

## The UV Index and its forecast

It is an internationally used index in order to communicate to the public the information regarding the possible risk from excessive exposure to UV sun radiation.

The UV Index is strictly related to the elevation of the sun on the horizon and to the cloudiness and therefore it reaches the highest values in summer during midday hours in clear sky; other factors such as stratospheric ozone, altitude, surface albedo, etc. impact on the UV Index.

The forecast here presented is produced by DWD (Deutscher Wetterdienst, Germany; <https://kunden.dwd.de/uvi/index.jsp>).

**Two types of daily maximum UV Index forecast are showed, one taking into account the predicted cloudiness and one for clear sky. Attention: the UV Index for predicted cloudiness could be underestimated in case of unpredicted sunny spells (particularly around midday) and the observed value could be very close to that expected for clear sky.**

Thin clouds, which permit the view of the sun, little influence the UV Index, while thick clouds can reduce it of about 70-90% during overcast sky, of about 40-50% for cloudy or mostly cloudy sky (6-7 tenths of cloudiness), of about 20-30% for partly cloudy (3-4 tenths of cloudiness); for lower cloud cover the attenuation effect is negligible.

High elevation, highly reflective surfaces such as snow, very light sand, etc. can induce an underestimation of the predicted UV Index also for clear sky condition.

The forecast is represented both in the form of maps indicating the UV Index value expected at different times of the day (**hours are in UTC time, consequently to obtain local time you have to add 2 hours from April to September and 1 hour in the remaining part of the year**) and in the form of the maximum daily UV Index expected at specific locations.

## Precautions to adopt

The table below shows the general precautions to be taken (**based on the maximum daily expected UV index**).

Maximum daily UV INDEX	
11 + Extreme	<b>Extra protection is required.</b> Avoid staying outdoors during midday hours. May sure you seek shade at least from 11 a.m. to 4 p.m. (daylight saving time)! It is a must to use sunglasses, hat, t-shirt and sunscreens with high protection. Particular attention in case of very reflecting surfaces (snow, light sand, etc.).
8-10 Very High	<b>Protection is required.</b> Seek shade during midday hours (it is recommended to extend the period from 11 a.m. to 4 p.m., daylight saving time)! Use sunglasses, hat, t-shirt and sunscreens with high protection. Particular attention in case of very reflecting surfaces (snow, light sand, etc.).
6-7 High	<b>Protection is required.</b> Seek shade during midday hours! Use sunglasses, hat, t-shirt and sunscreens with high protection. Particular attention in case of very reflecting surfaces (snow, light sand, etc.).
3-5 Moderate	<b>Protection is required.</b> Seek shade during midday hours! Use sunglasses, hat, t-shirt and sunscreens with high protection. Particular attention in case of very reflecting surfaces (snow, light sand, etc.).
1-2 Low	<b>No protection is required.</b> No protection is required unless of particular sensitivity to UV radiation. We recommend the use of sunglasses and sunscreens on snow.

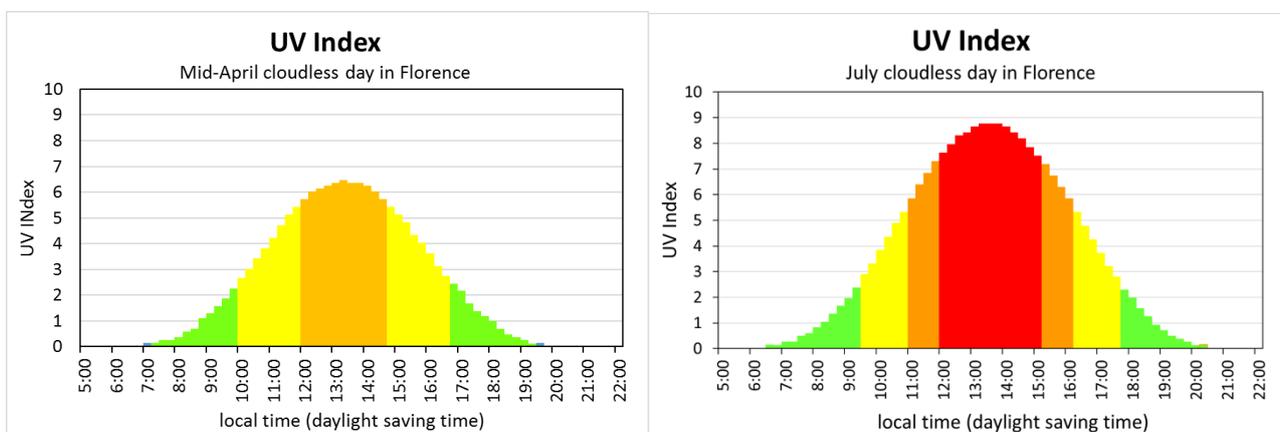
The table is based on the recommendation of the World Health Organization (WHO/WMO) ([https://www.who.int/news-room/questions-and-answers/item/radiation-the-ultraviolet-\(uv\)-index](https://www.who.int/news-room/questions-and-answers/item/radiation-the-ultraviolet-(uv)-index)).

Pay attention, even in shaded conditions, the UV radiation may not be negligible (for example, during a clear sky, on a normal beach, under the shade of a beach umbrella it is possible to have up to the 25-40% of the UV radiation in full sun conditions).

In any case neither the LaMMA Consortium nor the DWD can be held responsible for any errors in the service offered (not always the forecast is correct) or for an incorrect use of the available information.

## UV Index monitoring

The UV Index is measured by means of radiometers able to detect the UV solar radiation effective in determining erythema. Below, in figure, the UV Index trends in Florence for two clear days of mid-April and July, are shown. Similar trends are also expected occur in other lowland locations in Tuscany (apart from particular environmental conditions such as the presence very high surface albedo). Notice how in July, in the period from 11 to 16 local time (daylight saving time), there are values “high” and “very high”



Below the approximately expected daily maximum UV Index for clear sky in the different months of the year. Varying stratospheric ozone concentration and some other environmental conditions the values could partly be different.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	2-3	3-4	6-7	7	8	8-9	7	5	3	1-2	1

In central Italy, in May, June, July and August the exposure risk can be considered low only before 10 a.m. and after 5 p.m. Only in the months of November, December and January the UV values can be considered low with the exception of particular areas with very high reflection (snow, etc.). Recent studies put in evidence as also UV Index lower than 2 can produce some damages on very sensitive skin. Even on days with a pleasant temperature, the UV radiation can be very intense.

Even if not all the skins are equally sensitive to ultraviolet radiation, it is always advisable to adopt the precautions in the WHO table.

To view the real time UV Index in Florence, use the following link:

<http://www.lamma.rete.toscana.it/meteo/osservazioni-e-dati/dati-stazioni>).