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Evolution of the continental slope basins offshore West Iberia (NW Portugal)

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New regional (2D) seismic-reflection data, published DSDP/ODP and unpublished shallow-offshore well information were used to characterize the Meso-Cenozoic evolution of the western Iberian continental slope. Two distinct sectors exist on the continental slope between the Galicia Bank and the Nazare fault. In seven distinct subbasins, at least 5.5 s two-way travel time (approximately 10.5 km) of strata have been deposited since the lowermost Mesozoic. The evolution of the study area (outer proximal region of a non-volcanic passive margin) replicates the evolutionary setting proposed for the Galicia, Newfoundland and ancient Adria margins, with some significant differences: 1) Triassic-Berriasian units deposited over rotated tilt-blocks (Early Rifting stage) are overlaid by Early Cretaceous rift-climax units (Advanced Rifting stage) spatially constrained to a 100 km [62 mi] wide region stretched along the continental slope; and 2) from the Early Rifting stage, Mesozoic faults and halokinetic structures induced local differences in the thickness and character of seismic facies. Salt pillows, salt ridges, minibasins, mature diapirs and salt-detached overburden faults occur throughout the continental slope of West Iberia. Evidence of Mesozoic salt withdrawal and thin-skinned extension reveal that halokinesis did not exclusively occur during Cenozoic inversion. The presented work gives important hints on the regional extent and thickness of rift-climax units in the deeper margin offshore Portugal. Future IODP drilling, correlations with the Galicia margin, plus comparisons between the Iberian margin and the conjugate Grand Banks area will benefit from comprehensive seismic-stratigraphic analyses of the deep-offshore basins offshore Portugal.