

User Guide

Warning Products

Information to assist users in interpreting and using Bureau of Meteorology warning products. Please note that some samples linked from this document are examples only and the hazards were not actually present at the times indicated.

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Introduction

The Bureau of Meteorology issues a range of warning products across various environmental hazards.

Summary of Warning Types

- Agricultural warnings, which include **frost warnings**, **sheep graziers' warnings**, **downy mildew advice** and **brown rot warnings**;
- **Fire weather warnings** for weather conducive to the spread of dangerous fires;
- **Road weather alerts** for weather phenomena contributing to hazardous driving conditions (metropolitan areas (excluding Darwin), or state-wide in Tasmania).
- **Bushwalkers alerts** for weather phenomena contributing to hazardous bushwalking conditions (Tasmania only).
- **Flood watches and warnings** for riverine flooding (not including flash floods);
- **Hazardous surf warnings** for hazardous surf conditions (New South Wales and southern Queensland only);
- **Marine wind warnings** for hazardous winds and waves in coastal areas;
- **Ocean wind warnings** for hazardous winds and waves in ocean areas;
- **Severe thunderstorm warnings** for large hail, damaging wind gusts, heavy rainfall and tornadoes associated with thunderstorms;
- **Severe weather warnings** for hazardous winds, wind gusts, very heavy rain, abnormally high tides, unusually large surf and widespread blizzards in Alpine areas, not solely related to severe thunderstorms, tropical cyclones or bushfires;
- **Tropical cyclone warnings** where a tropical cyclone is expected to cause gale force winds or stronger over land in Australia;
- **Tsunami warnings** for land and marine inundation in coastal areas;
- **Heatwave warnings** for severe or extreme heatwaves.

Product Availability

Warning products are unique in that they only appear in Bureau services when the hazard is observed. At other times, products and files are not available on FTP or visible in web map/web feature services.

All Registered User FTP customers have a products_list.txt file in their home directory, which is updated daily at approximately 10:05 am AEST (0005 UTC). This lists all products which will appear in a user's directory, should they be issued.

Date modified information on the Bureau's FTP server can be used to identify when a warning has been issued or updated.

Warning product files appear in the /fwo subdirectory of Registered Users' directories. Product file names are unchanging, allowing for direct addressing, so individual files are overwritten when reissued.

File Formats

Warnings are typically available in TXT, PDF, HTML and XML formats.

amoc.xml files provide warning information (areas, issue time, severity etc.) without the warning text. All information available in these files is also available in the standard XML format messages.

Warnings and alerts that are provided in Common Alerting Protocol (CAP) format conform to the CAP v1.2 standard. Please see the [Bureau of Meteorology CAP data elements User Guide](#) for more information.

Information on values found in XML elements is available via:

http://www.bom.gov.au/schema/doc/AMOC_V1.pdf. XML schemas are provided at the top of the XML products.

Spatial data is provided as shapefiles, GML or AXF format.

Spatial Data

Warnings advise of hazardous phenomena for certain parts of the Earth's surface. Bureau of Meteorology warnings have varied definitions of spatial service.

- Specific hazard area (tropical cyclone, severe thunderstorm, severe weather);
- Flood watch/warning catchment area (flood);
- Fire weather district (fire);
- Forecast district (agricultural, tropical cyclone, severe thunderstorm, severe weather, heatwave);
- Coastal waters zones (hazardous surf, marine wind warning, tsunami).

Warnings for a specific hazard area come with specific files containing information on the hazard area.

All warning types refer to fixed areas which are defined in static shapefiles which do not update in real time. Details regarding the spatial information available are provided in the sections of this document relevant to each warning type.

Product Codes

The Australian mainland is divided into seven regions based on Australian states and territories. The third letter of the warning product code denotes the region affected – **D** for Northern Territory (NT), **N** for New South Wales (NSW) and the Australian Capital Territory (ACT), **Q** for Queensland (QLD), **S** for South Australia (SA), **T** for Tasmania (TAS), **V** for Victoria (VIC) and **W** for Western Australia (WA). For example, ID**D**20320 is the product code for Fire Weather Warning 1 (NT) and ID**N**22200 is the product code for Fire Weather Warning – ACT (NSW).

[Tropical Cyclone Warnings](#) have product codes based on the three regions in the Australian area of responsibility.

[Tsunami Warnings](#) and [Ocean Wind Warnings](#) (except for Ocean Wind Warnings for Tropical Cyclones) have a **Y** as the third letter of their product codes. For example, ID**Y**21000 is the product code for Ocean Wind Warning 1 – Metarea 10.

Accessing Sample Files

Links to samples of product files in the formats available via FTP are included in the sections of this document relevant to each warning type.

Due to most browsers no longer supporting FTP, it is generally necessary to use an FTP client such as Filezilla to retrieve the sample files.

Alternatively, they can be accessed via Windows File Explorer by pasting the following link into the address bar: <ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/>

Agricultural Warnings

Please note agricultural warnings are not issued for all states and territories.

Frost Warnings

Provide warning of frost, primarily to assist in reducing damage to frost-sensitive plants and crops, as well as machinery.

Table 1 provides a list of available frost warning products.

Product Code	Product Description
IDV23000	Frost Warning (VIC)
IDT21900	Frost Warning (TAS)
IDS21007	Frost Warning (SA)
IDQ20086	Frost Warning (QLD)

Table 1 List of frost warning products

Sheep Graziers' Warnings

Provide warning of wet and windy conditions to enable sheep graziers to take action to reduce losses among newly born lambs and newly shorn sheep due to hypothermia.

Table 2 provides a list of available sheep graziers' warning products.

Product Code	Product Description
IDS20242	Warning to Sheep Graziers (SA)
IDT29000	Warning to Sheep Graziers (TAS)
IDV29000	Warning to Sheep Graziers (VIC)
IDW29000	Warning to Sheep Graziers 1 (WA)
IDW29100	Warning to Sheep Graziers 2 (WA)
IDQ20000	Warning to Sheep Graziers (QLD)
IDN29000	Warning to Sheep Graziers (NSW)

Table 2 List of sheep graziers' warning products

Brown Rot Warning

Provides warning to fruit growers of conditions conducive to the development of brown rot on fruit.

Table 3 provides a list of available brown rot warning products.

Product Code	Product Description
IDV24000	Brown Rot Warning (VIC)

Table 3 List of brown rot warning products

Downy Mildew Advice

Provides warning of wet and mild weather conditions conducive to an infection of downy mildew in grape growing areas.

Table 4 provides a list of available downy mildew advice products.

Product Code	Product Description
IDS21003	Downy Mildew Advice (SA)

Table 4 List of downy mildew advice products

Formats

Via FTP: XML, TXT, HTML, PDF, CAP.

Issue Characteristics

Agricultural warnings are typically issued in the afternoon for the following day, with a routine update in the morning for the rest of the day.

Cancellations are issued for downy mildew advice products. No cancellation is issued for other agricultural warning products.

Spatial Information

Agricultural Warnings are defined at the district level, i.e. a warning covers an entire Public Weather Forecast District.

XML versions refer to AAC codes described here:

<http://reg.bom.gov.au/catalogue/spatialdata.pdf> (see IDM00001 - Public Weather Forecast Districts).

TXT, HTML and PDF versions contain defined district names which can also be mapped to district shapefiles.

Sample files

Frost warning:

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV23000.amoc.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV23000.cap.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV23000.pdf>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV23000.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV23000.xml>

Sheep graziers' warning:

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV29000.amoc.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV29000.cap.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV29000.pdf>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV29000.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV29000.xml>

Brown rot warning:

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV24000.amoc.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV24000.cap.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV24000.pdf>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV24000.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV24000.xml>

Downy mildew advice:

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDS21003.cap.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDS21003.htm>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDS21003.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDS21003.xml>

Fire Weather Warnings

Note: fire weather warnings warn of weather conducive to the spread of dangerous bushfires, they do not warn of fires themselves.

Product Codes

Table 5 provides a list of available fire weather warning products.

Product Code	Product Description
IDD20320	Fire Weather Warning 1 (NT)
IDD20330	Fire Weather Warning 2 (NT)
IDN22000	Fire Weather Warning 1 (NSW)
IDN22001	Fire Weather Warning 2 (NSW)
IDN22200	Fire Weather Warning - ACT (NSW)
IDQ20035	Fire Weather Warning 1 (QLD)
IDQ20036	Fire Weather Warning 2 (QLD)
IDS20290	Fire Weather Warning 1 (SA)
IDS20299	Fire Weather Warning 2 (SA)
IDT31100	Fire Weather Warning 1 (TAS)
IDT31200	Fire Weather Warning 2 (TAS)
IDV22000	Fire Weather Warning 1 (VIC)
IDV22001	Fire Weather Warning 2 (VIC)
IDW30000	Fire Weather Warning 1 (WA)
IDW30100	Fire Weather Warning 2 (WA)

Table 5 List of fire weather warning products

Formats

Via FTP: XML, TXT, PDF, CAP, HTML

Via the [GIS2Web Service](#): Web Map Service (WMS) and Web Feature Service (WFS)

Issue Characteristics

Fire weather warnings are typically issued in the afternoon for the following day, with a routine update in the morning for rest of the day. No cancellation is issued.



Spatial Information

Fire weather warnings are defined at the district level, i.e. a warning covers an entire Fire Weather District. Fire Weather Districts are different to Public Weather Forecast Districts.

XML versions refer to AAC codes described here:

<http://reg.bom.gov.au/catalogue/spatialdata.pdf> (see IDM00007 - Fire Weather Districts).

TXT, HTML and PDF versions contain defined district names which can also be mapped to district shapefiles.

Sample Files

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDS20290.amoc.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDS20290.cap.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDS20290.pdf>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDS20290.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDS20290.xml>

Further Information

<http://www.bom.gov.au/weather-services/fire-weather-centre/index.shtml>

<https://www.afac.com.au/initiative/afdrs>

Road Weather Alert

Road Weather Alerts are issued for metropolitan areas (excluding Darwin), or state-wide in Tasmania, when weather elements or phenomena are expected to contribute to hazardous driving conditions.

Product Codes

Table 6 provides a list of available road weather alert products.

Product Code	Product Description
IDN38100	Road Weather Alert - Sydney (NSW)
IDN38200	Road Weather Alert - Canberra (NSW)
IDQ20002	Road Weather Alert (QLD)
IDS20240	Road Weather Alert (SA)
IDT38100	Road Weather Alert (TAS)
IDV30000	Road Weather Alert - Melbourne (VIC)
IDW28500	Road Weather Alert (WA)

Table 6 List of road weather alert products

Formats

Via FTP: XML, TXT, PDF, CAP.

Via the [GIS2Web Service](#): Web Map Service (WMS) and Web Feature Service (WFS)

Issue Characteristics

Road weather alerts are typically issued 12 to 18 hours prior to the onset of the hazardous conditions, updated 6 hourly thereafter until cancelled.

Alerts are issued only when conditions are likely to be worse than normal for the season and location. For example, alerts for ice on roads are not normally issued for alpine districts in winter unless expected to be unusually severe or widespread and NO severe weather warning, severe thunderstorm warning or flood warning is in force.

Spatial Information

Road weather alerts are defined at the district level, i.e. a warning covers an entire Metropolitan Area (excluding Darwin), or Public Weather Forecast District (Tasmania only).

XML versions refer to AAC codes described here:

<http://reg.bom.gov.au/catalogue/spatialdata.pdf> (see IDM00014 - Metropolitan Areas and IDM00001 - Public Weather Forecast Districts).

