

## *Supporting information*

# **Long-range transport of Asian dust to the Arctic: identification of transport pathways, evolution of aerosol optical properties, and impact assessment on surface albedo changes**

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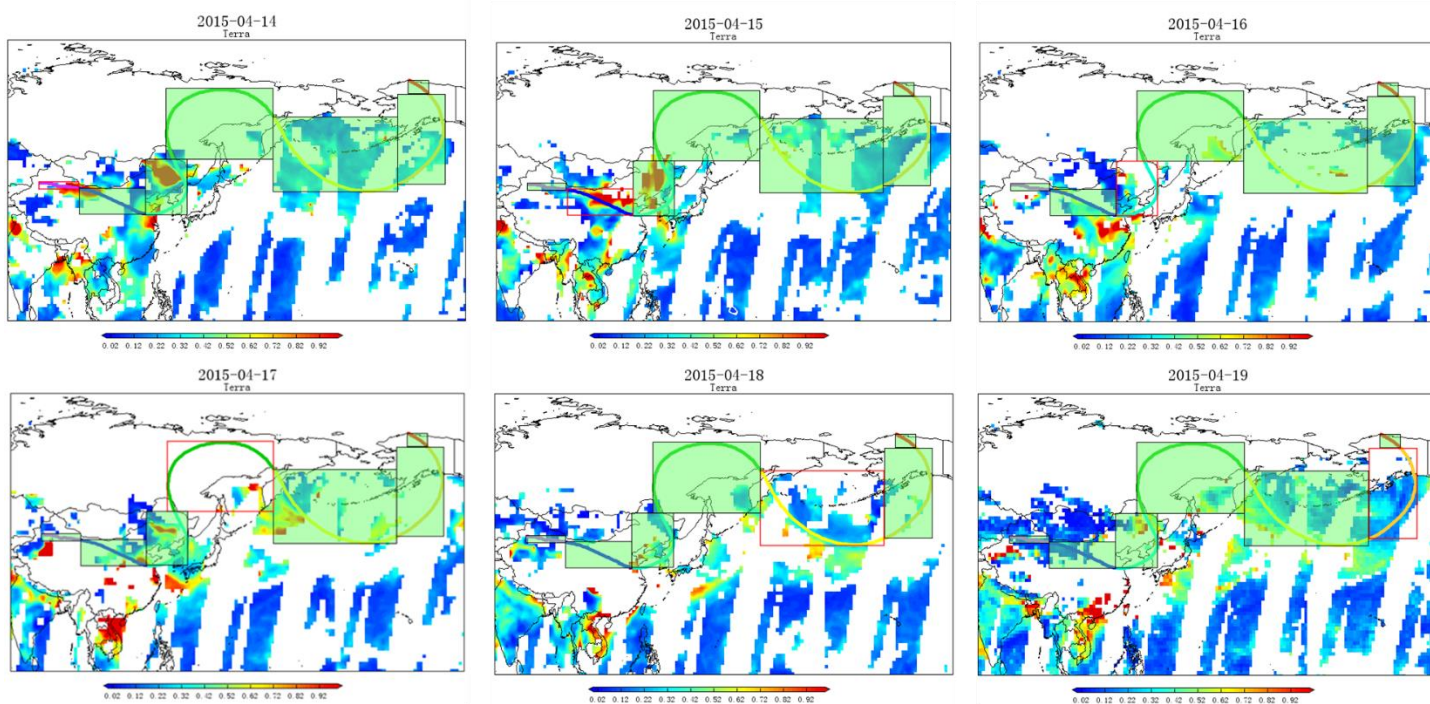
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**(a) CASE I**



