P2-15 Direct measurements of light absorbing particles impacts and ice nucleation activity in Svítnafelljökull

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Surface snow measurements of light absorbing particles were carried out in the spring at Svínafelljökull, an outlet glacier of the Vatnajökull Ice Cap (VIC) in southeast Iceland. The average annual rate of mass change of VIC (-1.34± 0.12 m w.e. a−1), during the period of 2002-2010, is one of the most negative mass balance values recorded in the 21 st century globally. The Svínafelljökull has retreated 800m and lost 30% of its 1890 volume. Light-absorbing particles, such as black carbon (BC), dust and brown carbon (BrC), alter the optical properties and melt of snow. This impact on snow reflectivity decline can be a major contributor to the regional accelerated melting seen in recent years. Currently, direct measurements of light absorbing aerosols (LAA), specifically BC, are very scarce in high latitudes. Three surface sites were selected for collecting snow surface samples and mobile albedo measurements. Our focus is to investigate how much of the observed change in snowmelt in southeast Iceland can be attributed to the deposition of LAA, such as BC, using the Snow, Ice, and Aerosol Radiative (SNICAR) model. Ice nucleation activity and rBC mass concentration results, using the Vienna Optical Droplet Crystallization Analyzer (VODCA) and the Single Particle Soot Photometer (SP2) respectively, will be discussed.