

Name of research institute or organization:

**Institute for Medical Physics, University Innsbruck**

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Title of project:

Solar UV irradiance

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Project leader and team:

Univ-Prof. Dr. Mario Blumthaler, project leader

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Project description:

Since 1980 variability and trend of solar UV irradiance have been observed at the High Alpine Research Station Jungfraujoch in annual campaigns of about 8 weeks duration. Especially the long-term variation of the biologically significant erythemally weighted UV-irradiance is of interest, as it can be taken as a general indicator of harmful reactions on humans.

With a double-monochromator spectroradiometer spectral measurements between 280 nm and 500 nm with a resolution of 0.25 nm are carried out. Total ozone column and spectral extinction by aerosols is derived from direct sun irradiance. Close international cooperation guarantees high quality of the UV measurements.

In 2001, the measurements at Jungfraujoch took place between 18.07.2001 and 30.08.2001. During the whole period at least one scientific collaborator from the Institute for Medical Physics was taking care of the measurements at Jungfraujoch for continuous quality control and for manual ancillary measurements on clear sky days. This year for the first time spectral actinic flux density from the upper hemisphere was measured too, which is especially important for tropospheric chemistry. First analyses show significant differences in the relation to global irradiance, when compared with similar results at valley stations, which mostly are a consequence of the snow covered surrounding. These results will also be presented at the EUROTRAC-meeting in Garmisch-Partenkirchen in March 2002.

Also in the following years the measurement campaigns at Jungfraujoch will be continued. Thereby further specific sensitivity studies on the influence of individual parameters on solar UV irradiance will be carried out. Furthermore, it will be of special interest, if in the next years a tendency for recovering of the ozone layer will really occur, which should be accompanied by decreasing levels of UV-B irradiance. Such conclusions can be drawn only from measurements carried out over several years, because otherwise any long-term trend may be masked by the strong short-term variations of various atmospheric parameters.

Key words

UV, erythema irradiance, ozone, aerosols, albedo effects

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Collaborating partners/networks:

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Close contact to Meteo Schweiz concerning radiation measurements and to BUWAL concerning ozone measurements. International cooperations in several EC-projects about spectral UV measurements.

Scientific publications and public outreach 2001:

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