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**Interaction between snow and the atmosphere in high latitudes and altitudes:  
Interplay of physical and chemical processes**

Snow is an important element of the cryosphere impacting physical and chemical processes at the Earth surface in high altitudes as well as in high latitudes. Due to such processes snow can play a crucial role for example in regional or local climate due to its albedo, in atmospheric chemistry due to its role as photochemical reactor, or in biogeochemistry as a temporal reservoir of impurities. Nevertheless, the role of chemical processes in snow is regularly overlooked and related processes are often not well understood. Some examples of such processes will be discussed by presenting results from studies in the Himalayas and over the Arctic Ocean. Processes will concern for example the snow albedo and how it is impacted by different impurities or the role of snow for the destruction of tropospheric ozone in the Arctic. I will finally discuss potential reasons which have caused the existing knowledge gaps concerning chemical snow processes and what methods and tools may have the potential to contribute closing such gaps.