Graduate Student Pop-ups

1 Minute Poster Previews

The Role of Obliquity in Rift Localization: Example of the Northern Gulf of California

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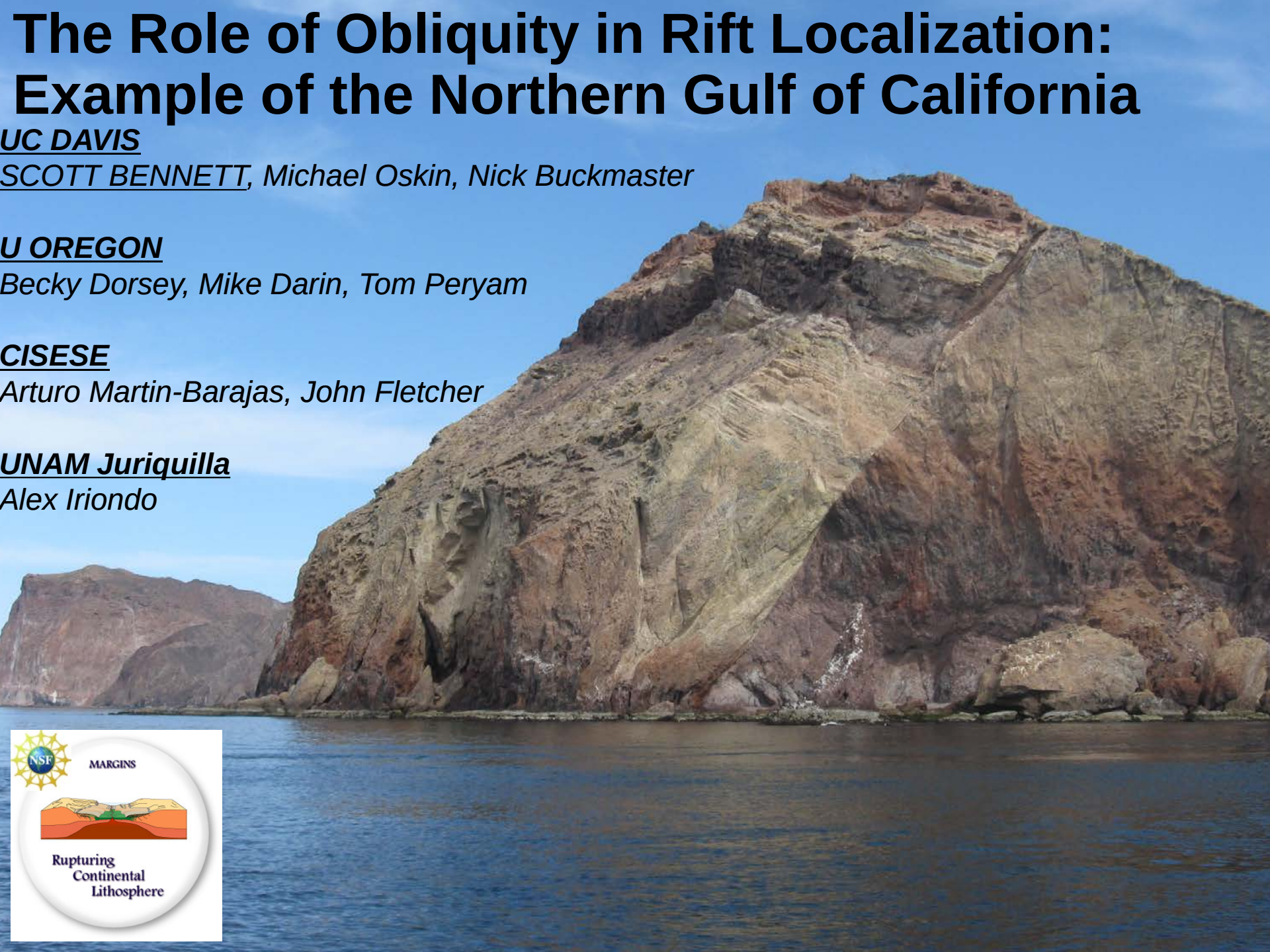
CISESE
Arturo Martin-Barajas, John Fletcher

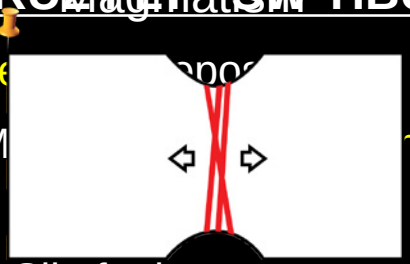
UNAM Juriquilla
Alex Iriondo



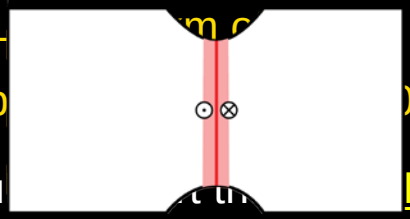
ROLE OF RIFT OBLIQUITY

- **COASTAL SONORA FAULT ZONE & NE ISLA TIBURON**
  - Initiated ca. 7 Ma, waning by 6 Ma
  - 15.7 k
  - Rocks

