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Obliquity favours propagation pulses during continental break-up

Anthony Jourdon[1], Laetitia Le Pourhiet[2], Frédéric Mouthereau[1], and Dave A. May[3]

[1]Geoscience Environnement Toulouse, CNRS, Université Paul Sabatier, Toulouse, France (jourdon_anthony@hotmail.fr)
[2]Sorbonne Université, CNRS□INSU, Institut des Sciences de la Terre Paris, ISTeP UMR, Paris, France
[3]University of Oxford, Department of Earth Sciences

V-shaped propagators are ubiquist and the seafloor age map is often sufficient to unravel the first order features of the timing of continental break-up at regional or more global scale. Some propagators show pulses in the rate of continental break-up propagation highlighted by the geometry of magnetic anomalies. These pulses, which were first introduced by Courtillot (1982) in the Gulf of Aden, represent a major element of plate tectonics. Despite the well documented geological record of these changes of rate, and their implications for plate kinematic reconstructions or the thermal regime of oblique margins, the dynamics of ridge and rift propagation at long/geodynamic timescale remains poorly studied nor understood. To date, despite the large progress made in understanding lithospheric dynamics and continental break-up, no lithospheric scale dynamic models has been able to produce self consistently pulse of ridgepropagation followed by a phase of stagnation. One obvious reason for this lack of dynamic ground stands from the fact that this problem mandates 3D thermo-mechanically coupled simulation approach that is just starting to emerge. In this work we chose to adopt a numerical modelling set-up after Le Pourhiet et al. (2018) to produce V-shaped propagators. Simulations investigate the influence of both kinematic and rheology of the lithosphere on the propagation trend and rate. The tectonic evolution of these margins shows 3 different modes of continental break-up propagation and a major change of deformation regime between phases of propagations and phases of stagnation.