Structural inheritance and evolving rift kinematics in transform and oblique rift systems: A comparison of global examples

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Introduction

- The development of oblique rifts and transforms is influenced by a number of interrelated factors (Brunel et al., 2016). Farangitakis et al., 2019, 2020).
- The relative importance, and prevalence, of evolving rift kinematics and structural inheritance amongst rift systems globally is insufficient.
- Plate model results: Peaks in the velocity of Greenland relative to North America at ~50 and 80 Ma are coincident with collision have been hypothesised for account for the appearance of the Davis Strait (Peace et al., 2017, 2018, Heirtz et al., 2019).

Approach

- Different regions with oblique rifts of various types are compared: West Greenland (Davis Strait), East Africa (Madagascar), Bay of Biscay and Gulf of California.

West Greenland

- Hotspot-Greenland rift between Greenland and North America created the Labrador Sea and Baffin Bay, while altering preserved continental inheritance in the Davis Strait which has been inferred to have been active between the Cenozoic and Quaternary (Peace et al., 2016; Heron et al., 2017). However, new observations on the velocity of the Earth and oceanic motion have been made (Zamora et al., 2017, 2018). These findings have important implications for the evolution of the Davis Strait.

Gulf of California

- The Gulf of California is a complex rift system that formed in the Late Miocene and Early Pliocene as a result of oblique rifting and has been influenced by plate tectonic processes. The rift system has been characterized by a series of tectonic events that have shaped its evolution over time (Phethean et al., 2016; Mueller and Jokat, 2017).

References