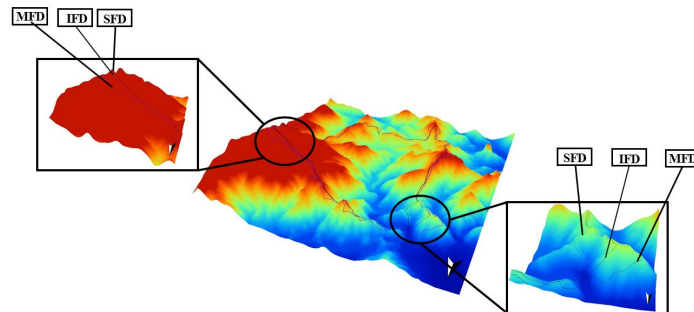


Analysis of Variation for Drainage Structure with Flow Direction Methods Based on DEM

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Abstract

The main purpose of this study is to suggest the more reliable flow direction methods within the framework of DEM by investigating the existing methodologies. To this end SFD(single flow direction method), MFD(multiple flow direction method) and IFD(Infinite flow direction method) are applied to determination of flow direction for water particles in Jeonjeokbigyo basin, and then assessed with respect to the variation of flow accumulation. As the main results the different patterns of flow accumulation are found out from each application of flow direction methods. As the flow dispersion increases on DEM contributing areas to outlet grow in sequence of SFD, IFD, MFD but contribution of individual pixels into outlet decreases. Especially MFD and IFD tend to make additional hydrologic abstraction from rainfall excess due to the flow dispersion within flow paths on DEM. Based on parameter estimation for power law distribution by maximum likelihood flow accumulation can be thought of as scale invariance factor. Combination of several flow direction methods could give rise to the more realistic water flow on DEM through separate treatment of flow direction methods for dispersion and aggregation effects of water flow within different topographies.



핵심용어 : DEM, SFD, MFD, IFD, Flow Accumulation

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