

Thirty years of vegetation cover dynamics and planform changes in the Brenta River (Italy): implications for channel recovery

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Abstract The timing and extent of the morphological changes that occurred in the last 30 years in a gravel-bed river (the Brenta River, eastern Italian Alps) have been analysed using eight sets of aerial photos, repeated topographic measurements and morphological–vegetational surveys. Human activities have produced modifications in the natural sediment regime and the cessation of gravel extraction in the late 1990s seems to have caused vegetation erosion and channel widening. Alteration of sediment regime has played a major role in the medium and short-term channel evolution. However, only relevant flood events (RI > 10 years) appear to determine substantial islands erosion. The analysis at smaller scale (sub-reach level) proved to be more effective in describing morphological responses and its relationships with the sediment dynamics within the study reach (20 km). The understanding of sediment transfer at the sub-reach level will provide helpful guidelines for the discussion of channel recovery potential.

Key words channel changes; fluvial erosion; vegetation cover dynamic; river restoration