



Project acronym: BREATHESAR

Project title: Bog-Breathing in Ryam: Ecosystem controls on Annual changes in the Peat Surface monitored by InSAR

Project leader: Christopher Marshall, University of Nottingham, UK

Discipline: Earth Sciences & Environment: Ecosystems & Biodiversity

Station(s): Mukhrino Field Station - Nymto Park (Russia)

The BREATHESAR project aims to demonstrate the use of InSAR as a means to characterise peatland type and its response to climatic change within boreal peatland. If confirmed this would represent a major advance in our ability to remotely monitor large areas of inaccessible peatland at a scale frequency not possible using ground based techniques. The technique has already been validated successfully in Northern Scotland but requires ground validation to be applied outside blanket peatland settings, particularly boreal peatlands that represent much of the Boreal peatland carbon store. The project will prepare InSAR maps to map seasonal peat surface motion (bog breathing) prior to the field visits, these will be used alongside local knowledge of the site managers to identify sites matching the resolution of the InSAR pixel (100x100m). Within these five smaller (5x5m) representative focus sites will be selected for field characterisation. This characterisation will include vegetation cover, pool cover, above ground biomass estimates and environmental variables such as water table, soil moisture, temperature, pH, Von Post Humification. Existing environmental data will also be incorporated. The final stage will be to produce a number of larger maps using the validation from the Mukhrino sites to examine the large scale relationship between the different mire types present and an estimate of the amount of above ground biomass. Increasing the accuracy of such measures is useful in auditing the size and state of the boreal peatland carbon stock and examining the effect of land management activities.