



**Project acronym:** RESPIRA

**Project title:** Effect of rising temperatures on respiration and carbon balance of peatland mosses

**Project leader:** Alicia V Perera Castro, Universidad de La Laguna, Spain

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

**Station(s):** Hyytiälä Forest Research Station (SMEAR II) (Finland)

How both photosynthesis and respiration respond to temperature and water availability is crucial to predict the carbon balance of Sphagnum species in different scenarios of climate change. Water availability determines not only CO<sub>2</sub> diffusion and photosynthetic capacity, but also the temperatures experienced by a moss under sunshine due to the high specific heat capacity of water. This project has the aim of quantifying the response of respiration and photosynthesis of Sphagnum species to changes in temperature and water content. This will be achieved by measurements of gas exchange at different temperatures and levels of hydration in samples of Sphagnum inhabiting the peatlands of Hyytiälä Forest Research Station (SMEAR II). Measurements of moss surface temperature under different hydric condition will be done for two weeks for covering different sun exposure. Both gas exchange device (LI-6800) and thermocouples are the unique equipment required for this project, provided from the University of La Laguna, Canary Islands. This knowledge will provide a better framework for predicting the response of peatlands to future climatic conditions, including the critical temperature for continued Sphagnum growth and thus the maintenance of this unique ecosystem.