



## **Remote Sensing based hydromorphological monitoring of river restoration using UAV**

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Due to the 2000 induced European water framework directive, in many sections of German rivers and creeks, hydromorphological measures have been implemented to provide a strong diversity of habitat alteration and indicate a positive effect on aquatic biota. These river restoration measures show often little effects on macrozoobenthic organism and fish, requirements for a good ecological status are not met and success of such measurements can be questioned. Common monitoring methods for mapping hydromorphological structures, such as slightly adapted used in all federal states or by LAWA have their limits in identifying and quantifying wooden debris, the proportion of coarse and fine sediment or scour as key habitat.

Remote sensing using Unmanned Aerial Vehicle (UAV) surveys open new vistas on the spatial and temporal scale but also has its restrictions and limits. This research discusses the use of different sensors for detection of hydromorphological changes of structure and volume in river restoration measures. In detail this work discusses different classification of sediment, using Structure from Motion (SfM) to create digital surface models and show limits and approaches to detect submerged sediment.