

EPA DIVISION

Smoke Complaint
Information Summary

Grindelwald, 7th April 2013



Tasmania
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Smoke Complaint – Information Summary

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This summary by the EPA Division is a compilation of information relating to smoke complaints concerning an incident on the 7th April 2013 at Grindelwald, Tasmania.

Contents

1. Complaints Summary
2. Satellite Imagery
3. Meteorology
4. Air Quality Data
5. Recorded Burns
6. Comments
7. Further Information

This summary has been prepared by the EPA Division Air Section to provide preliminary information relating to a smoke event reported to the EPA. The summary is a collection of information from a number of sources brought together into the one document.

Where appropriate this summary will include air quality monitoring data from stations near the reported smoke event. It also provides an overview of recorded burns in the area. However, it should be noted that it may not include all burns as not all burns are presently reported.

It is important to note that, in general, it is not the purpose of this initial summary to specify the source of smoke from which a complaint has arisen, nor is it likely to determine if an air quality standard has been exceeded. In many cases a full technical analysis must be performed to ascribe smoke to a specific source and to determine if an air quality standard is likely to have been exceeded. The level of detail required for a full technical analysis is beyond the scope of this summary.

Officers of the EPA will review all the available data relating to this complaint and determine whether a more detailed analysis is appropriate. In the event that a further report is compiled it will be available from the EPA Division Website at <http://epa.tas.gov.au/epa/blanket-reports>, and the complainants will be notified.

This report has been completed as an initial first assessment of the event. It is possible that more detailed analysis may show the data are incomplete. Where a significant omission is identified this report may be revised.

Smoke Complaint – Information Summary

Grindelwald, 7th April 2013

1. Complaints Summary

Table 1: Particulars of smoke event

Date	Time	Location	Description
7 th April	Late afternoon	Grindelwald	Late afternoon on the 7/4 looking north from Grindelwald the complainant could see the Tamar valley and beyond was covered generally in smoke. The smoke appeared to be coming from the mainland..

Smoke Complaint – Information Summary

Grindelwald, 7th April 2013

2. Satellite Imagery:

Generally overcast conditions in the Grindelwald area on the 7th April 2013 limit the utility of satellite images from the MODIS Terra and Aqua satellites in this location. However, a compilation of several MODIS images of south east Australia taken on the 7th April 2013 is shown in Figure 1. This image shows a significant amount of smoke in the Bass Strait.

A number of fires with associated smoke plumes can be identified in the Gippsland region of south east of Victoria. A smoke plume can be seen in the area south west of Mallacoota and a second north of Lakes Entrance. Plumes of smoke can be seen extending from these Gippsland fires, in a south westerly direction, towards the north coast of Tasmania.

