

GC31B-0466 Peatland classification of West Siberia based on Landsat imagery[Back to:](#) [Session: Environmental, Socioeconomic, ...](#)

Wednesday, December 17, 2014 08:00 AM - 12:20 PM

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Increasing interest in peatlands for prediction of environmental changes requires an understanding of its geographical distribution. West Siberia Plain is the biggest peatland area in Eurasia and is situated in the high latitudes experiencing enhanced rate of climate change. West Siberian taiga mires are important globally, accounting for about 12.5% of the global wetland area. A number of peatland maps of the West Siberia was developed in 1970s, but their accuracy is limited. Here we report the effort in mapping West Siberian peatlands using 30 m resolution Landsat imagery. As a first step, peatland classification scheme oriented on environmental parameter upscaling was developed. The overall workflow involves data pre-processing, training data collection, image classification on a scene-by-scene basis, regrouping of the derived classes into final peatland types and accuracy assessment. To avoid misclassification peatlands were distinguished from other landscapes using threshold method: for each scene, Green-Red Vegetation Indices was used for peatland masking and 5th channel was used for masking water bodies. Peatland image masks were made in Quantum GIS, filtered in MATLAB and then classified in Multispec (Purdue Research Foundation) using maximum likelihood algorithm of supervised classification method. Training sample selection was mostly based on spectral signatures due to limited ancillary and high-resolution image data. As an additional source of information, we applied our field knowledge resulting from more than 10 years of fieldwork in West Siberia summarized in an extensive dataset of botanical relevés, field photos, pH and electrical conductivity data from 40 test sites. After the classification procedure, discriminated spectral classes were generalized into 12 peatland types. Overall accuracy assessment was based on 439 randomly assigned test sites showing final map accuracy was 80%. Total peatland area was estimated at 73.0 Mha. Various ridge-hollow and ridge-hollow-pool bog complexes prevail here occupying 34.5 Mha. They are followed by lakes (11.1 Mha), fens (10.7 Mha), pine-dwarf-shrub sphagnum bogs (9.3 Mha) and palsa complexes (7.4 Mha).

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