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Aerosol optical depth and clouds glaciation as measured from satellites

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Aerosols are known to alter substantially cloud microphysical properties. One of the less quantified effects of aerosols on clouds is the glaciation onset temperature. The onset of glaciation and the depth of the mixed-phased region are important for several processes such as: precipitation, radiative forcing and lightning. Different aerosol type (anthropogenic, biomass burning and desert dust) can cause opposite effect on cloud glaciation temperature. We used aerosol optical depth (AOD) and cloud microphysical properties (effective radius and cloud top temperature) derived from the SEVIRI instrument on board Meteosat Second Generation (MSG) over Europe in order to asses the effect of anthropogenic aerosol over urban areas and biomass burning aerosol from major wildfires over Greece on cloud glaciation and precipitation formation processes.