



Test of innovative methodologies to monitor the morphological changes of river reaches: the case of the Orco river (Piedmont, Italy).

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Classic studies concerning the evolution of water courses provide both historical analysis of ancient ways of the river, than the analysis of topographic section in-time repeated. The first method offers the chance to obtain qualitative areal information; the second allows to obtain planimetric and altimetric high precision data but only at a single point. This work is aimed to illustrate new experimental methodology to obtain multitemporal analysis of riverbed digital elevation models. The first test site is an Orco River reach (40 Km in length) in the Piedmont Region (Italy); along this river reach, during low water periods in 2003 and 2004 two airborne LIDAR detections were carried out. First data processing and analyses confirm the possibility to obtain volumetric changes of un-submerged areas. For this reason it will be possible to apply this methodology to obtain large scale information about planimetric and altimetric changes both in ordinary hydraulic condition and after flood events. If the possibility exists to do a multibeam detection of submerged area, this methodology allows to make multitemporal comparison of the entire riverbed (using an union of the LIDAR and multibeam data).