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An analysis of selected elements of the environment in the outflow model compared with measurements of agricultural basin in central Poland.

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Due to the supra-regional importance of areas of intensive agriculture, it is important to identify factors, that are affecting the size of the drainage basin. One of the methods that will allow to determine relations is the spatial valorization of environmental elements, that affect the circulation of water. Such analysis was performed for highly agricultural region in the central part of Poland (52˚30'N, 18˚50'E).

The study area was Zglowiaczka basin, which covers an area of 1.495,6 km2.With the help of GIS methods and tools, there have been designated from thematic maps these factors of natural environment elements, that influence the size of the outflow. Basing on topographic maps at 1:25000 scale, river network, river length has been calculated, hydrographic objects such as lakes, swamps, marshes have been inventoried and the land use has been partly assessed. For the evaluation of the terrain there has been used a DTM in the form of a raster, that was created on the base of analyzing photogrametric materials. Its accuracy is similar to topographic maps at 1:10000 scale, with 1m vertical resolution. It was mainly used to determine the slopes, and watersheds deletion. It was also required to determine the length of some contours of the catchment's - the material needed for the expected value of runoff in the model. To determine the land use - mainly for agricultural use of crop type, Corine Land Cover 2000 was used. To determine the lithology and as a result - the infiltration, there were used both geological and soil maps. These elements formed the background, on which the spatial variation of river streamflow was marked and compared. Zglowiaczka basin was divided into several sub-basins. The analysis was performed for the entire basin in general and using the same methods for sub-basins as well. Each time model data was compared with the actual values gained from the field work (flow measurements and from recorders.

The poster presents the comparison of model assumptions, analyzed in a GIS environment with actual values. The result is an initial indication of the role of individual environmental elements, which may affect the circulation of water in this highly agricultural basin.

It may set an example of accuracy of choosing hydrological model depending on land type and land use.

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