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Measurements of light absorbing particles impacts and ice nucleation activity in the Goldbergkees basin

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Black carbon (BC) is recognized as the second most important anthropogenic warming species, only after carbon dioxide (CO_2), since its radiative forcing has been estimated to +0.4 W m-2. Light absorbing aerosols, such as BC, have a significant impact on snow reflectivity decline, which contributes to the accelerated melting seen in recent years in the cryosphere. Glaciers are known to be one of the best climate indicators because of their sensitivity to regional climate change. The Glodbergkees basin glacier have shown persistent recession following the European Alps trend, which as a whole has a cumulative mass-balance of -716mma-1. To this end we collected surface snow samples at Sonnblick Observatory and applied the Snow, Ice, and Aerosol Radiative (SNICAR) model. Finally, results from BC mass concentration and ice nucleation activity will be discussed, using the Single Particle Soot Photometer (SP2) and the Vienna Optical Droplet Crystallization Analyzer (VODCA), respectively.