



Using low resolution remote sensing data to detect changes in wetlands of Volga-Akhtuba floodplain (Russia) after flow regulation

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The Volga river basin (1 360 000 km²) is characterized by a high concentration of multipurpose industries. Over 40% of the industrial production in Russia is carried out in its territory. Power supply in the area is provided by hydrocarbon fuel, nuclear energy and hydropower, with a total capacity of over 58 000 MW. The consumption of power and other natural resources in the Volga river basin are at high level. This has a significant effect on ecological systems, including the water systems.

Main objective is to develop methods based on satellite imagery coupled with field observations to assess the impact of interannual flood regime on floodplain vegetation. This study is based on a combination of spatial data from satellite images and field observations of morphological features and vegetation in a number of cross-sections over the floodplain. Additionally, as flooding is a key driver for the development of floodplain morphology and vegetation, hydrologic data (water level time series) are analysed. Vegetation evolution from a bare surface up to soft-wood forest is a slow process, therefore two time scales are under consideration :

- 30 year evolution of the vegetation, using Landsat imagery (1974-2002)
- 7 year (2000-2006) detailed analysis of the relation between hydrology and vegetation, using daily hydrologic data and 16 days MODIS images.

Vegetation classification was made on the base of Landsat images with 25 classes of legend, what include 18 general types of plant communities. Dependence of inundated

zone square and discharge through Volgograd dam was calculated. Different types of water were studied: permanent water in the main channel, permanent water in the lakes of central floodplain, temporary water bodies in the inundated zone.