

# Supplementary Information

## Increased absorption by giant aerosol particles over the Gangetic-Himalayan region

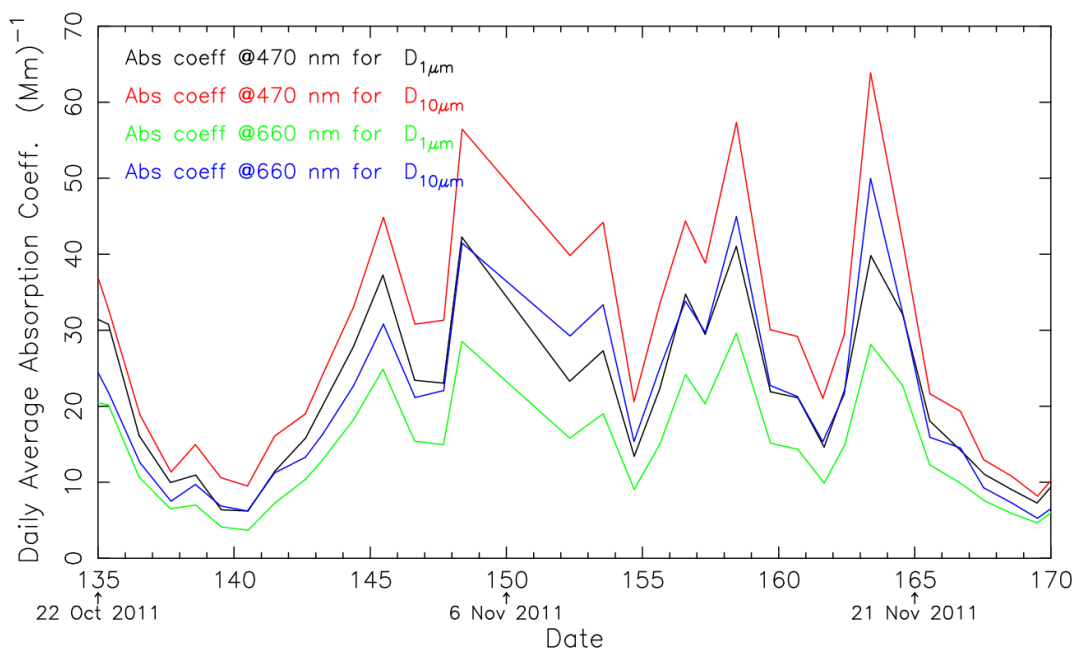
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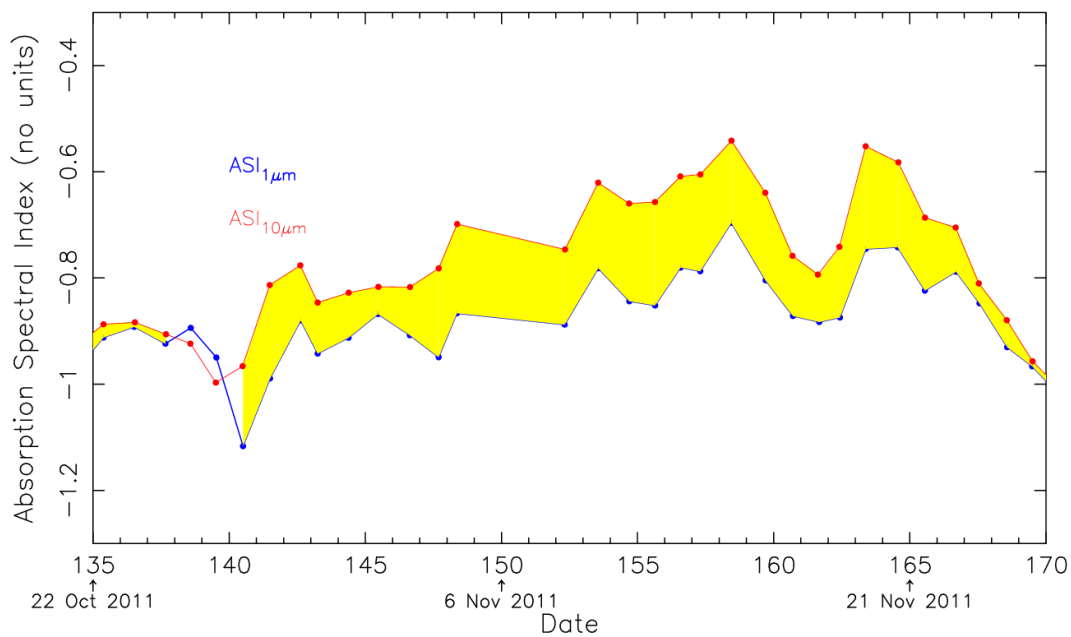
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### Note A

For clarity, the absorption coefficient and spectral index values are plotted in Fig. S1 for days 135-170. In this period, on the whole, the absorption rose to a higher value than previously. Moreover, the observed large deviation in absorption suggests the presence of large-micron aerosol, leading to increased absorption for  $D_{1\mu\text{m}}$  particles and near-constant absorption for  $D_{10\mu\text{m}}$  particles. These results suggest that significant amounts of super-micron particles were loaded continuously into the ambient aerosol over a period of about 15-20 days, starting at about day 140, and that this caused a steady increase in absorption for both  $D_{1\mu\text{m}}$  and  $D_{10\mu\text{m}}$  particles. The level of absorption attains a peak at about day 158.



