

Influence of groundwater on surface water pollution with nitrates

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Groundwater is a significant component in the balance of rivers and lakes and has influence on surface water quality. It especially depends on nitrates and is presented in the poster on the base of long-term (65 years) observations of nitrate concentrations in Warta River in Poland.

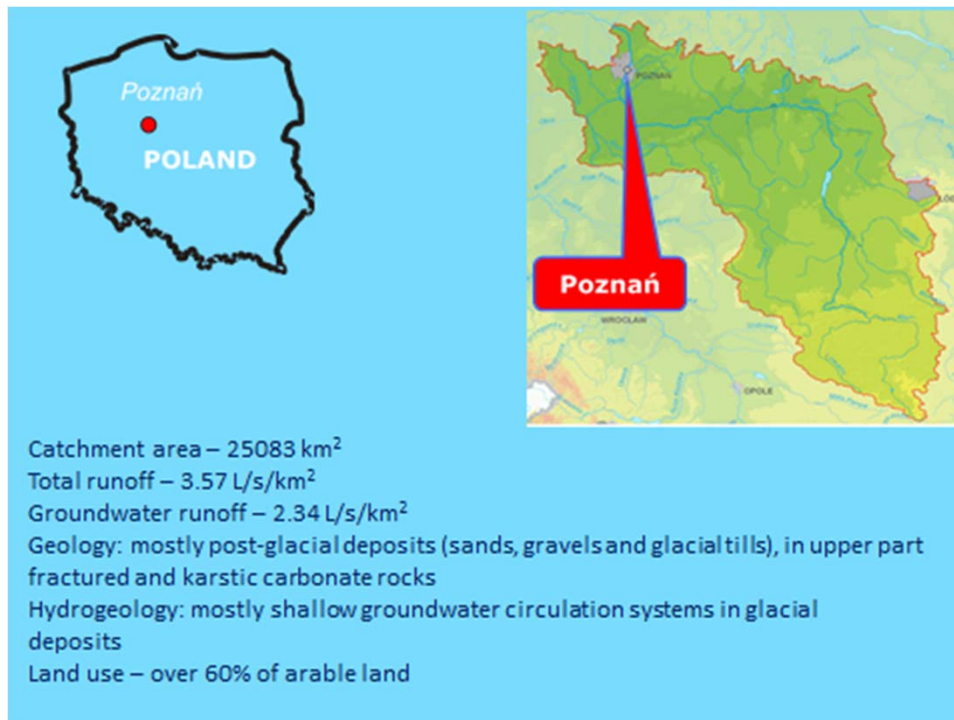


Fig.1 Characteristic of the upper and middle part of the Warta River catchment

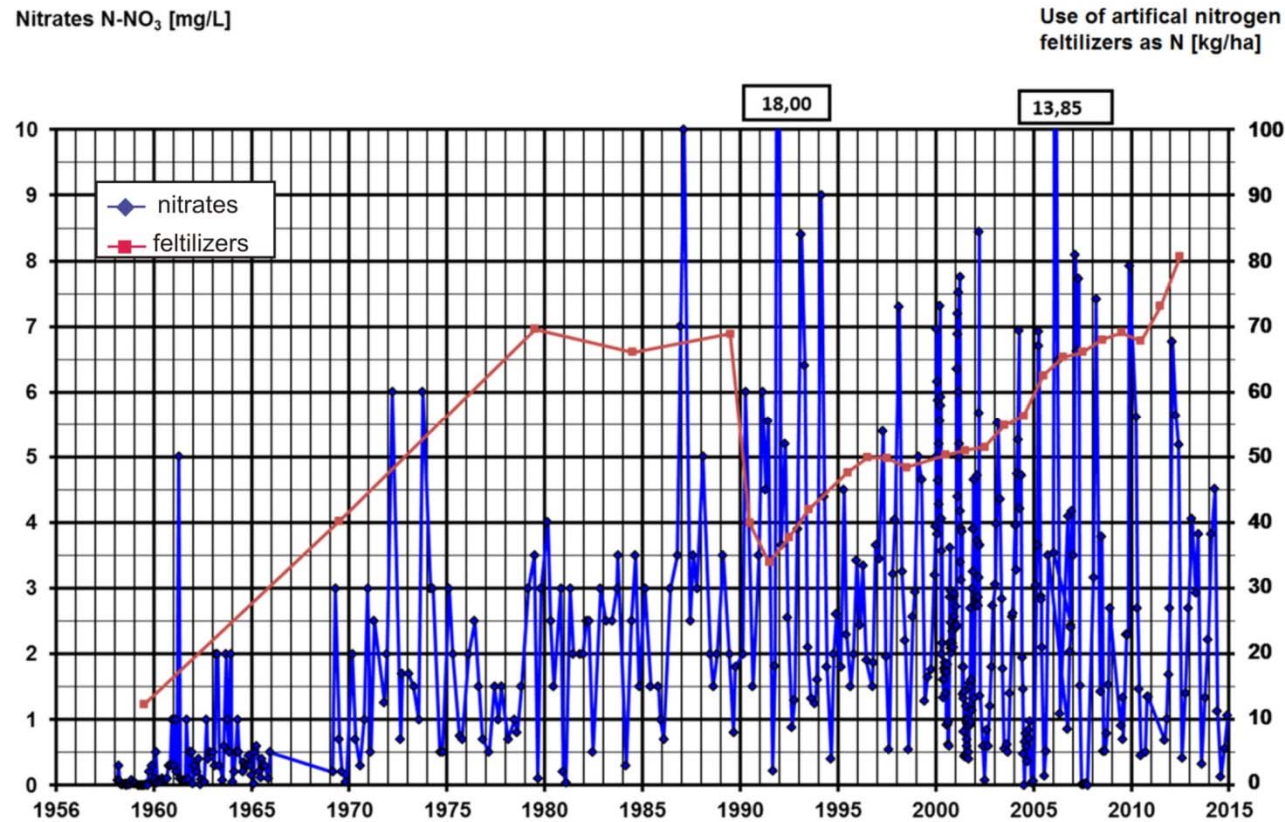


Fig.2 Changes of nitrates concentration in the Warta River water and the use of artificial nitrogen fertilizers as N [kg/ha] in Poland

The diagram of nitrate concentration in the Warta River water at the Poznań gauging section presented in fig. 2 shows a clear increasing trend. This trend mainly concerning maximum concentrations is clearly visible regardless of large seasonal and periodical variations. Data in fig. 2 shows also that nitrate concentrations are clearly correlated with the use of artificial nitrogen fertilizers in Poland. It proves that the main source of nitrates pollution is agriculture.

Conclusions

The presented materials prove a great usefulness of the nitrate content analyses in surface water for the evaluation of the contamination and state trends of changes in groundwater pollution with nitrates. Such evaluation should be an important supplementation of traditional monitoring of groundwater quality. It is also of great educational value in terms of showing interrelations between ground and surface water, as well as the necessity to take crucial action to protect groundwater, which is also essential for the protection of surface water.