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River Sinuosity Classification – The method

J. Petrovszki (1), B. Székely (1,2), and G. Timár (1)

(1) Eötvös Loránd University, Department of Geophysics and Space Science, Hungary (geojudit@gmail.com), (2) Institute of Photogrammetry and Remote Sensing, Vienna University of Technology, Vienna, Austria

We introduced a new evaluation method, the classification of multiple window-size based sinuosity spectrum. If the river is long enough for the analysis, the classification could be as useful, as the sinuosity spectrum, but sometimes it is more straightforward. Furthermore, for the classification, we did not need the main parameters of the river, e.g. the bankfull discharge.

Each sinuosity calculation that was performed for a given window size, has been considered as one band (one channel) of a multichannel "image". Then, the sinuosity spectrums became multichannel images are of size 1 X N where N represents the length of the actual river in pixels. Using this multichannel input unsupervised ISOCLASS classification was carried out on these data, using ER Mapper software. The requested number of classes was set to 5.

The results of the sinuosity calculations are scalars. Earlier, it was a subjective decision to divide the sinuosity values into the categories (low, medium-low, medium, medium-high, and high), while the new method provides integer numbers (1 to 5) itself. These numbers are calculated from the sinuosity values, but are not equal to them.

Analysing the results of the classification, it is important to note that the method typically splits the river course into contiguous sections that belong to the same class. Boundaries of these classes can be considered as points of considerable change in the river course, because the method uses statistically relevant amount of data of the river course in a robust way to detect changes. Some specific classes or their boundaries seem to be correlated to tectonically active zones.

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