TXT, HTML and PDF versions contain defined district names which can also be mapped to district shapefiles.



Sample Files

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDS20240.amoc.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDS20240.cap.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDS20240.pdf>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDS20240.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDS20240.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDT38100.amoc.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDT38100.cap.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDT38100.pdf>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDT38100.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDT38100.xml>

Further information

[Road Weather Alert | Bureau Data Catalogue \(bom.gov.au\)](#)

Bushwalkers Weather Alert

The Bushwalkers Weather Alert is only available in Tasmania to alert bushwalkers of hazardous weather such as heavy rain, snow down to low levels or when very windy conditions are expected.

Product Codes

Table 7 provides a list of available Bushwalkers Weather Alert products.

Product Code	Product Description
IDT38200	Bushwalkers Weather Alert - (TAS)

Table 7 List of Bushwalkers Weather Alert products

Formats

Via FTP: XML, TXT, PDF, CAP.

Issue Characteristics

Bushwalkers Weather Alerts are typically issued 24 to 30 hours prior to the onset of the hazardous conditions, updated 6 hourly thereafter until cancelled.

Weather conditions that lead to issuing a Bushwalkers Weather Alert are combinations of, but not necessarily all of, the following: a) Generally gale force winds (meaning greater than 62 km/h) or stronger; b) Cold temperatures generally near freezing; c) Snow settling to levels lower than expected for the time of the year.

Spatial Information

Bushwalkers Weather Alerts are defined at the district level, i.e. a warning covers an entire Public Weather Forecast District.

XML versions refer to AAC codes described here:

<http://reg.bom.gov.au/catalogue/spatialdata.pdf> (see IDM00001 - Public Weather Forecast Districts).

TXT, HTML and PDF versions contain defined district names which can also be mapped to district shapefiles.

Sample Files

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDT38200.amoc.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDT38200.cap.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDT38200.pdf>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDT38200.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDT38200.xml>

Flood Watches and Warnings

For riverine flooding (not including flash floods).

Product Codes

Table 8 provides a list of available Flood Watch and Flood Warning products.

Product Code	Product Description
IDN36503	Flood Watch 1 (NSW)
IDN36504	Flood Watch 2 (NSW)
IDD20590	Flood Watch 1 (NT)
IDD20595	Flood Watch 2 (NT)
IDQ20900	Flood Watch 1 (QLD)
IDQ20905	Flood Watch 2 (QLD)
IDS20374	Flood Watch 1 (SA)
IDS20375	Flood Watch 2 (SA)
IDT20625	Flood Watch 1 (TAS)
IDT20630	Flood Watch 2 (TAS)
IDV35010	Flood Watch 1 (VIC)
IDV35020	Flood Watch 2 (VIC)
IDW39605	Flood Watch 1 (WA)
IDW39606	Flood Watch 2 (WA)
IDD20535	Flood Warning - Adelaide River (NT)
IDD20545	Flood Warning - Daly River (NT)
IDD20555	Flood Warning - Katherine River (NT)
IDD20565	Flood Warning - Roper and Waterhouse River (NT)
IDD20575	Flood Warning - Victoria River (NT)
IDD20585	Flood Warning - McArthur River (NT)
IDN36601	Flood Warning - Tweed River (NSW)
IDN36602	Flood Warning - Wilsons River (NSW)
IDN36603	Flood Warning - Clarence River (NSW)

Product Code	Product Description
IDN36604	Flood Warning - Bellinger and Kalang Rivers (NSW)
IDN36605	Flood Warning - Macleay River (NSW)
IDN36606	Flood Warning - Hastings River (NSW)
IDN36607	Flood Warning - Manning and Gloucester Rivers (NSW)
IDN36608	Flood Warning - Hunter River (NSW)
IDN36609	Flood Warning - Hawkesbury and Nepean Rivers (NSW)
IDN36610	Flood Warning - Georges and Woronora Rivers (NSW)
IDN36611	Flood Warning - Shoalhaven River (NSW)
IDN36612	Flood Warning - Moruya and Deua Rivers (NSW)
IDN36613	Flood Warning - Bega River (NSW)
IDN36615	Flood Warning - Wyong River and Tuggerah Lake (NSW)
IDN36616	Flood Warning - Parramatta River (NSW)
IDN36618	Flood Warning - Orara River (NSW)
IDN36619	Flood Warning - Lake Macquarie (NSW)
IDN36620	Flood Warning - Upper Macintyre River (NSW)
IDN36621	Flood Warning - Gwydir River (NSW)
IDN36622	Flood Warning - Peel and Namoi Rivers (NSW)
IDN36623	Flood Warning - Castlereagh River (NSW)
IDN36624	Flood Warning - Macquarie River (NSW)
IDN36625	Flood Warning - Bogan River (NSW)
IDN36626	Flood Warning - Lachlan River (NSW)
IDN36627	Flood Warning - Queanbeyan and Molonglo Rivers (NSW)
IDN36628	Flood Warning - Murrumbidgee River (NSW)
IDN36629	Flood Warning - Murray River (NSW)
IDN36630	Flood Warning - Culgoa Birrie Bokhara and Narran Rivers (NSW)
IDN36631	Flood Warning - Warrego River (NSW)
IDN36632	Flood Warning - Paroo River (NSW)

Product Code	Product Description
IDN36634	Flood Warning - Barwon and Darling Rivers (NSW)
IDN36636	Flood Warning - Belubula River and Mandagery Creek (NSW)
IDN36637	Flood Warning - Brunswick River and Marshalls Creek (NSW)
IDN36638	Flood Warning - Wallis Lake (NSW)
IDN36639	Flood Warning - Paterson and Williams Rivers (NSW)
IDN36640	Flood Warning - Nambucca River (NSW)
IDN36641	Flood Warning - Camden Haven River (NSW)
IDN36642	Flood Warning - Mirrool Creek (NSW)
IDN36643	Flood Warning - Richmond River (NSW)
IDN36650	Flood Warning - Coffs Creek (NSW)
IDN36652	Flood Warning - Myall River (NSW)
IDN36654	Flood Warning - Cooma Creek (NSW)
IDN36658	Flood Warning - Cooks River (NSW)
IDN36659	Flood Warning - Dumaresq Creek (NSW)
IDN36660	Flood Warning - Cootamundra (NSW)
IDN36661	Flood Warning - Wooli River (NSW)
IDN36662	Flood Warning - Newcastle Metropolitan Area (NSW)
IDN36663	Flood Warning - Sydney Metropolitan Area (NSW)
IDN36664	Flood Warning - Gosford Shire (NSW)
IDN36665	Flood Warning - Wollongong Metropolitan Area (NSW)
IDN36666	Flood Warning - Macquarie River to Bathurst (NSW)
IDN36667	Flood Warning - Stockinbingal (NSW)
IDN36668	Flood Warning - Orange (NSW)
IDN36669	Flood Warning - St Georges Basin (NSW)
IDQ20705	Flood Warning - Daintree and Mossman Rivers (QLD)
IDQ20710	Flood Warning - Barron River (QLD)
IDQ20712	Flood Warning - Mulgrave and Russell Rivers (QLD)

Product Code	Product Description
IDQ20715	Flood Warning - Johnstone River catchment (QLD)
IDQ20720	Flood Warning - Tully and Murray Rivers (QLD)
IDQ20725	Flood Warning - Herbert River (QLD)
IDQ20735	Flood Warning - Ross, Bohle and Black Rivers (QLD)
IDQ20740	Flood Warning - Haughton River Catchment (QLD)
IDQ20745	Flood Warning - Burdekin River (QLD)
IDQ20750	Flood Warning - Don and Proserpine Rivers (QLD)
IDQ20755	Flood Warning - Pioneer River Catchment (QLD)
IDQ20765	Flood Warning - Fitzroy River Catchment (QLD)
IDQ20770	Flood Warning - Burnett River (QLD)
IDQ20775	Flood Warning - Kolan, Boyne and Calliope Rivers and Baffle Creek (QLD)
IDQ20785	Flood Warning - Burrum and Cherwell Rivers Catchment (QLD)
IDQ20790	Flood Warning - Mary River (QLD)
IDQ20795	Flood Warning - Maroochy and Noosa Rivers (QLD)
IDQ20800	Flood Warning - Upper Brisbane River Catchment (QLD)
IDQ20805	Flood Warning - Lower Brisbane River Catchment (QLD)
IDQ20815	Flood Warning - Logan and Albert Rivers (QLD)
IDQ20820	Flood Warning - Nerang and Coomera Rivers (QLD)
IDQ20825	Flood Warning - Condamine and Balonne Rivers (QLD)
IDQ20835	Flood Warning - Macintyre and Weir Rivers (QLD)
IDQ20840	Flood Warning - Moonie River (QLD)
IDQ20842	Flood Warning - Wallam and Mungallala Creeks (QLD)
IDQ20845	Flood Warning - Warrego River (QLD)
IDQ20850	Flood Warning - Paroo River (QLD)
IDQ20855	Flood Warning - Bulloo River (QLD)
IDQ20860	Flood Warning - Thomson and Barcoo Rivers and Cooper Creek (QLD)
IDQ20865	Flood Warning - Diamantina River (QLD)

Product Code	Product Description
IDQ20870	Flood Warning - Georgina River and Eyre Creek (QLD)
IDQ20876	Flood Warning - Nicholson & Leichhardt Rivers (QLD)
IDQ20878	Flood Warning - Flinders River (QLD)
IDQ20879	Flood Warning - Norman & Gilbert Rivers (QLD)
IDQ20885	Flood Warning Summary (QLD)
IDS20360	Flood Warning - Gawler River (SA)
IDS20362	Flood Warning - Torrens River (SA)
IDS20364	Flood Warning - Onkaparinga River (SA)
IDS20370	Flood Warning - Inland Rivers (SA)
IDS20371	Flood Warning Summary (SA)
IDS20372	Flood Warning - Light and Wakefield River (SA)
IDS20373	Flood Warning - Angas and Bremer Rivers (SA)
IDS20380	Flood Warning - River Murray in SA (SA)
IDT20600	Flood Warning Summary (TAS)
IDT20604	Flood Warning - Forth River (TAS)
IDT20605	Flood Warning - Mersey River (TAS)
IDT20609	Flood Warning - Meander River (TAS)
IDT20610	Flood Warning - North Esk River (TAS)
IDT20611	Flood Warning - South Esk River (TAS)
IDT20612	Flood Warning - Macquarie River (TAS)
IDT20613	Flood Warning - Derwent River (TAS)
IDT20614	Flood Warning - Jordan River (TAS)
IDT20615	Flood Warning - Coal River (TAS)
IDT20616	Flood Warning - Huon River (TAS)
IDV36050	Flood Warning Summary (VIC)
IDV36110	Flood Warning - Cann and Genoa Rivers (VIC)
IDV36120	Flood Warning - Snowy River (VIC)

