

Interactive comment on “Modern comprehensive approach to monitor the morphodynamic evolution of restored river corridors” by N. Pasquale et al.

Anonymous Referee #2

Received and published: 24 January 2011

General comments:

This methodological paper is well presented and is relevant according to river restoration. It lists suitable methods at the interface between hydrogeomorphology and ecology for the estimating eco-geomorphic resilience of re-naturalized rivers. In particular, it focuses on the effects of hydrogeomorphic parameters on pioneer ligneous vegetation recruitment dynamics. All the material and methods presented may be useful for attempting to redefine reference states for the future river restoration projects.

One of my concerns relate to the fact that the proposed methodology is not particularly

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original while all these methods are known and widely used actually. The different and complementary methods proposed for coupling vegetation and geomorphic dynamics should be better and explicitly integrated in the introduction within a conceptual framework in relation with ecological resilience and the role of vegetation in controlling it. Furthermore, it would be useful to have in this paper a discussion on why and how this methodology should be applied in different hydrogeomorphic contexts (e.g., on the longitudinal energy gradient, different bioclimatic regions). Finally, you consider the effects of plants roots, and that makes sense, but the effects of plant aerial structures on sediment-landform dynamics are not taken into consideration explicitly in your approach. Sediment trapping by pioneer vegetation represents a fundamental component of hydrogeomorphic resilience and adjustment dynamics. This may represent a major process to be monitored periodically in order to defining objectively the ecological resilience of the restored rivers and the resistance thresholds associated to vegetation destruction by floods.

Specific comments:

P. 7, L. 20: what do you mean by seasonal vegetation? : Annual and biannual herba-ceous species?

P. 9, L. 15: ‘Generally, the sample taken on the surface (Fig. 4b) shows a higher percent of coarse sediments than the sample at 40 cm depth (Fig. 4c)’ : this may be the contrary within dense ligneous vegetation patches. It would be interesting to monitor fine sediment accretions and correlative topographic changes within the potential future patches of pioneer vegetation which may develop on the alluvial bar.

P. 10, L. 25: Replace ‘morphodinamic’ by ‘morphodynamic’.

P. 11, L. 25 : ‘Thus we are currently exploring the possibility to obtain such an in-formation from terrestrial photography’: The use of photogrametry and terrestrial 3D laser scanning may also be relevant for monitoring frequently topographic-vegetation changes.

P. 37, Figure 8: It would be useful to indicate the variation and to indicate the statistical test for differences.

P. 18, L. 25: 'Moreover, cuttings resistance to floods will eventually depend on their root architecture' : indeed, but it may also depend greatly on morphological and biomechanical properties of aerial structure.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 8873, 2010.

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