



Iberia/Eurasia plate kinematic models as recorded from shortening evolution of the Pyrenees

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Contrasting reconstructions of Iberia plate motion have been proposed in the Pyrenees, reflecting our difficulties to reconcile interpretations from magnetic anomalies with geological arguments. Here, we confront implications from currently proposed plate kinematic models with the most recent constraints on the thermal history and shortening evolution of the Northern Pyrenees. We particularly focus on the incipient subduction/collision and question the role played by the rifted margin architectures. A good fit with geological constraints is found provided that a significant amount of arc-normal convergence is accommodated at a distal hyper-extended margin, during the earliest stages of collision. After 20 Myrs of plate convergence, the first contact between proximal margins initiated a progressive decrease of plate convergence that was mainly consumed in building the Pyrenean mountain belt. This shortening scenario is shown to be consistent with recent geophysical data on deep crustal processes and finite strain predicted on young continental margins.