



## **A new service providing daily UV doses computed from shortwave downwelling radiation at surface from the HelioClim-3v5 database**

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This communication presents a new operational service providing archives and recent daily doses of UV. This service has been set up on the SoDa website ([www.soda-pro.com](http://www.soda-pro.com)) to answer numerous requirements from users in various applications in human health, agro-meteorology, phenology, or water quality.

The UV dose is computed from the shortwave downwelling radiation at surface, also known as broadband solar radiation, using the already published method of Wald. This method has the advantage to be independent from the geographical location. The operational service exploits the broadband irradiation data contained in the HelioClim-3 version 5 database (HC3v5). HC3v5 is constructed from Meteosat images and makes use of the estimates of the broadband irradiances in cloud-free conditions provided by the McClear service, within the Copernicus Atmosphere Monitoring Service of the European Union. HC3v5 covers Europe, Africa, the Middle East, the Arabian peninsula, the Atlantic ocean and part of South America.

The new service provides daily doses of UV from 2004 up to current day-2. It benefits from the wide audience received by the SoDa Service, whose reliability and robustness has been enhanced by mirroring approach and investment in computer resources. Four examples provided by users are given to illustrate the benefit of the service. In example 1, the atmospheric effects on humans, and more precisely the link between UV radiation and Parkinson disease were addressed. The aim of this study was to demonstrate that UV-B exposure, as a surrogate for vitamin D levels, contributes to prevent from Parkinson disease.

Example 2 deals with the characterization of the climate for three sites in the Lubéron, a mountainous area of France, where a particular plant: “*inula montana*” is found. The influence of several meteorological variables on this plant was studied, including UV doses.

Example 3 presents a study on the synthesis of protective compounds such as flavonoids in plants as a biological response to abiotic stressors such as UV radiation and other meteorological variables in coastal areas in the Iberian Peninsula. The study particularly addresses the color of iris flowers, as an answer to stress.

Example 4 reports on the development and toxicity of algae blooms in the Villerest water reservoir in France. The study was originally based on broadband radiation. Preliminary results lead the authors to pay attention to UV-B radiation, which was made possible with the new service.