**Submission: T-2020-254-1**

Title Unraveling driving forces explaining significant reduction in satellite-inferred Arctic surface albedo since the 1980s

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Poster title (brief) **Recent Arctic surface albedo reduction**

Abstract - text box
The Arctic has warmed significantly since the early 1980s and much of this warming can be attributed to the surface albedo feedback. In this study, satellite observations reveal a 1.25~1.51% per decade absolute reduction in the Arctic mean surface albedo in spring and summer during 1982-2014. Results from a global model and reanalysis data are used to unravel the causes of this albedo reduction. We find that reductions of terrestrial snow cover, snow cover fraction over sea ice, and sea ice extent appear to contribute equally to the Arctic albedo decline. We show that the decrease in snow cover fraction is primarily driven by the increase in surface air temperature, followed by declining snowfall. Although the total precipitation has increased as the Arctic warms, Arctic snowfall is reduced substantially in all analyzed data sets. Light-absorbing soot in snow has been decreasing in past decades over the Arctic, indicating that soot heating has not been the driver of changes in the Arctic snow cover, ice cover, and surface albedo since the 1980s.
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