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Paleogene deformations of the western part of the Eurasian plate, a coupled study: stratigraphic analysis - landform study

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The late Cretaceous to early Paleogene is a period of major deformations of the western part of the Eurasian plate known as the Laramide deformations. These are correlated with major paleogeographic changes - widespread upper Cretaceous marine platforms (chalk) are uplifted, intensively eroded and announced the present-day configuration of the geology of north-western Europe.
These deformations occur in a complex geodynamic setting within both the context of the Africa-Eurasia convergence and the North Atlantic opening. Two main mechanisms are proposed: (1) surface upwelling caused by flows in the underlying mantle (Iceland Plume upwelling); (2) horizontal lithospheric deformations (Africa/ Eurasia convergence).
The precise ages of these deformations and the type of reliefs created (height, wavelength etc.) are still poorly known. Here we link onshore landforms (planation surfaces and incised valleys) located on outcrops of Proterozoic to Paleozoic basement (Armorican Massif, French Massif Central) to onshore-offshore sediment accumulation areas (Aquitanian, Paris, Western Approaches, London, Belgium, North-Sea Basins). The aim is to propose a topographic reconstitution of the reliefs and basins of western Europe - for the uppermost Cretaceous to the Paleogene period - performing restored european scale cross sections (geomorphology and geology).
This study is based on two different approaches:
- Erosional domain - on the mapping and chronology of all the macroforms (weathering surfaces and associated alterites, pediments and pediplains, incised rivers) dated by intersection with the few preserved sediments, weathering and the volcanics.
- Depositional domain - on a more classical dataset of seismic lines and wells, coupled with biostratigraphic revaluations (characterization and dating of vertical movements of the basins).

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