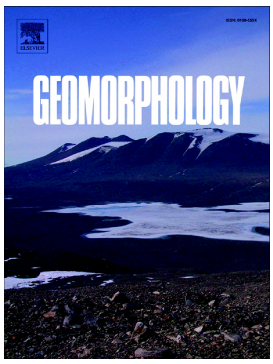

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Decoupled geomorphic and sedimentary response of Po River and its Alpine tributaries during the last glacial/post-glacial episode

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Abstract

The complex geomorphic and sedimentary evolution of the central Po Plain (northern Italy) during the last 30 ky was reconstructed through the integration of stratigraphic, geomorphological, geochemical and radiocarbon data. A key element of the Late Pleistocene stratigraphy is a 20 km-wide channel-belt sand body, with its top at a depth of ~13 m, fed by the Po River. Whereas the southern boundary of the Po fluvial channel belt coincides with a sharp lithological contact with floodplain muds, its northern boundary is an erosional (sand-on-sand) surface that was traced tentatively in the subsurface with the aid of sediment provenance (Po versus Alpine) proxies and radiocarbon data. Stratigraphic and geomorphological features testify to a decoupled sedimentary and geomorphic response of the Alpine and Po River systems to climate change in the last 30 ky. Contemporaneous Po River incision and Alpine rivers aggradation occurred at the onset of the Last Glacial Maximum (LGM). In contrast, Po River aggradation and Alpine rivers entrenchment took place during early deglaciation. The Holocene stratigraphy records the overall aggradation and northward migration of the Po River, with the consequent erosion of distal Alpine LGM deposits