OPERATIONAL CIRCULAR 10/2018
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MARCH 2018

INCIDENT WEATHER FORECAST IMPROVEMENTS

Commencing 19 March 2018, the Bureau of Meteorology (BOM) are implementing changes to the 'Spot' or 'Special Weather Forecasts' to improve the provision of critical information to incident managers for important operational decisions.

These changes are the result of a 2017 review into Spot Forecasts conducted by fire agencies and BOM. The AFAC Predicted Services Group has also endorsed the changes.

The new and improved 'Incident Weather Forecast' (IWF) will provide increased precision, extra information and a more targeted forecast, focusing on key fire weather parameters.

BOM advises the new product is expected to take forecasters longer to produce and send, especially for complicated weather situations like trough changes or sea breezes.

Where an incident is escalating or conditions could be conducive to fast fire spread, verbal updates can be sourced from the DFES SOCMET (business hours) or afterhours from the Regional Forecast Centre (RFC) Senior Forecaster. The SAO can facilitate RFC verbal updates.

Career and volunteer personnel are requested to familiarise themselves with the new format (see sample attached) and distribute widely. For the relevant BOM Information Sheet refer to the IM Toolbox Planning page under References.

Changes to the Incident Weather Forecast format include:

- Three new text boxes for:
  - Significant wind changes during the forecast period, including uncertainties;
  - Forecast thunderstorm potential, precipitation and cloud, including uncertainties; and
  - Spatial variation of conditions and other important information.
- Hourly forecast time steps for the first 12 hours of the forecast.
- Three new columns in the forecast table:
  - C-Haines;
  - Mixing height; and
  - Thunderstorm Activity Level (TAL).

MAL CRONSTEDT AFSM
DEPUTY COMMISSIONER STRATEGY AND EMERGENCY MANAGEMENT

Full links for staff and volunteers:
https://shared.dfes.wa.gov.au/business-units/imtoolbox/opsresourcesoperationalforms/PLANNING/DFES-IMToolbox-Incident-Weather-Forecasts-Improvements.pdf

Target Audience: All operational personnel.				
A	B	C	D	Vol
O.I.C. is to communicate content to all relevant personnel under their command, discuss implications, and sign appropriate box above. Once completed Circulars shall be filed on station and forwarded to Information Resources at the end of each financial year.				

Sample Incident Weather Forecast

Email: request@email.addr

1. Significant wind changes during the forecast period, including uncertainties

2. Forecast thunderstorm potential, precipitation and cloud, including uncertainties

3. Spatial variation of conditions and other important information

30 Hour Forecast commencing 1800 hours Wednesday 14 February 2018

Drought factor: 10 | Curing value (%): 95 | Fuel Loading: 4.5

4 5 6 7

Local Time	Temp (C)	Dewpt (C)	RH (%)	10m Wind (km/h) Dir	Speed	Gust	1000m AGL Wind (km/h) Dir	Speed	FFDI	GFDI	cHaines	Mix Height (m)	TAL
1800	28	2	19	NW	25	40	SW	35	35	19	8	2500	2
1900	23	4	29	W	15	20	SW	35	17	7	8	2500	2
2000	22	6	35	SW	10	20	SW	30	14	4	5	1900	1
2100	20	6	40	SW	15	25	SW	30	15	6	5	1900	1
2200	18	5	43	SW	10	20	SW	30	11	3	5	1900	1
2300	17	6	49	SW	10	20	SW	25	7	3	6	600	0
0000	16	7	55	SW	20	30	SW	25	7	6	6	600	0
0100	15	6	55	SW	15	30	SW	25	6	4	6	600	0
0200	13	6	62	SSW	10	30	WSW	25	4	2	6	300	0
0300	12	5	62	SSW	10	15	WSW	25	3	2	6	300	0
0400	12	5	63	SSW	5	10	WSW	25	2	1	6	300	0
0500	11	5	67	SSW	5	10	WSW	30	2	1	4	100	0
0600	11	5	66	SSW	10	20	WSW	30	2	2	4	100	0
0900	15	5	51	SW	10	20	WSW	30	4	2	4	400	0
1200	22	5	33	WSW	10	25	WSW	20	11	4	2	1500	0
1500	26	4	24	W	10	25	WSW	20	16	5	4	2300	0
1800	27	5	24	W	10	30	WSW	25	17	5	4	2700	0

1. **Significant wind changes during the forecast period, including uncertainties.**
   - Presented as a standalone text area.
   - 'Uncertainties' allows for the forecaster to add value to the forecast by communicating confidence and alternative scenarios specifically related to the wind change.

2. **Forecast thunderstorm potential, precipitation and cloud, including uncertainties.**
   - Presented as a standalone text area.
   - Combined with cloud and precipitation forecasts to highlight significant weather during the forecast period in this text area.

3. **Spatial variation of conditions and other important information**
   - Presented as a standalone text area.
   - Details potential differences to the tabular forecast values based on spatial and topographical considerations of the incident location.

- Includes other important information such as significant inversions, assumptions on the fire site location, fuel information used, and other assumptions made in constructing the forecast.

4. **Headings of Temp (C); Dewpt (C); RH (%); 10m Wind (km/h) – Dir, Speed, Gust; 1000m AGL Wind (km/h) – Dir, Speed; FFDI; GFDI**
   - All data supplied at 1-hour time steps for the first 12 hours of the incident.
   - 1000m AGL wind, C-Haines, MixHgt and TAL are all calculated for a 3-hour time period so the 1-hourly values will typically only change every 3 hours.

5. **Heading of C-Haines**
   - Index of atmospheric stability.
   - Provides important information on conditions above the incident location.
   - High C-Haines values (increased instability) alert users to the possibility of unexpected fire behavior, notably large plume-dominated fires and pyrocumulonimbus that may lead to thunderstorms with lightning and erratic downdraft winds.

6. **Heading of Mix Height (m)**
   - The upper height, to which the lower atmosphere will undergo mixing (mechanical and turbulent) resulting in a nearby uniform air mass – measured in metres above Mean Sea Level (MSL).
   - To obtain the mixing height value Above Ground Level (ABL) you will need to subtract the fire site elevation from the given value.
   - The mixing height acts as a lid on the height that smoke can reach. Generally, the higher the mixing height, the more unstable the atmosphere is and the higher a smoke plume can potentially reach.
   - Conversely, the lower the mixing height, the more stable the atmosphere generally is and the greater potential for smoke to be trapped.

7. **Heading of TAL**
   - Values correspond to:
     0. Storms not expected
     1. Possible storm
     2. Storm likely
     3. Storm expected