Ultraviolet Ground- and Space-based Measurements, Models, and Effects II (AE106)

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Observation and model predictions indicate a correlation between decreasing levels of stratospheric ozone and increased solar ultraviolet (UV) radiation. Numerous studies report that UV radiation is harmful to living organisms and is detrimental to human health. High doses of UV radiation are considered the major contributing factor for the development of skin cancer or cataracts. UV radiation can weaken the human immune system and can affect crop yields and phytoplankton activity. Concerns that increased levels of UVB are harmful to the biosphere have led to the development of ground- and space-based measurement programs to provide long-term data of UVB reaching the earth’s surface. Considerable effort has been put into determining the effects of increased UVB on plants, humans, and ecosystems. More work is needed in this area, especially in determining how increased UVB interacts with other stressors such as drought, increased temperatures, and CO2. Detecting mid-latitude UVB trends is difficult because clouds and aerosols cause considerable UV variations from year to year, and have a comparable effect on UVB from variations in stratospheric ozone (e.g., interannual QBO effect). Satellite platforms such as TOMS provide global maps of UVB and UVA irradiances by combining measurements of backscattered UVB and UVA irradiances from space with models. Radiative transfer models predict UV surface irradiances, but are often limited by insufficient knowledge of physical input parameters. This conference will encourage discussion of the multidisciplinary research being undertaken in:

- effects of aerosols (absorbing and non-absorbing) and broken fields of water and ice clouds on UV irradiances
- inferring daily UVB and UVA doses from a single satellite overpass
- factors affecting UV irradiance
- biases that arise when comparing the different footprints from the ground and from space
- advances in instrumentation and calibration
- UVB and UVA trends and climatology.

In addition, presentations are encouraged that quantify the effects of UVB on plants, human health, ecosystems, and materials. Topics include:

- effects of UV direct and diffuse irradiances on the various stages of plant development
- sensitivity of plants to varying ratios of UVB/UV/A PAR
- UVB effects on litter decomposition
- cumulative (multi-year) effects of UVB on trees
- harmful (skin cancer, cataracts, immune system repression) and beneficial (Vitamin D synthesis) effects of UVA and UVB on human health
- effects of UVB on cellular levels of plants and humans
- effects of multiple stressors (UVB, drought, temperature, CO2)
- penetration of UV into oceans where the ecology (e.g. coral reefs) or the food chain can be affected (e.g., phytoplankton).
Conditions of Acceptance

- Authors are expected to secure registration fees and travel and accommodation funding, independent of SPIE, through their sponsoring organizations before submitting abstracts.
- Only original material should be submitted.
- Commercial papers, descriptions of papers with no research/development content, and papers where supporting data or a technical description cannot be given for proprietary reasons will not be accepted for presentation in this symposium.
- Abstracts should contain enough detail to clearly convey the approach and the results of the research.
- Government and company clearance to present and publish should be obtained, and submitting authors are required to warrant to SPIE that submitting authors are authorized to transfer copyright of the paper to SPIE.
- Applicants will be notified of acceptance by mail no later than 2 July 2002. Early notification of acceptance will be placed on the SPIE Web site the week of 24 June 2002 at www.spie.org/info/[sympinitial]/

Paper Review

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