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# Geomorphological cartography on the River Tejo lower valley –implications for interpretation of landscape and environmental changes of western Iberia in the last 2 Ma

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Since the second half of the 90s of the last century, geomorphological cartography in some reaches of the Lower River Tejo (Portugal) was undertaken (Martins, 1999; Cunha, et al., 2008; Martins, et al., 2009, 2010a). Up to six terraces were identified in reach I (Ródão), reach III (Abrantes) and reach IV (V.N.Barquinha–V.F.Xira). A resistant Paleozoic basement proved to be favorable to the development of a narrow valley with almost no terraces. On the contrary, reaches located upstream of resistant local base levels or with a substratum of Cenozoic sediments promoted the valley enlargement and alluvial aggradation. A long-term trend of incision driven by regional uplift, punctuated by episodes of valley enlargement and aggradation promoted by high sea-level periods was considered in the formation of the terrace staircase (Martins et al., 2010b).

This contribution focuses on the unpublished terrace sequence of reach IV, located just upstream of the modern estuary. Geomorphological mapping at a 25,000 scale reveals an asymmetrical development of the terraces in reach IV. The asymmetric development of the terraces indicates differential uplift. In the Chamusca area up to ca. 30 m of differential uplift is estimated to have occurred after the formation of terrace T3 (minimum age of 340 ka). Since the beginning of down-cutting in the Piacenzian-Gelasian culminant surface (the Tejo River alluvial plain before the incision stage), the geometry of the valley evolved from broadly aggradation surfaces in the older terraces (T1 to T4) to a more narrow and incised valley coeval of the lower and younger terraces (T5 and T6). This feature is widespread in the Tejo upstream reaches, up to 200 km from the river mouth. This change in time of the valley geometry is insufficiently understood, but the terrace elevations and the available ages (post-IR-IRSL for the younger terraces, T6, T5 and T4, Cunha et al., 2012; ESR for the T4 to T1, Rosina et al., 2014) suggests longer periods of valley enlargement and aggradation for the older terraces, compared with the younger terraces possibly due to the acceleration of uplift. The cartography also evidences the Holocene alluvial plain, and a late Pleistocene aeolian sand unit only represented in the eastern margin of the valley.

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