



Assessing the impact of climate change on water quality and quantity in the Elbe catchment using an open-data driven approach

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Due to global climate change, the past decade has been the warmest for Germany since the beginning of climate records. Not only air temperature but also precipitation patterns are changing and therefore influencing the hydrologic cycle. This will certainly influence the chemical status of ground- and surface water bodies as mobilization, dilution and chemical reactions of contaminants are altered. However, it is uncertain if those alterations will impact water quality for better or worse and how they occur spatially. Since water management in Europe is handled at the regional scale, we suggest that an investigation is needed at the same scale to capture and quantify the different responses of the chemical status of water bodies to climate change and extreme weather conditions. In this study, we use open-access data to (1) quantify changes in temperature, precipitation, streamflow and groundwater levels for the past 40 - 60 years and (2) assess their impacts on nutrient concentrations in surface- and groundwater bodies. To disentangle management from climate effects we pay special attention to extreme weather conditions in the past decade. Referring to the Water Framework Directive, we chose the river basin district Elbe as our area of interest. Preliminary results indicate that especially the nitrate concentrations in surface water bodies of the Elbe catchment were positively affected in the last two years, while no significant impact on nitrate levels in shallow groundwater bodies was witnessed. However, many wells showed the first significant increase in water table depth in both years since 1985, raising the question of how fast groundwater-surface water interactions will change in the next years.