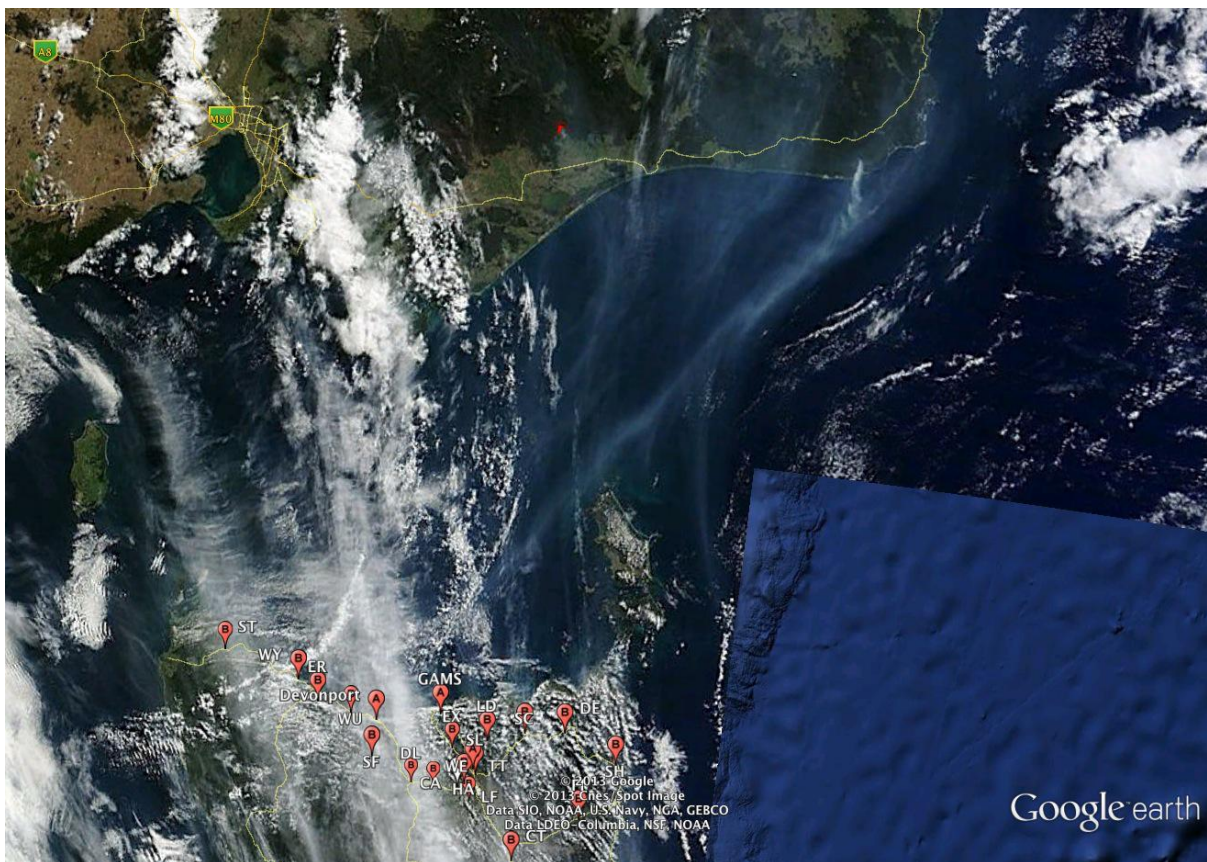


Figure 1- A collage of MODIS satellite images of south east Australia collected on the 7th April 2013. Smoke plumes from fires located in the Gippsland region of south east Victoria can be seen extending into the Bass Strait. Red markers indicate the EPA Division's network of air quality monitors in northern Tasmania.

Smoke Complaint – Information Summary

Grindelwald, 7th April 2013

3. Meteorology

The large scale (synoptic) conditions between the 5th April 2013 and the 8th April 2013 are represented by Bureau of Meteorology Charts given in Figures 2a-d. (source <http://www.bom.gov.au>). Note that these charts indicate wind conditions likely to be experienced over a smooth surface such as calm ocean, hence do not account for local wind variability due to topography. As such they are to be used as a general guide of prevailing wind conditions at the lower cloud level across the regional and large scale.

These figures indicate that it is likely that an extension of north east winds existed from Victoria to Tasmania's north coast during this period.

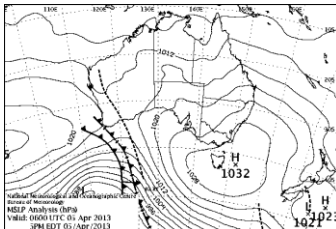


Figure 2a: Bureau of Meteorology synoptic chart 5pm (EDT) 05 April 2013

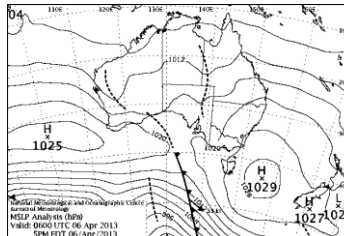


Figure 2b: Bureau of Meteorology synoptic chart 5pm (EDT) 06 April 2013

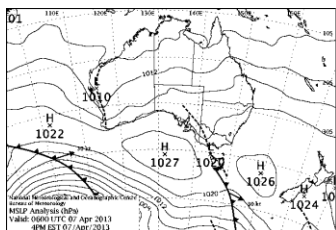


Figure 2c: Bureau of Meteorology synoptic chart 4pm (EDT) 07 April 2013

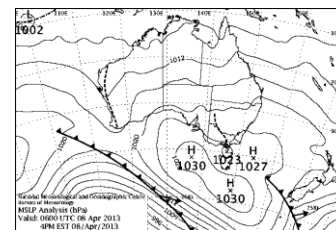


Figure 2d: Bureau of Meteorology synoptic chart 4pm (EDT) 08 April 2013

Smoke Complaint – Information Summary

Grindelwald, 7th April 2013

4. Air Quality Data

4.1 BLANKET Data

Air quality data is collected by the EPA Division from the BLANKET network of air monitoring stations. Details of the data collected at the Exeter Station during the period of the 7th to the 12th April 2013 are shown in Figure 3.

