

# GeoPRISMS Grad Student RIE Implementation Strategy

GeoPRISMS Implementation Meeting

Santa Fe, NM

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# G.R.A.D. Implementation Plan

Graduates Rifting Across all Dimensions

- (1) What about RIFTING can we learn in the next 10 years?
- (2) Where should we focus our studies of these processes?
- (3) How can GeoPRISMS serve and build the grad student community during the next 10 years?

Why  
we  
care?



~midnight

# (1) What are the high-priority scientific questions?

- **RIFT INITIATION**

- *The relative roles of magmatism pre-existing structures*

- **RIFT EVOLUTION**

- *The relationship between deformation and magmatism*
- *Variations of erosion, sed transport, & deposition with climate and tectonic forcing*

- **RIFT TO DRIFT**

- *Influence of sedimentary processes during & after break-up on margin formation.*
- *Sed fluxes and morphologic response to climate and land-use changes*

- **FLUIDS & VOLATILES**

- *Role of volatiles (& their fluxes) in rift initiation and evolution*





# Good Attributes of a Primary Site

- interdisciplinary research
- accessibility
  - cost, logistics, exposure, pirates, freedom whales

- amphibious
- existing framework
- applicability
- international collaboration
- cross-latitude (climate)
- along-strike variability



# (2) Where to study?



- **RIFT INITIATION**

- *The relative roles of magmatism pre-existing structures*

East African Rift

Walker Lane-Salton Trough-Gulf of California

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East African Rift

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Eastern Southern Gulf of California

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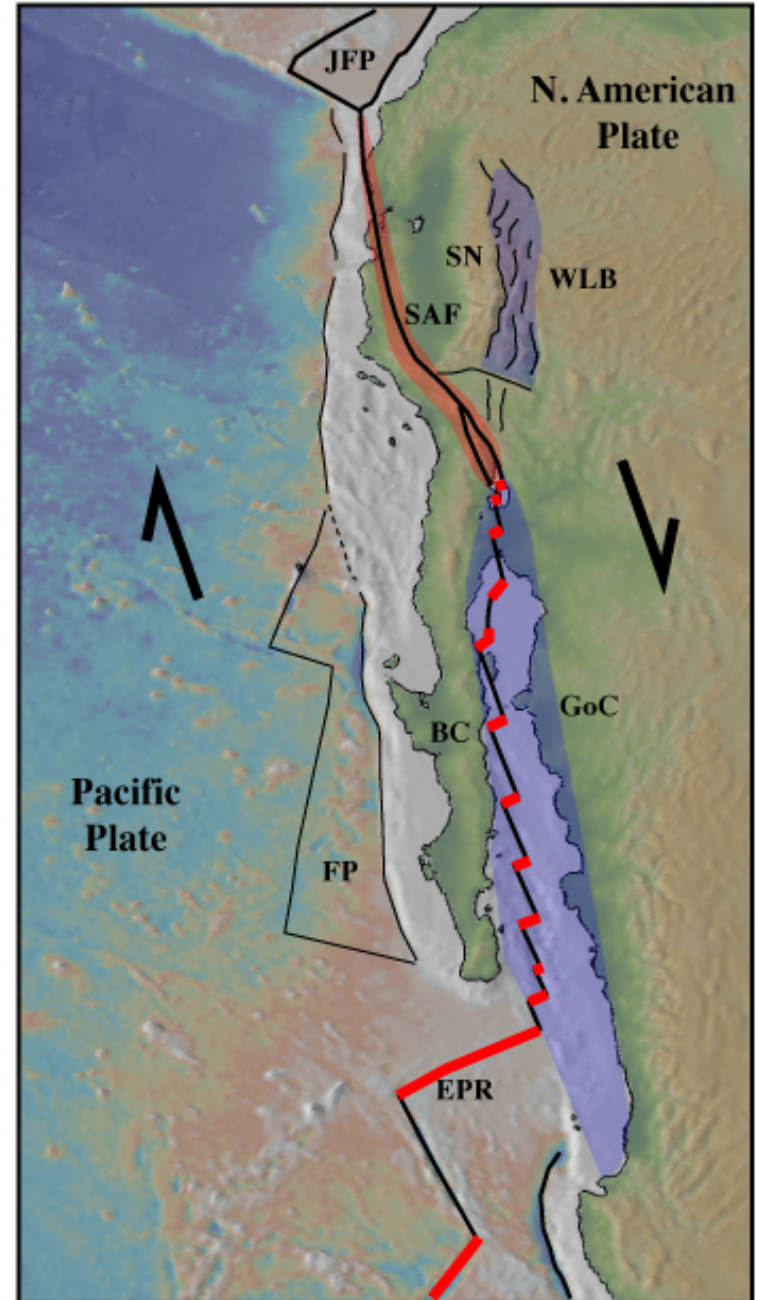
East African Rift

