



## **Cases Studies of Irrigated Soil Degradation and Progradation**

Anatoly Zeyliger (1), German Kust (2), Sergey Rozov (2), and Galina Stoma (2)

(1) Moscow State University for Environmental Engineering, Centre for Geo and HydroInformatics, Moscow, Russian Federation (azeilguer@mail.ru, +7499 9764907), (2) Moscow State University named after Lomonosov, Russia

Waterlogging and salination, along with interaction with other degradation processes, have not only caused the collapse of irrigation-based societies in the past, but are indeed threatening the viability of irrigation at present. The problem is global in scope. Decimation of natural ecosystems, deterioration of soil productivity depletion and pollution of water resources, and conflicts over dwindling supplies have become international problems closely linked with extension of irrigation development to large scale and associated impact to soil fertility and surrounding environment.

Practical experience and scientific research done in the frame of FP6 DESIRE project provided an affirmative answer to the question – can irrigated agriculture be sustained for long time.

In present contribution two case studies will be discussed and analysed in scope to compare different irrigation practises used for about 35 years and their impact to soil fertility. Investigated areas of both case studies are situated in the same Saratov Region of Russia at the left bank of middle part of Volga River with distance between about 100 km. First case study was developed during 2009-2010 by field trials at irrigated and surrounded areas of agricultural farms situated at Privolghskaya Irrigation System (Marksovsky District). Second case study was developed during summer of 2011 by field trial at experimental farm of research institute called VolgNIIGiM (Enghelsky District). During fields trail soil maps of both case studies were developed and compared with soil maps of the same areas done at 1970th before irrigation projects at both areas were started.

Results of soil map comparison are showing that in the territory of first case study considerable soil degradation is taken place, but in the territory of the second case study a substantial soil progradation is taken place. Thus is supported by the time series of ground water monitoring at both irrigated areas. Obtained results will be analysed and discussed from theoretical and practical points of view. Special attention will be paid to practical conclusions for farmers dealing with irrigation of crop growth how to monitor soil fertility status and preserve soil degradation.