Title:	Micro-Pulse Lidar observations of elevated aerosol layers over the Himalayan region
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Abstract:	The present study investigates the characteristics of elevated aerosol layer (EAL) using high spatio-temporal Boundary Layer Lidar observations over Manora Peak (29.4° N; 79.2° E; 1958m above mean sea level), Nainital located in the Himalayan region. We have chosen four EAL cases on June 17, 2006 (C1); December 12, 2007 (C2); February 06 (C3) and May 07, 2008 (C4) over the observational site. The occurrence of EAL is generally found at an altitude ~ 2–4 km above ground level over the site. It is found that the westerly/northwesterly winds with magnitudes of about 6–9 ms−1 are conducive for the generation and strengthening of EAL. A 7-days airmass backward trajectory analysis reveals that the lower (higher) altitude source originates from the west coast (northwest) regions. Furthermore, the atmospheric radiative forcing estimated using Santa Barbara DISORT (discrete ordinates radiative transfer) Atmospheric Radiative Transfer (SBDART) model reveals that the atmosphere heats up with 1.35 K day−1 and 1.32 K day−1 due to the presence of EAL on C1 and C4, respectively. Our results confirm that the occurrence of EALs causes atmospheric warming, that can impact on the regional radiation budget over the Himalayan region.
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