Challenges of indication of peat formation conditions in extreme climate

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Peatlands restoration activities and/or implementation of land use impact mitigation demand the assessment of the effectiveness of the undertaken measures. The key feature of living peatland/mire is peat formation which is recognised by an excess of the ecosystem production over the respiratory processes or physical displacement of not decomposed organic material out of the ecosystem. The numeric data on the positive NEE is often used as criteria for peat formation. In the regions with harsh climatic conditions and presence of permafrost the direct measurements of NEE by GHG fluxes demand high temporal and spatial resolutions. The conditions and ecosystem response are permanently changing depending on the current weather and permafrost status. The integrative indicators based on the vegetation and soil characteristics could be a solution. We had undertaken the attempt to develop the set of easy measurable indicators for peat formation conditions in the peatland ecosystem restoration sites in Russian Arctic (Nenets Autonomous Okrug) and Mongolia (Khashat region). The statistical analysis had been undertaken for the data on plant species composition (including vascular plants, lichens and mosses), surface temperature and soil moisture gradients, water table and permafrost level, soil texture and carbon content. The data were compared with the direct measurements of NEE. The first outcomes of the project as proposal for peat formation indication scheme of the study will be presented.