- **LA CRUZ FLT. SW TIBURON**
  - Marine
  - <6.7M



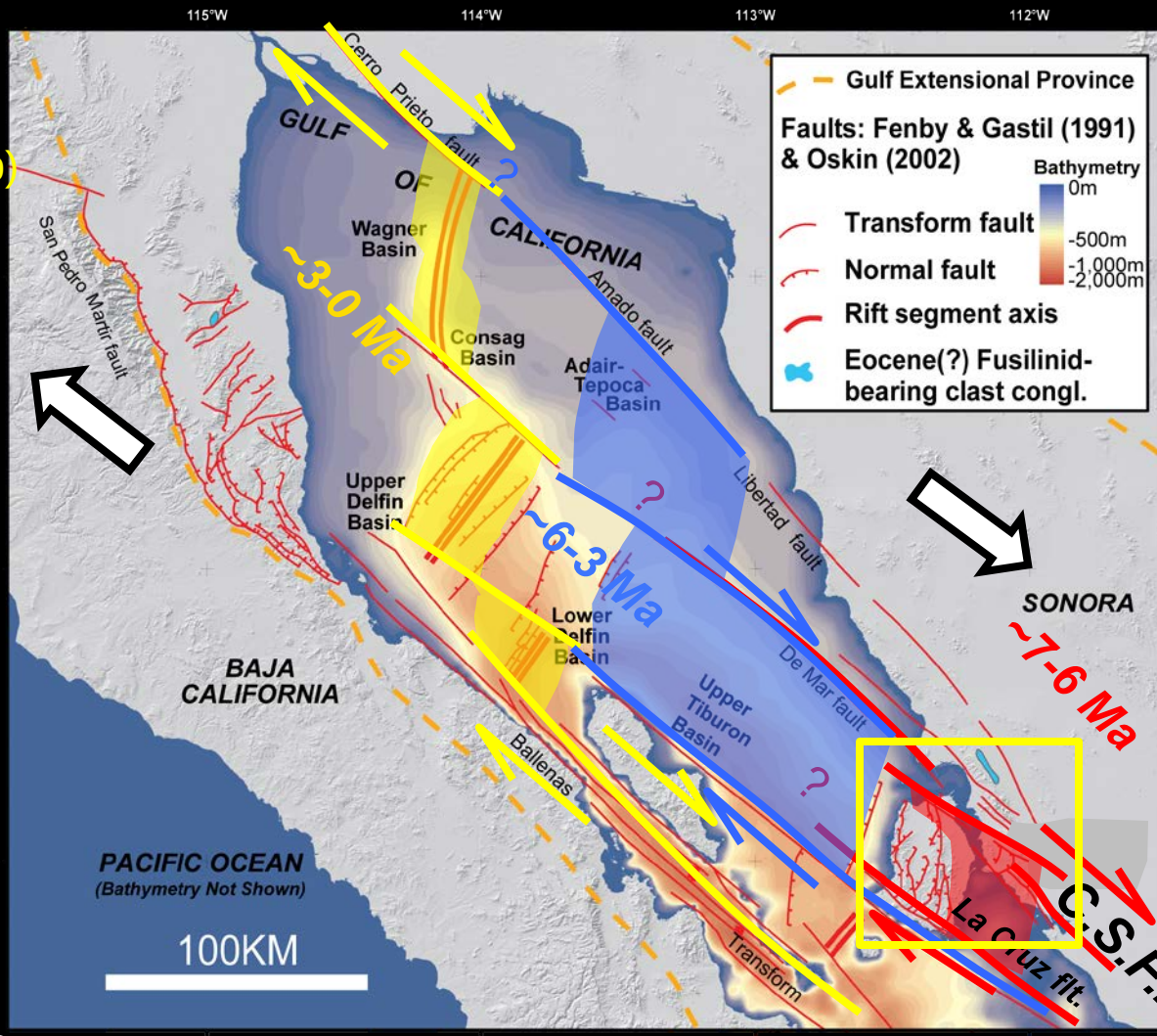
- Strike-Slip faults:
  - prece
  - 1
  - p



- Resu liquity, strike-slip faults may localize strain
- Older (pre-7Ma) shear zones east??

