



Supplement of

Naturally fractured reservoir characterisation in heterogeneous sandstones: insight for uranium in situ recovery (Imouraren, Niger)

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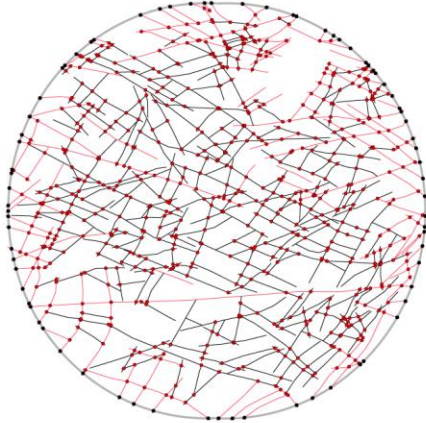
Supplementary materials

Table S1: Tracing operations parameters.

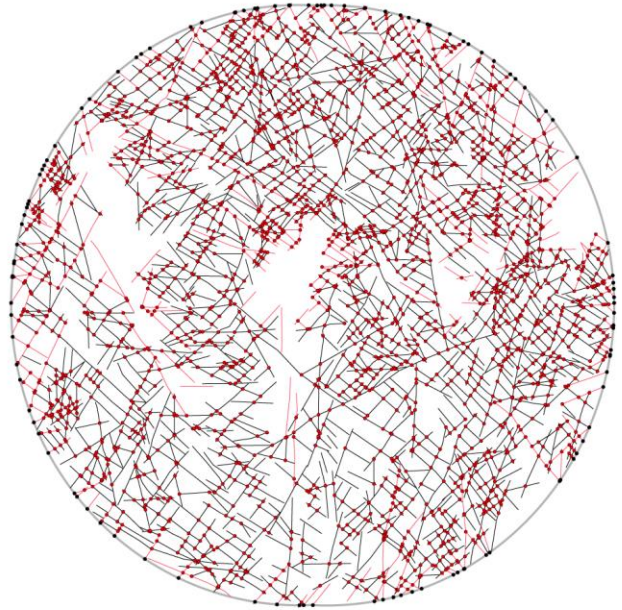
Operating site	Injection well (azimuth)	Average pumping flow (m3/h)	Tracing time (hours)	Mass of salt (Kg)	Brine volume (L)	Injected water volume (L)	Maximum chloride deviation [Cl-] (mg/L)	Restitution of chloride (Kg)	Rate of restitution (%)
IMOU_2527_2	IMOU_2527_3 (N0°E)	18.1	841	200	3000	1756	11.9	71.2	56.2
	IMOU_2527_4 (N270°E)	18.3	173	200	3000	1704	145	96.4	79