The top panel of the plots shown below show the air quality data detected at the relevant BLANKET stations. PM_{2.5} concentrations are given in micrograms per cubic metre (in short form this is written as $\mu\text{g}/\text{m}^3$, or $\mu\text{g m}^{-3}$ in scientific notation).

PM_{2.5} is a better indicator of smoke than is PM₁₀. PM_{2.5} is shown as the red square symbols in the air quality plots. PM_{2.5} values below $5 \mu\text{g m}^{-3}$ signify very clear air.

The lower panel of the plots show the meteorological data. The meteorological data plot shows the external (air) temperature, relative humidity, wind speed and wind direction. Wind speed is given in kilometres per hour (km/hr, or km hr^{-1} in scientific notation). Wind direction is given in degrees. Zero degrees is a north wind, 90 degrees is an east wind, 180 degrees is a south wind, and 270 degrees is a west wind. Wind direction is divided by 10 before being plotted, so a wind direction of 18 units on the plot means 180 degrees, or a wind from the south.

Smoke Complaint – Information Summary

Grindelwald, 7th April 2013

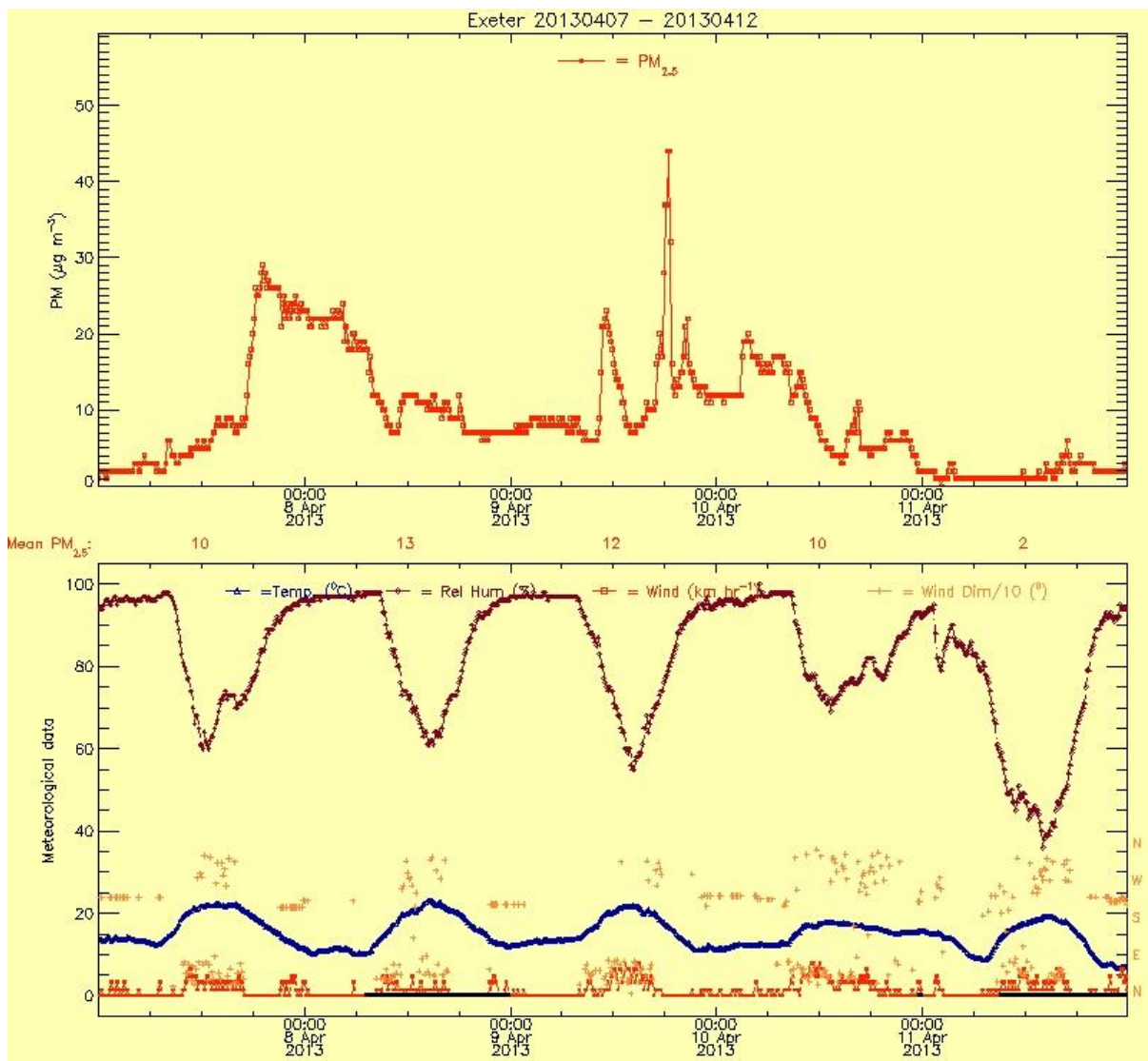


Figure 3 – A plot of smoke concentrations (upper panel) and meteorological conditions (lower panel) detected by the BLANKET Air Monitoring Station at Exeter, during the period 7th until the 12th April 2013.

Daily average PM_{2.5} concentrations during this period were moderately elevated to between 10 and 13 µg/m³. These concentrations were below the 24-hour PM_{2.5} reporting standard of 25 µg/m³.