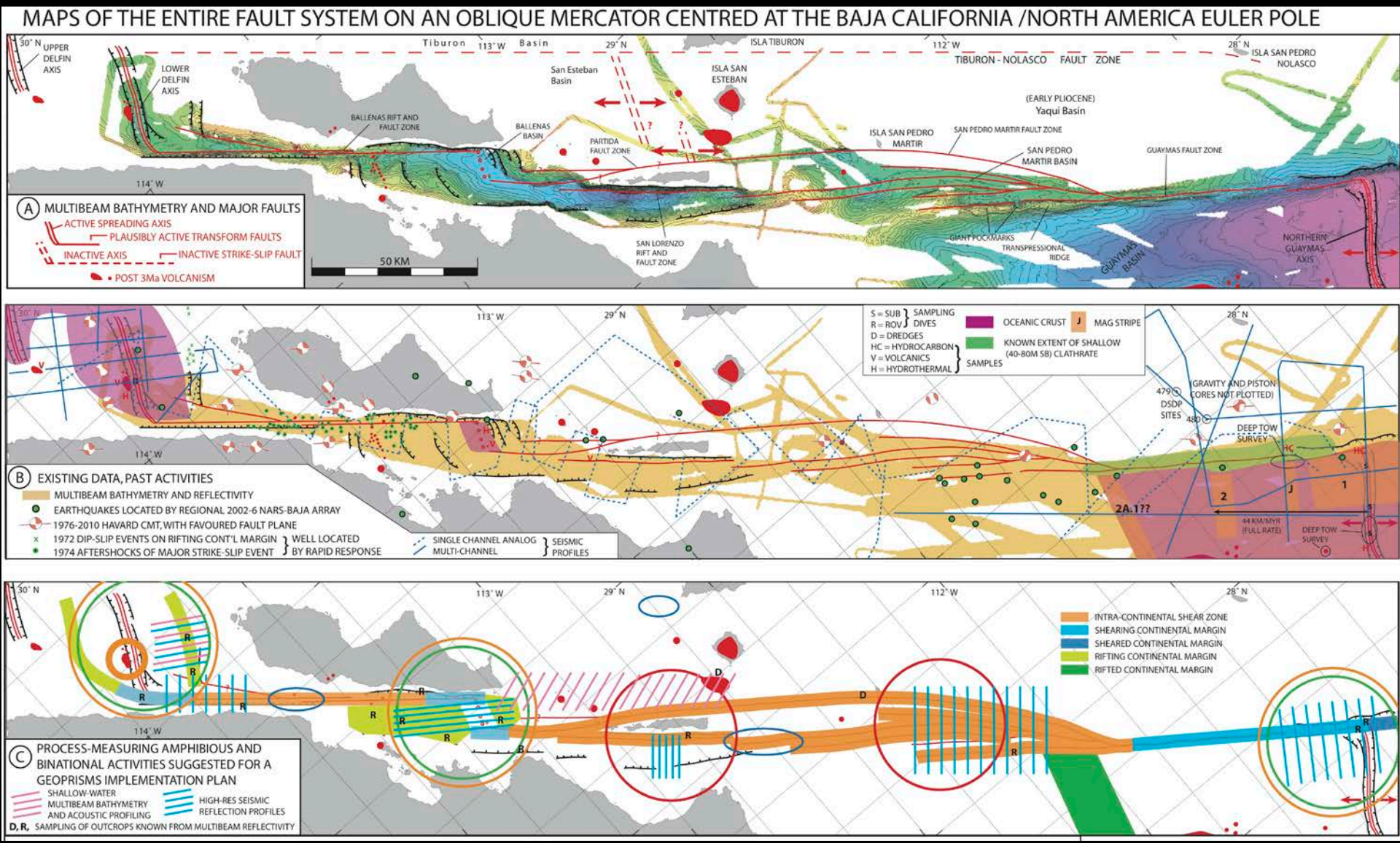
PRE-RUPTURE DEXTRAL SHEAR

When? How Much? Where?

