

Forecasts for sun safety

Predictions of ultraviolet (UV) radiation help the campaign against skin cancer

This year, almost 300,000 Australians will visit a doctor or specialist to have a skin cancer (or cancers) removed. Sunburn caused by overexposure to ultraviolet-B (UVB) radiation is known to be the primary cause of skin cancer. To help people choose appropriate levels of protection against skin cancer, the Bureau of Meteorology issues daily forecasts of the UV Index.

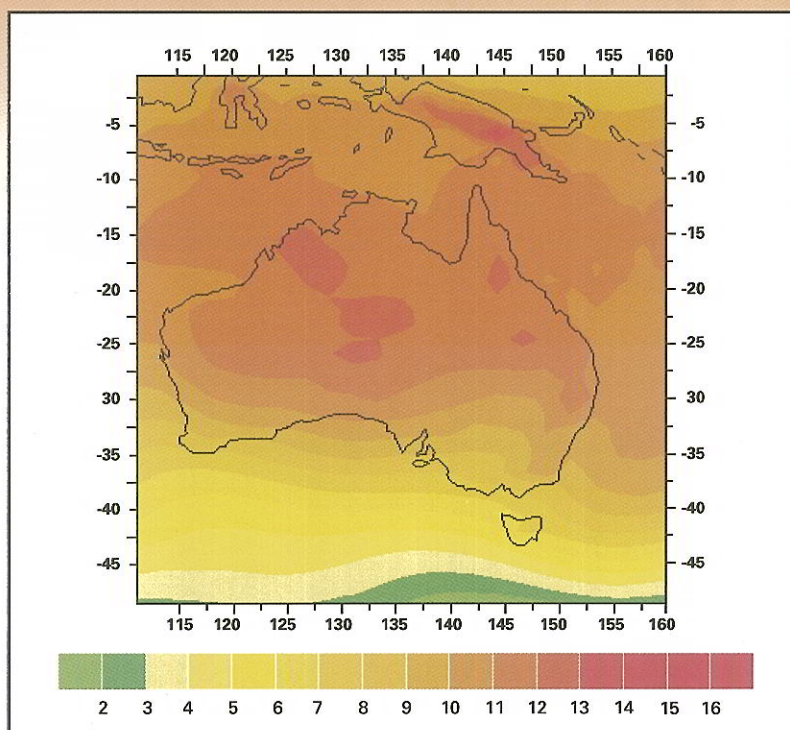
UV Index forecasts are issued as a map of Australia (this page), a numerical value with descriptive category, and as a graph (see over), for capital cities and towns across Australia. The map, text and graphical forecasts are available via the Bureau's website (<http://www.bom.gov.au/weather/national/charts/UV.shtml>), with the map also available through the Bureau's Weather By Fax service (dial 1902 935 018, cost 66 cents/min inc. GST). The mass media also receive text forecasts along with other Bureau services.

About Ultraviolet Radiation

The sun emits three types of ultraviolet radiation – UVA, UVB and UVC. UVA penetrates deep into the skin causing damage like wrinkles and discolouration. Exposure to UVB causes sunburn, a skin reaction where blood vessels expand and leak fluids, producing inflammation, pain and redness. Sunburn, whether severe or mild, can cause per-

manent and irreversible skin damage. Cumulative exposure to UV radiation and the number of severe sunburns received, especially during childhood, increases the risk of developing skin cancer.

The ozone layer blocks the sun's output of UVC and most UVB radiation. The UVB radiation that does reach the earth's surface poses the greatest danger for sunburn and skin damage. Ozone gas high in the atmosphere is vital in filtering out much of the sun's UV, making ozone depletion a major environmental issue. Decreasing ozone levels will increase the health risks associated with UV, but personal risk can be largely averted by avoiding the sun during the middle of the day, or by covering up with appropriate clothing, headgear and sunglasses, and by using SPF 30+ sunscreen.



▲ Typical UV Index forecast map during summer.

Forecast Issued at 0430 13/03/2001 for Tuesday

Sydney Metropolitan: Morning mist patches in the west, otherwise fine and sunny.

A very warm to hot day with cloud increasing and the chance of a late shower or thunderstorm. Max temp: 30

UV Index: 11 (Extreme) decreasing to 8 (Very High) under cloud

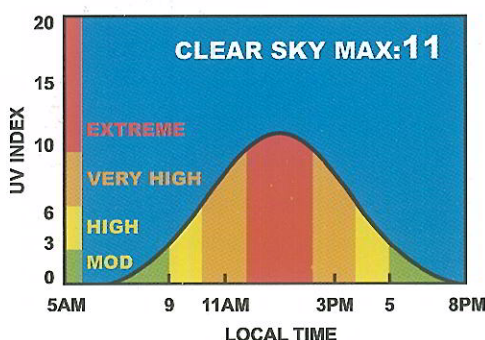
Calculating a hazard

Forecasting the intensity of UV at ground level takes into account information on the time of day, date, latitude, amount of cloud, altitude, presence of haze and ozone concentrations. The Bureau of Meteorology, in conjunction with the Cooperative Research Centre for Southern Hemisphere Meteorology, developed a global computer model that predicts ozone concentration, and calculates the intensity of UV radiation expected to reach the ground at any point. The forecast radiation intensity is converted to an index that estimates the maximum UV intensity for midday – assuming cloud-free skies. Forecasters then apply a correction factor for the expected cloud coverage. Both clear-sky and cloud affected UV Index values are included in the text forecast while only clear sky values appear in the map and graphs.

Cloudy days deceive many people into thinking the danger of UV radiation is minimal. Cloud affects the strength of radiation reaching the ground in complex ways. Most clouds block some UV radiation, but the degree of protection depends on the type and amount of cloud. Some clouds can actually increase the UV intensity on the ground by reflecting and refracting the sun's rays. People can also be caught unawares when a small break in an overcast deck of clouds allows a brief burst of intense radiation to reach the ground. Cold air can also be deceptive as temperature is not directly related to UV intensity. Skiers should take particular care as reflective snow on the ground and high altitude raise the UV Index significantly relative to its value at sea level.

Describing the danger

The UV Index is a simple and informative way of describing the daily danger of solar UV radiation intensity. The Bureau's UV forecast gives the index value for midday (1pm during daylight saving) when the sun's radiation is most intense. As illustrated by the graph, UV intensity remains close to the day's peak value between 10am and 2pm, (11am and 3pm during daylight saving). Without adequate protection, sun exposure between these hours poses the greatest risk for developing sunburn rapidly. You can still burn outside these hours; though it will take longer. Each point on the index scale is equivalent to 25 milliWatts/square metre of UV radiation at the earth's surface for UV wavelengths between 290 and 400 nanometres.



▲ Typical UV Index graph during daylight saving.

UV INDEX	DANGER CATEGORY
Below 3	Moderate
3 to 6	High
7 to 9	Very High
10 and above	Extreme

Sun protection tips

The Cancer Council Australia's key recommendations to minimise the risk of skin cancer:

- Seek shade and reduce your sunlight exposure, especially during the peak radiation hours between 10am – 2pm (11am – 3pm during daylight saving).
- Cover up, even when temperatures are in the low 20's
- Choose loose lightweight clothing that covers your arms, legs and neck.
- Wear a hat with a broad brim, at least 8–10cm.
- Apply broad spectrum SPF 30+ sunscreen 20 minutes before heading outside. Reapply every 2 hours, or more often if swimming or perspiring.
- Wear sunglasses that meet the Australian Standard (AS 1067) to block UV and protect your eyes against cataracts.