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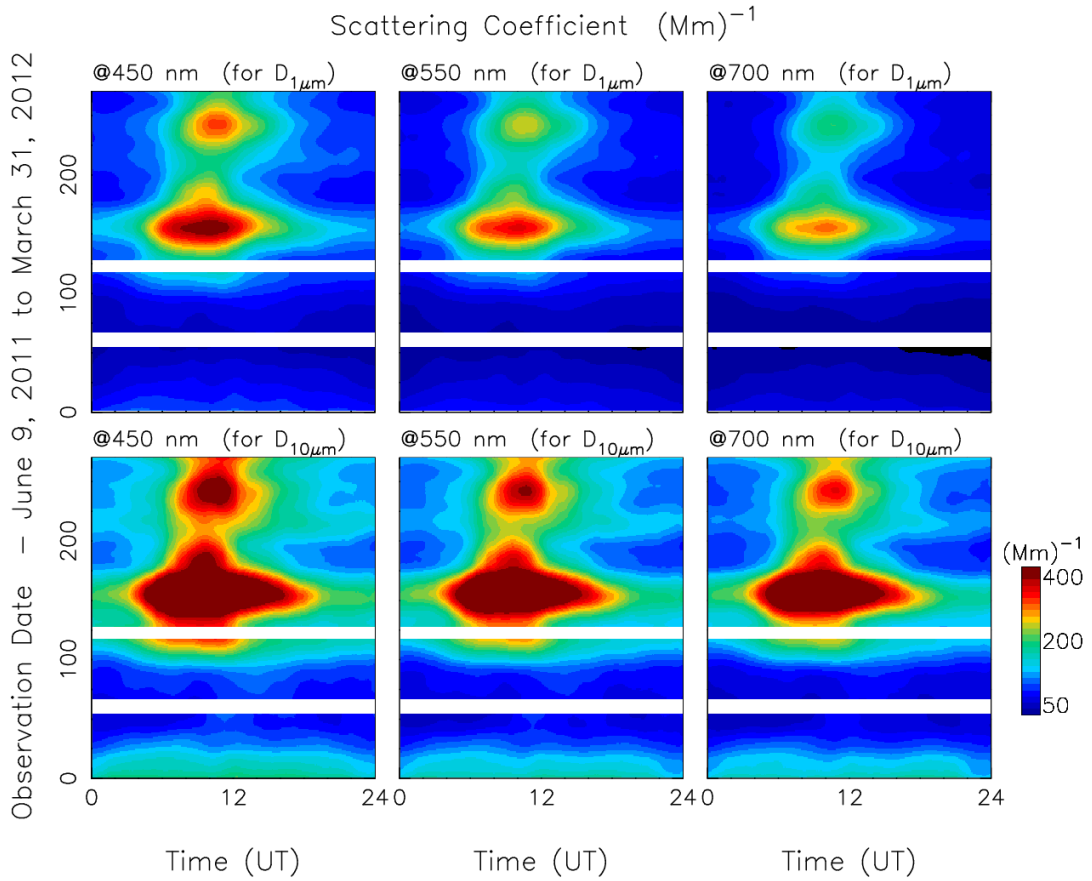
17 **Supplementary Figure S1 – Daily averaged absorption coefficient (a) and ASI (b) for days 135-170.**

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19 **Note B**

20 Daily variations of aerosol scattering coefficients in three wavelength bands — 450, 558 and 700 nm —  
21 for  $D_{1\mu\text{m}}$  and  $D_{10\mu\text{m}}$  particles from June 9, 2011, to March 31, 2012. Data are missing in the white areas.

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25 **Supplementary Figure S2 – Temporal and spectral variation of aerosol scattering between June 9,**  
26 **2011 to March 31, 2012.**

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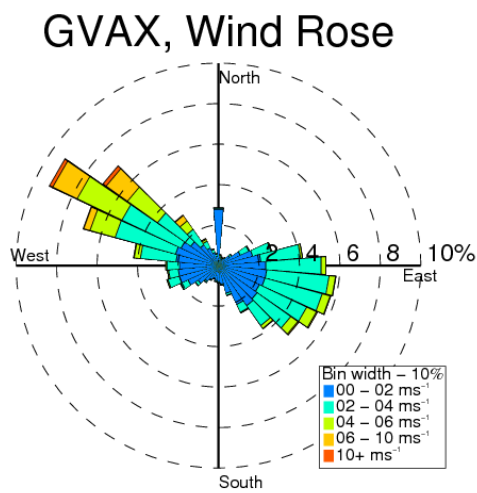
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34 **Note C**

35 The surface wind measurements from GVAX indicate that the wind direction in Nainital was commonly

36 from the northwest and southeast.



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38 **Supplementary Figure S3: Surface wind measurements from GVAX.**

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