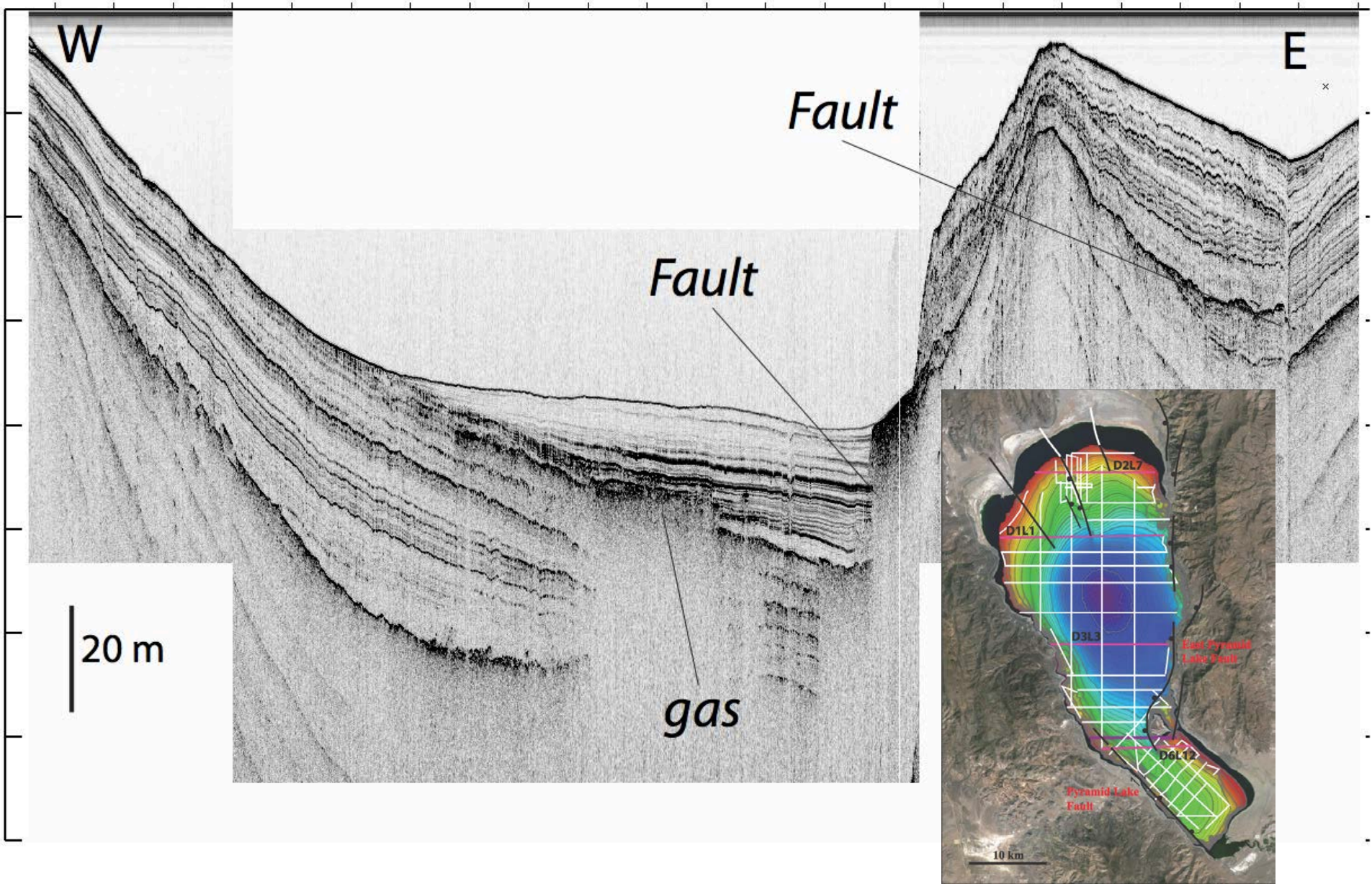


Westward Migration of Extensional Basins
Aragón-Arreola & Martín-Barajas (2007)

THE GUAYMAS TRANSFORM SYSTEM OF THE CENTRAL GULF OF CALIFORNIA

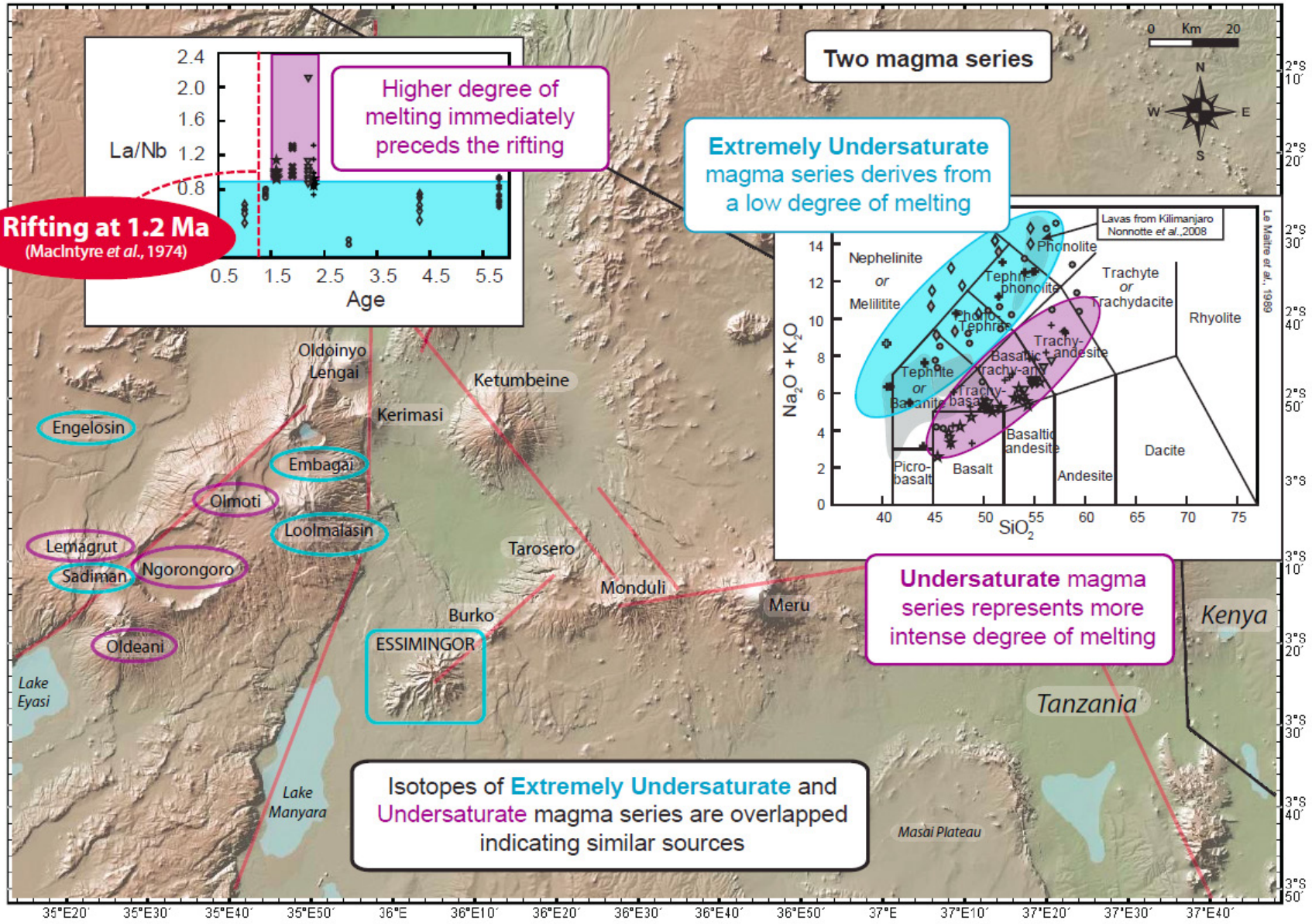


Investigations into early rift development and geothermal resources in the Pyramid Lake fault zone, Western Nevada

