



**Project acronym:** N2O-FLUX

**Project title:** Nitrous oxide exchange in a permafrost dominated region

**Project leader:** Ivan Mammarella, University of Helsinki, Finland

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

**Station(s):** Abisko Scientific Research Station (Sweden)

Research on nitrous oxide (N<sub>2</sub>O) dynamics is still getting much less attention than research on carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>) in arctic region, even though evidence is mounting that N<sub>2</sub>O emissions can be high from permafrost-affected soils. The project N<sub>2</sub>O-FLUX aims at significantly advancing this field by establishing the first Arctic research site where N<sub>2</sub>O fluxes are measured continuously at high frequency using eddy-covariance technique. The measurements will provide also the first continuous data on N<sub>2</sub>O over the critical shoulder (spring, fall) and winter seasons from an Arctic site, which are known to be important in the annual N<sub>2</sub>O fluxes in northern soils. The site chosen (Abisko-Stordalen mire in Sweden) is strategically excellent hosting permafrost peatlands, the largest N<sub>2</sub>O emitters known from the Arctic, and it is an ICOS site, which bears the potential for long-term N<sub>2</sub>O observations over a thawing permafrost landscape. The project utilizes efficiently existing infrastructure, know-how and datasets. Nowadays it is important to deliver new scientific understanding and societal values with limited extra costs and infrastructure needs. The new dataset and results will be used to advance process-based models at regional and global scales and will contribute to clarify the role of northern permafrost regions in the global N cycle in present and future.