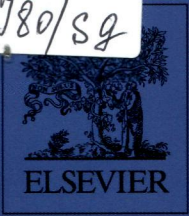


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# JOURNAL OF STRUCTURAL GEOLOGY



# Journal of Structural Geology

Volume 48, Pages 1-164 (March 2013)

## Photograph of the month

*Pages 1-2*

W.M. Schwerdtner

## Repeated seismic slips recorded in ultracataclastic veins along active faults of the Arima–Takatsuki Tectonic Line, southwest Japan

Original Research Article

*Pages 3-13*

Aiming Lin, Katsuhiko Yamashita, Makoto Tanaka

### Highlights

► Ultracataclastic veins including pseudotachylyte-like (Pt) and gouge veins occur along the ATTL faults, Japan. ► Both the Pt and fault-gouge veins consist of fine-grained materials of host rocks. ► Networks of Pt and fault gouge veins were generated by rapid comminution and injection. ► Fine-grained materials can be fluidized and injected rapidly into fault–fracture networks. ► Networks of Pt and fault gouge veins represent a record of paleoseismic faulting events.

## Early foreland deformation of the Fuegian Andes (Argentina): Constraints from the strain analysis of Upper Cretaceous–Danian sedimentary rocks

Original Research Article

*Pages 14-32*

Pablo J. Torres Carbonell, Luis V. Dimieri, Daniel R. Martinioni

### Highlights

► We study the early foreland deformation in the Fuegian Andes orogenic front. ► Strain analysis of Upper Cretaceous rocks indicates deformation at upper-crustal depths. ► Deformation was dominated by flexural folds and pressure-solution tectonic foliation. ► Deformation progressed from layer-parallel shortening to folding and thrusting. ► Successive non-coaxial strain orientations suggest a new tectonic model for the region.

# Enabling 3D geomechanical restoration of strike- and oblique-slip faults using geological constraints, with applications to the deep-water Niger Delta

Original Research Article

Pages 33-44

Pauline Durand-Riard, John H. Shaw, Andreas Plesch, Gbenga Lufadeju

## Highlights

► Classical boundary conditions fail to properly restore strike-slip systems. ► Local slip offsets used as additional constraints resolve correct slip and deformation patterns. ► Channels offset allow restoring a complex restraining bend in the Niger delta basin. ► The restoration resolves slip styles on the complex set of faults. Enabling.

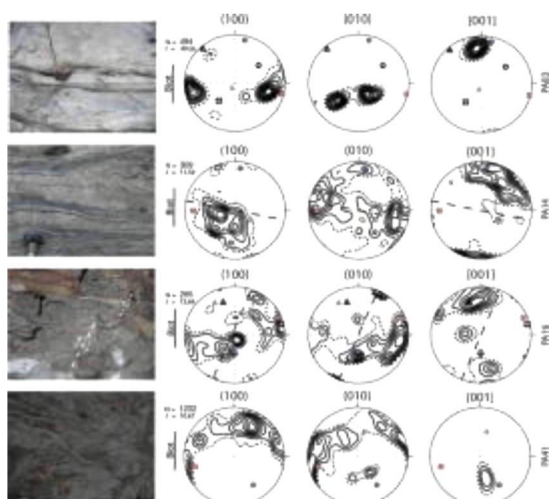
# Fabrics of migmatites and the relationships between partial melting and deformation in high-grade transpressional shear zones: The Espinho Branco anatexite (Borborema Province, NE Brazil)

Original Research Article

Pages 45-56

Luis Gustavo F. Viegas, Carlos J. Archanjo, Alain Vauchez

## Graphical abstract



## Highlights

► Combined fabric studies help constrain melt deformation in shear zones. ► Fabric comparisons reveal that their correlation is not always straightforward. ► Complex patterns are not reproduced in migmatite internal fabrics.

## **Shear strengths of sandstone fractures under true triaxial stresses**

Original Research Article

*Pages 57-71*

Piyanat Kapang, Chaowarin Walsri, Tanapol Sriapai, Kittitep Fuenkajorn

### **Highlights**

► We performed true triaxial tests to determine fracture shear strengths in sandstones. ► The stresses parallel to the strike can reduce the fracture shear strength. ► Confined fractures are sheared more easily than those under unconfined condition.

## **Flow vorticity in Zhangbaling transpressional attachment zone, SE China**

Original Research Article

*Pages 72-84*

Qing Zhang, Christian Teyssier

### **Highlights**

► The Zhangbaling schist was produced in simple-shear dominated general shear. ► The Zhangbaling ductile midcrust experienced fairly uniform deformation. ► The ductile crust underwent relatively even crustal thinning. ► The Zhangbaling schist is considered a midcrustal attachment zone.

