

Digital Model of Holms at the Danube River Bank Near Apatin, South Part of Special Nature Reserve “Upper Danube”, Vojvodina, Serbia

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Gornje Podunavlje (Upper Danube) Special Nature Reserve is a large protected area of wetland in the northwest of Serbia (Vojvodina province). As one of the last integral floodplains of the Danube, it contains some of the most valuable wetland habitats and therefore is a sanctuary for many species, which with their lifecycles, is inherently connected to the river.

Throughout the geological history, the river Danube valley has often erosionally devastated the northwest part of Vojvodina. However, the Danube river created also one of the most rich full wetland complexes in Serbia, Special Nature Reserve „ Upper Danube.“ People from this region constructed river embankments and other fortification objects to protect themselves from the floods, but still, there are still some vast unprotected areas. In those areas, many floral and animal species (including game) face floods every year. High water level of the Danube River is the most dominant factor of change of habitat conditions in this area. About 60% of the territory of analyzed territory is in the zone of floods. During the extreme high water-level, most of the animals species suffer serious losses. The purpose of this paper is to present possible application of geographic information system (GIS) in flood prediction in order to reduce negative flood impacts. GIS technologies are used in many aspects of flood identification, prediction, and hazard mitigation. In this paper a 3D model is introduced to predict flooded areas based on the Danube water levels and topography of the surrounding terrain. Several examples (models) of flooded areas based on several water levels are shown in the paper. During the flood some parts of the terrain are under water, and some higher courts remain dry. By using 3D model, all the isolated holms where animals trapped by surrounding water could be located. This method could be crucial for rescue intervention priorities and decision making during extreme flood periods.

Keywords: GIS, digital model, floods, Upper Danube, Vojvodina, Serbia

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