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## Absorbing aerosols and summer monsoon evolution over South Asia: An observational portrayal

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### Documents

**PDF Available Here**

3 MB, PDF-document

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### Links

<http://journals.ametsoc.org/doi/abs/10.1175/2007JCLI2094.1>

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### Abstract

The South Asian haze builds up from December to May, is mostly of anthropogenic origin, and absorbs part of the solar radiation. The influence of

interannual variations of absorbing aerosols over the Indo-Gangetic Plain in May on the Indian summer monsoon is characterized by means of an observational analysis. Insight into how the aerosol impact is generated is also provided.

It is shown that anomalous aerosol loading in late spring leads to remarkable and large-scale variations in the monsoon evolution. Excessive aerosols in May lead to reduced cloud amount and precipitation, increased surface shortwave radiation, and land surface warming. The June ( and July) monsoon anomaly associated with excessive May aerosols is of opposite sign over much of the subcontinent (although with a different pattern) with respect to May. The monsoon strengthens in June ( and July).

The analysis suggests that the significant large-scale aerosol influence on monsoon circulation and hydroclimate is mediated by the heating of the land surface, pursuant to reduced cloudiness and precipitation in May. The finding of the significant role of the land surface in the realization of the aerosol impact is somewhat novel.

## Research areas

INDIAN-OCEAN EXPERIMENT, BLACK CARBON AEROSOLS, INTERANNUAL VARIABILITY, GLOBAL PRECIPITATION, NORTHEAST MONSOON, ATLANTIC-OCEAN, SATELLITE DATA, OPTICAL DEPTH, CLIMATE, TOMS

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