Forest carbon tracking and ecosystem vulnerability assessment in western Siberia

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Implementation the ideas of Forest Carbon Monitoring System (FCMS) project in WS

FCMS project: the synergetic use of in-situ measurements and Earth Observation data for quantitative estimates of CO2 emissions induced by deforestation and forest degradation.

- The forests of Russia comprise almost 1/4 of the worlds forest cover.

- 50% of the world resources of valuable coniferous wood is a proper of Russian government.

Location of the test site: southern boreal region, western Siberia



Results of manual classification (vector format, MapInfo software)



3 223 - sedge brown moss fer

3 224 - aapa mir

122 - mixed birch coniferous valley fores

211 - birch sedge grass forest



In-situ observations 2001-2004



Inundation in upland forest (an evidence of wetland expansion?)



Pine forest recovering from fire



Degradation of natural forest (expansion of wetlands).



Human-induced changes (the area of oil pumping)

LANDSAT-based land-cover classification and change detection (observed in 17-yrs period)

General trend of land-cover change (expansion of wetlands): Upland forest \longrightarrow Wet forest \longrightarrow Forested peatland \longrightarrow Treeless peatland

Degradation of peat layers is also found in some areas.

Major question: Is it actual impact of climate change, or we observe the natural variability?



LANDSAT TM, 1989.08.01

LANDSAT TM, 2006.09.09

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Forest C-tracking and vulnerability assessment for Siberian ecosystems in FCMS project

