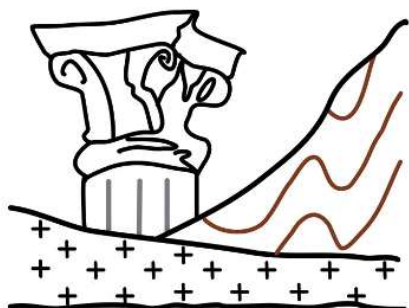
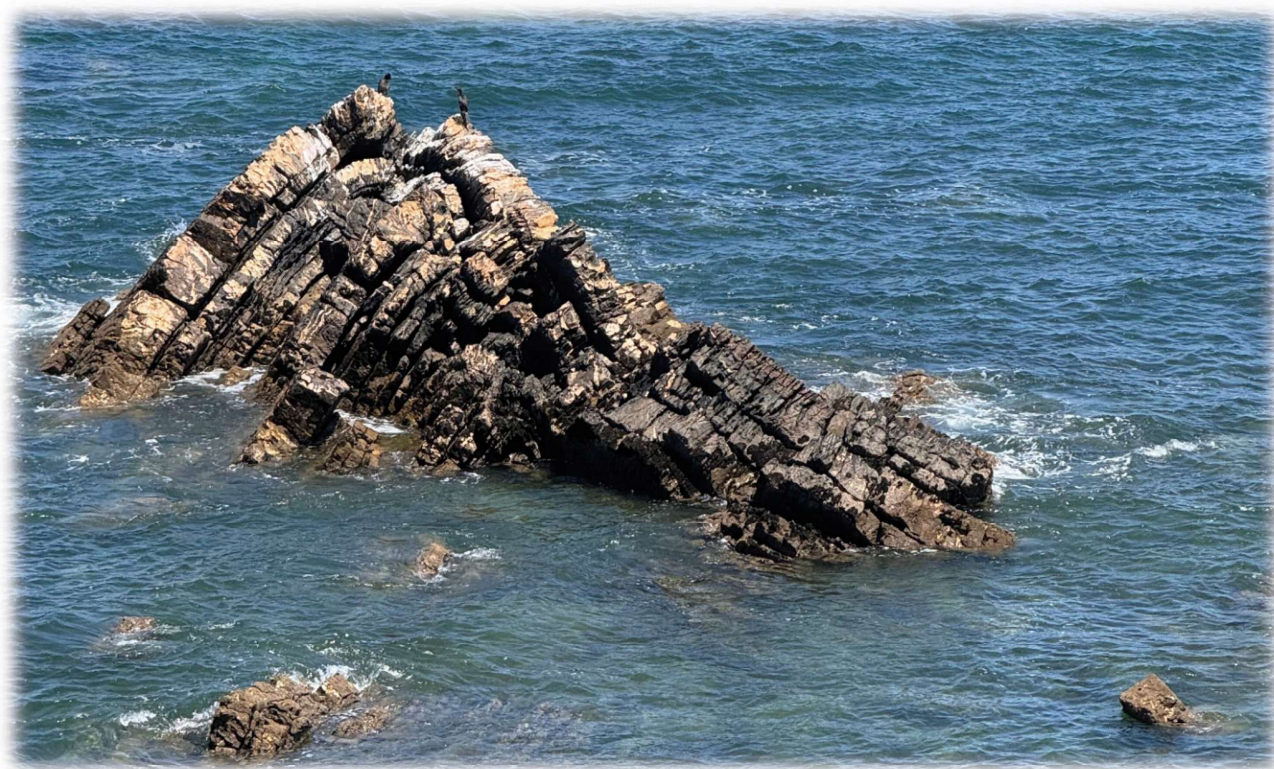




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Livro de Resumos

Coordenado por:

Pedro Nogueira, José Roseiro e Noel Moreira

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Geomorphological and sedimentary evolution of the Southwestern sector of the Tagus river

Ruben Pereira Dias ¹; Ricardo Ressurreição ¹; Paulo Legoinha ²

¹ LNEG;

² Geobiotec, Faculdade de Ciências e Tecnologia da Universidade NOVA de Lisboa.

Resumo

The present-day Tejo River flows within the Lower Tejo Basin, a Cenozoic tectonic depression formed during the Alpine orogeny at the end of the Cretaceous and during the Paleogene under a NNE–SSW compressional stress. Deformation intensified during the Miocene with NNW–SSE compressional stress, reactivating pre-existing faults that controlled the accommodation space and thickness of the basin's sedimentary fill. Tectonic inversion led to the uplift of the Lusitanian Basin and the Central Cordillera, which supplied sediments laterally to the Tejo Basin. Sedimentation began in the Paleogene with the development of extensive alluvial fan systems, later evolving into fluvial environments. Throughout the Miocene, the southwestern sector of the basin experienced several marine incursions, leading to the formation of reefs and coastal swamp environments that extended inland to the Santarém–Lavra region. Eustatic fluctuations caused repeated shoreline advances and retreats, controlling the position of the fluvial system. The pre-Tejo River developed as an alluvial plain dominated by a meandering system. At the beginning of the Pliocene, the pre-Tejo was characterized by an extensive alluvial plain transporting and depositing mainly medium- to coarse-grained siliciclastic sands. The river likely received contributions from the Alvalade Basin fluvial system and discharged into an estuary north of the Grândola range. The southern margin of the river can be recognized near Melides. Pliocene dating from Galé beach (Melides) and the Setúbal Peninsula indicates ages of ≈ 4.5 Ma (Ressurreição, 2018) and 3.8 Ma (Azevedo, 2006), respectively, showing progressively younger deposits towards the north. These data suggest that during the Pliocene the river gradually migrated northward, eventually reaching the Setúbal Peninsula. Clay deposits in the Pegões region, with considerable lateral extent and thickness, suggest proximity to the mouth of a major river system. During the Pleistocene, fluvial incision began and terrace levels formed as the valley progressively entrenched. The river continued to migrate northward and eventually established its outlet in the Gargalo do Tejo constriction, possibly due to tectonic activity along its fault and/or river capture. The main clay depocentre shifted to the Mar da Palha. Overall, during the Pliocene and Pleistocene, the estuarine sector of the Tejo fluvial system experienced a progressive northward migration until it became entrenched and stabilized in its present position.

