DETERMINATION OF STANDARDS FOR AN UV MONITORING NETWORK

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Natural and anthropogenic variations of the stratosphere have two important consequences on the biosphere. First, stratospheric ozone is the major absorber of UV-B radiation (280-320 nm) in the Earth's atmosphere and it is known to have damaging effects on biological systems. Any processes, either natural or anthropogenic, that cause decreases in stratospheric ozone and therefore cause increases in UV-B radiation are of great concern. Second, biospheric processes are known to affect the concentrations of radiatively active trace gases in the atmosphere. Therefore, consideration must be given to the possibility of indirect effects of the stratosphere on climate that might result from UV-B-produced biospheric effects that could modulate the flux of greenhouse gases into the atmosphere.

The overall objective of this project is to produce practical recommendations for the deployment of an integrated UV-B network throughout Europe. The recommendations will be based on comparison of different methods of measurement both between and within instrument categories. Suitability of instruments and the criteria for a network will be judged by their ability to meet the requirements of the data users : atmospheric modellers, photobiologists, photochemists, ...

In achieving this major aim two other independent objectives need to be met to allow a network based on a number of different instruments. One is the development of a calibration system that can be used for all instrument, the second is a computational means of normalising the results from instruments with different optical input geometry.

A side product of the project will be a data base of UV-B measurements made throughout Europe during the two years of the project. While not a unified network, the investigation of measurement techniques and instruments in the project will provide compatibility limits between different locations, and allow data from other networks to be used with an acknowledged degree of uncertainty in absolute spectral measurements. The other networks can also provide information on the level of various atmospheric constituents which

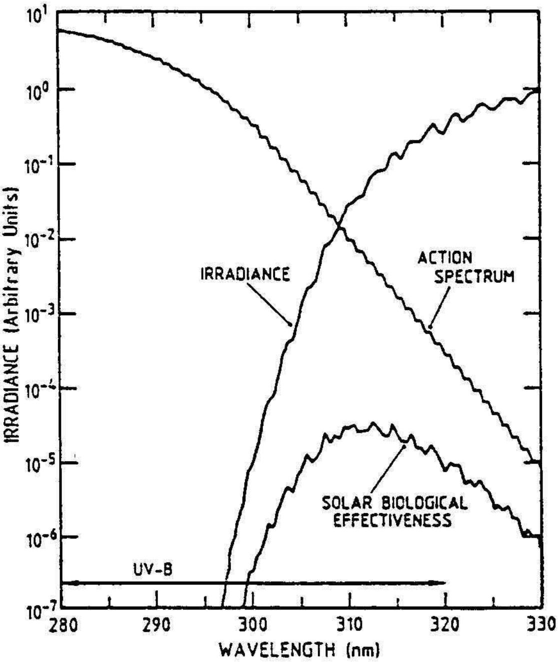

Fig. 1. — Solar spectral irradiance at the Earth's surface and the biological response spectrum as a function of wavelength. The area under the curve is defined as the biologically effective irradiance.

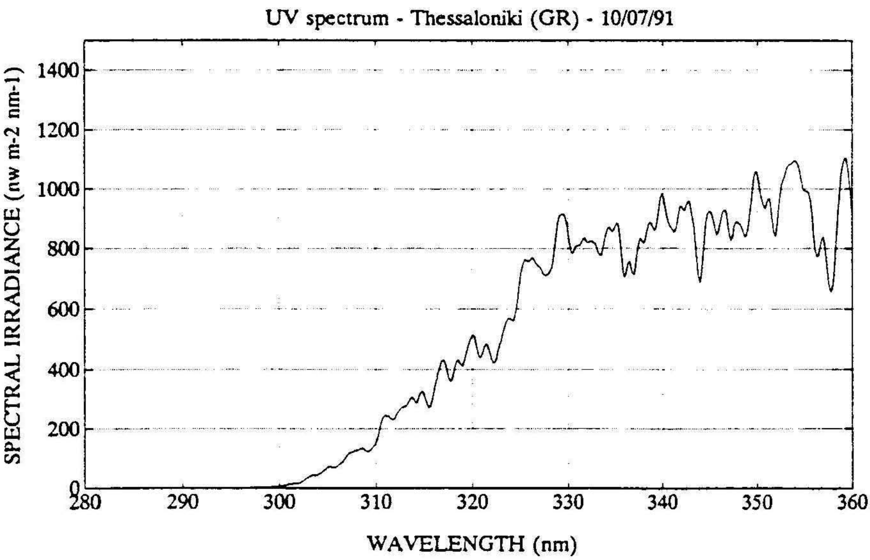

Fig. 2. — UV solar irradiance measured during the intercomparison campaign in Thessaloniki (Greece).

together with the measured UV-B irradiances should aid the understanding of UV radiative transfer.

Figures 1 and 2, give respectively a schematic representation of UV solar biological effectiveness and an example of UV spectrum taken during a recent intercomparison campaign.

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