

**A POSSIBLE DELAMINATION ORIGIN FOR
HINTERLAND BASINS TO THE RIF-BETIC
CORDILLERA AND CARPATHIANS**

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The hinterland basins of the Rif-Betic cordillera (Western Alboran Sea) and the Carpathians (Pannonian Basin) are in part composed of a thick (in excess of 3-4 km) thermal sag basin sequence. The underlying crust has been thinned to 25 km in parts of the Pannonian Basin and to 15 km in parts of the Alboran Sea. Modern tectonic models for these areas envision tectonic collision and thickening of the crust followed by gravitational collapse and crustal thinning by extension contemporaneous with thrusting. Basin and Range-type extension has been envisioned for parts of these extensional collapse systems. While such features may exist locally, they do not fit the structural style of the entire region and fail to explain the great thickness of the sag basins, and details of the timing and geometry of structures within the basins and the thrust belts. Consequently, it is suggested that delamination of the mantle lithosphere and perhaps parts of the lower crust by subduction roll-back is an important factor in the evolution of these basins. Roll-back of the mantle lithosphere permits hot asthenospheric mantle to upwell and lie close to the base of the crust. Initially, uplift and erosion of the crust overlying the asthenosphere occurs. As the thermal perturbation cools, the crust thermally subsides to produce a large sag basin.