Product Code	Product Description
IDV36130	Flood Warning - Tambo River (VIC)
IDV36140	Flood Warning - Mitchell River (VIC)
IDV36205	Flood Warning - Gippsland Lakes (VIC)
IDV36210	Flood Warning - Avon River (VIC)
IDV36220	Flood Warning - Macalister River (VIC)
IDV36230	Flood Warning - Thomson River (VIC)
IDV36240	Flood Warning - Latrobe River (VIC)
IDV36245	Flood Warning - Traralgon Creek (VIC)
IDV36250	Flood Warning - South Gippsland (VIC)
IDV36300	Flood Warning - Maribyrnong River (VIC)
IDV36310	Flood Warning - Yarra River (VIC)
IDV36320	Flood Warning - Dandenong Creek (VIC)
IDV36330	Flood Warning - Western Port (VIC)
IDV36340	Flood Warning - Diamond Creek (VIC)
IDV36350	Flood Warning - Merri Creek (VIC)
IDV36360	Flood Warning - Kororoit Creek (VIC)
IDV36370	Flood Warning - Plenty River (VIC)
IDV36390	Flood Warning - Werribee River (VIC)
IDV36400	Flood Warning - Barwon River (VIC)
IDV36510	Flood Warning - Hopkins River (VIC)
IDV36520	Flood Warning - Glenelg River (VIC)
IDV36530	Flood Warning - Moyne River (VIC)
IDV36610	Flood Warning - Mitta Mitta River (VIC)
IDV36620	Flood Warning - Kiewa River (VIC)
IDV36630	Flood Warning - Ovens and King Rivers (VIC)
IDV36640	Flood Warning - Broken River (VIC)
IDV36641	Flood Warning - Seven Creeks and Castle Creek (VIC)

Product Code	Product Description
IDV36642	Flood Warning - Broken Creek (VIC)
IDV36710	Flood Warning - Goulburn River (VIC)
IDV36750	Flood Warning - Campaspe River (VIC)
IDV36810	Flood Warning - Loddon River (VIC)
IDV36820	Flood Warning - Avoca River (VIC)
IDV36830	Flood Warning - Wimmera River (VIC)
IDV36910	Flood Warning - Murray River Upstream of Lake Hume (VIC)
IDW39700	Flood Warning - Eucla District (WA)
IDW39712	Flood Warning - South Interior District (WA)
IDW39720	Flood Warning - South Coastal District (WA)
IDW39725	Flood Warning - South East Coastal District (WA)
IDW39730	Flood Warning - Blackwood River (WA)
IDW39740	Flood Warning - South West District (WA)
IDW39760	Flood Warning - Preston River (WA)
IDW39765	Flood Warning - Collie River (WA)
IDW39770	Flood Warning - Harvey River (WA)
IDW39775	Flood Warning - Murray River (WA)
IDW39780	Flood Warning - Canning River (WA)
IDW39785	Flood Warning - Swan River (WA)
IDW39790	Flood Warning - Avon River (WA)
IDW39798	Flood Warning - Moore River (WA)
IDW39799	Flood Warning - Yarra Yarra Lakes District (WA)
IDW39800	Flood Warning - Irwin River (WA)
IDW39802	Flood Warning - Greenough River (WA)
IDW39808	Flood Warning - Wooramel River (WA)
IDW39810	Flood Warning - Murchison River (WA)
IDW39820	Flood Warning - Gascoyne River (WA)

Product Code	Product Description
IDW39822	Flood Warning - Lyndon-Minilya (WA)
IDW39825	Flood Warning - Onslow Coastal (WA)
IDW39830	Flood Warning - Pilbara Coastal Rivers (WA)
IDW39835	Flood Warning - Ashburton River (WA)
IDW39840	Flood Warning - Fortescue River (WA)
IDW39845	Flood Warning - De Grey River (WA)
IDW39850	Flood Warning - Sturt Creek District (WA)
IDW39855	Flood Warning - Salt Lakes District (WA)
IDW39860	Flood Warning - Sandy Desert District (WA)
IDW39865	Flood Warning - Warburton District (WA)
IDW39875	Flood Warning - North Kimberley District (WA)
IDW39880	Flood Warning - West Kimberley District (WA)
IDW39885	Flood Warning - Fitzroy River (WA)
IDW39890	Flood Warning - Ord River (WA)

Table 8 List of Flood Watch and Flood Warning products

Formats

Via FTP: XML, TXT, HTML, PDF, CAP.

Via the [GIS2Web Service](#): Web Map Service (WMS) and Web Feature Service (WFS)

Issue Characteristics

Flood watches are issued when the combination of forecast rainfall and catchment or other hydrological conditions indicate that there is a significant risk of potential flooding.

Flood warnings are issued to advise that flooding is occurring or expected to occur. Flood warnings may include either qualitative or quantitative predictions, depending on the quality of real-time rainfall and river level data, the capability of rainfall and hydrological forecast models and the level of service required.

A quantitative or qualitative flood warning of minor, moderate or major flooding is provided in areas where the Bureau has specialised warning systems. Predictions of expected water levels and the timing of flood peaks are provided at key forecast locations.

The Bureau also provides generalised flood warnings when there is not enough data to make specific predictions or in the developing stages of a flood. They typically rely on forecast rainfall and knowledge of historical flood response.

Flood watches and warnings are generally finalised rather than cancelled. Final flood watches and warnings are provided in the same files when the hazard has ceased.

Spatial Information

Flood watches and warnings are defined at the catchment level.

XML versions refer to AAC codes described here:

<http://reg.bom.gov.au/catalogue/spatialdata.pdf> (see IDM00020 – Flood Watch Catchment Areas and IDM00017 – Flood Warning Catchment Areas). Spatial datasets are also available via the [Australian Water Data Service](#).

TXT, HTML and PDF versions contain defined catchments names which can also be mapped to catchment shapefiles.

[Flood Watch Catchment Areas](#) cover all catchments in Australia including catchments without flood forecasting systems and data networks. The service covers inland and desert areas without well-defined rivers and streams where flooding is predominantly overland flow.

[Flood Warning Catchment Areas](#) are only delineated where flood warnings are produced.

Sample Files

Flood watch:

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20900.amoc.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20900.cap.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20900.html>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20900.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20900.xml>

Flood warning:

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20870.amoc.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20870.cap.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20870.pdf>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20870.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20870.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20885.amoc.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20885.html>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20885.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20885.xml>

Further Information

<http://www.bom.gov.au/australia/flood/knowledge-centre/>

Hazardous Surf Warnings

For hazardous surf conditions. Note: hazardous surf warnings are only issued for New South Wales and southern Queensland.

Product Codes

Table 9 provides a list of available hazardous surf warning products.

Product Code	Product Description
IDN28522	Hazardous Surf Warning (NSW)
IDQ28522	Hazardous Surf Warning (QLD)

Table 9 List of hazardous surf warning products

Formats

Via FTP: XML, TXT, HTML, CAP.

Via the [GIS2Web Service](#): Web Map Service (WMS) and Web Feature Service (WFS)

Issue Characteristics

Only one hazardous surf warning product is issued per region, regardless of the coastal zones being warned for.

Hazardous surf warnings warn of hazardous surf conditions on either the current or following day, i.e. they can be issued up to two days in advance of the hazard.

Warnings are updated every six hours when current.

Cancellation of warnings is provided in the same files when the hazard has ceased.

Spatial Information

Hazardous surf warnings are defined at the district level, i.e. a warning covers an entire coastal zone (coastal waters forecast area).

XML versions refer to AAC codes described here:

<http://reg.bom.gov.au/catalogue/spatialdata.pdf> (see IDM00003 – Marine Zones)

TXT and HTML versions contain defined coastal zone names which can also be mapped to district shapefiles.



Sample files

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDN28522.amoc.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDN28522.cap.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDN28522.html>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDN28522.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDN28522.xml>

Further information

<http://www.bom.gov.au/marine/about/hazardous-surf-messages.shtml>

Marine Wind Warnings

For hazardous winds and waves in coastal areas. *Note: marine wind warning information is also incorporated in coastal waters forecast products.*

Product Codes

Table 10 provides a list of available marine wind warning summary products.

Product Code	Product Description
IDD20105	Marine Wind Warning Summary (NT)
IDN20400	Marine Wind Warning Summary (NSW)
IDQ20085	Marine Wind Warning Summary (QLD)
IDS20201	Marine Wind Warning Summary (SA)
IDT20100	Marine Wind Warning Summary (TAS)
IDV20600	Marine Wind Warning Summary (VIC)
IDW20100	Marine Wind Warning Summary (WA)

Table 10 List of marine wind warning summary products

Formats

Via FTP: XML, TXT, PDF, CAP.

Via the [GIS2Web Service](#): Web Map Service (WMS) and Web Feature Service (WFS)

Issue Characteristics

Only one marine wind warning product is issued per region, regardless of the coastal zones being warned for. Marine wind warnings warn of hazardous wind conditions on either the current or following day, i.e. they can be issued up to two days in advance of the hazard.

Warnings are updated every six hours when current.

Cancellation of warnings is provided in the same files when the hazard has ceased.

Spatial Information

Marine wind warnings are defined at the district level, i.e. a warning covers an entire coastal zone (coastal waters forecast area).

XML versions refer to AAC codes described here:

<http://reg.bom.gov.au/catalogue/spatialdata.pdf> (see IDM00003 – Marine Zones)

TXT, HTML and PDF versions contain defined coastal zone names which can also be mapped to district shapefiles.



Sample Files

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDD20105.amoc.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDD20105.cap.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDD20105.pdf>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDD20105.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDD20105.xml>

Further Information

<http://www.bom.gov.au/marine/knowledge-centre/index.shtml>

Ocean Wind Warnings

Warnings to shipping on the High Seas, issued whenever gale, storm or hurricane force winds are expected in the Australian Area of Responsibility ([METAREA 10](#)).

Product Codes

Table 11 provides a list of available ocean wind warning products.

Product Code	Product Description
IDD20130	Ocean Wind Warning 1 - Metarea 10 Northern - Tropical Cyclone (NT)
IDD20230	Ocean Wind Warning 2 - Metarea 10 Northern - Tropical Cyclone (NT)
IDQ20008	Ocean Wind Warning 1 - Metarea 10 Northeast - Tropical Cyclone (QLD)
IDQ20009	Ocean Wind Warning 2 - Metarea 10 Northeast - Tropical Cyclone (QLD)
IDQ20074	Ocean Wind Warning 3 - Metarea 10 Northeast - Tropical Cyclone (QLD)
IDW23100	Ocean Wind Warning 1 - Metarea 10 Western - Tropical Cyclone (WA)
IDW23200	Ocean Wind Warning 2 - Metarea 10 Western - Tropical Cyclone (WA)
IDW23300	Ocean Wind Warning 3 - Metarea 10 Western - Tropical Cyclone (WA)
IDY21000	Ocean Wind Warning 1 - Metarea 10
IDY21010	Ocean Wind Warning 2 - Metarea 10
IDY21020	Ocean Wind Warning 3 - Metarea 10
IDY21030	Ocean Wind Warning 4 - Metarea 10
IDY21040	Ocean Wind Warning 5 - Metarea 10
IDY21050	Ocean Wind Warning 6 - Metarea 10
IDY21060	Ocean Wind Warning 7 - Metarea 10
IDY21070	Ocean Wind Warning 8 - Metarea 10
IDY21080	Ocean Wind Warning 9 - Metarea 10
IDY21090	Ocean Wind Warning 10 - Metarea 10
IDY21091	Ocean Wind Warning 11 - Metarea 10
IDY21092	Ocean Wind Warning 12 - Metarea 10

Table 11 List of ocean wind warning products

Formats

Via FTP: TXT, XML

Issue Characteristics

Warnings are issued where gales or stronger are expected within 24 hours and updated every six hours when current.

Ocean wind warnings associated with tropical cyclones appear in different products. They are issued whenever a tropical cyclone or developing tropical low pressure system is likely to cause gales in the Australian Area of Responsibility within the next 24 hours.

Cancellation of warnings is provided in the same files when the hazard has ceased.

