HappySun:

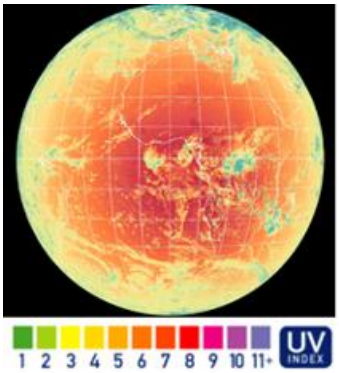
Smart Sunbathing thanks to EO satellites !

HappySun (www.happysun.co.uk) is an innovative **satellite-based Android/iOS App for personal solar photo protection** that will be launched in the market by **siHealth Ltd** (http://www.sihealth.co.uk) in **May 2016**. It's currently **the unique personal UV dosimeter based on satellite Earth Observation (EO) real-time data processing worldwide.**

This technology has been developed by **Flyby Srl (Italy)** spending more than 5 years of research & development and validation activities made also in **collaboration with the European Space Agency (ESA)** and many public organizations bodies in the field of environmental health protection such as the **Public Health England (PHE)**.

Screenshots of the HappySun App: real-time UV dosimeter function.

For the end user it works as a **"personal consultant" for sun exposure** through a specific smartphone app allowing for the **safer and enjoyable sunbath avoiding sunburn**. The HappySun system is based on the exploitation of **data** coming both **from several EO satellites** and from the **Copernicus Atmosphere Monitoring Service (CAMS)**, enabling real time measurement of the ground-level UV radiation. The real time service is currently active over **Europe, Africa and Brazil**.



An example of a satellite-based UV radiation map (expressed in UV index units) produced by the HappySun system. The considered time instant is on 2nd March 2016 at 12:00 UTC.

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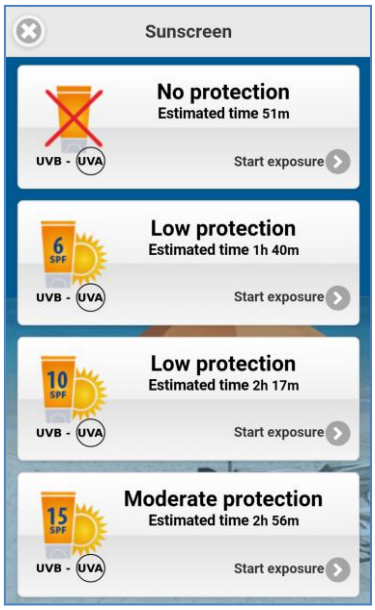
HappySun assesses the **UV erythema dose** for the worst case body part exposed (e.g. direct normal solar irradiance exposure), issuing an **alert when the maximum recommended UV dose have been accumulated** during the day.

The HappySun App provides **real-time personalized recommendations** and useful information for a safe sun exposure: user phototype and Minimal Erythemal Dose (MED) are calculated by an expert system based on an anamnestic questionnaire. Once both the user phototype and UV radiation have been determined for the exposure location, following the smartphone's **geolocation**, HappySun immediately **calculates the personal safe-exposure time**, taking into account also the **SPF** (Sun Protection Factor) of the sunscreen possibly applied and the **ground-reflected radiation** surrounding the user. Moreover the system is able to provide **recommendations both on the sunscreen** to be applied and **on the sunglasses** for eye protection depending on the **real-time measured UV radiation**.



Screenshots of the HappySun App: sunscreen – safe exposure time recommendations function.

Further **R&D activities** are on-going to increase further the HappySun's accuracy: as an example, the input satellite-based ozone data will be further improved by the results of the **AURORA project** ("Advanced Ultraviolet Radiation and Ozone Retrieval for Application", 2016-2019) funded under the **Horizon 2020 Programme** of the European Commission (http://www.aurora-copernicus.eu/). The envisaged AURORA system will exploit the data provided by **Sentinel 4/5/5p satellites** in order to provide ozone and UV radiation data with higher accuracy and higher temporal/spatial resolution with respect to the currently available ones.