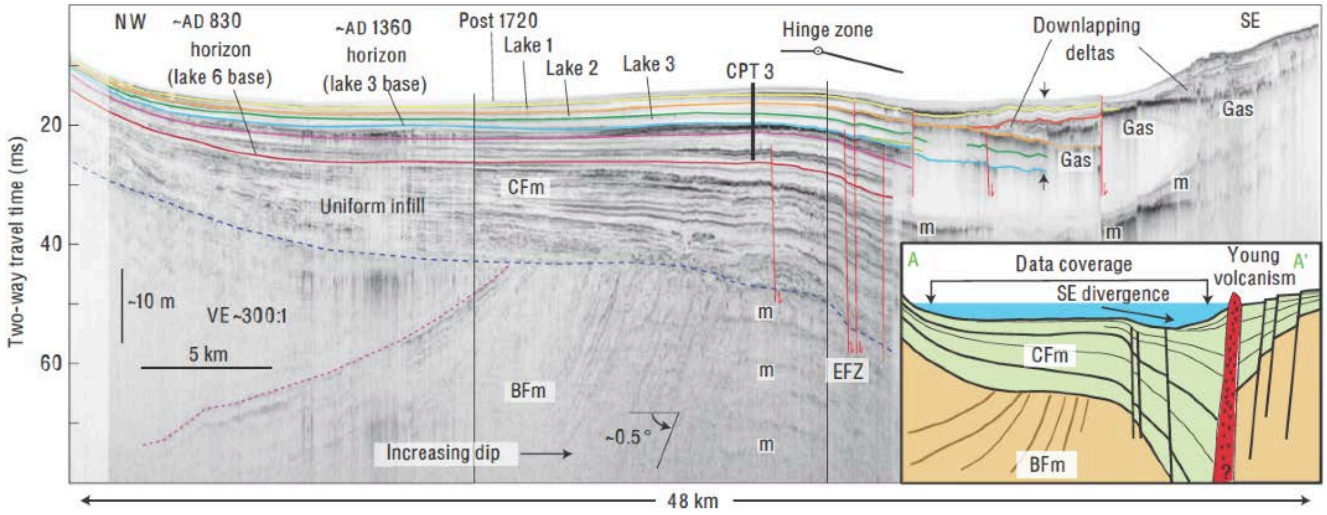


Geochemistry and Geochronology of Miocene to Recent Volcanoes of the Northern Tanzanian Divergence Zone, East African Rift System

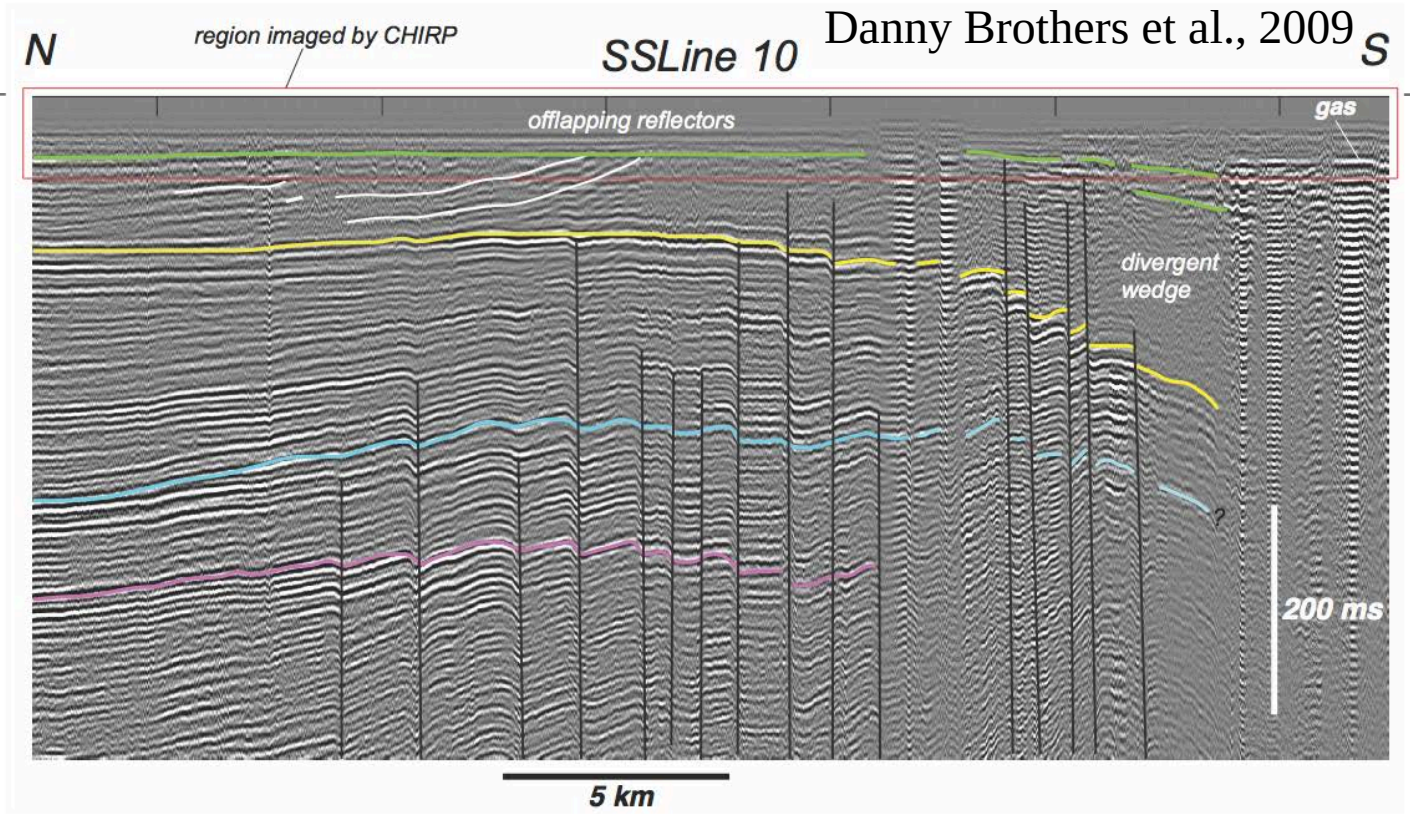
S. Mana , G.F. Mollel , M.J. Carr , T. Furman and C.C. Swisher III