Spatial Information

Ocean wind warnings reference the five areas (WESTERN, SOUTH EASTERN, NORTH EASTERN, NORTHERN and SOUTHERN) for which shapefiles are available in IDM00015 (see <http://reg.bom.gov.au/catalogue/spatialdata.pdf>), however the boundary of the actual area affected by each warning is described in the warning text in latitude and longitude coordinates.

Sample Files

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20008.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20008.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDY21050.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDY21050.xml>

Further Information

About ocean wind warnings: <http://www.bom.gov.au/marine/about/warnings/marine-wind-warnings-ocean.shtml>

About ocean wind warnings for Tropical Cyclones: http://www.bom.gov.au/cyclone/tropical-cyclone-knowledge-centre/warnings/Tropical_Cyclone_Service_Level_Specification.pdf (see page 35)

Severe Thunderstorm Warnings

Severe thunderstorm warnings warn of thunderstorms which cause large hail (2cm in diameter or larger), damaging wind gusts (generally wind gusts exceeding 90 km/h), heavy rainfall which may cause flash flooding or tornadoes. *Note: there is overlap between the phenomena covered by severe thunderstorm and severe weather warnings.*

Product Codes

Table 12 provides a list of available severe thunderstorm warning products.

Product Code	Product Description
IDD21033	Severe Thunderstorm Warning 1 (NT)
IDD21034	Severe Thunderstorm Warning 2 (NT)
IDD21035	Cell Based Warning (NT)
IDD21041	Severe Thunderstorm Warning 1 – IMAGE (NT)
IDD21044	Severe Thunderstorm Warning 2 – IMAGE (NT)
IDD21047	Cell Based Warning – IMAGE (NT)
IDN21033	Severe Thunderstorm Warning (NSW)
IDN21035	Cell Based Warning (Syd) (NSW)
IDN21036	Cell Based Warning (Can) (NSW)
IDN21041	Severe Thunderstorm Warning – IMAGE (NSW)
IDN21047	Cell Based Warning (Syd) – IMAGE (NSW)
IDN21055	Cell Based Warning (Can) – IMAGE (NSW)
IDQ21033	Severe Thunderstorm Warning (Qld)
IDQ21035	Cell Based Warning (Qld)
IDQ21041	Severe Thunderstorm Warning – IMAGE (Qld)
IDQ21047	Cell Based Warning – IMAGE (Qld)
IDS21033	Severe Thunderstorm Warning (SA)
IDS21035	Cell Based Warning (SA)
IDS21041	Severe Thunderstorm Warning – IMAGE (SA)
IDS21047	Cell Based Warning – IMAGE (SA)
IDT21033	Severe Thunderstorm Warning (Tas)
IDT21035	Severe Thunderstorm Warning - Hobart Area (TAS)

Product Code	Product Description
IDT21041	Severe Thunderstorm Warning – IMAGE (Tas)
IDT21047	Severe Thunderstorm Warning - Hobart Area - IMAGE (TAS)
IDV21033	Severe Thunderstorm Warning (Vic)
IDV21035	Cell Based Warning (Vic)
IDV21041	Severe Thunderstorm Warning – IMAGE (Vic)
IDV21047	Cell Based Warning – IMAGE (Vic)
IDW21033	Severe Thunderstorm Warning 1 (WA)
IDW21034	Severe Thunderstorm Warning 2 (WA)
IDW21035	Severe Thunderstorm Warning - Perth Area (WA)
IDW21041	Severe Thunderstorm Warning 1 – IMAGE (WA)
IDW21044	Severe Thunderstorm Warning 2 – IMAGE (WA)
IDW20147	Severe Thunderstorm Warning - Perth Area - IMAGE (WA)

Table 12 List of severe thunderstorm warning products

Formats

Via FTP:

- Standard products (warning text and images) - TXT, HTML, PDF, XML, CAP, PS
- 'Graphic' (warning image only) - PNG

Via the [GIS2Web Service](#): Web Map Service (WMS) and Web Feature Service (WFS)

Issue Characteristics

There are two different types of severe thunderstorm warning:

- Metropolitan ('cell-based') - for all capital cities. They provide more specific information on individual severe thunderstorms. The warning includes a map depicting any existing thunderstorms and the forecast direction of movement for up to 60 minutes.
- Broad-based - issued as an alert to the public, emergency services and other organisations that severe thunderstorms are likely to develop, or extend into, a specified area over the next few hours. They include a map with the areas covered by the warning shaded in yellow.

Western Australia and the Northern Territory have two different broad-based warning products ("1" and "2") to enable them to issue two concurrent warnings for hazards in different areas.

Severe thunderstorms can be quite localised, develop quickly and their severity is difficult to predict. Warnings are usually issued without much lead-time before the event.



Metropolitan severe thunderstorm warnings are updated at least hourly.

Broad-based warnings are updated at least three-hourly.

Cancellation of warnings is provided in the same files when the hazard has ceased.

Spatial Information

Severe thunderstorm warnings are valid for the specific area of the hazard, as represented in the warning image.

Plain text files containing the lat-lon coordinates of the warning boundary are available as a separate Registered User FTP service (please see [Appendix B](#)). At a coarser level, affected districts are also defined by the warning.

XML versions refer to AAC codes described here:

<http://reg.bom.gov.au/catalogue/spatialdata.pdf> (see IDM00001 - Public Weather Forecast Districts and IDM00014 – Metropolitan Areas and other forecast areas).

TXT, HTML and PDF versions contain defined district names which can also be mapped to district shapefiles.

Sample files

Warning products:

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ21033.amoc.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ21033.cap.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ21033.html>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ21033.pdf>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ21033.ps>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ21033.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ21033.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV21035.amoc.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV21035.cap.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV21035.html>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV21035.pdf>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV21035.ps>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV21035.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV21035.xml>

Graphics:

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ21041.png>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ21047.png>

Spatial data:

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ65654.axf>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDV65748.axf>

Further information

<http://www.bom.gov.au/weather-services/severe-weather-knowledge-centre/warnings.shtml>

Severe Weather Warnings

Severe weather warnings warn of sustained winds of gale force (63 km/h) or more, wind gusts of 90 km/h or more (100 km/h or more in Tasmania), very heavy rain that may lead to flash flooding, abnormally high tides (or storm tides) expected to exceed highest astronomical tide, unusually large surf, waves expected to cause dangerous conditions on the coast, or widespread blizzards in Alpine areas which are not solely related to severe thunderstorms, tropical cyclones or bushfires. *Note: there is overlap between the phenomena covered by severe thunderstorm and severe weather warnings.*

Product Codes

Table 13 provides a list of available severe weather warning products.

Product Code	Product Description
IDD21037	Severe Weather Warning 1 (NT)
IDD21038	Severe Weather Warning 2 (NT)
IDD21137	Severe Weather Warning 3 (NT)
IDD21063	Severe Weather Warning 1 – IMAGE (NT)
IDD21066	Severe Weather Warning 2 – IMAGE (NT)
IDD21163	Severe Weather Warning 3 – IMAGE (NT)
IDN21037	Severe Weather Warning 1 (NSW)
IDN21038	Severe Weather Warning 2 (NSW)
IDN21137	Severe Weather Warning 3 (NSW)
IDN21063	Severe Weather Warning 1 – IMAGE (NSW)
IDN21066	Severe Weather Warning 2 – IMAGE (NSW)
IDN21163	Severe Weather Warning 3 – IMAGE (NSW)
IDN28503	Severe Weather Warning - Norfolk Island (NSW)
IDN28504	Severe Weather Warning - Lord Howe Island (NSW)
IDQ21037	Severe Weather Warning 1 (Qld)
IDQ21038	Severe Weather Warning 2 (Qld)
IDQ21137	Severe Weather Warning 3 (Qld)
IDQ21063	Severe Weather Warning 1 – IMAGE (Qld)
IDQ21066	Severe Weather Warning 2 – IMAGE (Qld)
IDQ21163	Severe Weather Warning 3 – IMAGE (Qld)

Product Code	Product Description
IDS21037	Severe Weather Warning 1 (SA)
IDS21038	Severe Weather Warning 2 (SA)
IDS21137	Severe Weather Warning 3 (SA)
IDS21063	Severe Weather Warning 1 – IMAGE (SA)
IDS21066	Severe Weather Warning 2 – IMAGE (SA)
IDS21163	Severe Weather Warning 3 – IMAGE (SA)
IDT21037	Severe Weather Warning 1 (Tas)
IDT21038	Severe Weather Warning 2 (Tas)
IDT21137	Severe Weather Warning 3 (Tas)
IDT21063	Severe Weather Warning 1 – IMAGE (Tas)
IDT21066	Severe Weather Warning 2 – IMAGE (Tas)
IDT21163	Severe Weather Warning 3 – IMAGE (Tas)
IDV21037	Severe Weather Warning 1 (Vic)
IDV21038	Severe Weather Warning 2 (Vic)
IDV21137	Severe Weather Warning 3 (Vic)
IDV21063	Severe Weather Warning 1 – IMAGE (Vic)
IDV21066	Severe Weather Warning 2 – IMAGE (Vic)
IDV21163	Severe Weather Warning 3 – IMAGE (Vic)
IDW21037	Severe Weather Warning 1 (WA)
IDW21038	Severe Weather Warning 2 (WA)
IDV21137	Severe Weather Warning 3 (WA)
IDW21063	Severe Weather Warning 1 – IMAGE (WA)
IDW21066	Severe Weather Warning 2 – IMAGE (WA)
IDW21163	Severe Weather Warning 3 – IMAGE (WA)

Table 13 List of severe weather warning products

Formats

Via FTP:

- Standard products (warning text and images) - TXT, HTML, PDF, XML, CAP, PS
- 'Graphic' (warning image only) - PNG

Via the [GIS2Web Service](#): Web Map Service (WMS) and Web Feature Service (WFS)

Issue Characteristics

There are three different severe weather warning products for each state/territory to enable concurrent warnings to be issued for hazards affecting different areas. Severe Weather Warning 1 and Severe Weather Warning 2 are dedicated to general hazards (damaging winds, heavy rainfall) and Severe Weather Warning 3 is dedicated to coastal hazards (damaging/dangerous surf, abnormally high tides). Warnings for damaging/dangerous surf and abnormally high tides are only issued for coastal areas.

Severe weather warnings are updated at least every six hours.

Cancellation of warnings is provided in the same files when the hazard has ceased.

Spatial Information

Severe weather warnings are valid for the specific area of the hazard, as represented in the warning image.

Plain text files containing the lat-lon coordinates of the warning boundary are available as a Registered User FTP service: (please see [Appendix B](#)).

At a coarser level, affected districts are also defined by the warning.

XML versions refer to AAC codes described here:

<http://reg.bom.gov.au/catalogue/spatialdata.pdf> (see IDM00001 - Public Weather Forecast Districts).

TXT, HTML and PDF versions contain defined district names which can also be mapped to district shapefiles.

Sample Files

Warning products:

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ21037.amoc.xml>
<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ21037.cap.xml>
<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ21037.html>
<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ21037.pdf>
<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ21037.ps>
<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ21037.txt>
<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ21037.xml>
<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDN21137.amoc.xml>
<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDN21137.cap.xml>
<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDN21137.html>
<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDN21137.pdf>
<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDN21137.ps>
<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDN21137.txt>
<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDN21137.xml>
<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDN28504.amoc.xml>
<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDN28504.pdf>
<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDN28504.txt>
<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDN28504.xml>

Graphics:

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ21063.png>
<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDN21163.png>

Spatial data:

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ65272.axf>
<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDN65266.axf>

Further Information

<http://www.bom.gov.au/weather-services/severe-weather-knowledge-centre/>

Tropical Cyclone Warnings

Areas of Responsibility

The World Meteorological Organization divides the world into areas of responsibility for the purposes of tropical cyclone warning services. The Bureau is responsible for the issue of all warnings and related advice products and information for tropical cyclones affecting the Australian area of responsibility (see Figure 1). This incorporates the coastal waters and land areas of Australia, including Christmas Island, Cocos Island, Lord Howe Island and Norfolk Island. The Australian area of responsibility is divided into three regions, with warnings issued from Perth, Darwin and Brisbane.