Smoke Complaint – Information Summary

Grindelwald, 7th April 2013

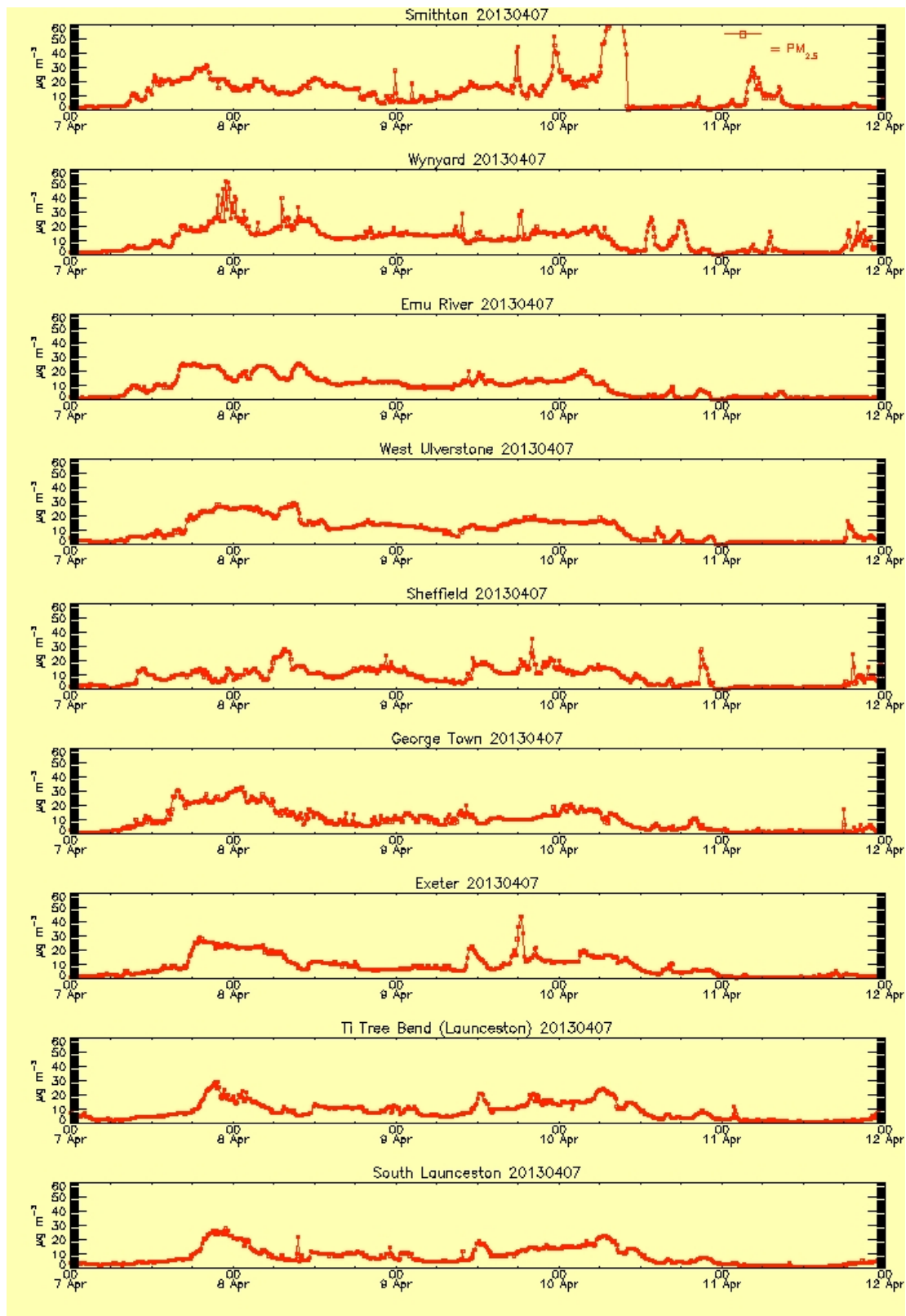


Figure 4 - A plot of smoke concentrations detected by the BLANKET air monitoring network at stations located in the north-west and Tamar regions of Tasmania during the period 7th until the 12th April 2013.

Smoke Complaint – Information Summary

Grindelwald, 7th April 2013

Plots of the data from the BLANKET stations in the north-west and Tamar region are shown in Figure 4. These plots indicate that PM_{2.5} was moderately elevated at many of the BLANKET Stations located in the north west and Tamar regions from around noon the 7th of April until the evening of the 10th April. These concentrations were below the PM_{2.5} reporting standard of 25 µg/m³. The uniform level of PM_{2.5} concentrations present at each of the stations suggests that smoke was dispersed across a large part of the region. The high concentrations seen briefly at Smithton on the morning of the 10th April are not repeated at other stations in the region. It is likely that the Smithton station detected a plume of smoke from a fire or fires ignited to the south west of Smithton.

Please Note: The BLANKET data are indicative data, not reference data.

For additional information on how to interpret this graph please visit the EPA website at <http://epa.tas.gov.au/epa/base-line-air-network-of-epa-tasmania-blanket>

4.2 Air quality standards and DHHS Air Quality Notifications