Seismic Reflection Study of the Salton Sea



Danny Brothers et al., 2009



Investigations of rare Pliocene strata for interpreting basin evolution in an active extensional margin in the southern Afar Depression

Erin DiMaggio[1], Ramón Arrowsmith[1], Chris Campisano[2], Kaye Reed[2]

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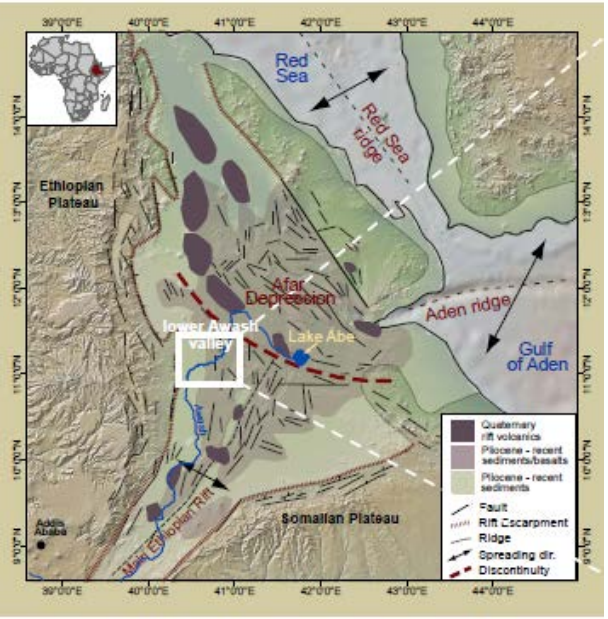
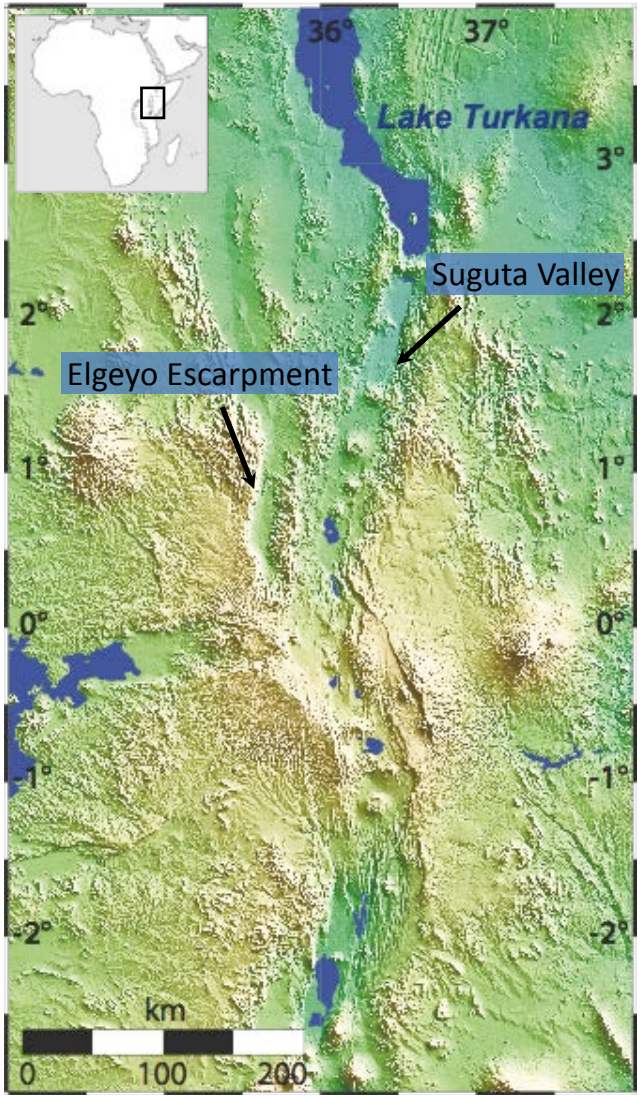