## **Statistical tests of scaling relationships for geologic structures**

Original Research Article

*Pages 85-94*

Richard A. Schultz, Christian Klimczak, Haakon Fossen, Jon E. Olson, Ulrike Exner, Donald M. Reeves, Roger Soliva

### **Highlights**

► Displacement–length scaling of fractures and deformation bands was investigated. ► Disaggregation bands scale as  $L$ , similar to faults. ► Dilatant fractures scale as  $\sqrt{L}$ . ► Cataclastic deformation bands and shear-enhanced compaction bands scale as  $\sqrt{L}$ .

## **Transition from fracturing to viscous flow in granulite facies perthitic**

## **feldspar (Lofoten, Norway)**

Original Research Article

*Pages 95-112*

Luca Menegon, Holger Stünitz, Pritam Nasipuri, Renee Heilbronner, Henrik Svahnberg

### **Highlights**

► Deformation mechanisms of perthites in a granulite facies shear zone. ► Predominance of fracturing over crystal plasticity in perthites porphyroclasts. ► Recrystallization of perthites by nucleation and growth from fractured grains. ► Recrystallized grains deformed by diffusion creep and grain boundary sliding. ► Fracturing promoted operation of grain size sensitive creep and strain localization.

## **Mode I microfracturing and fluid flow in damage zones: The key to distinguishing faults from slides**

Original Research Article

*Pages 113-125*

Mark H. Anders, John R. Schneider, Christopher H. Scholz, Steven Losh

### **Highlights**

► Large slide blocks do not develop a process zone during emplacement. ► Microfracture density and fluid histories are useful in characterizing detachments. ► Two large-displacement extensional allochthons are found to actually be slide blocks.

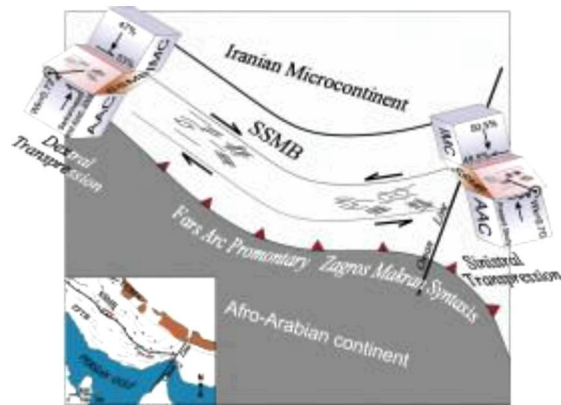
## **Variations in the kinematics of deformation along the Zagros inclined transpression zone, Iran: Implications for defining a curved inclined transpression zone**

Original Research Article

*Pages 126-136*

Khalil Sarkarinejad, Abdolreza Partabian, Ali Faghih

### **Graphical abstract**



## Highlights

- ▶ This study showed plate boundary shape can control the nature of deformation.
- ▶ Curvature along the Zagros transposition zone affects the kinematics of deformation.
- ▶ The kinematics of the transposition zone varies with the orientation of its boundary.

## Theoretical analysis of large amplitude folding of a single viscous layer

Original Research Article

Pages 137-152

Marta Adamuszek, Daniel W. Schmid, Marcin Dabrowski

## Highlights

- ▶ LAF is a theoretical model for buckling of a single, viscous layer.
- ▶ It accurately predicts the evolution of geometrical parameters up to large amplitudes.
- ▶ LAF is not restricted to any viscosity ratio and type of perturbation.
- ▶ LAF reproduces essential features of the natural fold shapes.

## A new three-dimensional method of fault reactivation analysis

Original Research Article

Pages 153-161

Henri Leclère, Olivier Fabbri

## Highlights

- ▶ A 3-D method to evaluate the reactivation potential of faults is proposed.
- ▶ The method does not include restrictions about the principal stress axis orientations.
- ▶ Faults with various friction coefficients or cohesions can be tested.
- ▶ The method is applied to the March 2011 Tohoku-Oki

mainshock-aftershock sequence. ► Heterogeneous spatial distribution of fluid pressure affects fault reactivation.

**Corrigendum to “Termination of the northwestern Basin and Range province into a clockwise rotating region of transtension and volcanism, southeast Oregon” [J. Struct. Geol. 39 (2012) 52–65]**

*Pages 162-163*

David Trench, Andrew Meigs, Anita Grunder