Geophysical Research Abstracts,
Vol. 10, EGU2008-A-09089, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-09089
EGU General Assembly 2008


# Regionalization of lowland excess water hazard

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Reasonable and preventive management of agricultural areas requires satisfactory information on the spatial and temporal distribution of excess water. The first attempts to display water excess hazard of lowlands on maps dates back to early ’80s in Hungary. National and regional overview maps were compiled based on mainly even frequency records. These maps are however don’t fit the requirements set up by agriculture and rural development, which require more accurate and reliable maps from both spatial and thematic point of view. Excess water is a complex process whose characteristics can only be determined through taking numerous factors into consideration. GIS together with large-scale spatial information on those factors, which significantly affect formulation of excess water, can provide suitable background for the compilation of maps with the expected accuracy.

For the territory of three counties situated in the lowland featured southern-eastern Hungary GIS based quantification and large scale mapping of excess water hazard was carried out. Limited numbers of affecting environmental factors were taken into consideration. However information on these factors was available in a harmonized manner i.e. the spatial resolution and information density as well as reliability was comparable in opposite to approaches where numerous but incompatible factors are treated together providing unreliable results. One well-defined and quantified parameter representing the affect of relief, soil, agrogeology, groundwater, land use and hydrometeorology on the formulation of excess water was defined and derived. Each factor was spatially represented. Generalized versions of the quantified spatial layers were jointly statistically analyzed with the map of relative frequency of excess water events. Multiple regression was used for the determination of the role various factors

in the formulation of excess water thus providing weights for its linear estimation by the applied factors. The derived weights then were used with the more detailed original map layers to produce the result water excess hazard map. The resulted risk map can be utilized in numerous land related activities: land use and agricultural planning, water management interventions, water oriented cultivation systems, wetland restoration etc.

The work was partly funded by the Hungarian National Scientific Research Foundation (OTKA, Grant No. K60896).