Recent Spatiotemporal Variation of Dust Occurrence and Its Relation to Normalized Difference Vegetation Index (NDVI)

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In order to examine the variational features of Asian dust outbreak in recent years, observed WMO synop data for the period from 1996 to 2007 were employed. We divided Asian dust source regions into four subregions; 1) Taklamakan, 2) Gobi, 3) Inner Mongolia-Manchuria and 4) Loess, and spatiotemporal variation of dust occurrences are examined in each of the four source regions. The results showed that a remarkable increase in dust outbreaks has occurred in the eastern part of the Asian Continent over three recent years (2000-2002) in comparison with the previous four years (1996-1999). This result corresponds well with the annual change of yellow sand events for the same period in Korea. The area of frequently observed dust outbreaks expanded extensively to the east, and dust outbreaks also frequently occurred in regions around North China Plain and Inner Mongolia-Manchuria in 2000-2002. Good correspondence between the NDVI and dust outbreaks was found in spatial distribution patterns. This indicates that NDVI is one of the promising factors in explaining the extension of the dust outbreaks region in the recent three years, and as well the main source region shifted toward Northwest of China after 2002.

Key words : Asian dust, dust outbreak, NDVI

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