Air monitoring results from the BLANKET Stations located in the Tamar Valley were analysed to determine if any station recorded day-averaged PM_{2.5} measurements above the National Environmental Protection Measure (calendar day) reporting standard of 25 µg m⁻³. No stations recorded calendar-day-averaged PM_{2.5} measurements above the NEPM reporting standard.

The Department of Health and Human Services (DHHS) publishes air quality notifications when air monitoring data received from the BLANKET air monitoring network is above 25 µg m⁻³ for a period of one hour (<http://www.dhhs.tas.gov.au/peh/alerts/air>). Table 2 indicates the total number of hours that the smoke levels were above the health notification level at the BLANKET Stations in the Tamar Valley.

Table 2. : Total number of hours PM_{2.5} was above the DHHS notification level on the 7th April 2013 at the BLANKET Stations in the Tamar Valley.

BLANKET Station	No of hours >25 µg m ⁻³
Exeter	2
Ti Tree	1
South Launceston	2

The DHHS air quality notifications indicate that PM_{2.5} was above the hourly averaged 25 µg m⁻³ health notification level at the Exeter, Ti Tree and the South Launceston BLANKET Stations on the 7th April 2013. Analysis of these data indicates no other activations of the health notification level occurred in the period 8th until the 13th April, except for one hour at the Exeter BLANKET Station on the 9th April.

Smoke Complaint – Information Summary

Grindelwald, 7th April 2013

5. Recorded Burns:

5.1 Forest Practices Authority - Co-ordinated Smoke Management System

The Co-ordinated Smoke Management System (CSMS) is intended to coordinate planned burns in order to minimise the risk of high concentrations of smoke within individual air sheds. Figure 5 indicates the location and names of the air sheds recognised by the CSMS.

