



Project acronym: Rad-ICE

Project title: The radioactive memory of high Arctic glaciers

Project leader: Giovanni Baccolo, University Milano-Bicocca, Italy

Discipline: Earth Sciences & Environment: Global change & Climate observation

Station(s): Villum Research Station (VRS) (Greenland/Denmark)

Cryoconite is the dark sediment forming on the surface of glaciers. It is known to accumulate pollution, in particular artificial radioactivity. The research project is focused on the radioecological characterization of the Flade Isblink Ice cap and of the surrounding pro-glacial area. During the expedition we retrieved 50 cryoconite samples (about 60 grams each) from the surface of Flade Isblink. We could access the glacier and collect many samples in 4 days in the field. The initial idea was to collect cryoconite following two transects, one along the ice stream feeding the northern marine-terminating tongue, where ice horizontal motion is high (about 400 m per year), a second one toward a more stable sector of the glacier, where ice is almost immobile. For logistic reasons we could only collect samples from the first identified part. Unexpectedly, cryoconite was extremely abundant on the glacier surface, and collecting samples was extremely easy. We only used spoons. In the next months we will conduct analyses to measure the radioactivity of samples and infer about its source. To gather information about the distribution of radionuclides in the environment surrounding the glacier, we had planned to collect samples from the pro-glacial areas, in the area between the terminus and Villum Research Station. We could riverine sediments from two different rivers, one directly fed by the glacier, one fed by snow meltwater. It will be extremely interesting to compare results from these two different environments and understand how the presence of the ice cap and the formation of cryoconite influence the distribution of radioactivity on a larger scale. Even if not originally included in the project, we will try to conduct other analyses, to investigate the distribution of other pollutant classes: namely heavy metals and organics. This would make the characterization of cryoconite collected on the Flade Isblink one of the most complete available, shedding light on the distribution of pollutants in the

high Arctic.