



## **Fusion of Remote Sensing Methods, UAV Photogrammetry and LiDAR Scanning products for monitoring fluvial dynamics**

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Fusion of remote sensing data is a common and rapidly developing discipline, which combines data from multiple sources with different spatial and spectral resolution, from satellite sensors, aircraft and ground platforms. Fusion data contains more detailed information than each of the source and enhances the interpretation performance and accuracy of the source data and produces a high-quality visualisation of the final data. Especially, in fluvial geomorphology it is essential to get valuable images in sub-meter resolution to obtain high quality 2D and 3D information for a detailed identification, extraction and description of channel features of different river regimes and to perform a rapid mapping of changes in river topography.

In order to design, test and evaluate a new approach for detection of river morphology, we combine different research techniques from remote sensing products to drone-based photogrammetry and LiDAR products (aerial LiDAR Scanner and TLS). Topographic information (e.g. changes in river channel morphology, surface roughness, evaluation of floodplain inundation, mapping gravel bars and slope characteristics) will be extracted either from one single layer or from combined layers in accordance to detect fluvial topographic changes before and after flood events. Besides statistical approaches for predictive geomorphological mapping and the determination of errors and uncertainties of the data, we will also provide 3D modelling of small fluvial features.