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## Diurnal cycle in anthropogenic aerosol impacts on clouds

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The cooling effect of anthropogenic aerosols on Earth's climate offsets part of the greenhouse gas warming effect. To reduce the uncertainty in the aerosol cooling effect on climate, aerosol impact on clouds needs to be better understood. In this research, we extend satellite observations of polluted cloud tracks from Toll et al. (2019, *Nature*, <https://doi.org/10.1038/s41586-019-1423-9>) with analysis of temporal evolution of anthropogenic cloud perturbations using satellite data from SEVIRI instrument onboard geostationary Meteosat satellite. Study area is concentrated to European part of Russia as we have found strong contrast between properties of polluted and unpolluted clouds in this area. We analyze the properties of polluted clouds at pollution hot spots and compare these to the properties of the nearby unpolluted clouds. We compare the temporal evolution of the properties of the polluted and unpolluted clouds to study the importance of diurnal cycle in aerosol-cloud interactions.