

Digital Earth Australia Hotspots

<https://hotspots.dea.ga.gov.au/>

Some incomplete instructions on how to use the site based on trial and error:

1. Investigate the drop-down menus on the left hand side of the screen:



2. The information in **About** is quite important so is reprinted here:

Digital Earth Australia Hotspots is not published in real time and should not be used for safety of life decisions.

Digital Earth Australia Hotspots is a national bushfire monitoring system that provides timely information about hotspots to emergency service managers across Australia. The mapping system uses satellite sensors to detect areas producing high levels of infrared radiation (called Hotspots) accurately to allow users to identify potential fire locations with a possible risk to communities and property.

Please note the following limitations of detecting Hotspots from satellite sensors.

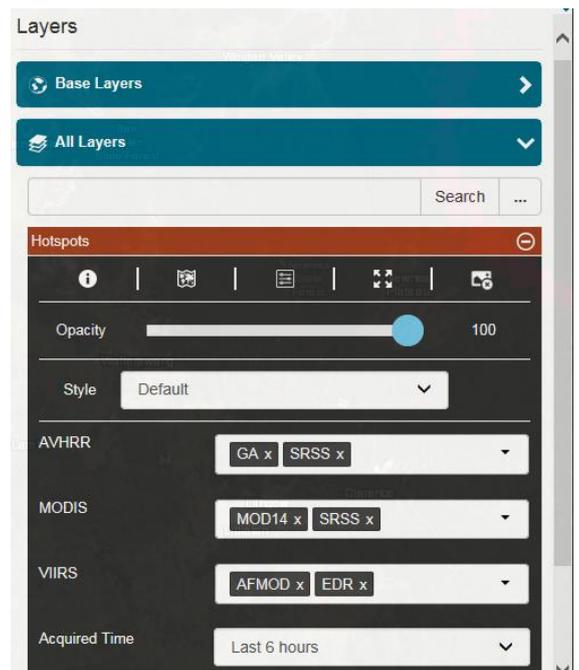
- At best, the information is 30 min to an hour old (this is how long it takes to download and process data into hotspots after each satellite pass)
- Satellites pass over a given area between 2 to no more than 4 times a day, and each pass covers only a part of Australia, which means some fires are not detected because the satellite was not looking over that particular area.
- The hotspot location on any map (no matter how detailed) is only accurate to at best 1.5 km
- The size of the hotspot does not indicate the area of fire
- Not all hotspots are fires; they can also indicate black soil, gas fires, industry, furnaces, smoke plumes or hot rocks
- Not all hotspots are detected by the satellites. Some heat sources may be too small, not hot enough, or obscured by thick smoke or cloud

Comments: This mapping system does not give you instant information about a new fire. It is best to go to *Fires Near Me* first if you think there is a new fire in your locality. Such a fire will appear on *Digital ... Hotspots* some time after a satellite passes over.

3. Click on the **Layers** menu to set the parameters of your search. Click on **All Layers** and use individual drop-down menus so that your screen resembles the one on the right



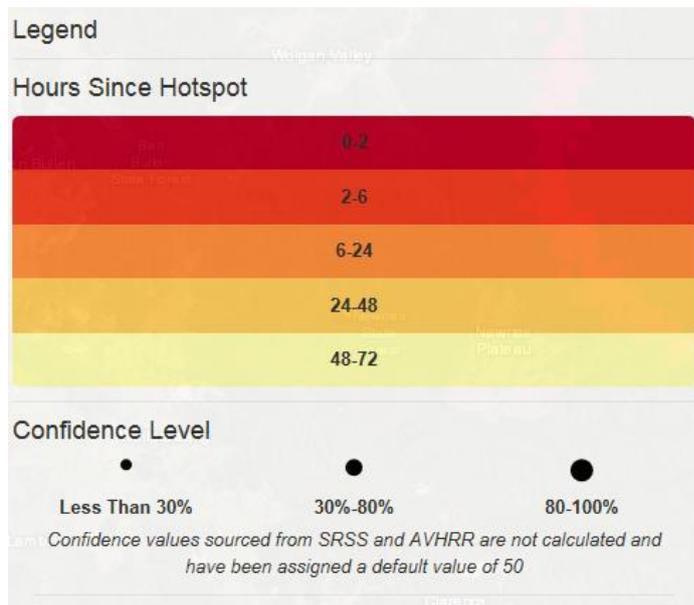
- We recommend that you set the **AVHRR** to “select all” so that you capture information from both Geoscience Australia (GA) and the Landgate Satellite Remote Sensing Services (SRSS) from the West Australian Government.
- Under **Acquired Time** you can select from 2 hours to 72 hours (since fire detection) but we’ve found 6 hours is most useful especially if you want to know where a fire is burning currently. Two hours may not reveal anything (see above) and 72 hours tells you where the fire has been in that time.



