

MeteoSwiss

Section Sciences et Ingénierie de l'environnement Design Project 2019 (semestre de printemps)

Proposition n°8

UV irradiance maps to support skin cancer research and prevention

Partenaire externe

Météosuisse

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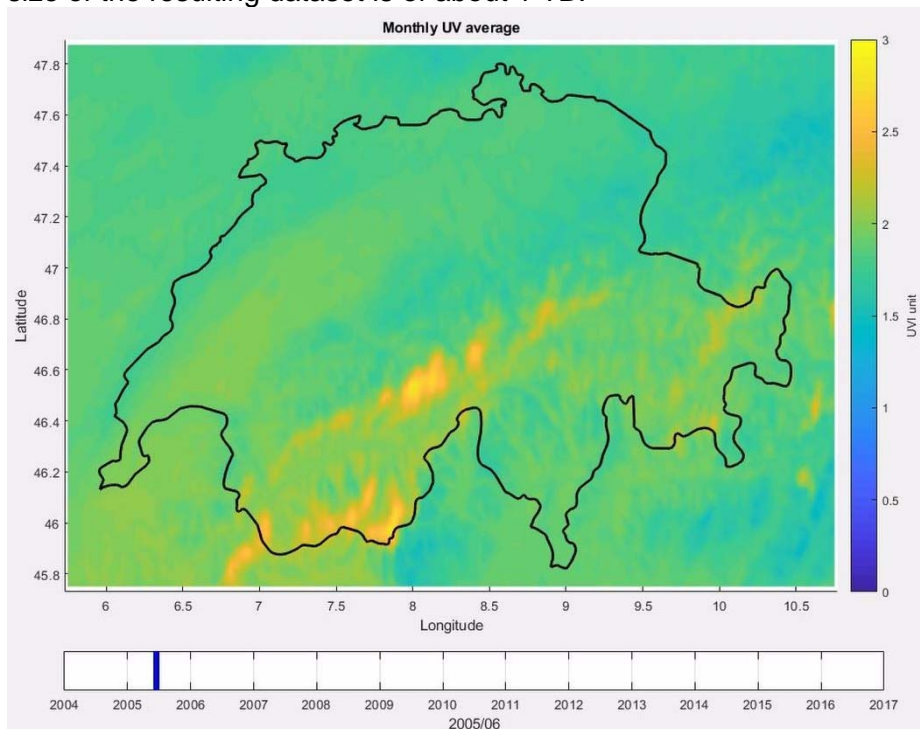
Descriptif du projet

The SNF project PurSUE (CR2313_152803), aiming at addressing the existing gaps between the growing burden of skin cancer and the tools available to assess and manage individual UV exposures, has been completed recently. One of the outcome of this project is the setup of a satellite-based climatology of ground UV radiation in Switzerland. This climatology was built by adapting to UV wavelengths, techniques used to estimate solar radiation in the visible range. It was validated using ground measurement datasets issued from three

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meteorological stations: Davos, Locarno-Monti and Payerne, where solar radiation is measured separately for the direct, diffuse and reflected component both for the total solar wavelength range from the UV, through the visible to the near infrared, and restricted to the UV range.

The UV spatio-temporal dataset for Switzerland is now available. It extends from 01.01.2004 to 31.12.2016 with a temporal resolution of 1 hour and a spatial resolution of about 1km. A single month of data requires the computation of about 1 billion UV radiation values and the size of the resulting dataset is of about 1 TB.



Objectif et buts

(Décrire 1 objectif général et 3-4 buts réalistes)

The aims of this project is to valorize the existing dataset in producing UV irradiance maps for Switzerland. These maps should provide various metrics, including yearly or seasonal ground irradiance or anatomical exposures estimates, in order to allow future uses in research or health prevention.

Descriptif tâches

(Décrire 3 à 4 étapes de la démarche de projet en spécifiant s'il y a une partie expérimentale (terrain, mesures, prototypage))

- Define appropriate metrics according to the possible use of the dataset (prevention, epidemiology, environmental research,..)
- Build irradiance maps conveying the suitable spatial and temporal information
- Valorize the maps produced toward different target audiences

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Divers

Preliminary knowledge in mapping techniques is required in this project.