Project acronym: T-MOSAiC

Project title: Standardized monitoring of permafrost thaw: a user-friendly, multi-parameter protocol

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

Station(s): Western Arctic Research Centre (WARC) (Canada)

The permafrost thaw action group of the Terrestrial Multidisciplinary distributed Observatories for the Study of the Arctic Connections (T-MOSAiC) project developed a protocol, for use by non-specialist scientists and technicians, citizen scientists and indigenous groups, to collect standardized metadata and data on permafrost thaw (Boike et al. 2021). One of the key goals of this Action Group is to produce a highly accessible, publicly available dataset to study permafrost thaw. This dataset will also be useful for parameterising Earth System Models used to study climate change. The data collection will follow the T-MOSAiC permafrost sampling protocol that we have developed to enable a wide range of users to make high-quality, standardized and accessible measurements. Our protocols address the need for consistent collection and integration of data from across around the permafrost region to: i) better monitor and understand permafrost thaw,; ii) establish a baseline against which future change can be measured,; and iii) support the integration of field measurements within pan-Arctic geospatial datasets developed through remote sensing analyses or modelling. The accompanying app guides the user through the observation process,; ensures that the observations are consistent and well documented; and transfers the observations to an accessible database. The measurement of the following parameters is requested: thaw depth, snow depth, vegetation height, water table, and soil characteristics. The measurements are simple, and detailed descriptions (protocol, videos, app) will guide the operators through the process. No specialized equipment is needed, other than a frost probe (metal rod) and a spade, both of which are available at the partnering INTERACT stations. The measurement of each parameter is directly aligned with a corresponding objective.