Methods

+ Geologic Mapping
+ Stratigraphy
+ Tephrochronology
+ Tephrostratigraphy



Objectives

- Understanding the onset of rifting.
- Determining erosion Rates through time

Methods

Cosmogenic Nuclides: ^{10}Be in river sediment

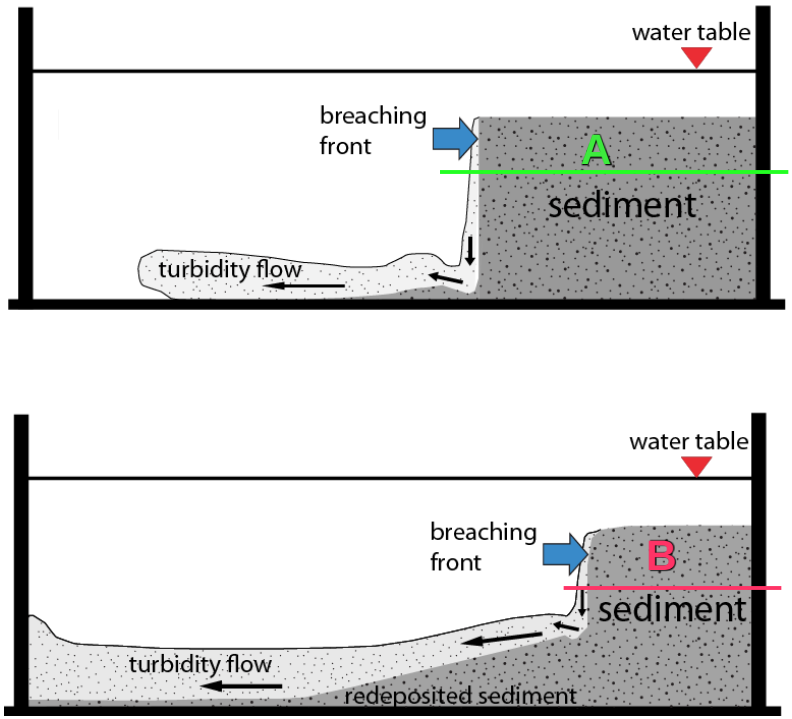
Thermocronology: (U-Th)/ He on apatite from basement rocks

Breaching: a slope failure process that generates sustained turbidity currents

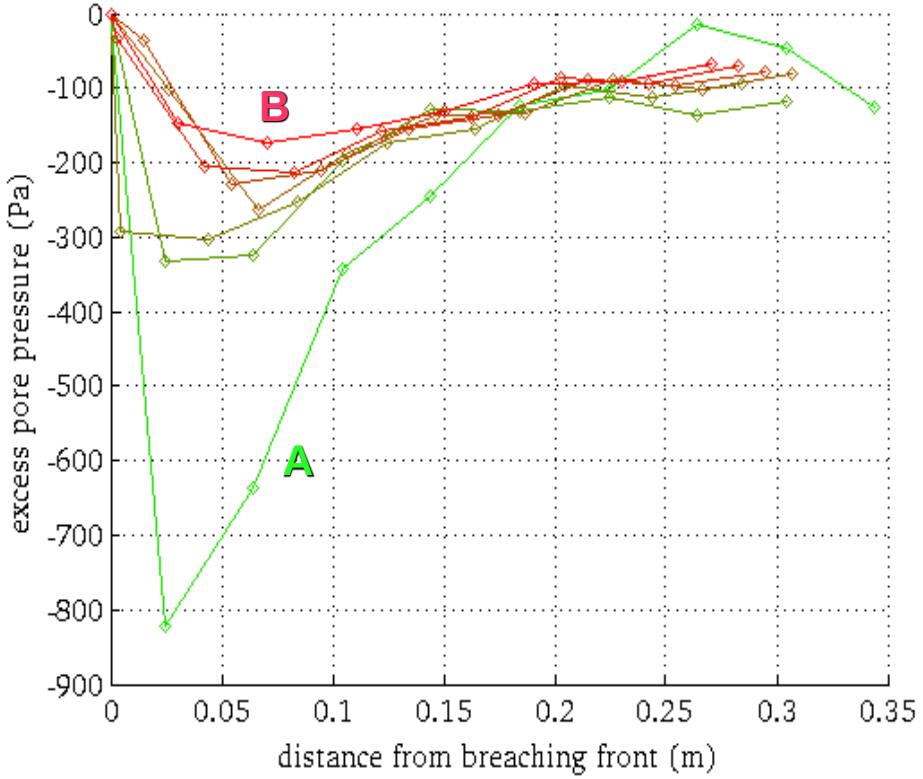
Yao You*, Peter Flemings, David Mohrig The University of Texas at Austin