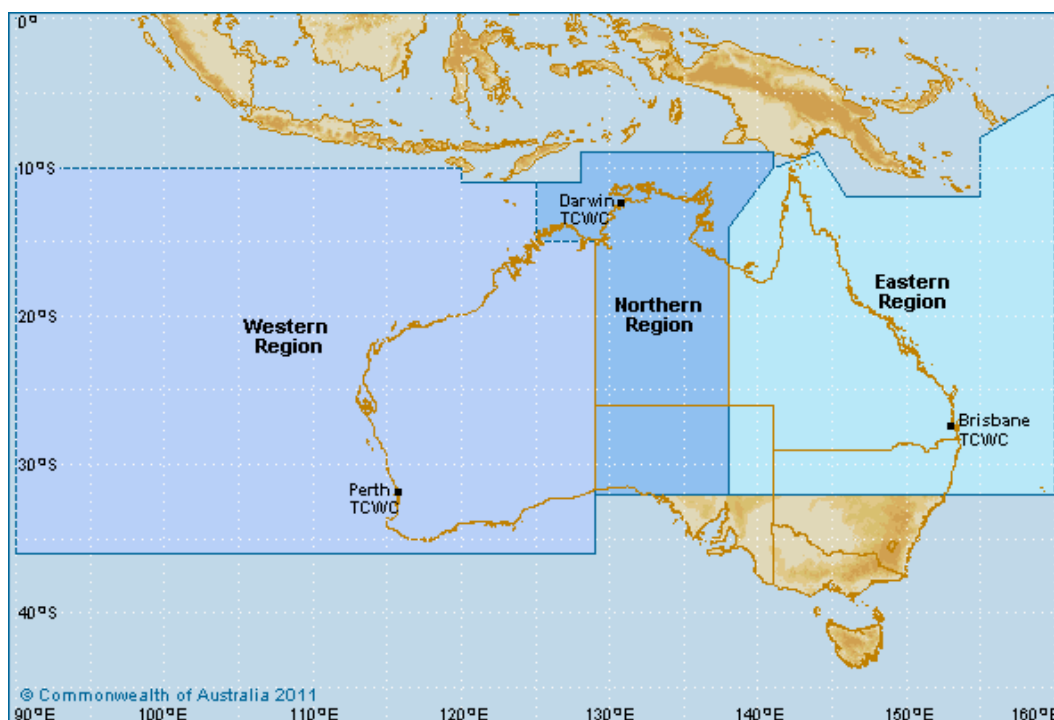


Figure 1 Australian area of responsibility for tropical cyclone warnings

Product Issue Sequence

File name conventions

Bureau of Meteorology product codes are allocated by area of responsibility:

- IDQ*: Eastern Region (Queensland);
- IDD*: Northern Region (Northern Territory);
- IDW*: Western Region (Western Australia).

System number

The files relevant to a particular tropical cyclone are determined by the area of responsibility and the cyclone's system number for that area. The Eastern and Western Regions can accommodate up to three tropical cyclones simultaneously; the Northern Region can accommodate two. The system number is seen at the end of the product description in the product listings below.

Within a Region, system numbers are filled numerically, so most tropical cyclones occupy system number 1. When a system is downgraded and products are no longer issued, other systems do not change their system number. For instance, when system 1 is cancelled, system 2 remains as system 2.

When a tropical cyclone crosses Regional boundaries, product IDs change to that of the new Region. The system number can change in this circumstance.

Tracking systems across products

Once named, systems can be programmatically tracked by the name of the system. The system name is found in all products once the system has been named.

In addition, each tropical cyclone/low is allocated an *identifier* value. This value remains constant for the life of the system. All systems identified by a Tropical Cyclone Warning Centre are allocated this identifier. The identifier is found in the tropical cyclone XML, GML/shapefile and technical bulletin products, but not the standard warning products.

Product Types

Tropical Cyclone Information Bulletin

Issued when a tropical cyclone (or developing tropical low) is active in the Australian area of responsibility but is not expected to cause winds in excess of 62 km/h (gale force) over land in Australia within 48 hours. Updated every six hours.

Table 14 provides a list of available tropical cyclone information bulletin products.

Product Code	Product Description
IDD20300	Tropical Cyclone Information Bulletin 1 (NT)
IDD20301	Tropical Cyclone Information Bulletin 2 (NT)
IDQ20065	Tropical Cyclone Information Bulletin 1 (QLD)
IDQ20066	Tropical Cyclone Information Bulletin 2 (QLD)
IDQ20067	Tropical Cyclone Information Bulletin 3 (QLD)
IDW24000	Tropical Cyclone Information Bulletin 1 (WA)
IDW24010	Tropical Cyclone Information Bulletin 2 (WA)
IDW24020	Tropical Cyclone Information Bulletin 3 (WA)

Table 14 List of tropical cyclone information bulletin products

Formats: txt, xml.

Sample files

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDW24010.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDW24010.xml>

Tropical Cyclone Advice

There are two types of tropical cyclone advice:

- Watch: Issued when gale force winds associated with a cyclone are expected to affect coastal communities within 48 hours, but not expected within 24 hours. Updated every six hours.
- Warning: Issued when gale force winds associated with a cyclone are affecting or expected to affect coastal communities within 24 hours. Updated every three hours (or hourly in some circumstances when a cyclone approaching the coast is under radar surveillance).

Table 15 provides a list of available tropical cyclone advice products.

Product Code	Product Description
IDD20150	Tropical Cyclone Advice 1 (NT)
IDD20250	Tropical Cyclone Advice 2 (NT)
IDDP0007	QLD Tropical Cyclone Advice for System Affecting NT*
IDNP0004	QLD Tropical Cyclone Advice for System Affecting NSW*
IDQ20023	Tropical Cyclone Advice 1 (QLD)
IDQ20026	Tropical Cyclone Advice 2 (QLD)
IDQ20029	Tropical Cyclone Advice 3 (QLD)
IDQ20064	Tropical Cyclone Advice - Norfolk Island (QLD)
IDQP0004	NT Tropical Cyclone Advice for System Affecting QLD*
IDW24100	Tropical Cyclone Advice 1 (WA)
IDW24200	Tropical Cyclone Advice 2 (WA)
IDW24300	Tropical Cyclone Advice 3 (WA)
IDW24400	Tropical Cyclone Advice - Cocos Island and Christmas Island (WA)
IDWP0004	NT Tropical Cyclone Advice for System Affecting WA*

Table 15 List of tropical cyclone advice products

*These products duplicate warning information found in the main TC Advice product but display the affected state's local time and emergency services advice.

Formats: txt, xml.

Sample files

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20023.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20023.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20064.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20064.xml>

Tropical Cyclone Advice – CAP format

Tropical cyclone advice products in Common Alerting Protocol (CAP) format include polygon information for the threat area and additional CAP format information.

Table 16 provides a list of available tropical cyclone advice products in Common Alerting Protocol (CAP) format.

Product Code	Product Description
IDD24500	Tropical Cyclone Advice 1 - CAP (NT)
IDD24510	Tropical Cyclone Advice 2 - CAP (NT)
IDQ24500	Tropical Cyclone Advice 1 - CAP (QLD)
IDQ24510	Tropical Cyclone Advice 2 - CAP (QLD)
IDQ24520	Tropical Cyclone Advice 3 - CAP (QLD)
IDW24500	Tropical Cyclone Advice 1 - CAP (WA)
IDW24510	Tropical Cyclone Advice 2 - CAP (WA)
IDW24520	Tropical Cyclone Advice 3 - CAP (WA)

Table 16 List of tropical cyclone advice products in Common Alerting Protocol (CAP) format

Sample files

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ24510.cap.xml>

Tropical Cyclone Technical Bulletin

International-standard technical details about the cyclone, available in text and XML formats.
Updated every six hours.

More information on Cyclone XML (CXML):

<http://www.bom.gov.au/cyclone/cxmlinfo/index.shtml>

Table 17 provides a list of available tropical cyclone technical bulletin products.

Product Code	Product Description
IDD20020	Tropical Cyclone Technical Bulletin 1 (NT)
IDD20021	Tropical Cyclone Technical Bulletin 2 (NT)
IDD65441	Tropical Cyclone Technical Bulletin 1 - CXML (NT)
IDD65442	Tropical Cyclone Technical Bulletin 2 - CXML (NT)
IDQ20018	Tropical Cyclone Technical Bulletin 1 (QLD)
IDQ20068	Tropical Cyclone Technical Bulletin 2 (QLD)
IDQ20069	Tropical Cyclone Technical Bulletin 3 (QLD)
IDQ65255	Tropical Cyclone Technical Bulletin 1 - CXML (QLD)
IDQ65256	Tropical Cyclone Technical Bulletin 2 - CXML (QLD)
IDQ65257	Tropical Cyclone Technical Bulletin 3 - CXML (QLD)
IDW27600	Tropical Cyclone Technical Bulletin 1 (WA)
IDW27700	Tropical Cyclone Technical Bulletin 2 (WA)
IDW27800	Tropical Cyclone Technical Bulletin 3 (WA)
IDW60350	Tropical Cyclone Technical Bulletin 1 - CXML (WA)
IDW60351	Tropical Cyclone Technical Bulletin 2 - CXML (WA)
IDW60352	Tropical Cyclone Technical Bulletin 3 - CXML (WA)

Table 17 List of tropical cyclone technical bulletin products

Formats: txt, xml.

Sample files

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20018.amoc.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20018.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ20018.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ65255.xml>

Tropical Cyclone Forecast Track Map

The tropical cyclone forecast track map is issued at the same time as the tropical cyclone advice and contains all the information included in the advice. Unlike tropical cyclone advices, tropical cyclone forecast track maps are issued for all tropical cyclones, even if there is no threat to Australian communities.

The tropical cyclone forecast track map gives a graphical representation of the cyclone's past track, forecast movement and its threat area. Updated with the tropical cyclone advice – hourly, three-hourly or six-hourly.

Table 18 provides a list of available tropical cyclone forecast track map products.

