



Project acronym: MARSH

Project title: Moss Drying and rewetting in globally warmer Arctic Regions: Consequences for moss physiology and stability in Svalbard's habitats

Project leader: Alla Orekhova, Masaryk University, Czech Republic

Discipline: Life Sciences & Biotech: Other - Life Sciences & Biotech

Station(s): Polish Polar Station, Hornsund (Svalbard/Poland)

The proposed MARSH project addresses stress physiology of Arctic mosses. With regard to my previous studies focused on the effect of moss dehydration on the primary photochemical processes of photosynthesis (Orekhova et al., 2020 submitted), *Sanionia uncinata* and *Racomitrium lanuginosum* will be experimental species. These two species will be taken from the Hornsund region (Polish polar station), Svalbard and studied under controlled hydration / dehydration conditions after transport to Brno to EEL laboratories. By modern biophysical methods (induced chlorophyll fluorescence, for details, see below), the activity of the photosynthetic apparatus in relation to the current water potential (Ψ) and the relative water content (RWC) in the thalli of experimental moss species will be studied. For a better understanding of the mechanisms of moss resistance to cycles desiccation/rehydration, an integrated approach will be used. The studies will be combined different approaches including special chlorophyll fluorescence techniques.

The proposed project MARSH is linked to several recently running projects at the Masaryk University, Brno. In these projects devoted to different aspects of polar biology, I am a member of the team of the principal investigator/co-investigator: CzechPolar2 (2016-2019), CARP (2020), ECOPOLARIS (2017-2021). The proposed MARSH project will add some aspects of functional biology of mosses from polar regions and broaden the scope of the above-listed projects. The MARSH will undoubtedly contribute to my further professional growth and development, as well as strengthening of international contacts with leading research groups in the field of ecophysiology of mosses from polar regions.