(포스터 발표)

Comparative studies of 1985 and 1996 on UV-A and UV-B radiation in kongju region.

Ki-Hwan Lee, Chu-Mi Hwang*, Tae-Ho Lee, Byong-Ro Jun, Hyang-Bae Kim[1], Jang-Kyu Park[1]

Dept. of Chemistry, College of Natural Science, Kongju National University, Kongju 314-701, Korea

[1]Dept. of Dermatology, College of Medicine, Chungnam National University, Taejon 301-040, Korea

In order to get the environmental data to describe the interaction of solar ultraviolet (UV) radiation with the Earth-atmospheric system, we were measured the doses of ultraviolet A (UV-A) and ultraviolet B (UV-B) at kongju (latitude 36° 37′ N and longitude 127° 07′ E) from April to September, 1985 and 1996, respectively, on two different weather conditions (clear and relatively clear) and daily changes (10, 112, 14 and 16 O'clock). IL 700A research radiometer instrument provides measurements of UV-A (λ_{max} 355nm) and UV-B (λ_{max} 290nm). This instrument was calibrated by comparisons with a standard detector.

We have distinguished the weather between clear and relatively clear days in order to minimize the effect of masking parameters such as cloudiness. In analyzing the data, we have treated all the data using the Student's t-test.

The results show that the doses of UV-A on clear weather in 1996 were decreased by an average 19% than that of 1985 while the doses of UV-B on clear weather in 1996 were increased by an average 72% than that of 1985. And the doses of UV-A on relative clear weather in 1996 were decreased by an average 2% than that of 1985 while the doses of UV-B on relatively clear weather in 1996 were increased by an average 138% than that of 1985. As compared with monthly, the doses of UV-A in August of 1996 on clear weather was maximally decreased by 26% than that of 1985 and the doses of UV-A on relatively clear weather in April and May of

1985 were decreased as compared with that of 1996 and reversed in June and July and again decreased with smally in August. While the doses of UV-B on clear weather in July of 1996 were increased by 237% than that of 1985 and those on relatively clear in July of 1996 were increased by 279% than that of 1985. Thus it depends highly on the influence of clouds. The daily maximum values of doses of UV-A and UV-B radiation on clear weather were occurred at 12 O'clock and the daily minimum values of those were occurred at 16 O'clock. The relative difference according to the different time depends on the degree of Solar Zenith angle.

We conclude that a significant decrease of UV-A was reflected in the pollutants such as SOx, NOx, Hydrocarbons and photochemical smog while a prominent increase of UV-B radiation was reflected in the depletion of stratospheric ozone (O_3).