



Hydrological modeling using high resolution dem to level control on highways

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Floods are natural disasters that must be managed, controlled and taken precautions before it happens considering the damage they inflicted to environment and human lives. As to highways, the main vein of urban life flow, must be taken into consideration as a different entity that affected by excessive rainfalls and floods. Due to inadequate drainage that allow rainfall to form water ponds on highways cause vehicles to lose control and that lead vehicles to have traffic accidents. To reduce the traffic accidents caused by ponding waters on highways we need to know area of inundation and water depths. In this context we used FLO-2D Basic Model (2009) to hydrological modeling of Black Sea Coastal Highway with meteorological and hydrological data using a Digital Elevation Model (DEM). In this study, ponding areas on highways determined by simulating the rainfall with a high resolution DEM that can represent the actual road surface correctly. With this information, General Directorate of Highways (GDH) in Turkey can adjust the cross-sectional and longitudinal slope or build better and bigger drainage structures where water accumulated to prevent ponding. With the results obtained from Hydrological Model, GDH can rapidly control highways conformity to regulations before highways come into service. Also these ponding areas acquired by reveals where to prioritize in flood risk managements.

Key Words: Area of Inundation, Digital Elevation Model, FLO-2D, Hydrological Modeling, Highway, Rainfall-Runoff Simulation, Water Depth.