



Deformations during uppermost Cretaceous-Early Eocene in NW Europe - The record of the Paris basin

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The uppermost Cretaceous to Early Paleocene is, in NW Europe, a period of major deformations with significant inversions during Turonian to Campanian times and during Early Paleocene. The mechanism of those inversions is still debated. Later on, a major uplift coeval with the Faroe-Shetland volcanic province occurred with a deformation regime still poorly understood.

The objective of this study is to better constrain those deformations in the Paris Basin and to discuss their implications on the palaeogeography and the sedimentary systems. This study is based on well-dated wells and outcrops, correlated using the technique of “stacking pattern”. In a second step, accommodation space measurements were performed from isopaches and facies maps.

(1) The paroxysm of the deformation and the sharp decrease of the subsidence occurred between Late Campanian (with probably deposition of part of the Maastrichtian) and Early Danian, with the growth of a middle wavelength fold controlled by the Bray Fault. Danian carbonate platforms, mainly preserved south-west of Paris, are growing on unstable slightly consolidated chalk (numerous slumps).

(2) A hiatus characterized part of the Danian, the Selandian and the base Thanetian.

(3) Thanetian initiate a major change of sedimentary system (silicilastic) and of subsidence pattern, now located north of the Bray Fault, above the Early Liassic highly subsiding domains.

(4) The Thanetian – Ypresian sediments do not record the eustatic signal, using the Zachos world sea temperature curve as a proxy (Haq's curve cannot be used anymore). This means that a significant deformation event overprints this signal, here the reactivation of the Seine Fault with inversion of some upper crust heterogeneities.