Geophysical Research Abstracts
Vol. 12, EGU2010-14372, 2010
EGU General Assembly 2010

Inventory and monitoring options of peatlands at regional scale

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Determination of the spatial extent of peatlands and monitoring their status is important for the evaluation of soil carbon stocks and greenhouse gas fluxes. At European Level there is a need to provide accurate and updated estimate of the distribution of peatlands. Comparison of national data with EU wide land cover mapping shows that there is limited compatibility between the different data sets. In this study a methodology of standardized mapping and monitoring of peatlands at regional level (national to supra-national bio-climatic regions), is presented. This methodology, based on the enhanced integration of existing thematic maps through GIS analysis in combination with remote sensing, has been applied to Estonia, as study case. Existing national maps and field inventory of Estonian peatlands have been used for a GIS based evaluation of peatlands relevant information contained in Corine Land Cover. Remote sensing has been employed in 2 ways: a multispectral approach using Landsat TM and a phenology oriented time series analysis of SPOT VEGETATION NDVI both implemented for the entire territory of Estonia. The remote sensing results are evaluated against the existing high resolution Estonian map of peatlands. In the case study it has been shown that peatlands are both spectrally and phenologically clearly distinct from other land cover types and therefore have a good potential to allow semi-automated mapping over large areas with relatively high accuracy, which lays the basis for efficient monitoring and mapping of peatlands change.