



Meteorological and urban impacts on groundwater level in Rostov region

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Rostov region is situated in the southeastern part of Russia. Due to geological, climatic and human influence there is not much groundwater for water supply in it. The resource of groundwater is vitally important to the economic and social well being of the region. The main source of recharge of them is precipitation and groundwater from another aquifers. That is why it is important to found out what is the quantity of the precipitation income to the recharge. It has been long known that climate variability, particularly seasonal variability, affects water levels in aquifers. A climate change impact on groundwater and urban impact were identified as critical issues for research study. Research on climate change impacts on groundwater resources is being conducted in 3 districts of Rostov region with different level of human influence. They are situated in north, central and southern part of Rostov region. It was noticed climate change for 50 years. Winter became shorter and less frozen. Annual temperature became higher. There is a positive trend in temperature and negative in precipitation. At the same time it was noticed the growth of groundwater level. Analyze of correlation between groundwater levels, meteorological elements change and urban impact was held. Veshenskaya is situated in the northern part of Rostov region. It is not highly industrial region. Analyze of the climate influence on groundwater level showed high influence of humidity and evaporation on groundwater level. The influence of meteorological elements on groundwater level varies from 86 % (seasonal) up to 65% (annual). There is no urban influence on groundwater level. Morozovsk is situated in the central part of Rostov region. There was noticed that quality of precipitation become more. There is high correlation between water level and humidity and evaporation. Influence of meteorological elements varies from 70% (seasonal) up to 45% (annual). It is an industrial center, but urban impact is not high due to geological conditions. Rostov-on-Don is a highly developed industrial city with population over 1 mln

people. There was noticed that although precipitation becomes higher there is no correlation with groundwater level. Moreover there is no correlation between increasing of precipitation and temperature and groundwater level rise. Influence of meteorological elements is between 35 % (seasonal) and 27 % (annual). The urban impact is about 65 % - 73 %. Main human-induced effects on groundwater resources are leakages from water supplying system, barrage and infiltration of technique, industrial and wastewaters are principal sources of groundwater recharge in Rostov.