

Application of Public Access Two-Dimensional Hydrodynamic and Distributed Hydrological Models for Flood Forecasting in Ungauged Basins

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Abstract : In Afghanistan, floods are the most frequent and recurrent events among other natural disasters. On the other hand, lack of monitoring data is a severe problem, which increases the difficulty of making the appropriate flood countermeasures of flood forecasting. This study is carried out to simulate the flood inundation in Harirud River Basin by application of distributed hydrological model, Integrated Flood Analysis System (IFAS) and 2D hydrodynamic model, International River Interface Cooperative (iRIC) based on satellite rainfall combined with historical peak discharge and global accessed data. The results of the simulation can predict the inundation area, depth and velocity, and the hardware countermeasures such as the impact of levee installation can be discussed by using the present method. The methodology proposed in this study is suitable for the area where hydrological and geographical data including river survey data are poorly observed.

Keywords : distributed hydrological model, flood inundation, hydrodynamic model, ungauged basins

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