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Supplement of

On the influence of erect shrubs on the irradiance profile in snow

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S1. Additional photos taken from field sites located on a plateau in the Tasiapik Valley, Umiujaq, Northern Québec (56°33’N, 76°32’E)

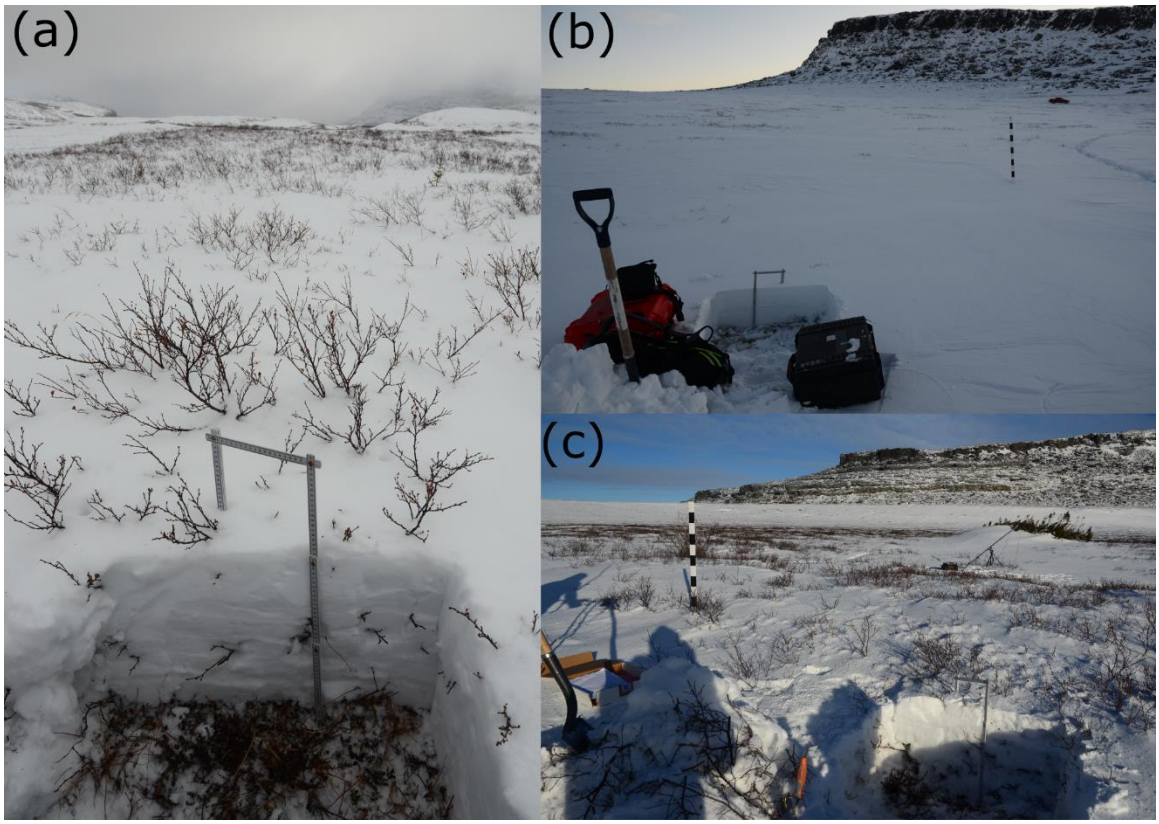

Figure S1: Overview of the landscape around field sites in the northern (a, b) and southern area of the plateau (c). (a) Photograph taken on 03 Nov. 2015 at a site with 60 cm shrub height and 43 cm snow height. (b) Photograph taken on 08 Nov. 2015 on a pure snow site with 18 cm snow height. (c) Photograph taken on 23 Nov. at a site with 60 cm shrub and 50 cm snow height.