**(b) CASE II**

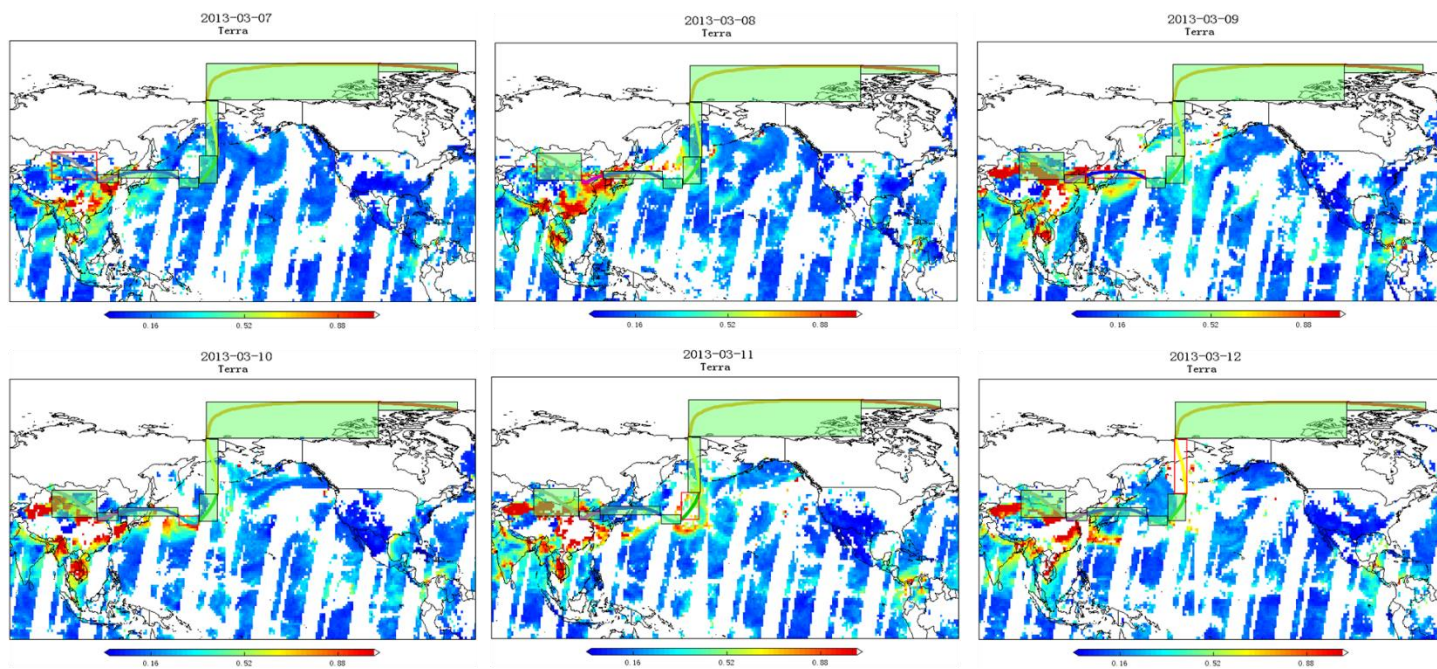


Figure S1. The daily MODIS AOD during the long-range transport period in (a) CASE I and (b) CASE II. The red rectangle covers the area that the daily backward trajectory travelled through.

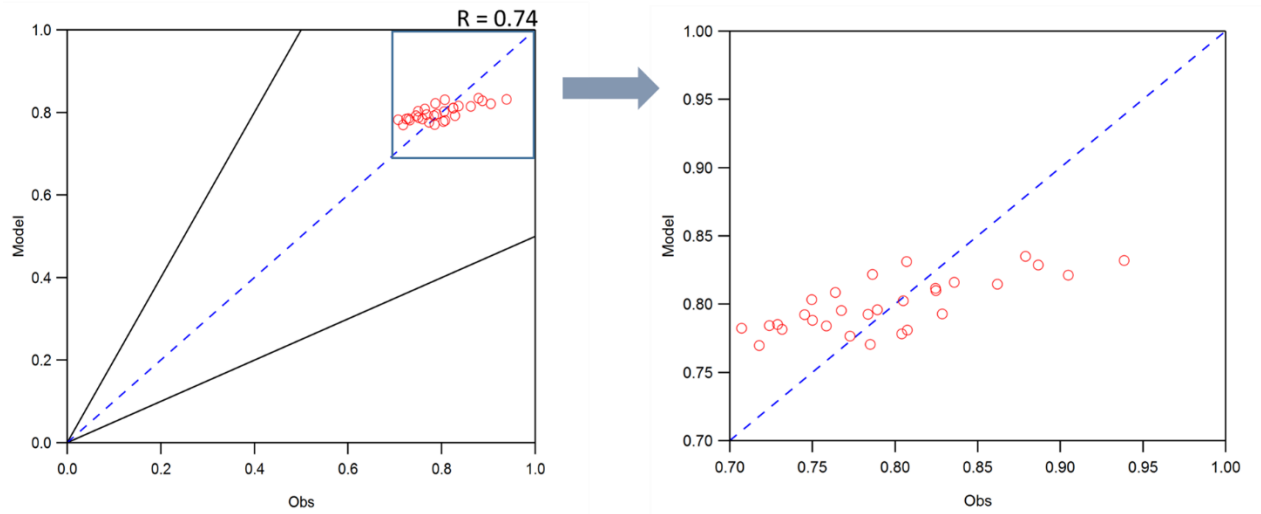


Figure S2. Simulated values of surface albedo and the observations at an ARM (Atmospheric Radiation Measurement) site located at Barrow during 14 – 19, April, 2015.

