

Late Cretaceous-Cenozoic intraplate basin inversion in the North Atlantic-western Alpine-Tethys realm and plate boundary dynamics

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Intraplate basin/structural inversion is a good marker of (“far-field”) tectonic stress regime changes that are linked to plate boundary reorganisations. The premise is well-established in the literature: how Late Cretaceous-Palaeocene inversion of sedimentary basins has occurred in north-central Europe, for example, can be linked explicitly with the timing and style of plate break-up in the North Atlantic. Periods of intraplate tectonics (marked primarily by structural inversion in initially extensional sedimentary basins) in the North Atlantic realm is here documented and correlated and interpreted in the context of plate tectonics kinematics and processes as well as global tectonics. Examples documenting intraplate tectonics are from published literature and are primarily interpreted seismic reflection profiles (more inferential examples will be permitted depending on robustness of timing where no such data exist but intraplate deformation seems in evidence from other kinds of observations). The focus is on the Late Cretaceous-Palaeocene, the Eocene and the Miocene. The aim is to establish a basis for investigating if/how regional intraplate deformation/inversion in the North Atlantic-western Alpine-Tethys realm may be linked to rapid plate dynamic changes in this tectonic realm (and globally).