 -59	27 047 -58	25 047 -56	25 045 -52	27 037 -50	28 045 -52	29 042 -53	29 054 -56	28 061 -59
22	015 -57	33 015 -59	33 023 -62	29 026 -66	25 038 -64	23 050 -61	24 035 -52	29 037 -51	29 033 -54	31 050 -55	31 072 -60	28 072 -64
14	011 -57	01 015 -58	01 042 -58	30 039 -57	25 045 -57	23 055 -56	21 045 -48	27 037 -52	30 028 -54	34 093 -56	32 086 -56	29 066 -56
15	015 -48	01 016 -49	01 027 -47	29 029 -46	25 035 -47	21 033 -50	21 039 -47	28 038 -48	31 024 -49	35 066 -48	33 062 -45	30 055 -44
14	012 -32	02 015 -31	03 020 -30	33 008 -29	24 010 -32	19 035 -34	19 036 -37	29 016 -38	29 019 -34	33 028 -31	34 052 -28	31 042 -28
13	014 -19	04 012 -19	03 016 -17	03 010 -18	07 011 -20	19 034 -20	19 027 -29	28 007 -24	29 012 -22	33 013 -20	33 041 -16	31 039 -15
26	029 -55	28 028 -57	29 025 -59	27 028 -60	25 031 -60	24 026 -60	24 023 -55	26 027 -53	27 033 -54	28 042 -54	28 051 -55	27 058 -57
26	016 -64	30 017 -64	31 029 -67	29 024 -67	24 026 -65	20 022 -65	17 035 -61	20 010 -57	28 030 -57	30 048 -58	30 067 -59	29 093 -65
17	023 -59	15 061 -59	14 036 -57	14 036 -57	14 036 -57	17 023 -59	15 061 -59	14 036 -57	29 017 -58	29 037 -56	30 113 -57	30 103 -57
17	023 -50	15 058 -51	14 038 -52	14 038 -52	14 038 -52	18 026 -34	15 039 -35	14 016 -37	28 024 -50	29 037 -50	30 095 -48	30 094 -47
18	026 -34	15 039 -35	14 016 -37	14 016 -37	14 016 -37	18 026 -34	15 039 -35	14 016 -37	27 018 -36	29 025 -35	31 054 -34	30 062 -32
18	029 -21	16 031 -23	14 011 -24	14 011 -24	14 011 -24	18 029 -21	16 031 -23	14 011 -24	26 017 -24	28 027 -23	30 046 -20	30 046 -19
26	033 -63	25 029 -61	24 037 -60	25 038 -57	27 045 -55	28 054 -54	28 051 -55	27 058 -57	27 045 -55	28 054 -54	28 064 -55	28 064 -55
27	030 -68	22 036 -68	19 039 -66	21 045 -65	25 039 -59	28 061 -58	29 070 -60	29 067 -61	26 048 -58	27 058 -59	28 061 -58	29 070 -60
27	023 -61	21 037 -60	19 043 -60	19 043 -60	19 043 -60	27 023 -61	21 037 -60	19 043 -60	19 055 -59	23 036 -56	29 062 -58	31 060 -60
26	024 -51	21 033 -51	19 043 -51	20 053 -51	22 038 -51	20 053 -51	20 053 -51	22 038 -51	20 053 -51	22 038 -51	30 069 -51	31 047 -52
25	021 -33	20 031 -33	21 033 -34	20 045 -37	23 037 -37	20 031 -33	21 033 -34	20 045 -37	23 037 -37	23 037 -37	30 065 -36	31 050 -35
25	018 -21	18 025 -22	20 025 -23	20 035 -24	21 039 -24	20 018 -21	18 025 -22	20 025 -23	20 035 -24	21 039 -24	30 056 -25	31 050 -22

GRID POINT FORECASTS (FL180 - 450)			
PROVIDED BY AUSTRALIAN BUREAU OF METEOROLOGY			
DATA FROM WAFc LONDON			
	FL hPa	ISA T	
VALID:	0000 UTC 17 Jun 2015	300 200 -56	
ISSUED:	2140 UTC 16 Jun 2015	340 290 -52	
DATA FORMAT:	dd ff TTT	300 300 -44	
dd:	WIND DIRECTION IN DEGREES TRUE TO NEAREST 10	240 400 -33	
ff:	WIND SPEED IN KNOTS	180 500 -21	
TTT:	SIGN +/- AND TEMPERATURE IN WHOLE DEGREES CELSIUS		



Australian Government

Bureau of Meteorology

# Wind and Temperature Charts

