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# Multiscale analysis of the fracture pattern in granite, example of Tamariu's granite, Catalunya.

L. Bertrand, E. LeGarzic, Y. Géraud, and M. Diraison
University of Strasbourg, France

Crystalline rocks can be the host of important fluid flow and therefore they can provide a good reservoir potential. In this kind of rocks, the matrice porosity is in general low and a large part of the permeability is governed by the fracture pattern. Thus, they are the first interest of studies in order to characterize and model the fluid flows. Actual reservoirs are underground, and the only access to the fracture pattern is with boreholes and seismic lines. Those methods are investigating different scales and dimensions: seismic is in 3D at a global scale whereas boreholes are 1D at a localized scale. To make the link between the different data, it is necessary to study field analogues where such fractured rocks are outcropping. Tamariu's granite, in Catalunya, has recently been studied as a field analogue of a fractured reservoir. The previous studies have lead to define structural blocks at different scales, linked to the regional deformation. This study's aim is to characterize the internal fracturation of a single structural block with a statistical analysis. We used one dimension scan lines at the scale of a block and 2 dimensions mapping at a more precise scale until the grain scale. The data highlighted that the fracture and fault lengths have a power law relation in 8 orders of scales. So this power law is stretching between seismic and borehole scales. Therefore, the data fit with a very good trust in the power law exponent, which is very well defined. The link between the reservoir scale faults and the internal block fracturation has also been defined in term of the structures orientation. Finally, a comparison between the 1D and 2D measurement could be done. The 1D scan lines show correctly the different fractures families but samples incompletely a part the fracture pattern, whereas the 2D maps which show more the global trends of the fractures and could lose some minor trends orientations.