



Long term changes and Climatology of Ultraviolet Radiation over Europe

Signatories



Objective

UV solar radiation plays an important role in many processes in the biosphere, including the influence on human organisms, and may be very harmful if UV exposure exceeds "safe" limits. The knowledge of biologically effective UV radiation doses and their geographical distribution and climatology in Europe is therefore crucial for the European population, who will be addressed as the main end user of the Action.

The main objective of the COST Action 726 is to advance the understanding of UV radiation distribution under various meteorological conditions in Europe in order to determine UV radiation climatology and assess UV changes over Europe.

To achieve its general objective, the Action has the following practical objectives:

- to make an inventory of available solar radiation data sets, including UV data, spectral and broadband, ancillary data (ozone, clouds, sunshine etc.) and available satellite data,
- to advance the understanding of UV reconstruction models for the calculations of UV climatology and assessment of UV changes,
- to advance the understanding of biological UV radiation climatology and changes in Europe,
- to advance the understanding of UV influence on ecosystem, both on the basis of climatology and changes of selected effective UV radiation doses in Europe,
- to use the advanced knowledge under the points above, in order to elaborate a comprehensive analysis and information basis, addressed to beneficiaries,
- to create a European reference group of broadband radiometers.

Benefits

The major benefits of the Action will be a geographically broader and scientifically deeper knowledge of the climatology of UV radiation and of selected biologically effective UV radiation doses across Europe. The main beneficiaries will be the public, researchers in atmospheric, photobiological and medical sciences as well as authorities and policy makers.

Scientific Program

Obtaining UV radiation data for long time periods and from various places without UV measurements requires modelling tools. This can be done by radiation transfer models, which use available proxy atmospheric data as input parameters, or it can be done by statistical models, using ancillary data. The activity will focus on the following areas:

- Inventory of UV measurements and ancillary data for UV reconstruction
- Model data selection
- Comparison of modelled and measured UV data
- Action spectra
- Derivation of requirements
- European climatology and trends
- Exploitation of the long-term UV series
- Common Q/A and Q/C procedures for European broadband radiometers

Signatories



WG1 - Data collection

Leader: Hugo De Baker

(Hugo.DeBacker@kmi-irm.be)

Main tasks:

- Inventory and collection of measured ancillary data that are necessary to run the models, considering variable spatial and temporal resolution.
- Inventory of available high quality UV-measurements to validate the results of the reconstruction models.

WG4 - Quality Control

Chair: Julian Gröbner

(Julian.Groebner@pmodwrc.ch)

Main tasks:

- Drafting and implementation of common Q/A and Q/C procedures.
- Characterisation and intercomparison of selected broadband radiometers.
- Creation of a European reference group of broadband radiometers.

Duration:

Entry into force: 8. January 2004

End of action: 28. March 2009

WG2 - UV modelling

Leader: Peter Koepke

(Peter.Koepke@lrz.uni-muenchen.de)

Main tasks:

- Identify models suited for building a European climatological dataset of UV radiation.
- Generate a prototype subset for European UV climatology for evaluation purposes, using different models and ancillary data.
- Quality check of UV climatologies modelled by different algorithms, both against each other and against measured data.
- Modelling long time UV series with high spatial and temporal resolution for selected biological processes.
- Calculation of UV trend patterns and their temporal variability.
- Establishing the sources of UV trend variability over Europe.
- Visualisation with respect to beneficiaries needs.
- European UV climatology assessment.

Chairs:

Chair: Dr. Zenobia.Litynska @imgw.pl

Vice-Chair: Dr. Peter.Koepke @lrz.uni-muenchen.de

WG3 - Requirements for biological UV effects

Leader: Alois Schmalwieser

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Main tasks:

- Collection of action spectra for photobiological effects induced by UV radiation and selection of representative action spectra.
- Derivation of requirements for ancillary data collection, reconstruction, climatology and trend analysis.
- Recommendation of biological action spectra, time resolution and other requirements for UV modelling.
- Dissemination of information on the biological importance of effective UV radiation and gained results to a broader audience.

Cost-Office

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