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AAS005-05 会場: 201B 時間: 5月27日10:00-10:15

富士山頂における炭素系エアロゾルの通年観測

Year-round measurment of carbonaceous aerosols at the summit of Mt. Fuji, Japan

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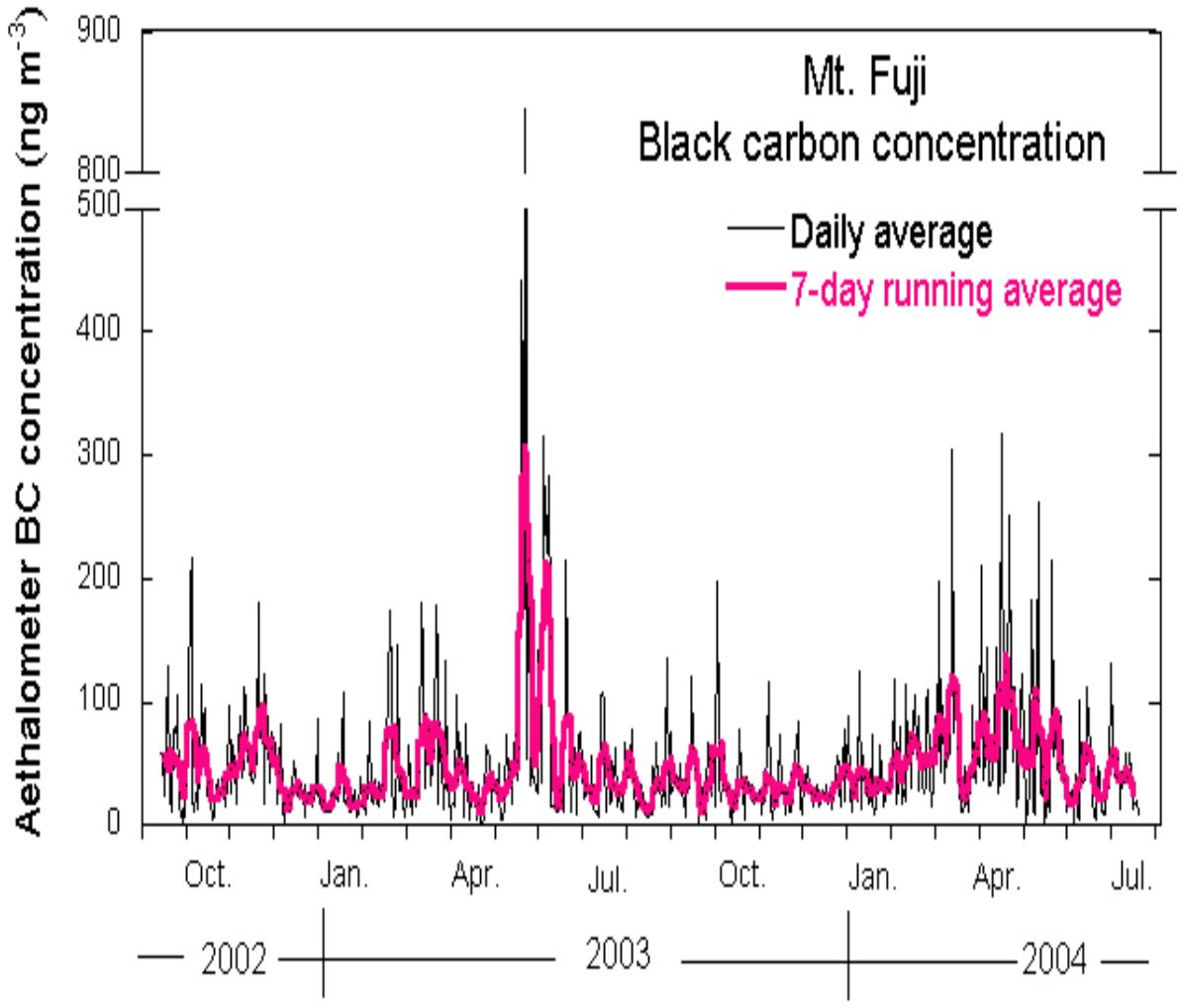

Figure Daily and 7-day running averaged concentration of black carbon at the summit of Mt. Fuji from September 2002 to July 2004.

To understand the background concentration and transport pattern of carbonaceous aerosols at the free tropospheric height on the eastern edge of the Eurasian continent, black carbon (BC) and elemental carbon (EC) were measured at the summit of Mt. Fuji for nearly two years.
Hourly concentration of black carbon was measured with an Aethalometer. Because of the uncertainty associated with the mass absorption efficiency of BC aerosols, we followed the manufacturer's instrumental factor of 16.6 m^2g^{-1}at 880 nm wavelength for the interpretation to mass concentration. Figure shows the daily averaged and 7-day running averaged concentration of BC measured with the Aethalometer. Extremely high concentrations at the end of May 2003 are attributed to the advection of Siberian forest fire (Kaneyasu et al., 2007). To demonstrate the seasonality of BC concentration, monthly averaged BC concentration was calculated from 1 hr data with four different data selection criteria. To exclude the data of air transported from the planetary boundary layer nearby, elimination of daytime data and humid air data are examined. Through these data handling processes, the minimum monthly-averaged BC concentration in the free tropospheric condition appears to be 20 ng m^{-3}during autumn to early winter, whereas that of maximum being 80 ng m^{-3}in spring.
"Elemental carbon" is another concept of soot-like particulate carbon traditionally used in the field of air pollution research. For the Thermal-Optical Reflectance (TOR) analysis of elemental carbon, weekly filter sample (quartz tissue, Advantec QR-100) was collected with a high-volume air sampler (Shibata HVC-1000N). In a period when forest fire activity was eminent (May 1-28, 200 3), time resolution of sampling period was increased from 7 days to 1 day. From May 28 to June 1 5, 2003, the sampling time resolution was further increased from 24 hr to 4 hr. Filter samples were analyzed with Thermal-Optical carbon analyzer (Desert Research Institute) using IMPROVE protocol. The results of TOR-EC analysis will be presented at the symposium with an analysis of radioactive carbon isotope (^{14}C) determinded by accelerator mass spectrometry.

Kaneyasu, N., Y. Igarashi, Y. Sawa, H. Takahashi, H. Takada, H. Kumata, and R. Holler: Chemical and optical properties of 2003 Siberian forest fire smoke observed at the summit of Mt. Fuji, Japan, J. Geophys.Res., 112, D13214, doi:10.1029/2007JD008544 (2007).

キーワード:黒色炭素,元素状炭素,熱-光学分析,炭素同位体
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