Walker Lane-Salton Trough-Gulf of California

# Walker Lane to Gulf of California

## “Attributes”

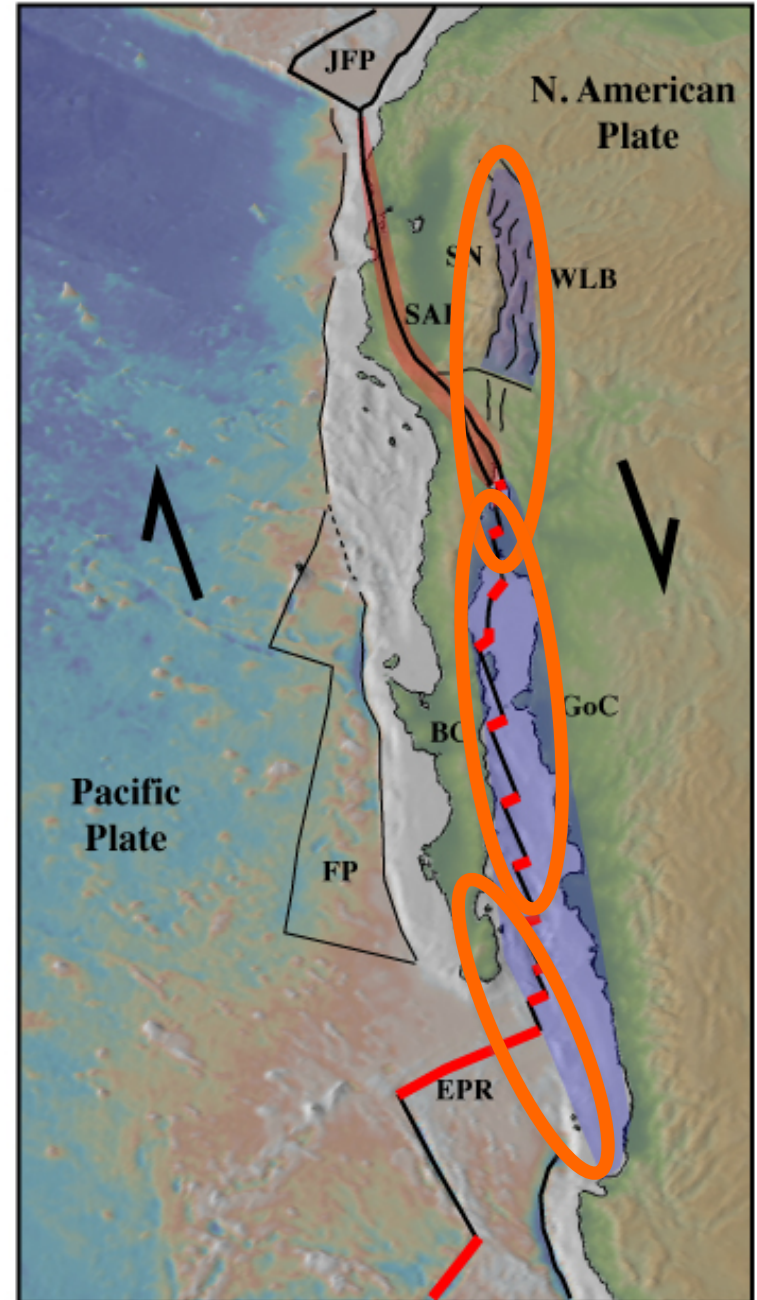
- Strong Existing Framework
- Interdisciplinary
- Amphibious
- Linkage to U.S.
- Accessible?
  - International Collaboration
    - CICESE, UNAM
  - Data Collection?
- Applicability



# Walker Lane to Gulf of California

## Applicability

- Rift Initiation
  - Rift Evolution
  - Rift to Drift
  - Volatiles
- 
- Spatial and Temporal (active and passive) Variability
    - Magmatic
    - Structural
    - Climate variations along latitude
    - Sediment Flux
    - Hydrocarbons
    - Carbon sink?





# What can we learn from Walker-Salton-Gulf Primary Site?

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# East Africa Rift

## Top Site Attributes

- Strong Existing Framework
- Interdisciplinary
- Amphibious
- Strong Collaboration Opportunities
- Accessible?
  - Cost
  - Logistics
  - Exposure
  - Regional Conflicts/Politics
- Applicability (next)

# East African Rift

## Applicability

- Rift Initiation

- Rift Evolution

### Magmatism

- preservation at all stages
- Illusive “transitional” crust in Afar
- ‘Discrete’ events
- Mantra: “No dates, no rates”

