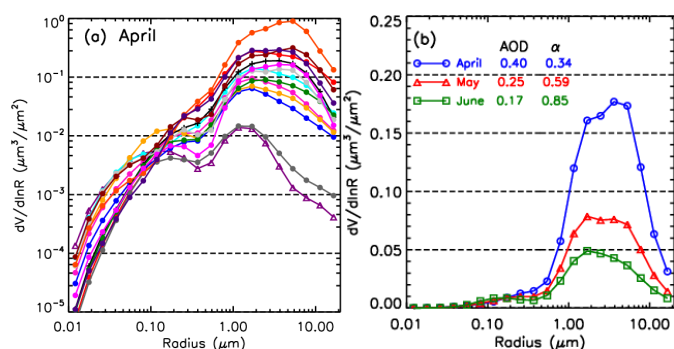


Bi, J., J. Shi, Y. Xie, Y. Liu, T. Takamura, and P. Khatri, 2014: Dust aerosol characteristics and shortwave radiative impact at a Gobi Desert of northwest China during the spring of 2012. *J. Meteor. Soc. Japan*, **92A**, 33-56.

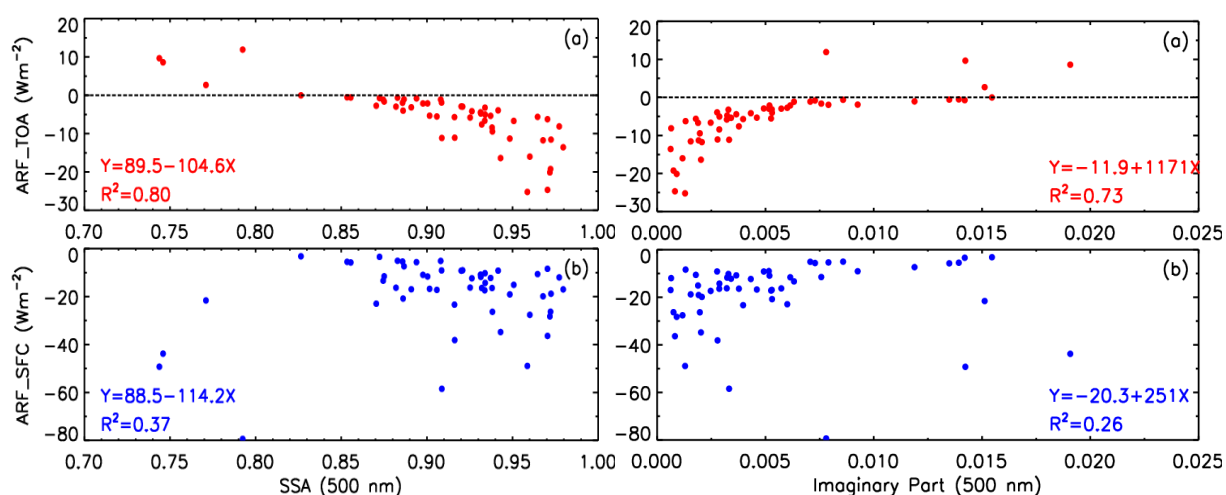
<http://dx.doi.org/10.2151/jmsj.2014-A03>



←

Figure 1. (a) Daily mean aerosol volume size distributions in April and (b) monthly average volume size distribution during 2012 at Dunhuang.

↓ Figure 2. Daily mean of aerosol shortwave direct radiative forcing (ARF) at the top of atmosphere (TOA) and surface versus SSA<sub>500</sub> and Imaginary part at 500 nm.



- High aerosol loading and predominantly coarse particulates were observed in Dunhuang during the spring of 2012 ascribed to the influence of prevalent dust storm (Fig. 1).
- The single scattering albedo at 500 nm (SSA<sub>500</sub>) varied from 0.91 to 0.97 on dusty days and increased with the increase of aerosol optical depth, indicating that the dust aerosols sourced from northwest China were not strongly absorbing.
- The daily mean aerosol shortwave direct radiative forcing (ARF) were largely negative at the surface (-79.4 to -3.2 Wm<sup>-2</sup>) and moderately positive in the atmosphere (2.2 to 25.1 Wm<sup>-2</sup>), which represents a strong cooling at the surface and moderate warming in the atmosphere. The ARF at TOA was positive value when SSA<sub>500</sub> is less than 0.85 or the imaginary part at 500 nm was larger than 0.015 (Fig. 2).