Geophysical Research Abstracts
Vol. 14, EGU2012-10878, 2012
EGU General Assembly 2012

Local disturbances of stress field around faults: insights from borehole breakouts

Y. Yamada and J. Shibanuma
Kyoto Univ., Earth Resources Eng., Kyoto, Japan (yamada@earth.kumst.kyoto-u.ac.jp)

Borehole breakouts are enlargements and elongation of a borehole in a particular direction. These are generated by failure of the borehole wall rock in a direction parallel to the minimum horizontal stress axis (Shmin), thus have been widely used for determination of in-situ stress orientation and magnitude, based on rock mechanics theory around the wellbore. Such breakouts are generated immediately after drilling and progresses (thus widening) with time. Detection of borehole breakouts is available by using geophysical logging data, such as caliper data from dip meter tools, and more preferably borehole wall images by acoustic or electrical devices.

We have used offshore scientific drilling (IODP) data in Nankai Trough, a subduction margin with a development of accretionary wedge, off SW Japan, and extracted a number of borehole breakouts. Most of the breakouts show directions that can be explained by the regional convergence, but some are obviously rotated around major faults or fractured zones. These local disturbances in the breakout direction can be used as an indicator of geologically recent fault movement. This paper discusses the correlation of fault systems in this area and rotation of borehole breakouts.