Product Code	Product Description
IDD65001	Tropical Cyclone Forecast Track Map 1 - Graphic (NT)
IDD65002	Tropical Cyclone Forecast Track Map 2 - Graphic (NT)
IDD65011	Tropical Cyclone Forecast Track Map 1 (NT)
IDD65012	Tropical Cyclone Forecast Track Map 2 (NT)
IDDP0008	QLD Tropical Cyclone Forecast Track Map for System Affecting NT – Graphic*
IDDP0009	QLD Tropical Cyclone Forecast Track Map for System Affecting NT*
IDDP0010	WA Tropical Cyclone Forecast Track Map for System Affecting NT – Graphic*
IDDP0011	WA Tropical Cyclone Forecast Track Map for System Affecting NT*
IDQ65001	Tropical Cyclone Forecast Track Map 1 - Graphic (QLD)
IDQ65002	Tropical Cyclone Forecast Track Map 1 (QLD)
IDQ65003	Tropical Cyclone Forecast Track Map 2 - Graphic (QLD)
IDQ65004	Tropical Cyclone Forecast Track Map 2 (QLD)
IDQ65223	Tropical Cyclone Forecast Track Map 3 - Graphic (QLD)
IDQ65224	Tropical Cyclone Forecast Track Map 3 (QLD)
IDQ65230	Tropical Cyclone Forecast Track Map for NSW - Graphic (QLD)
IDQ65231	Tropical Cyclone Forecast Track Map for NSW (QLD)
IDQ65253	Tropical Cyclone Forecast Track Map - Norfolk Island (QLD)
IDQ65254	Tropical Cyclone Forecast Track Map - Norfolk Island - Graphic (QLD)
IDQP0011	NT Tropical Cyclone Forecast Track Map for System Affecting QLD – Graphic*
IDQP0012	NT Tropical Cyclone Forecast Track Map for System Affecting QLD*
IDW60280	Tropical Cyclone Forecast Track Map 1 - Graphic (WA)
IDW60281	Tropical Cyclone Forecast Track Map 1 (WA)

Product Code	Product Description
IDW60284	Tropical Cyclone Forecast Track Map 2 - Graphic (WA)
IDW60285	Tropical Cyclone Forecast Track Map 2 (WA)
IDW60287	Tropical Cyclone Forecast Track Map 3 - Graphic (WA)
IDW60288	Tropical Cyclone Forecast Track Map 3 (WA)
IDWP0005	NT Tropical Cyclone Forecast Track Map for System Affecting WA – Graphic*
IDWP0006	NT Tropical Cyclone Forecast Track Map for System Affecting WA*

Table 18 List of tropical cyclone forecast track map products

*These products duplicate information found in the main TC track product but display the affected state's local time and emergency services advice.

Formats: html, png, xml.

Sample files

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ65001.png>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ65002.amoc.xml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ65002.html>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ65002.xml>

Tropical cyclone forecast track maps: GML and shapefile

All current forecast map graphics are available in GIS compatible format. These products show forecast tracks to 120 hours where the static images show 72 hours. Updated with the tropical cyclone advice – hourly, three-hourly or six-hourly.

These track maps are also available as web map service layers as part of the Bureau's [GIS2Web service](#).

Table 19 provides a list of available tropical cyclone forecast track GML and shapefile products.

Product Code	Product Description
IDD65401	Tropical Cyclone Forecast Track Map 1 - GML (NT)
IDD65402	Tropical Cyclone Forecast Track Map 2 - GML (NT)
IDD65408	Tropical Cyclone Forecast Track Map for WA - GML (NT)
IDD65409	Tropical Cyclone Forecast Track Map for QLD - GML (NT)
IDQ65248	Tropical Cyclone Forecast Track Map 1 - GML (QLD)
IDQ65249	Tropical Cyclone Forecast Track Map 2 - GML (QLD)
IDQ65250	Tropical Cyclone Forecast Track Map 3 - GML (QLD)
IDQ65251	Tropical Cyclone Forecast Track Map for NT - GML (QLD)
IDQ65252	Tropical Cyclone Forecast Track Map for NSW - GML (QLD)
IDW60266	Tropical Cyclone Forecast Track Map 1 - GML (WA)
IDW60267	Tropical Cyclone Forecast Track Map 2 - GML (WA)
IDW60268	Tropical Cyclone Forecast Track Map 3 - GML (WA)
IDW60283	Tropical Cyclone Forecast Track Map for NT - GML (WA)

Table 19 List of tropical cyclone forecast track map GML and shapefile products

Formats: GML, ESRI shapefile (as zip).

Sample files

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ65248.gml>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ65248.zip>

Ocean Wind Warnings – Tropical Cyclone

For more information and a list of products please see the [Ocean Wind Warnings](#) section of this document.

Additional Resources

The Tropical Cyclone Real-Time Event Data product (RED product) consolidates available data for a tropical low or tropical cyclone event into a single machine-readable file. Information about this product is available in the [Tropical Cyclone Real-Time Event Data product guide](#).

[ACCESS-TC](#) is a numerical weather prediction model run over a variable domain specifically targeting tropical cyclones. It contains forecasts of ten-metre wind, mean sea level pressure and precipitation.

The Bureau of Meteorology's [radar network](#) is designed to provide coverage of all of the Australian coastline likely to experience a tropical cyclone crossing.

Visible and infra-red satellite images from the Himawari-9 satellite can be used to track tropical cyclones.

Observations from automatic weather stations can be used to observe parameters such as wind strength, rainfall amount and mean sea level pressure.

The Bureau's [GIS2Web service](#) displays tropical cyclone tracks as a single web map service (WMS)/web feature service (WFS) layer showing all valid tropical cyclones.

Further Information

<http://www.bom.gov.au/cyclone/tropical-cyclone-knowledge-centre/>

Tsunami Warnings

Table 20 provides a list of available tsunami warning products.

Product Code	Product Description
IDY68005	ATWS National Tsunami Watch Bulletin (BNOC)
IDY68009	ATWS National Tsunami No Threat Bulletin (BNOC)
IDY68019	National Tsunami Event Summary (BNOC)
IDY68020	National Tsunami Warning Summary (BNOC)
IDY68025	WA Tsunami Bulletin
IDY68026	NT Tsunami Bulletin
IDY68027	Qld Tsunami Bulletin
IDY68028	NSW Tsunami Bulletin
IDY68029	Vic Tsunami Bulletin
IDY68030	SA Tsunami Bulletin
IDY68031	Tas Tsunami Bulletin
IDY68032	Cocos Island Tsunami Bulletin
IDY68033	Christmas Island Tsunami Bulletin
IDY68034	Lord Howe Island Tsunami Bulletin
IDY68035	Norfolk Island Tsunami Bulletin
IDY68036	Macquarie Island Tsunami Bulletin
IDY68074	Antarctic Tsunami Bulletin

Table 20 List of tsunami warning products

Formats

Via FTP:

- TXT, XML (CAP).
- 'Graphic' (warning image only) - PNG

Via the [GIS2Web Service](#): Web Map Service (WMS)

Issue characteristics

Upon detection of an earthquake, a national tsunami watch or no threat bulletin is issued.

Upon confirmation of a tsunami, or once the potential first point of impact is within 90 minutes, state/territory tsunami bulletin warnings are issued.



Warning products are updated at least hourly.

Cancellation of warnings is provided in the bulletin files with the same ID code when the tsunami threat has ceased, plus the event summary product is issued.

Spatial information

Tsunami warnings are defined at the district level, i.e. a warning covers an entire coastal waters zone.

CAP versions refer to AAC codes described here:

<http://reg.bom.gov.au/catalogue/spatialdata.pdf> (see IDM00003 – Marine Zones)

TXT versions contain coastal waters zone end points which can also be mapped to coastal waters zone shapefiles.

Sample files

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDY68005.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDY68009.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDY68019.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDY68020.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDY68025.txt>

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDY68025.png>

ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDY68027_cap.xml

Further information

http://www.bom.gov.au/tsunami/about/tsunami_warnings.shtml

Heatwave Warnings

Table 21 provides a list of available heatwave warning products.

Product Code	Product Description
IDD21013	Heatwave Warning (NT)
IDN21013	Heatwave Warning (NSW)
IDN21014	Heatwave Warning (ACT)
IDQ21013	Heatwave Warning (QLD)
IDS21013	Heatwave Warning (SA)
IDT21013	Heatwave Warning (TAS)
IDV21013	Heatwave Warning (VIC)
IDW21013	Heatwave Warning (WA)

Table 21 List of heatwave warning products

Formats

Via FTP:

- HTML, PDF, XML, CAP

Issue characteristics

The heatwave season starts in early October and continues until the end of March. The season can be extended if periods of significant heat are expected to occur earlier in the year or continue past the end of March.

The Heatwave Warning is issued for a state or territory when Severe or Extreme heatwaves are expected to affect at least 10% of a weather district. A warning can be issued up to one day in advance of the heatwave starting, to allow time for agencies and the public to take protective actions.

The warning will include a description of the expected maximum and minimum temperatures, the timing of when the heatwave will peak and affected towns within the warning area.

Heatwave Warnings are issued by around 15:00 local time each day, but slightly earlier in Western Australia (14:00 local time). Warnings are updated daily during heatwave events and then cancelled at the end of the event. A cancellation is also issued if the forecast conditions change such that a heatwave is no longer expected in a weather district.

The warning covers 4 three-day periods, extending out to 3 days in the future.

Heatwave severity levels are based on the Excess Heat Factor severity values as defined in the following table.

Table 22 provides a list of heatwave severity levels based on Excess Heat Factor severity values.

Heatwave Severity Level	EHF Values
No Heatwave	EHFsev < 0
Low-intensity Heatwave	EHFsev > 0 < 1
Severe Heatwave	EHFsev >=1 < 3
Extreme Heatwave	EHFsev >= 3

Table 22 List of heatwave warning products

The legend used for the map component of the Heatwave Warning is shown in Figure 2.

No Heatwave	Low-Intensity Heatwave	Severe Heatwave	Extreme Heatwave
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Figure 2 Legend used for the map component of the Heatwave Warning

Spatial information

The Bureau's heatwave services, including the Heatwave Warning, cover all Australian states, mainland territories and nearby offshore islands.

Heatwave warnings are defined at the district level, i.e. a warning covers an entire Public Weather Forecast District.

CAP versions refer to AAC codes described here:

<http://reg.bom.gov.au/catalogue/spatialdata.pdf> (see IDM00001 - Public Weather Forecast Districts).

Sample files

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ21013.pdf>

ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ21013_xml_samples.zip (please note this zip file contains example files for a sequence of warnings between 1 January 2022 and 7 January 2022, including the initial warning, the daily updates and then the cancellation of the warning – note the files have been renamed to distinguish them).

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ21013.amoc.xml>

Further information

http://www.bom.gov.au/research/publications/cawcrreports/CTR_060.pdf



Appendix A: Bureau of Meteorology CAP data elements

User Guide

Introduction

The purpose of this guide is to assist users in interpreting the behaviour of the Bureau's CAP warning products and should be read in conjunction with the rest of this document, the CAP Standard (CAPv1.2) and the CAP-AU profile (CAP-AU).

The CAP-AU profile is derived from, and compliant with CAPv1.2 so that it is a more constrained version of the international standard (ref CAP-AU-STD).

Multiple info blocks

CAP warnings can contain multiple info blocks to describe different levels of threat and/or threat levels for different areas and/or threat levels for different times.

Areas

Overlapping areas within warnings

Marine Wind Warnings, Fire Weather Warnings and Hazardous Surf Warnings all warn for a threat discreetly on separate days where each day is handled by a separate <info> block. In these products warning areas can overlap when the same area is being warned for on separate days.

Although this is in accord with the CAP Standard (v1.2) recommendation that, 'information in later blocks MAY expand but MAY NOT override the corresponding values in earlier ones', it does not conform with the stricter CAP-AU recommendation that, 'different <info> elements MAY be used to support two separate <area>'s that are experiencing different levels of threat'.

Overlapping areas between warnings

Two separate warnings current at the same time for the same hazard and event can also have overlapping areas. Product pairs in which this can occur are, Flood Warning & Flood Watch; Severe Thunderstorm Warning & Cell Based Warning and Tsunami Watch & Warning. Where this occurs, it is important to note that warnings will contain more detailed and up to date information for the overlapping area than the broader scale watches. In the same way a Cell Based Warning will contain more detailed and up to date information for the overlapping area than the broader scale Severe Thunderstorm Warning.

Suspended areas

Cell Based Severe Thunderstorm warnings can be suspended when severe thunderstorms in the warning area have temporarily eased and when their redevelopment remains likely. The <area> associated with a suspended warning is an anonymous locale or arbitrary area that cannot be associated with a fixed area.

