

Title:

Norwegian Monitoring Program for Palsa Peatlands

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Abstract: (Your abstract must use **Normal style** and must fit in this box. Your abstract should be no longer than 300 words. The box will 'expand' over 2 pages as you add text/diagrams into it.)

Ongoing and anticipated warming trend at high latitudes has increased the need for monitoring programs designed to track response of fragile ecosystems and edaphic and biotic structures they depend on. Palsa peatlands belong to permafrost landforms that incorporate both fragile edaphic structures and fragile biotic communities. The spatiotemporal distribution of palsas depends on local and regional climatic factors and their change at decadal and century scales. In Norway palsas are common features in peatlands mainly in two regions, one in the south restricted to the Dovre region, and one broader northern in Troms and Finnmark. The development of palsa peatlands during the latter half of the 20th century has been dominated by decline. The documentation has however been slightly biased towards "late successional" palsa features with a somewhat obscured holistic picture. A Norwegian monitoring program designed to capture the constant flux of changes caused by permafrost alternations (including palsa features, thermokarst pond development, pond colonization, vegetation change) was started in 2004 to aid profound conclusions for change rate and management considerations. Six selected palsa areas represent different climatic regions confined by variation in major environmental gradients from northern to southern Norway. Changes are analyzed by air photos and ground-based line analyses of 28 variables (categories: land cover type; bottom-, field- and shrub layers; thaw depth; peat crack frequency; height above mire level). Most monitored peatlands have experienced a reduction in palsa frequency and cover during last decades, but sparse formation of new palsas occurs both in the north and south. The most pronounced decreasing trend in palsa cover, and increase in sedge covered areas, is shown in northern coastal regions and in the wettest parts of individual peatlands. Drier regions or peatland parts show only minor changes. The main climatic background is a pronounced change in the precipitation regime.

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