

the increased levels of photochemical pollution, probably acting as a filter to the transfer of solar ultraviolet radiation to the surface (VAROTSOS, 1994).

## 5 References

- BIRD, R.; C. RIORDAN, (1986): Simple Solar Spectral Model for Direct Irradiance on Horizontal and Tilted Planes at the Earth's Surface for Cloudless Atmosphere, *J. Clim. Appl. Meteor.*, 25, 87-97
- JOSE & PITTS D. G. C., (1985): Wavelength dependency of cataracts in albino mice following chronic exposure, *Exp Eye Res*, 41, 545-563
- KOMHYR W.D., (1980): Operations handbook – ozone observations with a Dobson spectrophotometer, WMO Global Ozone Research and Monitoring Project, Rep. 6, WMO, 104-105, 125 p.
- LECKNER B., (1978): The Spectral Distribution of Solar Radiation at the Earth's Surface-Elements of a Model, *Solar Energy*, 20, 143-150
- MADRONICH S., (1992): Implications of recent total atmospheric ozone measurements for biologically active ultraviolet radiation reaching the earth's surface, *Geophysical Research Letters*, 19, 37-40
- PIERCE A. K.; R. G. ALLEN, (1977): The solar spectrum between. 3 and 10  $\mu\text{m}$ , In O.R. White (ed.) *The Solar Output and its Variation*. Colorado Associated University Press, Boulder, CO, 169-192
- SÖDERBERG P.G., (1989): Mass alteration in the lens after exposure to ultraviolet radiation, 300 nm, *Acta Ophthalmol*, 67, 633-646
- STOLARSKI R. G.; P. BLOOMFIELD; R. D. MCPETERS, (1991): Total ozone trends deduced from Nimbus-7 TOMS data, *Geoph. Res. Lett.*, 18, 1015-1018
- VAROTSOS C., (1994): Decrease in biologically active ultraviolet radiation due to tropospheric ozone increase, *Toxicological and Environmental Chemistry*, 45, 173-178
- VAROTSOS C., (1994): Solar ultraviolet radiation and total ozone, as derived from satellite and ground-based instrumentation, *Geophysical Research Letters*, 21, 1787-1790
- VAROTSOS C. A.; A. P. CRACKNELL, (1993): Ozone depletion over Greece as deduced from Nimbus-7 TOMS measurements, *International Journal of Remote Sensing*, 14, 2053-2059
- VAROTSOS C.; K. Y. KONDRATYEV; S. KATSIKIS, (1995): On the relationship between total ozone and solar ultraviolet radiation at St. Petersburg, Russia, *Geophysical Research Letters*, 22, 3481-3484
- VAROTSOS C.; D. ALEXANDRIS; G. CHRONOPOULOS; A. KATSAMBAS; C. ANTONIOU; J. STRATIGOS, (1995): Association of the vertical ozone structure with the solar ultraviolet radiation reaching the ground, *Toxicological and Environmental Chemistry*, 52, 121-127

Received: January 6, 1997  
Accepted: March 31, 1997

## Addendum

### Global Total Ozone Dynamics: Impact on Surface Solar Ultraviolet Radiation Variability and Ecosystems

KIRILL YA. KONDRATYEV, COSTAS A. VAROTSOS

**Part I:** Global Ozone Dynamics and Environmental Safety  
(*ESPR* 3/96, pp. 153-157)

**Part II:** Dynamics of Atmospheric Chemical Composition –  
The Role of Remote Sensing  
(*ESPR* 4/96, pp. 205-209)

In **Part I**, an overview of the ozone issue is given including the following aspects: 1. The impact of tropospheric ozone on climate as a greenhouse gas (GHG) on climate; 2. Solar activity effects on TO and ozone concentration vertical profile in both the troposphere and stratosphere (in cases of solar radiation absorption by the stratosphere, an unexpected problem arises via a coupling between processes of increased absorption due to “bursts” of solar activity and enhanced destruction of ozone molecules due to the same increase

resulting in weakening UV radiation absorption) and 3. Surface ozone concentration variations under conditions of polluted urban atmospheres, which lead to episodes of photochemical smog formation (dangerous for human health).

In **Part II**, possibilities of remote sensing techniques applications have been considered which are suitable tools to obtain more complete information on atmospheric concentrations of various trace gases determining the ozone content.