

Are We Getting Dry? A Satellite-based Analysis of Water Conditions in the Vistula River

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The present study takes advantage of Google Earth Engine and the JRC Yearly Water Classification History dataset to depict temporal changes in permanent water conditions (i.e., river channel always covered by water) along the reach of the Vistula River from Dęblin to Włocławek. The JRC dataset contains maps of the location and temporal distribution of surface water from 1984 to 2021, as well as statistics on the extent and change of those water surfaces. Results show that, along the investigated reach, a decrease in permanent water conditions is visible starting from the late 1990s, which is somehow not fully correlated to the slight decrease in flow discharge observed at the Dęblin gauging station. Indeed, the observed significant decrease of the surface occupied by permanent water is likely due also to other natural and anthropogenic drivers, such as global warming and increased population density. Despite being only a preliminary analysis of permanent water conditions in a selected reach of the Vistula River, the present analysis shows the potential of remote sensing for depicting changes in the availability of flowing water across multiple spatiotemporal scales.