• Alistair Harding, Neal Driscoll, Scripps
• PESCADOR-Dan, Paul, Gary, Steve, Antonio and John
• Students (Danny Brothers, Fiona Sutherland, Jeff Dingler, Annie Kell and Amy Eisses)
—Observations and Lessons from the Gulf of California, Salton Trough and Walker Lane

• Slab Rollback
• Slab Detachment
• Microplate Capture
• Extension
• Drift
Outline
—10 Years of Margins Research—
Gulf of California, Salton Trough & Walker Lane

• The “Slab”
• Rifting
• Rift to Drift
• Sediment Influence
The “Slab”
Slab Detachment

Erin Burkett, UC Davis
Oblique Rifting
— Arc Crust —
Whole Crustal Extension

Northwest Margin:
Current width: 285 km
Non-extended crustal thickness: 30 km
Extension = 145 km

Southeast Margin:
Current width: 400 km
Non-extended crustal thickness: 29 km
Extension = 170 km

Total opening across the Alarcón transect = 450 km
Tomographic Inversions

- crustal keel remains
- allowable extension: 425-477 km
MCS profiles: Timing of Extension in the Gulf

Line 16
Northwestern (Baja) Margin

Line 16b
Alarcón Basin (Oceanic Crust)
Continent Ocean Transition
Tamayo Trough
Tamayo Bank

Line 20
Southeastern (Mainland Mexico) Margin
San Blas Basin
East Nayarit Trough
Central Nayarit Trough
West Nayarit Trough
Wide Rift
—Yes?—
No....Maybe
Dramatic changes in crustal thickness profiles transforms: dewatering due to Comondú volcanics?

Lizarralde et al. 2007
“Rift to Drift”

... Rift Initiation
Faults Studied: 2006-8
Central/Northern Walker Lane

Dextral shear not accommodated along through-cutting transforms faults... only furthest north WLB
Ongoing GPS Studies

Bill Hammond, NBM&G
“Sediment Influence”
Sill Emplacement—Central GoC
“thick sediments may promote broad magmatism”

Lizarralde et al., 2010
ASYMMETRIC SPREADING IN THE SALTON TROUGH:
Near-surface detachment slip accommodated by accretion at depth?

Mechanical Extension

WSDE

SAF

N

W

Crustal Accretion
Observed Structure

Focused Extension

Brawley Seismic Zone
Salton Sea Imaging Project—a cast of thousands (of receivers)...

February—2010
SSIP—Main Experiment Feb. 2010

region imaged by CHIRP

SSLLine 10

truncated reflectors
gas

divergent wedge

N

S

5 km

200 ms
Influence of Sedimentation on Rift Development

Lake Tahoe  
**Pyramid Lake**

Salton Sea  
←Sediment Starved
Thank You...