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Flood hazard assessment based on a GIS based methodology

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Global warming effects on hydrological cycle and land use changes have led to flood events with severe social and economical consequences. The European Directive 2007/60/EC aims to the reduction and management of the risks that floods pose to human health, the environment, cultural heritage and economic activity. Especially in cases of transboundary river basins, the integrated management of flood risks is even more challenging. Under this scope, the estimation of flood hazards areas of Evros transboundary river basin was attempted based on a grid-based GIS modelling method. Based on this approach, the flood-hazard map was produced after the aggregation of six individual maps for each of the main factors that contribute to the development of floods: flow accumulation, slope, land use, rainfall intensity, geology and elevation of the river basin. The final flood hazard map was divided in five classes: very high, high, moderate, low and very low. In order to verify the results of the specific methodology, the produced risk map was compared to the inundation map of the April 2006 flood event. The results accredited the accuracy of the method since 85.3% of the inundated area was already characterized as of very high flood hazard in the model while 14% of the flooded area was classified as of high hazard.

Keywords: flood hazard mapping, Evros river, GIS, Directive 2007/60/EC