

Distributions and seasonal changes of organic aerosols at Cape Hedo, Okinawa: n-alkanes observed during 2005-2007

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http://www.nies.go.jp/asia/kenkyusha/sato_kei.html

To study long-range transport of organic aerosols in East Asia, n-alkanes associated with aerosols were observed at Cape Hedo, Okinawa, Japan during 2005-2007. Aerosols were collected by using a high-volume air sampler to be analyzed by gas chromatography-mass spectrometry.

The total concentration of C15-C34 alkanes was 31 ± 24 ng/m³. The concentrations in winter (38 ng/m³) and spring (32 ng/m³) were higher than that in summer (15 ng/m³). At Cape Hedo, the monsoons from the Continent and the Pacific are predominant in winter and summer, respectively. The results of seasonal distribution shows that the alkanes emitted from the Continent have a larger contribution. The carbon preference index (CPI), calculated from the molecular distribution of alkanes, was 2.1 ± 0.1 at Cape Hedo. This result was close to literature values of Chinese cities (1.1-1.6) than that of Chichi-jima Island in the Pacific (4.4 ± 0.7), showing that the alkanes observed at Cape Hedo have mainly anthropogenic origins. We conclude that long-range transport of anthropogenic n-alkanes emitted from the Chinese Continent play an important role in the alkanes observed in Cape Hedo.