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Flood Classification Using Support Vector Machines

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Lowland floods are in general considered to be less extreme than mountainous floods. In order to investigate this, seven lowland floods in the Netherlands were selected and compared to mountainous floods from the study of Marchi et al. (2010). Both a 2D and 3D approach of the statistical two-group classification method support vector machines (Cortes and Vapnik, 1995) were used to find a statistical difference between the two flood types. Support vector machines were able to draw a decision plane between the two flood types, misclassifying one out of seven lowland floods, and one out of 67 mountainous floods. The main difference between the two flood types can be found in the runoff coefficient (with lowland floods having a lower runoff coefficient than mountainous floods), the cumulative precipitation causing the flood (which was lower for lowland floods), and, obviously, the relief ratio.
Support vector machines have proved to be useful for flood classification and might be applicable in future classification studies.

References

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