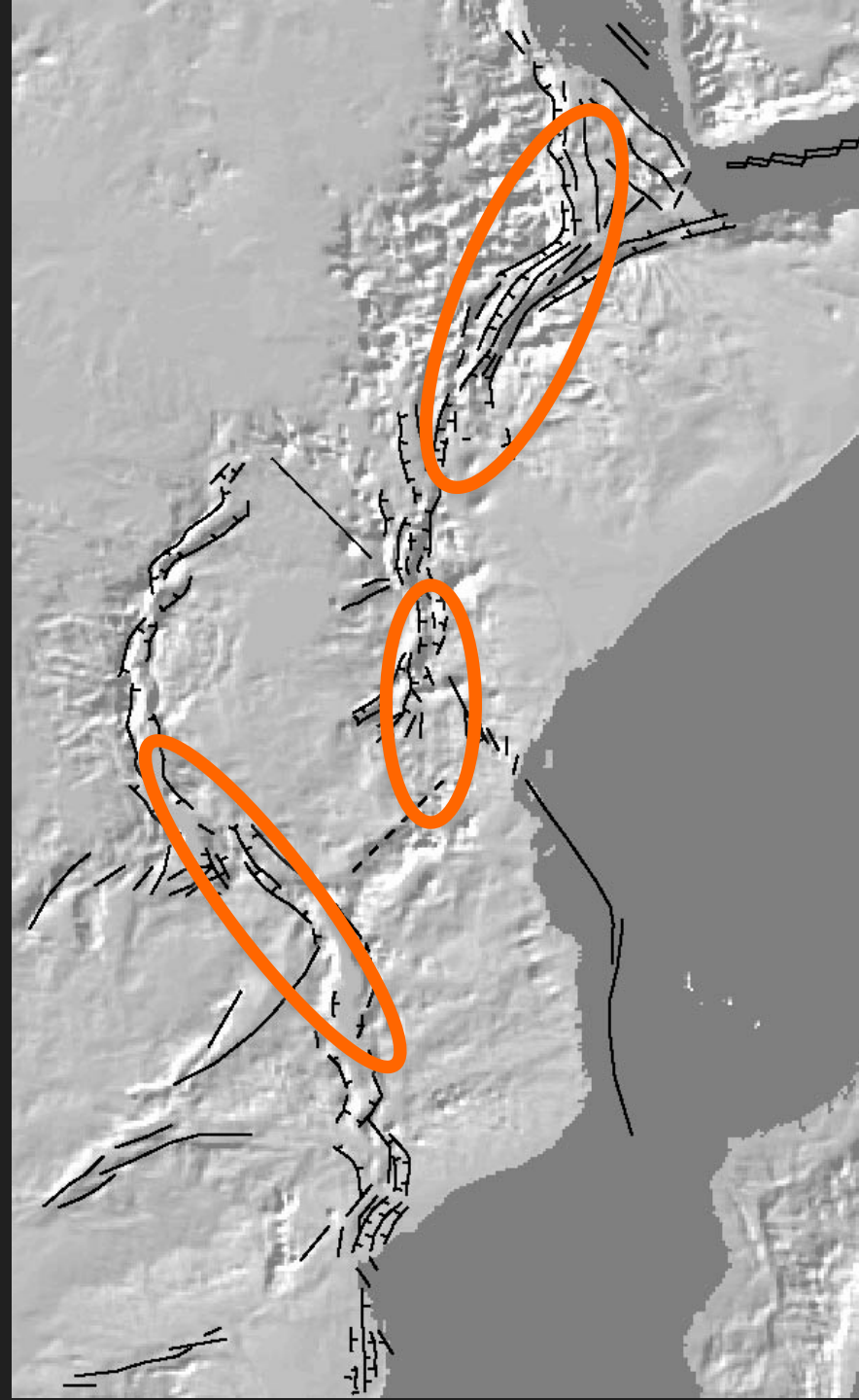
### Spatial and Temporal Variability

- magma supply rates & chemistry; strain rates
- Latitude; Topography; basins

### Sedimentation Patterns/Flux

Geodynamic/Geophysical presence (EAGLE)  
infrastructure

- Volatiles and Fluids



# What can we learn from East Africa Rift Primary Site?

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# G.R.A.D. Plan Summary

- **4 scientific questions**

- RIFT INITIATION
- RIFT EVOLUTION
- RIFT TO DRIFT
- ROLES OF FLUIDS/VOLATILES

- **2 Primary Sites**

- *Walker Lane - Salton Trough - Gulf of California*
- *East Africa Rift*

(1) both active sites provide along-strike variability providing temporal and spatial observations of rift initiation to evolution to drift

(2) sites provide ability to compare and contrast

# (3) What you can do for US!



## CONTINUE:

- grad-only discussion groups (**time set aside**)
- continue \$\$ support to attend meetings (Charleston, San Antonio, Santa Fe)
  - provides inspiration towards research (more so than GSA/AGU)
- highlight grad student research during your presentations
- keep 1-minute pop-up poster presentations

## NEW IDEAS:

- short course options (taught by 3-5 experts)
- section in bi-annual newsletter for update of GeoPRISMS-funded grad student research
- create an option for small-\$ grants for high-impact, short-time-scale research by grad students in Primary Sites (e.g. GSA Grad Research Grants)

# Thanks!

- Conveners  
(Oskin, Arrowsmith, Flemings, Shillington, van Wijk)
- Maggie Benoit
- Lori Summa
- Seth Stein
- John Hole
- Kyle Straub
- Liz Hajek