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Impact of the different lidar technique/data processing in aerosol and cloud direct radiative effect calculations

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Since ten years lidar instruments, both from ground and from space, are more and more employed to retrieve aerosol and cloud atmospheric profiles of their optical properties. Recently, multi-yearly lidar retrieved extinction profiles are used as input in the atmospheric radiative transfer models to compute the aerosol and cloud direct radiative effect. Those results are of particular importance as they will partially help to reduce the uncertainty in temperature raise predictions of the climate change models. In this study we quantify for the first time how the different lidar technique (e. g. Raman vs. elastic) and data processing influence the result on direct radiative effect calculations. This is important in view of the new (GALION) or existing ground-based networks (e. g. EARLINET and MPLNET) and space missions (e. g. CALIPSO; EarthCARE) involving lidar instruments.