S2. Results of k_e and SnowMCML simulations run with mineral dust

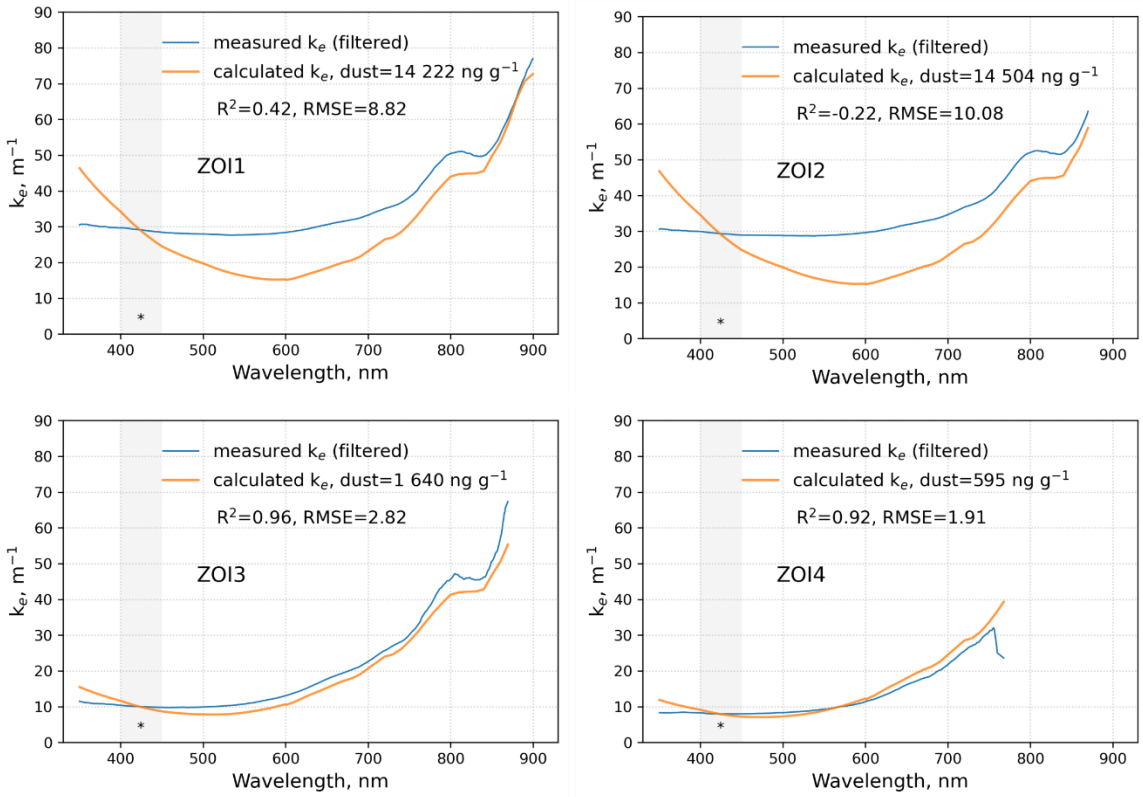

Figure S2.1: Measured and calculated k_e for zones of interest (ZOIs) in shrub-free snowpacks. Calculated k_e used mineral dust as impurity type. Gray areas highlight the spectral range where calculated k_e was fitted to measured k_e.

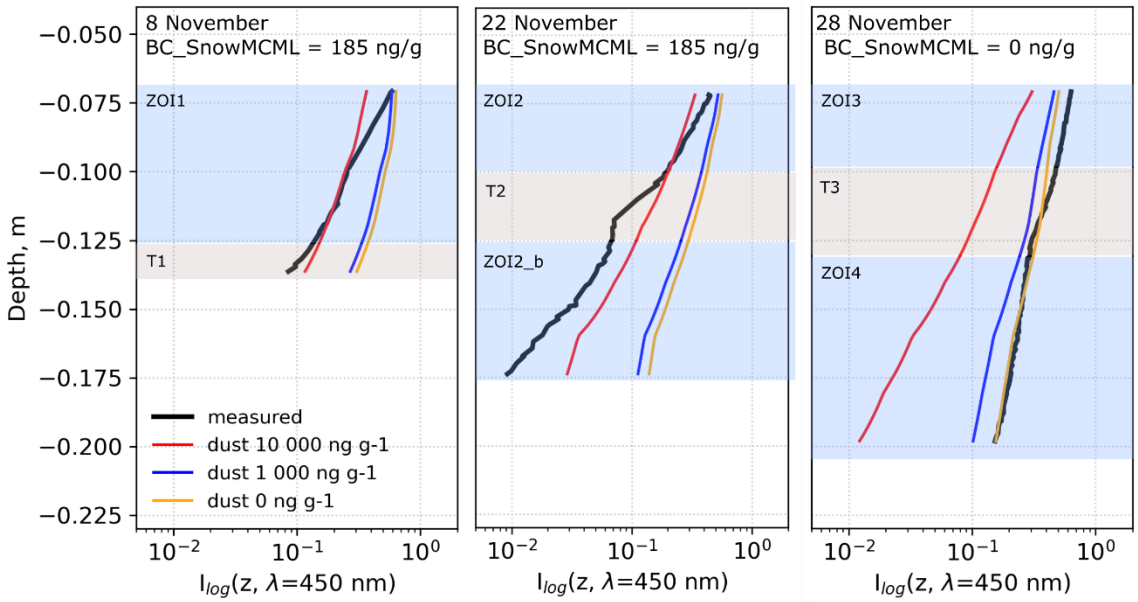

Figure S2.2: Measured log-irradiance profiles (black curves) and SnowMCML simulations (red, blue and orange curves) for snowpacks without shrubs at 450 nm. Simulated profiles were computed assuming mineral dust (dust) as impurity type. Log-irradiance profiles were measured on (a) 8 Nov., (b) 22 Nov. and (c) 28 Nov. Gray shaded areas highlight transition zones, where simulated and measured profiles were not expected to fit. Blue shaded areas highlight non-transition zones where simulated and measured profiles should fit if the appropriate impurity type and concentration is given in the simulation.