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Hydrological and ecological indicators of natural regimes of the North-Western Siberian Wetlands (Nadym, Pur and Taz rivers)

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The Western Siberian Plain is the most bogged region of the world – in some parts up to 70-80% of its territory is covered by bogs. For the last 10 thousand years wetland areas of Western Siberia have been extending their territories, acting as a terrestrial sink of atmospheric carbon on our planet. Two contrasting processes are actually occurring in the Southern and Northern parts of the region. In the south, there is a progressive swamping which leads to forest death. In the north, there is a thermokarst activity or thawing permafrost in palsas of sub-arctic zone of Western Siberia. In this work we analyse the hydrological and ecological indicators which characterize natural conditions of the North-Western Siberian Wetlands (watershed of Pur, Taz and Nadym rivers). These three rivers have total watershed of 243 000 km2 and discharge of 76 km3/year. They originate on the northern slopes of Sibirskiye uvaly ridge and flow to the Obb́ay and then to the Kara sea in the Arctic. Flat relief and the presence of permafrost lead to development of various forms of water objects and wetlands, such as river systems, flooded zones, lakes and bogs.

We present the results of systematization and classification of landscape patterns, as well as study of variability of hydrological processes in the study region at different temporal (from multi-year to seasonal) and spatial (from local to regional) scales through a multidisciplinary approach based on in situ and remote sensing data. Various sources of satellite Earth observations, such as radar altimetry (TOPEX/Poseidon, ENVISAT), radiometry (SMMR, SSM/I), optical data (Landsat) and space gravimetry data (GRACE) are used in combination with the in situ observations and the recent field studies done in the August 2008.

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