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Raft Tectonics in the Central Spanish Pyrenees

A tectonic event of Coniacian-early Santonian extensional raft faulting has been newly identified in the central Spanish Pyrenees. Here the Cotiella thrust sheet contains three spectacular examples of kilometer-scale extensional raft faults with up to 5.5 km of Coniacian-lower Santonian growth strata preserved in their hanging walls. These postrift listric growth faults detach on the prerift Triassic evaporites of the uplifted, southern flanks of Early Cretaceous (Hauterivian-Albian) rift basins. Early Alpine (late Santonian-Maastrichtian) contractional deformation reactivated and reversed the movement direction on both the Early Cretaceous rift faults and the Coniacian-early Santonian raft faults. Continued Alpine contraction in the Tertiary incorporated these reactivated extensional fault systems into the thin-skinned thrust sheets of the southern Pyrenees. The reactivation of the listric raft-fault systems deformed the hanging walls of the younger thrust faults into major antiforms, but the raft faults' original extensional hanging-wall architectures are well preserved. These outcrop analogues of raft structures are similar to those along the South Atlantic passive margins and in the Southern North Sea basin.