



Weather conditions in development of climatic water balance in Dunajec and Prosna catchments in Poland

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Within the framework of COST Action 734 (Impacts of Climate Change and Variability on European Agriculture: CLIVAGRI) the project "Correlation between Climatic Water Balance and Estimate of Plant Development Stage Based on Satellite Technologies" is realized by Polish members, as a case study. Because of the existing policy of the Polish Ministry of Science and Higher Education, to support scientific projects of COST Action members, this project has been awarded ministerial funds (619/N-COST/09/2010/0).

The main purpose of this project is to evaluate just how accurately Climatic Water Balance reflects the actual plant development stage. The study is based on the 1998-2009 dataset. Climatic Water Balance (CWB) is one of the indices characterizing atmosphere humidity.

Spatial differentiation of meteorological and climatological elements of water balance was worked out and illustrated as an example in two representative catchments. Research was carried out in Prosna catchment and Dunajec catchment. These two represent different climatological regions, first is located in central and second in southern part of Poland. Both catchments characterise different gravitational regime as well as thermal conditions which influence length of vegetations period.

In analysis used data gathered from 128 meteorological stations from the network of Institute of Meteorology and Water Management National Research Institute. Reference period was compared to decades data from period 1998-2009.

The greatest diversity of meteorological elements that have impact on climatological water balance in both catchments are observed in summer season. Prosna catchment shows shortages of rainfall and Dunajec catchment on the contrary an excess.

The results of the analysis of meteorological conditions were used both to calculate climatic water balance in referential river catchments, and to determine its the spatial differentiation, moreover they can be also used to forecast its volatility.

Meteorological elements and climatic water balance were analysed spatially using geostatistical methods and GIS technology.