



Terrestrial photography of a restored river corridor and related information content about its evolution dynamics

Nadine Taube, Nicola Pasquale, Alessandro Agazzi, and Paolo Burlando
Institute of Environmental Engineering, ETH Zurich, Zurich, Switzerland

The use of terrestrial photography to monitor river reaches is a practical and relatively cheap solution that allows collecting information about the ecological and morphological evolution of the fluvial corridor. Such a solution is even more valuable in case of on-going river restoration. In this case, the information contained within the sequence of photographs provides many useful insights that can be used to assess the success of restoration from multiple viewpoints. In this paper we illustrate the installation of remotely controllable digital cameras on the restored reach of river Thur (Switzerland), and its related use to extract information about river hydrology, inundation dynamics, vegetation evolution and related interaction with the local morphodynamics. In particular, we show that by changing the shooting frequency we are able to capture details of the inundation dynamics, which can be used as proxy data for non-invasive calibration of numerical hydrodynamic models and for space-dependent monitoring of submersion time of vegetation on river island and bars. As well, photographs taken in both the visible and the infrared can be combined to obtain the NDVI index showing the development of vegetation and its interaction with floods over the season. Eventually, by combining the photographs with morphological data from detailed DEM, some efforts can be done to ortho-rectify and georeference the images. This operation is however strongly conditioned by the shooting angle, as we show for our specific case.