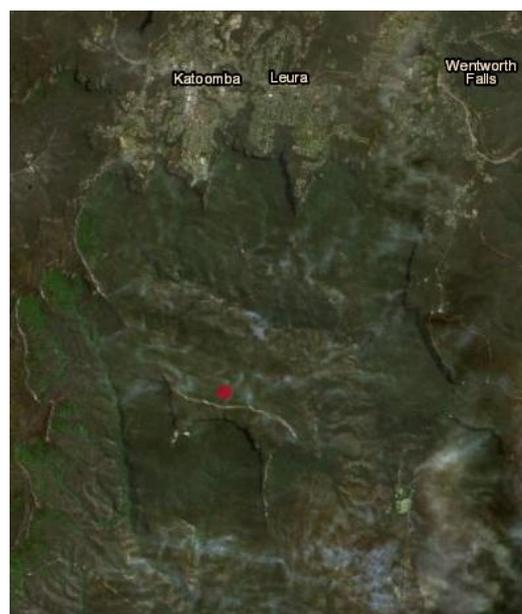
4. **Legend** explains the colour coding of the dots. The colours do not refer to the intensity of the fire but rather to the hours since detection. The mid-red colour means fire detection within the last 2-6 hours and that is what appears on the map if you have set the **acquired time at 6 hours**.

The paler the colour the older the fire occurrence. If you set the acquired time at 72 hours the map becomes messy but is useful if you want to know the area the fire has covered on the previous 72 hours.

We find that the **6 hour selection** gives us a much better picture of where the fire is than the *Fires Near Me* map of the same fire – refer to the following maps of the Ruined Castle Fire. At the time of writing this (1615 hrs 7th Dec 2019) the *Fires Near Me* map on the left showed the full extent of the fire but no indication of where the actual fire was still burning. That is shown by the red circle on the *Digital ... Hotspot* map on the right (a small spot just north of the walking track on the top of Mt Solitary).



Confidence Level in the Legend (ie how likely is the spot to show an actual fire not an infrared detection from another sources) is indicated by the size of the circle (as in diagram above). The red circle on Mt Solitary carries a confidence level of 75%. We did not estimate this but used the information obtained from the **Inspection Tool**. To access this just click on the hotspot (circle) you are interested in and the Inspection Tool (a long table) appears to the right of the map.



5. **The Inspection Tool:** So far we have mainly used the inspection tool (remember to click on a relevant hotspot circle) to determine the **confidence level** ie how confident can you be that a hotspot is a fire. In the case of the Mt Solitary hotspot the level is 75%.

Note that in the section of the legend relating to Confidence levels that it is stated that:

“Confidence values sourced from SRSS and AVHRR are not calculated and have been assigned a default value of 50”.

It is therefore important that you include the Geoscience Australia (GA) in the settings for AVHRR in **Layers** (as outlined on page 1). GA readings are more accurate than SRSS. However if you only select GA readings you may miss out on some actual fire spots.

Only selecting SRSS readings on the other hand will provide for more results but these may include false-positives (ie from infra-red emitting sources other than fire).

You can see that a range of other characteristics like latitude and longitude, time and date, satellite details etc can be obtained from this table.

ID	43578017
SATELLITE	SUOMI NPP
SATELLITE_NSSDC_ID	2011-061A
SATELLITE_OPERATORING_AGENCY	NASA/NOAA
SENSOR	VIIRS
ORBIT	42021
START_DT	2019-12-07T04:21:52Z
STOP_DT	2019-12-07T04:37:30Z
FILENAME	Npp20191207T042152Z20191207T043730Zhotspots.txt
PROCESS_DT	2019-12-07T05:08:56Z
PROCESS_ALGORITHM	AFMOD
PROCESS_ALGORITHM_VERSION	6
PRODUCT	AFMOD
LOAD_DT	2019-12-07T05:10:04.433Z
LATITUDE	-33.7783
LONGITUDE	150.3196
TEMP_KELVIN	316.4
DATETIME	2019-12-07T04:26:08Z
POWER	18.9
CONFIDENCE	75
AUSTRALIAN_STATE	NSW
HOURS_SINCE_HOTSPOT	1.1661141386111111

6. **Please note:**

- We have only been using this site for a few days, can therefore claim no expertise and apologise for any misinterpretations of the data
- This site is still under development and there may be changes and refinements in the future
- The map is revised regularly each day as new satellite data is added so sometimes the site does “not seem to be working”. Be patient, it will return with new data.
- Use in conjunction with the data on ‘Fires Near Me’ - <https://www.rfs.nsw.gov.au/about-us/our-districts/blue-mountains/fire-information/fires-near-me> (or the related App)

*Margaret and Nathaniel Baker
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