Ending the warning sequence

The practice of ending the warning sequence varies across the Bureau's suite of CAP products. The warning sequence for all CAP products can be ended at the Alert level however some products are routinely ended at the info block level. Warning sequence ending for the CAP products are described below.

Severe Weather and Thunderstorm, Hazardous Surf, Tsunami, Marine and Downy Mildew

The warning sequence for Downy Mildew Advises, Hazardous Surf Warnings, Marine Wind Warnings, Severe Thunderstorm Warnings and Severe Weather Warnings are ended at the Alert level with the <msgType> code value 'Cancel'.

Warnings ended with the <msgType> code value 'Cancel' will have a <headline> that begins with the words, 'Cancellation of' and will generally have a <severity> code value of 'Minor'.

Sample cancelled Severe Weather Warning -

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDW21037.cap.xml>

Fire Weather, Heatwave and Agricultural Warnings

The warning sequence for Frost Warnings, Sheep Graziers' Warnings, Brown Rot Advises, Heatwave Warnings and Fire Weather Warnings are ended at the info block level with the <msgType> code value 'Update' in conjunction with the <expires> time. The products end when the <expires> time is exceeded.

Sample of last Heatwave Warning in warning sequence - IDQ21013.2022-01-07.cap.xml within ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ21013_xml_samples.zip

Tropical Cyclone Warnings

The warning sequence for Tropical Cyclone Watches and Warnings are ended at the info block level with the <msgType> code value 'Update' in conjunction with a <headline> that begins with the words, 'Cancellation of' and will have a <severity> code value of 'Minor'.

Sample of last Tropical Cyclone Warning in warning sequence -

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDQ24510.cap.xml>

Flood Watches and Warnings

CAP flood watch and warning sequences are routinely ended at the info block level in conjunction with the <expires> and <headline> elements.

A warning area or areas that were included in the previous issue of the warning but are removed from the next issue are aggregated into one info block with a <headline> that begins with the words, 'Cancellation of'.

In the last warning in the sequence, warning areas that were included in the previous issue of the warning and that are not removed from the next issue are ended in discrete info blocks with a <headline> that begins with the word, 'Final'.

The last warning in the sequence can then have one or more info blocks with a <headline> beginning with the word, 'Final' and a single info block beginning with the words, 'Cancellation of'.

Flood watch and warning Info blocks beginning either with, 'Final' or 'Cancellation of' will have a <severity> code value of 'Unknown'.

Sample finalised flood warning -

<ftp://ftp.bom.gov.au/anon/sample/catalogue/Warnings/IDW39785.cap.xml>

Element content and usage

<urgency>

The code value 'Unknown' is used for all warnings except Tropical Cyclone, Heatwave and Tsunami.

The <urgency> code value used in the Tropical Cyclone Warning info block is 'Immediate' and the code value used in the Tropical Cyclone Watch info block is 'Expected'.

The <urgency> code values used in the Tsunami Warning products are listed in **Table 24** and in the Heatwave Warning products in **Table 25**.

<severity>

The <severity> code values for each hazard and warning are selected to correspond to the characteristics of the specific event.

The <severity> code values for the different hazards are listed in **Table 23** (and **Table 24** for Tsunami and **Table 25** for Heatwave).

Flood watches typically only include a code value for the <severity> element in NSW otherwise the value is set to 'Unknown'.

<certainty>

The code value 'Unknown' is used for all warnings except Tsunami and Heatwave.

The <certainty> code values used in the Tsunami Warning products are listed in **Table 24** and in the Heatwave Warning products in **Table 25**.

<expires>

Each warning has a fixed maximum time or lifetime in which its content is valid. Each product's lifetime is set according to the characteristics of the respective hazard. For example, the lifetime of a rapidly changing hazard which typically occurs over a short duration such as a 'Cell Based Thunderstorm Warning' is only of the order of 1 hour. Whereas the lifetime of flood warning for slow responding catchments may be of the order of 72 hours.

Warning practices ensure that product update frequencies are less than the lifetime of the product. Product update frequencies can vary depending on how quickly the situation for the particular hazard is changing.

The length of time between the <effective> time and the <expiry> time is equal to the product lifetime.

<headline>

The <headline> is typically of the form, {SEVERITY DESCRIPTION} {TYPE DESCRIPTION} for {area(s)} for <msgType> code values of 'Alert' and 'Update'. For the <msgType> code value 'Cancel', the headline statement is of the form, Cancellation of {TYPE DESCRIPTION} for {area(s)}

The SEVERITY DESCRIPTION is omitted from the headline statement when the SEVERITY CODE value is STD, BLWMIN AND UNCL.

The SEVERITY DESCRIPTION is an AMOC severity not a CAP severity. SEVERITY and TYPE DESCRIPTIONS for the different hazards are listed in **Table 23** (and **Table 24** for the Tsunami TYPE DESCRIPTION and **Table 25** for the Heatwave TYPE DESCRIPTION).

The <headline> for flood warnings differs to the general <headline> form (described above) in that the names of the river site locations that are within the warning area (or sub-catchment) where predictions are provided are appended.

Flood watches typically only include a value for the {SEVERITY DESCRIPTION} in NSW otherwise the value is set to Unknown.

The <headline> for Tsunami products differ from the general <headline> form (described above). The SEVERITY DESCRIPTION is omitted and the confirmation status (- Tsunami confirmed or - Tsunami unconfirmed) is appended to the general form of the <headline>.

<description>

The <description> element generally contains current status and/or prediction information for the warning area.

The <description> element is omitted for Fire Weather Warnings.

<instruction>

The <instruction> element is omitted for Marine Wind Warnings, Heatwave Warnings and Agricultural CAP products.

<event>

The <event> element code value 'Exposure' is listed in the Australian All-Hazards Event Code List (Attachment B to CAP-AU-STD) but is not listed in the XML Schema Definition for CAP-AU (XSD CAP-AU) (Attachment C to CAP-AU-STD). The <event> element code value 'Exposure' is used in the Bushwalkers Alert and so this product will fail validation against the XSD CAP-AU. This issue will be rectified in the next XSD CAP-AU release.

Table 23 provides SEVERITY and TYPE DESCRIPTIONS for the different hazards

TYPE DESCRIPTION	SEVERITY_CODE	SEVERITY_DESCRIPTION	CAP_SEVERITY_ELEMENT	CAP_SEVERITY_VALUE
Barley Growers Advice	UNK	Alert status unknown	severity	Unknown
Barley Growers Advice	CAN	Cancellation	severity	Minor
Barley Growers Advice	STD	Standard	severity	Moderate
Brown Rot Advice	UNK	Alert status unknown	severity	Unknown
Brown Rot Advice	CAN	Cancellation	severity	Minor
Brown Rot Advice	STD	Standard	severity	Moderate
Brown Rot Advice	SEV	Severe	severity	Severe
Bushwalkers Weather Alert	UNK	Alert status unknown	severity	Unknown
Bushwalkers Weather Alert	CAN	Cancellation	severity	Minor
Bushwalkers Weather Alert	STD	Standard	severity	Moderate
Severe Thunderstorm Warning	UNK	Alert status unknown	severity	Unknown
Severe Thunderstorm Warning	CAN	Cancellation	severity	Minor
Severe Thunderstorm Warning	STD	Standard	severity	Unknown
Downy Mildew Advice	UNK	Alert status unknown	severity	Unknown
Downy Mildew Advice	CAN	Cancellation	severity	Minor
Downy Mildew Advice	STD	Standard	severity	Moderate

TYPE DESCRIPTION	SEVERITY_CODE	SEVERITY_DESCRIPTION	CAP_SEVERITY_ELEMENT	CAP_SEVERITY_VALUE
Downy Mildew Advice	SEV	Severe	severity	Severe
Fire Weather Warning	UNK	Alert status unknown	severity	Unknown
Fire Weather Warning	CAN	Cancellation	severity	Minor
Fire Weather Warning	VH	Very High	severity	Severe
Fire Weather Warning	SEV	Severe	severity	Severe
Fire Weather Warning	EXT	Extreme	severity	Extreme
Fire Weather Warning	CAT	Catastrophic	severity	Extreme
Flood Warning	UNK	Alert status unknown	severity	Unknown
Flood Warning	CAN	Cancellation	severity	Unknown
Flood Warning	BLWMIN	Below Minor	severity	Unknown
Flood Warning	UNCL	Unclassified Severity in generalised prediction type warnings	severity	Unknown
Flood Warning	FINAL	Final	severity	Unknown
Flood Warning	MIN	Minor	severity	Minor
Flood Warning	MOD	Moderate	severity	Moderate
Flood Warning	MAJ	Major	severity	Severe
Flood Watch	UNK	Alert status unknown	severity	Unknown
Flood Watch	CAN	Cancellation	severity	Unknown

TYPE DESCRIPTION	SEVERITY_CODE	SEVERITY_DESCRIPTION	CAP_SEVERITY_ELEMENT	CAP_SEVERITY_VALUE
Flood Watch	FINAL	Final	severity	Unknown
Flood Watch	MIN	Minor	severity	Minor
Flood Watch	WATCH	Watch	severity	Unknown
Flood Watch	MOD	Moderate	severity	Moderate
Flood Watch	MINMOD	Minor to Moderate	severity	Moderate
Flood Watch	MODMAJ	Moderate to Major	severity	Severe
Flood Watch	MINMAJ	Minor to Major	severity	Severe
Flood Watch	MAJ	Major	severity	Severe
Frost Warning	UNK	Alert status unknown	severity	Unknown
Frost Warning	CAN	Cancellation	severity	Minor
Frost Warning	STD	Standard	severity	Moderate
Frost Warning	SEV	Severe	severity	Severe
Hazardous Surf Warning	CAN	Cancellation	severity	Minor
Hazardous Surf Warning	STD	Standard	severity	Moderate
Marine Wind Warning	UNK	Alert status unknown	severity	Unknown
Marine Wind Warning	CAN	Cancellation	severity	Minor
Marine Wind Warning	SMCRFT	Small craft alert	severity	Moderate
Marine Wind Warning	STR	Strong wind	severity	Moderate

TYPE DESCRIPTION	SEVERITY_CODE	SEVERITY_DESCRIPTION	CAP_SEVERITY_ELEMENT	CAP_SEVERITY_VALUE
Marine Wind Warning	GALE	Gale	severity	Moderate
Marine Wind Warning	STO	Storm force wind	severity	Severe
Marine Wind Warning	HURR	Hurricane force wind	severity	Extreme
Road Weather Alert	UNK	Alert status unknown	severity	Unknown
Road Weather Alert	CAN	Cancellation	severity	Minor
Road Weather Alert	STD	Standard	severity	Moderate
Severe Thunderstorm Warning	UNK	Alert status unknown	severity	Unknown
Severe Thunderstorm Warning	CAN	Cancellation	severity	Minor
Severe Thunderstorm Warning	STD	Standard	severity	Unknown
Severe Weather Warning	UNK	Alert status unknown	severity	Unknown
Severe Weather Warning	CAN	Cancellation	severity	Minor
Severe Weather Warning	STD	Standard	severity	Unknown
Warning to Sheep Graziers	UNK	Alert status unknown	severity	Unknown
Warning to Sheep Graziers	CAN	Cancellation	severity	Minor
Warning to Sheep Graziers	STD	Standard	severity	Moderate
Warning to Sheep Graziers	SEV	Severe	severity	Severe
Tropical Cyclone Watch/Warning	UNK	Alert status unknown	severity	Unknown
Tropical Cyclone Watch/Warning	CAN	Cancellation	severity	Minor