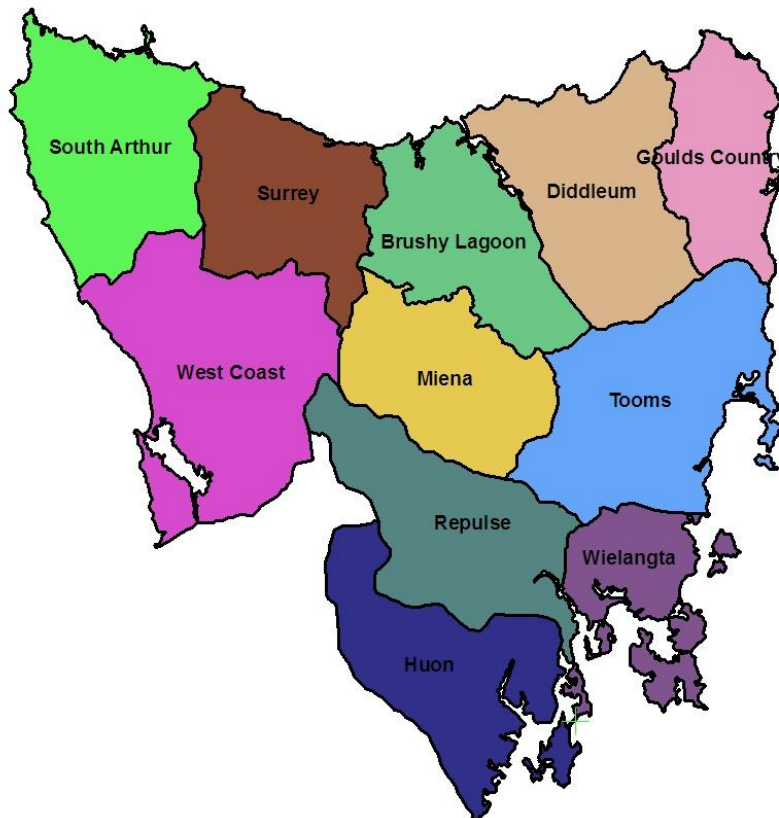


Figure 5 – This map indicates the air sheds defined by the Co-ordinated Smoke Management System (CSMS). Burns recorded under this system include those planned by Forestry Tasmania (FT), members of the Forest Industries Association of Tasmania (FIAT) and the Parks and Wildlife Service (PWS).

For details on the smoke management please visit the FPA website at http://www.fpa.tas.gov.au/forest_practices_system/smoke_management

Grindelwald is located in the Brushy Lagoon airshed. Details from the CSMS database indicate that no fires were recorded as having been ignited by Forestry Tasmania (FT), members of the Forest Industries Association of Tasmania (FIAT) or the Parks and Wildlife Service (PWS) between the 6th April until the 8th April in the Brushy Lagoon, Surrey Hills or the South Arthur airshed. However, several burns were recorded as having been ignited in the Repulse and Huon Valley airsheds during this period. One fire is recorded as having been ignited by the PWS in the West Coast airshed on the 6th April

Smoke Complaint – Information Summary

Grindelwald, 7th April 2013

5.2 Tasmania Fire Service Registration/Permit Burns South-east Tasmania.

Figure 6 indicates that several fires were registered with the Tasmania Fire Service in the Exeter region on the 7th of April 2013. The inset map shows that several permits were activated in the Exeter area on the 7th April. These fires include numbers 80, 85 and 90. It is possible that these small private burns may have had a limited influence on local air quality.

Please note that the registration of burns does not indicate that the fires were ignited.