1. Breaching can occur in any dilative material, like silty sand on the head of submarine canyons.
2. The erosion rate of breaching is proportional to the coefficient of consolidation of the deposit.

morphology



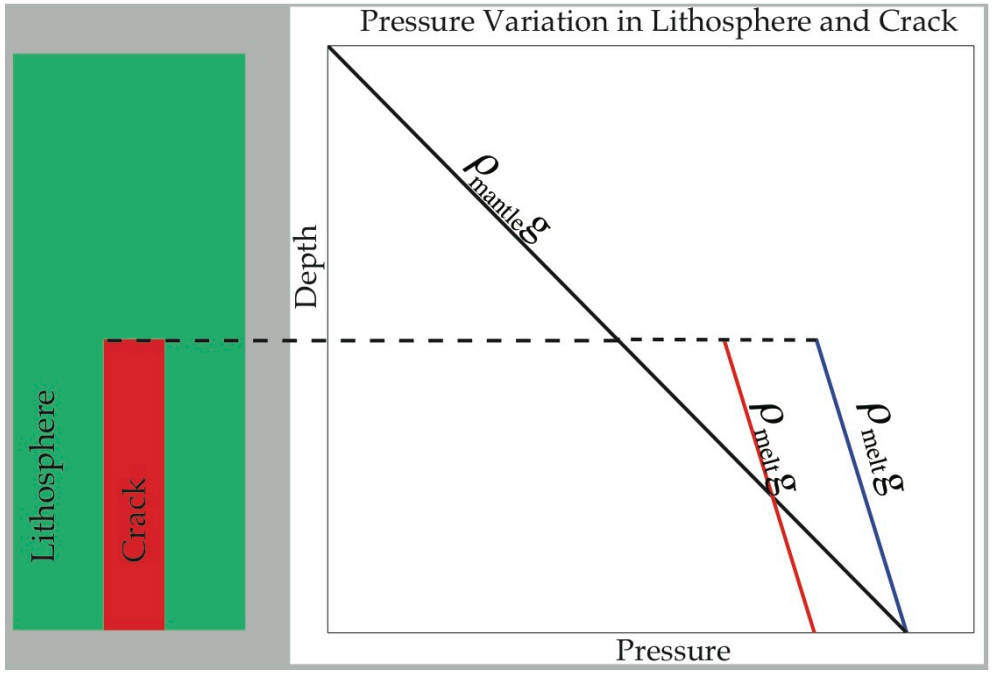
excess pore pressure

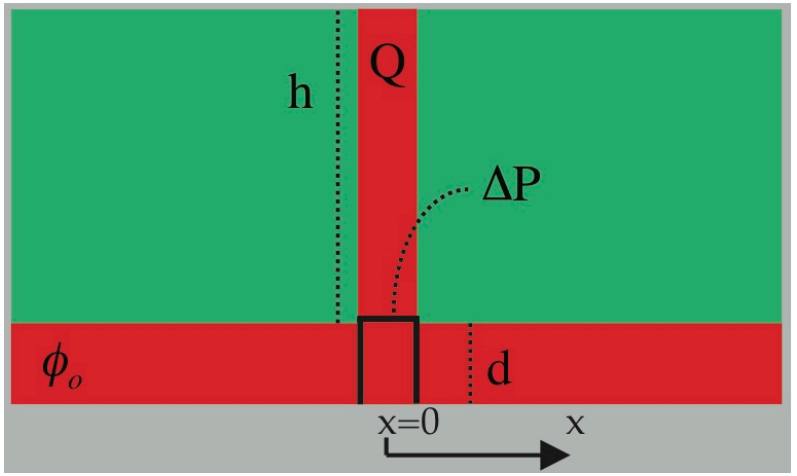


Melt generation and extraction from the upper mantle as a magma source for rifting

Chris Havlin*, Marc Parmentier*, Greg Hirth* in collaboration with Nick Kusznir**
*Brown University, **University of Liverpool

An assessment of the ability of porous flow melt migration to supply magma for dike emplacement in the lithosphere at early and intermediate stages of continental rifting





For reasonable material parameters, reasonable extension rates (1 km/Myr)

Thermochronological evidence for diffuse rupture of continental lithosphere within the central Arabian margin of the Red Sea rift system

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RESEARCH OBJECTIVES

- central and northern Arabian rift flank unexplored in terms of low-T (U-Th)/He thermochronology research
- CARF geologic terrane occupies a critical position along the length of the RSR system that allows us to investigate the nature of the change in rift dynamics

KEY RESULTS

- Onset of lithosphere rupture phase ~23 Ma
  - began concomitantly along the near-full length of the Red Sea – Gulf of Suez system
- <u>strain diffusion</u>: AHe data shows the CARF subdivided into two primary structural domains (HFC and inboard)
- CARF terranes exhumed along numerous rift-parallel footwalls from pre-rift flank depths of ~1.5 – 3.9 km

- Continental Lithosphere Rupture Phase ~23 Ma
- ~200 km-wide zone delineates "deformed wedge" of diffuse extension in the CARF
- Strain Focusing Phase ~14 Ma
- deformational mechanics of SARF and CARF/ NARF fundamentally different