TYPE DESCRIPTION	SEVERITY_CODE	SEVERITY_DESCRIPTION	CAP_SEVERITY_ELEMENT	CAP_SEVERITY_VALUE
Tropical Cyclone Watch/Warning	TCLOW	Low	severity	Moderate
Tropical Cyclone Watch/Warning	TCCAT1	Category 1	severity	Moderate
Tropical Cyclone Watch/Warning	TCCAT2	Category 2	severity	Severe
Tropical Cyclone Watch/Warning	TCCAT3	Category 3	severity	Severe
Tropical Cyclone Watch/Warning	TCCAT4	Category 4	severity	Extreme
Tropical Cyclone Watch/Warning	TCCAT5	Category 5	severity	Extreme

Table 23 List of SEVERITY and TYPE DESCRIPTIONS for the different hazards

Domains and grid resolution

Table 24 provides a list of Tsunami products versus urgency, severity and certainty

TYPE DESCRIPTION	URGENCY	SEVERITY	CERTAINTY
Tsunami Watch for {state name} – Tsunami Unconfirmed	Expected	Unknown	Possible
Tsunami Marine Warning for {state name} – Tsunami Unconfirmed	Immediate	Severe	Possible
Tsunami Marine Warning for {state name} – Tsunami Confirmed	Immediate	Severe	Likely
Tsunami Land Warning for {state name} – Tsunami Unconfirmed	Immediate	Extreme	Possible
Tsunami Land Warning for {state name} – Tsunami Confirmed	Immediate	Extreme	Likely
Cancellation of Tsunami Warning	Past	Minor	Unlikely

Table 24 List of Tsunami products versus urgency, severity and certainty

Table 25 provides a list of heatwave products versus urgency, severity and certainty

Timeline	Day -3	Day -2	Day -1	HW Day 1	HW Day 2	HW Day 3	Post HW Day 1
CAP element							
Msg Type	Alert*	Update*	Update*	Update*	Update	Update	Update
Response type	Monitor	Prepare	Prepare	Shelter	Shelter	Shelter	All Clear
Urgency	Future	Future	Expected	Immediate	Immediate	Immediate	Past
Severity – Extreme EHF level	Extreme	Extreme	Extreme	Extreme	Extreme	Extreme	Moderate
Severity – Severe EHF level	Severe	Severe	Severe	Severe	Severe	Severe	Minor
Certainty	Possible	Likely	Likely	Observed	Observed	Observed	Observed

*** 'Alert' is always used for the first warning message however many days ahead of the heatwave event it is**

Table 25 List of heatwave products versus urgency, severity and certainty

References

[Common Alerting Protocol \(oasis-open.org\)](https://oasis-open.org/)

[CAP-AU \(Common Alerting Protocol: Australian Profile \)- Specification \(bom.gov.au\)](https://bom.gov.au/metadata/CAP-AU/)

<http://www.bom.gov.au/metadata/CAP-AU/About.shtml>



Appendix B: Severe Thunderstorm and Severe Weather Warning Spatial Information

User Guide

Note: these files should only be used in conjunction with the main warning text found in separate products listed in the [Severe Thunderstorm Warning](#) and [Severe Weather Warning](#) sections of this document. Files are utilised to populate Bureau of Meteorology warnings and may be subject to change in future to support forecast workflow.

These products are made available as an interim measure whilst the Bureau develops improved spatial data for warning services. Please contact webreg@bom.gov.au for further information on the Severe Thunderstorm and Severe Weather Warning AXF bundle (IDB00017)

Products

There are files depicting three different types of warning area.

1. "Warning Area" depicts state-based warning areas;
2. "Threat Area" depicts metropolitan warning areas;

"Storm Location" depicts location and movement of individual storm cells depicted in the metropolitan warnings.

Table 26 provides a list of AXF products and the Severe Thunderstorm or Severe Weather Warning products to which they correspond

AXF Product Code	AXF Product Description	Warning Product Code
IDD26108	Severe Thunderstorm Warning - Darwin and Rural Area - Threat Area (NT)	IDD21035
IDD26109	Severe Thunderstorm Warning - Darwin and Rural Area - Storm Location (NT)	IDD21035
IDD26131	Severe Weather Warning 1 - Warning Areas - AXF (NT)	IDD21037
IDD26134	Severe Weather Warning 2 - Warning Areas - AXF (NT)	IDD21038
IDD26137	Severe Thunderstorm Warning 1 - Warning Area - AXF (NT)	IDD21033
IDD26140	Severe Thunderstorm Warning 2 - Warning Area - AXF (NT)	IDD21034
IDD26142	Severe Weather Warning 3 - Warning Areas - AXF (NT)	IDD21137
IDN65238	Severe Thunderstorm Warning - Warning Area (NSW)	IDN21033
IDN65240	Detailed Severe Thunderstorm Warning - Threat Area (NSW)	IDN21035
IDN65241	Detailed Severe Thunderstorm Warning - Storm Location (NSW)	IDN21035
IDN65251	Severe Thunderstorm Warning - Canberra - Threat Area (NSW)	IDN21036
IDN65252	Severe Thunderstorm Warning - Canberra - Storm Location (NSW)	IDN21036
IDN65259	Severe Weather Warning 1 - Warning Areas - AXF (NSW)	IDN21037
IDN65260	Severe Weather Warning 2 - Warning Areas - AXF (NSW)	IDN21038
IDN65266	Severe Weather Warning 3 - Warning Areas - AXF (NSW)	IDN21137
IDQ65272	Severe Weather Warning 1 - Warning Areas - AXF (QLD)	IDQ21037
IDQ65277	Severe Weather Warning 2 - Warning Areas - AXF (QLD)	IDQ21038
IDQ65282	Severe Weather Warning 3 - Warning Areas - AXF (QLD)	IDQ21137

AXF Product Code	AXF Product Description	Warning Product Code
IDQ65650	Severe Thunderstorm Warning - Southeast Queensland - Threat Area (QLD)	IDQ21035
IDQ65652	Severe Thunderstorm Warning - Southeast Queensland - Storm Location (QLD)	IDQ21035
IDQ65654	Severe Thunderstorm Warning - Warning Area (QLD)	IDQ21033
IDS65522	Severe Thunderstorm Warning - Adelaide - Threat Area (SA)	IDS21035
IDS65523	Severe Thunderstorm Warning - Adelaide - Storm Location (SA)	IDS21035
IDS65524	Severe Thunderstorm Warning - Warning Area (SA)	IDS21033
IDS65525	Severe Weather Warning - Warning Areas (SA)	IDS21037
IDS65526	Severe Weather Warning 2 - Warning Areas - AXF (SA)	IDS21038
IDS65527	Severe Weather Warning 3 - Warning Areas - AXF (SA)	IDS21137
IDT21049	Severe Thunderstorm Warning - Hobart Area - Threat Area (TAS)	IDT21035
IDT21050	Severe Thunderstorm Warning - Hobart Area - Storm Location (TAS)	IDT21035
IDT65503	Severe Weather Warning 1 - Warning Areas - AXF (TAS)	IDT21037
IDT65508	Severe Weather Warning 2 - Warning Areas - AXF (TAS)	IDT21038
IDT65513	Severe Thunderstorm Warning - Warning Area (TAS)	IDT21033
IDT65523	Severe Weather Warning 3 - Warning Areas - AXF (TAS)	IDT21137
IDV65659	Severe Weather Warning 1 - Warning Areas - AXF (VIC)	IDV21037
IDV65660	Severe Weather Warning 2 - Warning Areas - AXF (VIC)	IDV21038
IDV65663	Severe Weather Warning 3 - Warning Areas - AXF (VIC)	IDV21137
IDV65747	Severe Thunderstorm Warning - Warning Area (VIC)	IDV21033
IDV65748	Severe Thunderstorm Warning - Melbourne - Threat Area (VIC)	IDV21035
IDV65749	Severe Thunderstorm Warning - Melbourne - Storm Location (VIC)	IDV21035
IDW21049	Severe Thunderstorm Warning - Perth Area - Threat Area (WA)	IDW21035
IDW21050	Severe Thunderstorm Warning - Perth Area - Storm Location (WA)	IDW21035
IDW65644	Severe Thunderstorm Warning 1 - Warning Area - AXF (WA)	IDW21033

AXF Product Code	AXF Product Description	Warning Product Code
IDW65647	Severe Thunderstorm Warning 2 - Warning Area - AXF (WA)	IDW21034
IDW65659	Severe Weather Warning 1 - Warning Areas - AXF (WA)	IDW21037
IDW65660	Severe Weather Warning 2 - Warning Areas - AXF (WA)	IDW21038
IDW65663	Severe Weather Warning 3 - Warning Areas - AXF (WA)	IDW21137

Table 26 List of AXF products and the Severe Thunderstorm or Severe Weather Warning products to which they correspond

File Format

- .axf (comma-delimited data)

Fields

[DESCRIPTION]

system[30]

“ThunderBox” for state and metropolitan warning areas;

“Edited Titan” for storm cell information.

product[30]

“advice_areas” for state-based warning areas;

“threat_areas” for metropolitan warning areas;

“Transmitted Product” for storm cell information.

radar[30]

Not used.

aifstime[30]

Issue time of data. All times are in *yyyymmddhhmmss* format in UTC.

validfrom[30]

Start validity of related warning (warning area products only) in UTC.

validuntil[30]

End validity of related warning (warning area products only) in UTC.

low_dBZ_threshold

Reflectivity threshold for a storm cell (storm cell information only).

Usually 35dBZ, but can be 35, 40 or 45 dBZ.

[LINE] (Warning areas only)

Indicates the names of the threat areas described in the following field in the state and metropolitan warning area files. The first value in a [LINE] statement forms the field name for its matching geospatial data. The warningSection numbers group threat areas by phenomena. Other fields are not used.

[THREAT_AREAn] (Warning areas only)

Comma-delimited coordinates for warning area. Multiple threat areas may exist; count starts at 0.

[PHENOMENA] (Warning areas only)

Relevant phenomena for this warning have a value of 1.

warningSection

Match the warning section number to see which phenomena are associated with the threat area.

[FORECASTER_TEXT] (Warning areas only)

Warning text. Note that the text found in the official warning product (see below) is the official warning text.

[TRACK] (Storm cell information only)

This describes the fields containing cell information.

[EDITED_TRACK] and [FORECAST_TRACK] (Storm cell information only)

track_num[30]

Cell identifier from TITAN or New X if created manually.

aifstime[30]

Validity time of data in UTC.

lat, lon

Central point of ellipse.

major_axis

Distance from the centre point of the ellipse to the long edge of the elliptical area in kilometres.

minor_axis

Distance from the centre point of the ellipse to the short edge of the elliptical area in kilometres.

orientation

Orientation angle of the ellipse in degrees true.

height

Height of maximum reflectivity. (EDITED_TRACK only.)

vil

Vertically integrated liquid in kg/m². (EDITED_TRACK only.)

speed

Speed of cell in km/h. (EDITED_TRACK only.)

direction

Direction cell is moving toward in degrees true. (EDITED_TRACK only.)

original_speed

Speed value automatically generated by TITAN software. (EDITED_TRACK only.)

original_direction

Direction value automatically generated by TITAN software. (EDITED_TRACK only.)

visible[30]

Obsolete field from when all storm data was written out. Storm with value "false" would not be part of the warning as they were not severe thunderstorms/ good representations of the severe thunderstorm situation.