BGP-T7: **Stress feature interpretation from boreholes in the Snake River Plain (USA) and perspectives of downhole logging in the International Continental Scientific Drilling Program**

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Boreholes in the Snake River Plain served to shed new light on one of the largest basaltic-rhyolitic provinces and the Yellowstone Hotspot (Shervais, et al. 2013, 2011). In the framework of the ICDP (International Continental Scientific Drilling Program) we have obtained a set of geophysical logging data serving initially technical and scientific purposes. New analyses of borehole televiewer data serve to identify the stress features (i.e. borehole breakouts, natural and induced fractures) and to characterize the local and current stress field. Here we present and discuss the borehole televiewer data collected in Kimama hole between 270 m and 740 m. The two primary stress indicators used in this study are borehole breakouts and drilling induced tensile fractures (DITFs). Borehole breakouts are stress-induced elongations of a borehole cross section. On borehole images, borehole breakouts appear as dark features and in some cases, incipient breakouts have been identified by conjugate shear fractures, where no spalling of the borehole wall has occurred. However borehole images of Kimama hole show poor compressive failures, mainly located between 650 and 700 m. DITFs appear as dark electrically conductive fractures, mainly parallel to the axis of borehole and show a discontinuous nature. On the contrary the natural fractures are often seen as continuous sinusoids and appear as electrically conductive or electrically resistive. A consistent population of natural fracture (approximately 200 features) has been identified and interpreted.
These data are compared with existing stress records of the area to obtain an improved knowledge of present-day stress field in the area. A detailed understanding of the regional field is a fundamental contribution in several research areas such as geothermal reservoir studies or exploration and exploitation of underground resources etc. The evaluation of these data is integrated in the scientific assessment of downhole logging data acquired over the past years by the ICDP Operational Support Group with slimhole tools (150°C/80 MPa) in boreholes with a maximum bit size of about 210 mm in meanwhile 32 downhole logging campaigns worldwide. The acquired downhole logging data were often used only for depth correlation and the integration of core and downhole logging data but without further evaluation of their scientific potential.

References

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