Smoke Complaint – Information Summary

Grindelwald, 7th April 2013

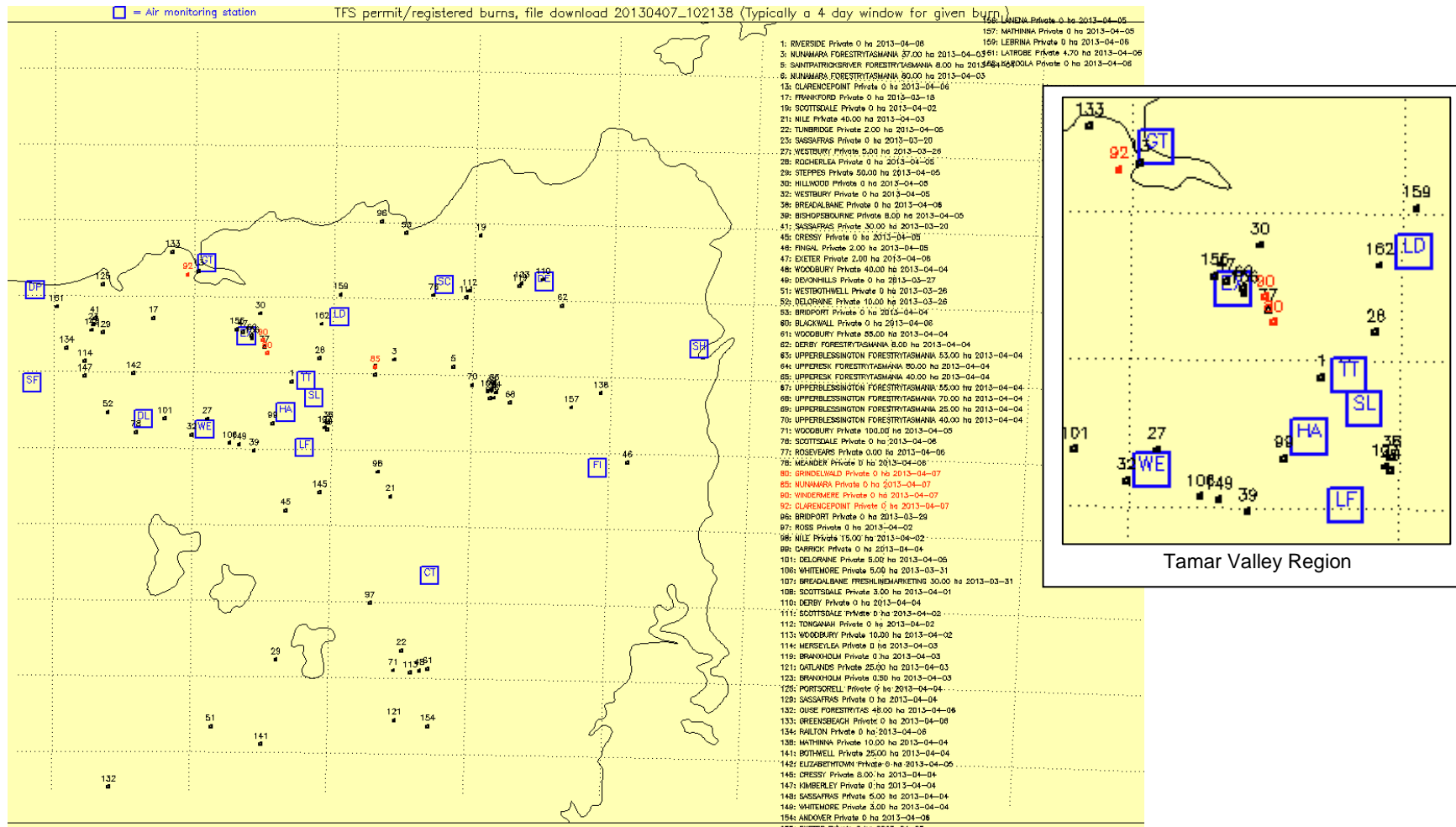


Figure 6 – Tasmania Fire Service Permit Burns active for the 7th April 2013. Permits for fires located in the Grindelwald area are highlighter in the inserted map of the Tamar region. The locations indicated in red represent new registrations. Please note that the registration of burns does not indicate that the fires were ignited.

Smoke Complaint – Information Summary

Grindelwald, 7th April 2013

5.3 Parks and Wildlife Service Burn Register

Burn details of burns undertaken by the Parks and Wildlife Service (PWS) are recorded on the Parks and Wildlife Service planned burns register. One fire is recorded as having been ignited by the PWS in the West Coast airshed on the 6th April. No burns are recorded on the Parks and Wildlife Service planned burns register between the 7th April and the 16th April 2013.

Details of burns conducted by the Parks and Wildlife Service can be obtained at their website: (<http://www.parks.tas.gov.au/index.aspx?base=26614>).

6. Comments

Data from the BLANKET network indicates that PM_{2.5} was moderately elevated across many of the BLANKET stations in the north of Tasmania between the 7th and the 10th April. The uniform level of PM_{2.5} concentrations detected at each of the stations suggests that smoke was dispersed across a large part of the region. Satellite imagery indicates that smoke from fires in the Gippsland region of Victoria moved into the Bass Strait on the 7th April. This smoke was then carried towards Tasmania under the influence of a high pressure system in the Tasman Sea. It is possible that this smoke influenced air quality in the Tamar Valley for several days between the 7th and the 10th April.

A more detailed analysis of this event may be undertaken in the future.

7. Further Information

For further Information please contact the following:

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