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Development of Map of Gridded Basin Flash Flood Potential Index: GBFFPI Map of QuangNam, QuangNgai, DaNang, Hue Provinces

Authors : Le Xuan Cau

Abstract : Flash flood is occurred in short time rainfall interval: from 1 hour to 12 hours in small and medium basins. Flash floods typically have two characteristics: large water flow and big flow velocity. Flash flood is occurred at hill valley site (strip of lowland of terrain) in a catchment with large enough distribution area, steep basin slope, and heavy rainfall. The risk of flash floods is determined through Gridded Basin Flash Flood Potential Index (GBFFPI). Flash Flood Potential Index (FFPI) is determined through terrain slope flash flood index, soil erosion flash flood index, land cover flash floods index, land use flash flood index, rainfall flash flood index. Determining GBFFPI, each cell in a map can be considered as outlet of a water accumulation basin. GBFFPI of the cell is determined as basin average value of FFPI of the corresponding water accumulation basin. Based on GIS, a tool is developed to compute GBFFPI using ArcObjects SDK for .NET. The maps of GBFFPI are built in two types: GBFFPI including rainfall flash flood index (real time flash flood warning) or GBFFPI excluding rainfall flash flood index. GBFFPI Tool can be used to determine a high flash flood potential site in a large region as quick as possible. The GBFFPI is improved from conventional FFPI. The advantage of GBFFPI is that GBFFPI is taking into account the basin response (interaction of cells) and determines more true flash flood site (strip of lowland of terrain) while conventional FFPI is taking into account single cell and does not consider the interaction between cells. The GBFFPI Map of QuangNam, QuangNgai, DaNang, Hue is built and exported to Google Earth. The obtained map proves scientific basis of GBFFPI.

Keywords : ArcObjects SDK for NET, basin average value of FFPI, gridded basin flash flood potential index, GBFFPI map
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