

PA39) Insight Sources and Influence of Yellow-sand Events in Spring 2003

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1. Abstract

The significant spring-time phenomenon known as the "Yellow Sand" influences not only regional, but also global climate. It's believed that frequency of yellow-sand events has increased in recent years. To investigate the possible factors inducing these special strong weather phenomenon and its impacts on meteorological elements, intensive sampling will be conducted by ADEMRC/KJIST from March to May 2003. Lagrangian trajectory (forward and backward), cluster analysis, factor analysis and satellite remote sense (SRS) techniques will be employed to inspect the mechanisms of yellow-sand. For exploring the influence of yellow-sand, trace metal elements, water-soluble ions, carbonaceous carbon of PM₁₀, PM_{2.5} particles, visibility, planetary boundary layer (PBL) height, total optical depth (TOD), UV radiation, fine particle radius distribution, aerosol index will be probed. This study will contribute to the understandings of yellow-sand events in spring 2003; and a database will be established for scientific community as well.

Basic meteorological elements will be collected during sampling period from China, Korea and Japan. The figs 1-4 show the information collected during yellow-sand period in spring 2003. Fig 1 is the first strong yellow-sand warning issued by National Meteorological Center (NMC) of China. Fig 2 shows NOAA dust-sand image. Figs 3-4 give wind and visibility distribution in Asia, respectively. Dataset obtained in this campaign will be analyzed in depth.

Acknowledgement

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Reference

- Draxler, R.R., Hees, G.D. (1997) Description of the HYsplit_4 Modeling System. NOAA Technical Memorandum ERL ARL-224.
Current Weather, 2003. Available at <http://www.kma.go.kr/>
He, Z., Kim, Y.J., Ogunjobi, K.O., Hong, C.S., 2003. Characteristics of PM_{2.5} species and long-range transport of air masses at Tae'an background station, South Korea. Atmospheric Environment 37, 219-230.
Weather underground, 2003. Available at <http://www.wunderground.com/>



Fig. 1. The first yellow sand event in China
(20030318, 18:00, Beijing Time)



Fig. 2. NOAA Dust Sand
(20030327, 23:46, Korea Time)

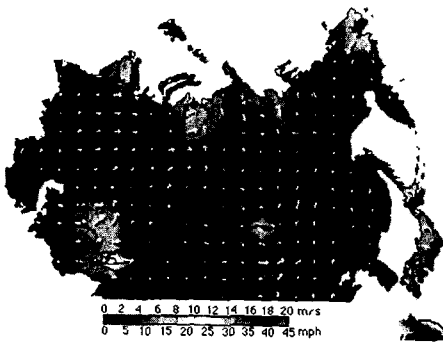


Fig. 3. Wind distribution in Asia
(20030328, 15:00, Korea Time)

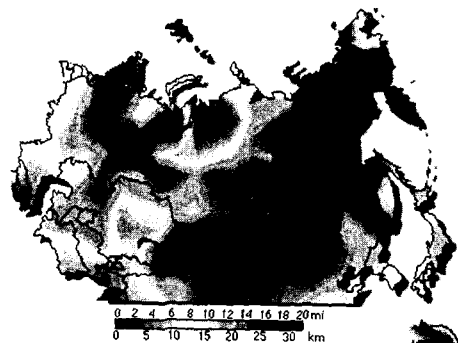


Fig. 4. Visibility distribution in Asia
(20030328, 15:00, Korea Time)