PROGRAM A

What Do High Resolution Observations Tell Us About the Frequency of Fire Weather Events?

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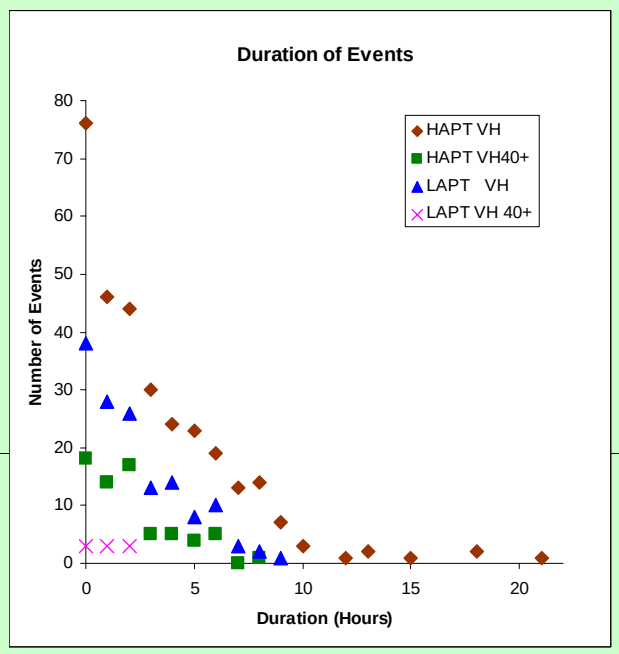
Introduction

Archival of hourly and half-hourly aerodrome weather observations (METARS) at Tasmanian airports since 1990 allows the development of a high temporal resolution dataset of fire weather observations. This, in turn, presents the opportunity to:

- Compare the number of fire weather events detected in this dataset with those observed using 3-hourly synoptic reports (synops) and 3 p.m.-only reports. Here, **an event is defined as occurrence of Very High fire danger**.
- Investigate the duration of fire weather events, and assess the relationship between duration and severity
- Examine diurnal patterns of peak fire weather activity.

Location of report sites highlighted in green.



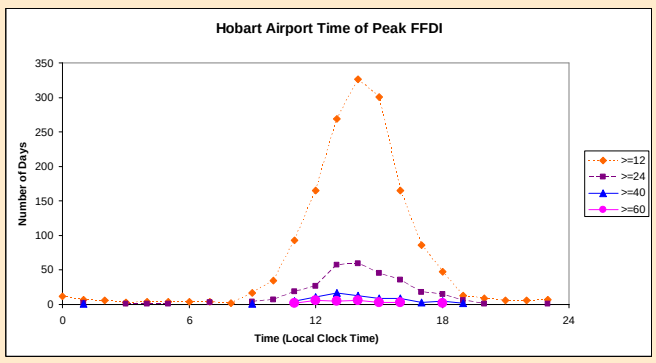
Duration of events

The plot to the left indicates that the majority of Very High fire danger events are of short duration – 54% of such events at Hobart Airport last less than 3 hours, and are at risk of being missed by a synoptic (3 hourly) observation schedule.

Considering events where the fire danger reaches 70, some 82% of the 17 events at Hobart Airport last less than 3 hours.

Diurnal Patterns

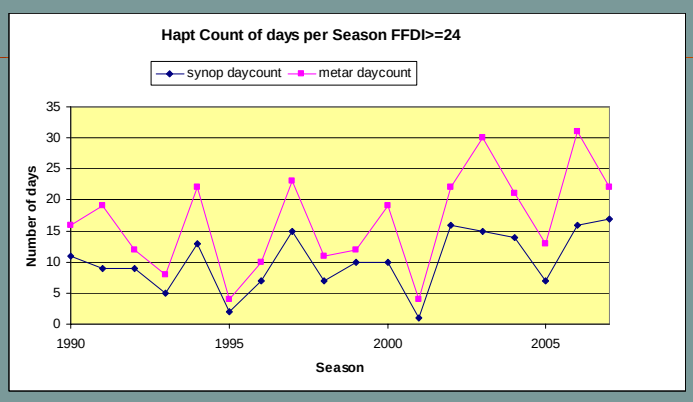
As might be expected, fire danger usually – but certainly not always - peaks early to mid afternoon. At Hobart Airport, the higher the peak fire danger examined, however, the earlier the peak occurs.

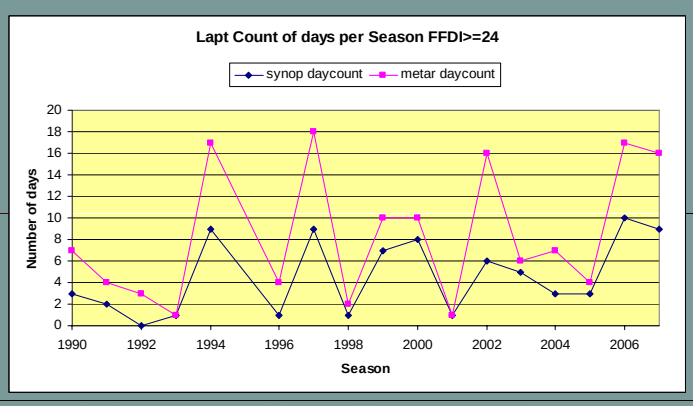


Comparing synoptic observations with METARS.

Using Mark V McArthur Forest Fire Danger meter, the count of days of Very High fire danger per fire season was calculated at Launceston and Hobart Airports (where a fire season was broadly defined as July 1 to the following 30 June). The two plots immediately below show:

- Substantial interannual variability at each location, mostly, but not completely, in phase with each other
- Between 1 and 2 times as many Very High events occurring with METARS as synoptic reports





This confirms that synoptic reports miss a very substantial proportion of the total number of fire weather events. Although the missed events may be short-lived, safe and effective fire management necessitates that all such events be recognised.

Conclusions:

- Even a 3-hourly reporting schedule misses many significant fire weather events
- Most events are short-duration (hence the first conclusion!), and the higher the fire danger threshold, the shorter the event tends to be
- While events commonly peak early to mid-afternoon, many do not.