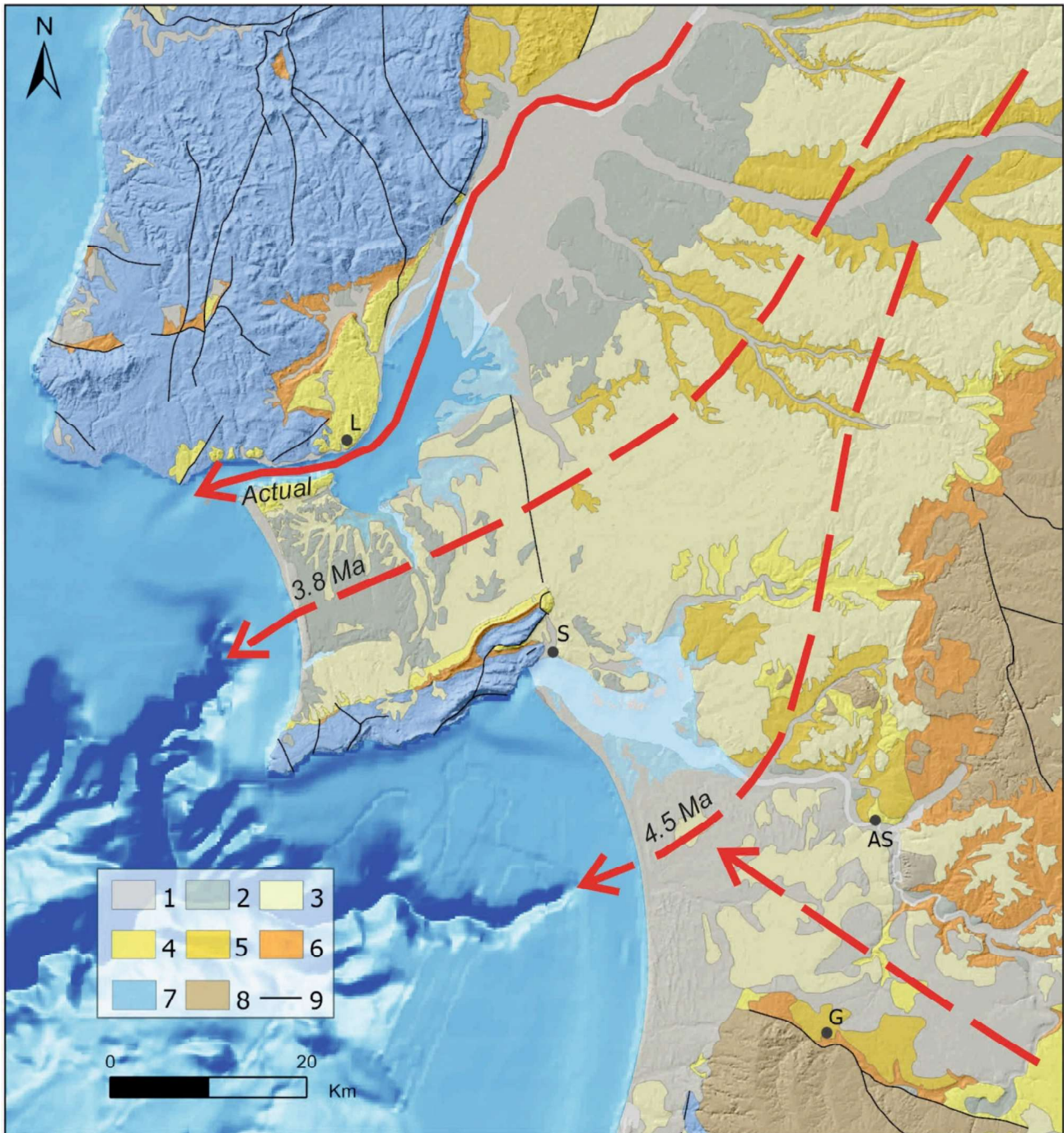


Fig. 1 – Geological map showing a northward migration of the Tejo fluvial system since the Pliocene. 1, Holocene; 2, Pleistocene; 3, Plio-Pleistocene; 4, Miocene (mostly marine facies); 5, Miocene (mostly continental facies); 6, Paleogene; 7, Mesozoic; 8, Paleozoic; 9, Fault; L, Lisbon; S, Setúbal; AS, Alcácer do Sal; G, Grândola. Adapted from the Geological Map of Portugal (1:1.000.000 scale), LNEG