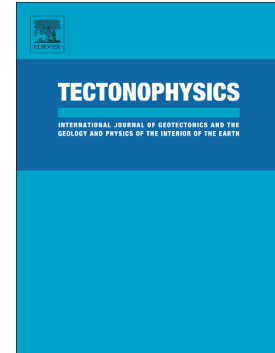


Accepted Manuscript

Initiation, evolution and extinction of pull-apart basins:
Implications for opening of the Gulf of California

J. van Wijk, G. Axen, R. Abera

PII: S0040-1951(17)30153-1
DOI: doi: [10.1016/j.tecto.2017.04.019](https://doi.org/10.1016/j.tecto.2017.04.019)
Reference: TECTO 127464
To appear in: *Tectonophysics*
Received date: 2 June 2016
Revised date: 29 March 2017
Accepted date: 19 April 2017



Please cite this article as: J. van Wijk, G. Axen, R. Abera , Initiation, evolution and extinction of pull-apart basins: Implications for opening of the Gulf of California. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Tecto(2017), doi: [10.1016/j.tecto.2017.04.019](https://doi.org/10.1016/j.tecto.2017.04.019)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

INITIATION, EVOLUTION AND EXTINCTION OF PULL-APART BASINS: IMPLICATIONS FOR OPENING OF THE GULF OF CALIFORNIA

J. van Wijk (1,*), G. Axen (1), and R. Abera (1)

(1) Department of Earth and Environmental Science, New Mexico Institute of Mining and Technology, Socorro, New Mexico 87801, USA

* Corresponding author, jolante.vanwijk@nmt.edu, Department of Earth and Environmental Science, New Mexico Tech, Socorro, New Mexico 87801, USA

ABSTRACT

We present a model for the origin, crustal architecture, and evolution of pull-apart basins. The model is based on results of three-dimensional upper crustal elastic models of deformation, field observations, and fault theory, and is generally applicable to basin-scale features, but predicts some intra-basin structural features. Geometric differences between pull-apart basins are inherited from the initial geometry of the strike-slip fault step-over, which results from the forming phase of the strike-slip fault system. As strike-slip motion accumulates, pull-apart basins are stationary with respect to underlying basement, and the fault tips propagate beyond the rift basin, increasing the distance between the fault tips and pull-apart basin center. Because uplift is concentrated near the fault tips, the sediment source areas may rejuvenate and migrate over time. Rift flank uplift results from compression along the flank of the basin. With increasing strike-slip movement the basins deepen and lengthen. Field studies predict that pull-apart basins become extinct when an active basin-crossing fault forms; this is the most likely fate of pull-apart basins, because basin-bounding strike-slip systems tend to straighten and connect as they evolve. The models show that larger length-to-width ratios with overlapping faults are least likely to form basin-crossing faults, and pull-apart basins with this geometry are thus most likely to progress to

Download English Version:

<https://daneshyari.com/en/article/8908852>

Download Persian Version:

<https://daneshyari.com/article/8908852>

[Daneshyari.com](https://daneshyari.com)