

## Information for potential collaborators

### Project Overview

The Joint Research Project "Traceability for surface spectral solar ultraviolet radiation" is a collaboration between National Metrology Institutes, partners from Industry and the research Community in Europe.

The aim of the project is to significantly enhance the reliability of spectral solar UV radiation measured at the Earth surface by developing new methods of observation (techniques and instruments) to provide traceable solar UV irradiance measurements with an uncertainty of less than 2%.

The project will address these objectives by shortening the traceability chain of the solar UV measurements to the SI unit and by reducing the associated transfer uncertainties. The goal is to approach uncertainties in the field comparable to those currently achieved only for primary spectral irradiance scale realisations at NMI level, i.e., at the level of 1%.

In view of using cost-effective array spectroradiometers as replacements for current UV filter Radiometers in UV monitoring networks, significant progress needs to be achieved in the characterisation of these devices. New characterisation techniques and post-correction methods will be developed to determine and correct the stray light, linearity, and wavelength scale of array spectroradiometers. These activities will be supported by designing and constructing novel array spectroradiometers with improved stray light characteristics.

The dissemination of the improved irradiance traceability and the developed tools and methods for using array spectroradiometers in the solar UV range will occur by a large field intercomparison of spectroradiometers organised at the end of the project at the World Radiation Center, Davos, Switzerland. Participants from the end-user community involved in solar UV measurements will be invited to the field intercomparison. Participating spectroradiometers from the end-users will be characterised and calibrated by the facilities developed in this JRP to provide traceability of spectral solar UV irradiance at this new level of uncertainty to the wider European UV monitoring community.

### Relevant activities of ENV03:

- 1) **Technical workshops** will provide a forum for end-users to interact with the Project Consortium. The workshops will give an overview of the project objectives, present current project activities and discuss preliminary results. Presentations will be given by project members and by participants from the user community. Preliminary dates are:
  - **6-10 August 2012** in conjunction with the UV Session at the International Radiation Symposium, Berlin, Germany.
  - **13 July 2013** at Davos, Switzerland, in conjunction with the IAMAS-IACS Davos Atmosphere and Cryosphere Assembly.
  - **1 Day workshop in May/June 2014** during the UV intercomparison at PMOD/WRC, Davos, Switzerland.
- 2) The **bandwidth, spectral stray-light** and **linearity** characteristics of a limited number of stakeholder array-spectroradiometers will be characterised by tuneable-laser facilities operated at NMI labs (PTB and METAS). Due to the significant efforts involved, certain restrictions will apply. Inquiries should be directed to the coordinator of the project (Julian.groebner@pmodwrc.ch).
- 3) An **intercomparison of spectroradiometers** (array and scanning) measuring global solar UV irradiance will be organised during about 10 days in late May/June

2014 at the World Radiation Center, Davos Switzerland. This intercomparison will be open to the UV community and provide access to the tools and techniques developed during the project in order to significantly decrease current uncertainties in measuring spectral solar UV radiation. The activities during the intercomparison will include:

- Intercomparison of global solar irradiance measurements with the QASUME reference spectroradiometer,
  - On-site absolute spectral irradiance calibrations using traceable transfer standards,
  - Linearity and wavelength characterisations of array and scanning spectroradiometers,
  - Workshop for describing the newly developed tools and methods within the project such as new diffusers, UV LED based transfer standards, optimised UV array spectroradiometers, hyperspectral UV imager, stray light and software tools (bandwidth correction algorithm and uncertainty estimation tool).
- 4) The **UV Thematic network** will be re-activated to serve as communication platform between the project consortium and the UV community. A **mailing list** will be used to disseminate project news and future project-related events through “**UVnews**” newsletters.

More information can be found on the project web-page at [projects.pmodwrc.ch/emrp](http://projects.pmodwrc.ch/emrp) and [www.emrponline.org](http://www.emrponline.org).

Note: The EMRP is jointly funded by the EMRP participating countries within EURAMET and the European Union.