



Submarine erosion: insights from the NE Iberian margin

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In the last 10 years a large amount of multibeam data has been collected from the NE Iberian margin, together with seismic reflection profiles, side-scan sonar data and a sediment cores. The combined multibeam data and onland topography allow an integrated approach for assessing Recent erosion processes. The data set shows that the onshore and offshore environments are clearly distinct. While erosion is extensive onland, submarine erosion is concentrated along specific sediment corridors such as canyons. Outside those corridors erosion is almost inexistent except for the few places in the continental slope and rise where mass-movements exist. The sediment that is removed via mass-wasting processes does not displace for large distances and in most cases is found immediately downslope the main scar. In general relatively small landslides are observed but individual exceptions may attain up to 26 km³. On the other hand where erosion is concentrated along corridors such as submarine canyons the sediment displaces for distances that may attain a few 100 km. As observed from the margin morphology submarine erosion appears to be most active along specific corridors such as canyon systems. In the NE Iberian margin submarine canyons clearly show distinct degrees of incision from S to N, with incision apparently controlled by sediment supply. On the southern sector sediment supply is high due to the nearby presence of the Ebro River. A large continental shelf develops and the slope is relatively steep. Nevertheless the canyons are small and downslope develop channel-levee systems which are mostly depositional features. On the north the sediment input is lower, but canyon systems appear better developed and extending further downslope.

Nevertheless the southern canyons most probably transport a larger amount of sediment as seen from the well developed channel-levee systems that occur at their feet. The sediment accumulation rate at their heads is higher in this canyons but also the amount of erosion and sediment flows generated within them. This clearly shows that sediment supply is a crucial parameter controlling the amount of canyon incision, and that canyon incision is not corresponding with degree of submarine erosion.