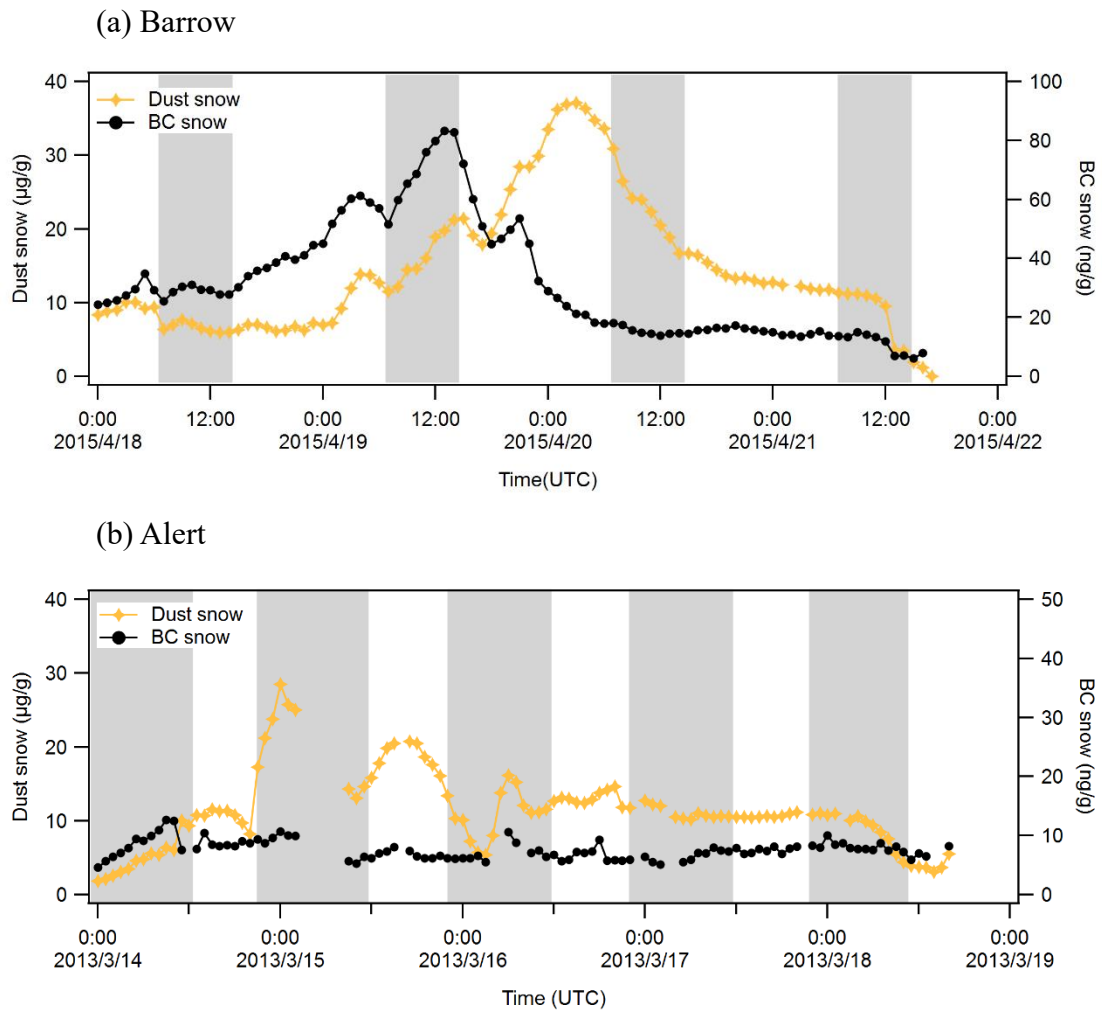


Figure S3. Time-series of the estimated dust and black carbon concentrations in snow at (a) Barrow and (b) Alert. The gray areas denote the local nighttime.