Geophysical Research Abstracts
Vol. 18, EGU2016-13811, 2016
EGU General Assembly 2016

Hydroecological monitoring in the headwaters of the Volga River

Viacheslav V. Kuzovlev (1,2), Yuri N. Zhenikov (2), Kyrill Y. Zhenikov (2), Sergey I. Shaporenko (3), Stefan Haun (4), Leopold Füreder (5), Martin Schletterer (5,6)

(1) Laboratory of Environmental Monitoring of the Tver Center for Hydrometeorology and Environmental Monitoring (ROSHYDROMET), ul. Efimova 6, Tver, Russia (v_kuzovlev@mail.ru), (2) Chair of Nature Management, Tver State Technical University, nab. Afanasiya Nikitina 22, 170026 Tver, Russia (v_kuzovlev@mail.ru), (3) Institute of Geography, Russian Academy of Sciences, Staromonetniy pereulok 29, 119017 Moscow, Russia (ser-shaporenko@yandex.ru), (4) Department of Hydraulic Engineering and Water Resources Management, University of Stuttgart, 70569 Stuttgart, Germany (Stefan.Haun@iws.uni-stuttgart.de), (5) Institute of Ecology, University of Innsbruck, Technikerstraße 25, 6020 Innsbruck, Austria (martin@schletterer.co.at), (6) TIWAG–Tiroler Wasserkraft AG, Eduard-Wallnöfer-Platz 2, 6020 Innsbruck, Austria (martin.schletterer@tiwag.at)

Europe's largest river, the Volga (3551 km), has experienced multiple stressors from human activities (i.e. the Volga Basin comprises about 40 % of the Russian population, 45 % of the country's industry and more than 50 % of its agriculture). During the research expedition "Upper Volga 2005" an assessment of hydrological, limnochemical and biological parameters was carried out by scientists from the Russian Federation and from Austria. The extensive sampling in 2005 showed that the free-flowing section of the Volga River, located upstream of Tver, represents conditions which are either reference or least disturbed - thus it can be considered as a refugial system for freshwater biota of the European lowlands. Subsequently three stretches in the headwaters of the Volga River (Rzhev, Staritsa, Tver) were selected for the monitoring programme "REFCOND_VOLGA", which is in operation since 2006. These locations correspond also with the sampling sites of ROSHYDROMET, i.e. at Tver physic-chemical samples are taken monthly and at Rzhev samples are taken in the main hydrological periods.
The laboratory ship "ROSHYDROMET 11" conducted monthly cruises between Tver and Kalyazin (Ivankovskoye and Uglichskoye reservoirs on Volga) in the headwaters during the navigation period (May – October). This also includes measurements with ADCP, which further allow the analyses of the spatial distribution of the suspended solids within cross sections. In addition sediment fluxes were derived by using the acoustic backscatter signal strength from the acoustic current Doppler profiler (ADCP). We exemplify at the monitoring sites the spatial distribution of different sediments, i.e. choriotope types, according the longitudinal profile of the river. We show that it is highly influenced by morphodynamics in the different river sections and this corresponds with the zoobenthos fauna accordingly.
This interdisciplinary approach, including sediment conditions, limnochemistry, hydrology and hydrobiology, leads to a hydro-ecological reference for European lowland rivers.