5 Fig. S1: Detailed maps of second-order sampled lineaments (Z1 to Z4), locations are available in figure 2c.

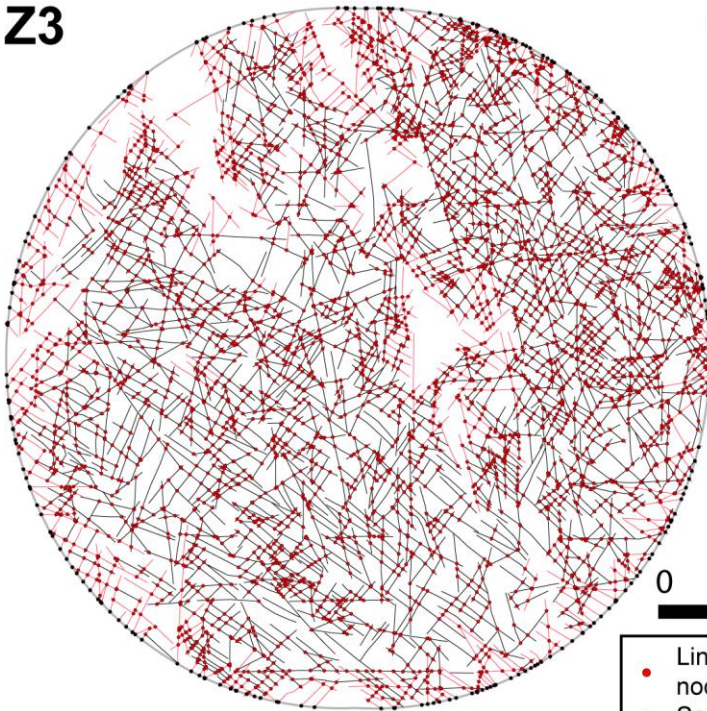
Z1



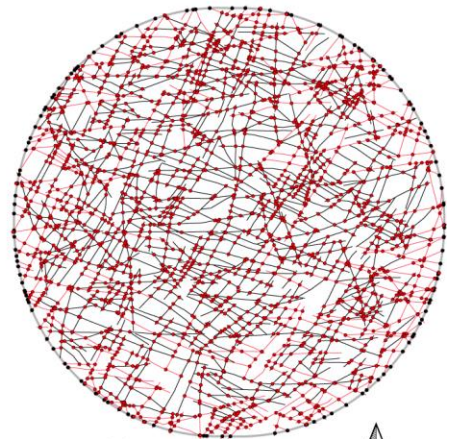
Z2



Z3



Z4



0 50 100 m

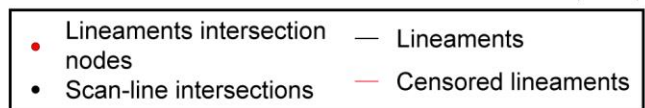


Fig. S2: Panel of deformation structures found in the Tchirezrine II unit at different scales of observation.

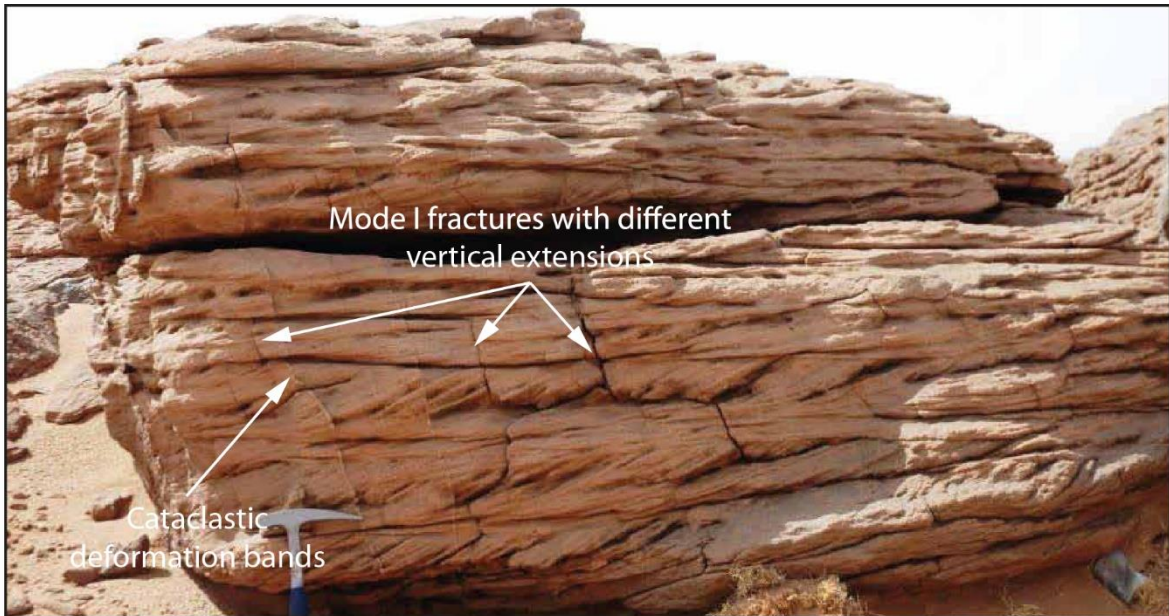


Photo of the Tchirezrine II outcrop showing cataclastic deformation bands and Mode I fractures present in the same sandstone unit. Note that the mechano-stratigraphic impact the vertical extension of the Mode I fractures (Orano Internal Report).

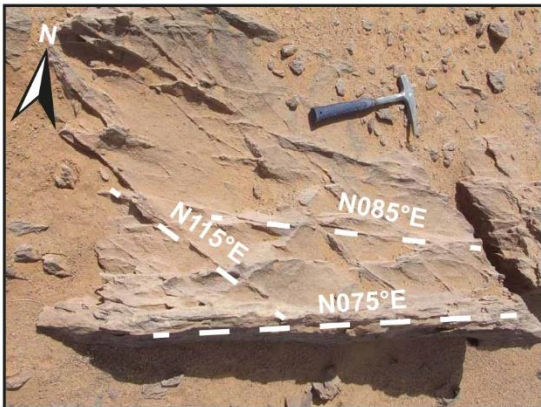


Photo of the Tchirezrine II outcrop showing cataclastic deformation bands system, next to a regional N070°E-N080°E cluster of faults (Orano Internal Report).

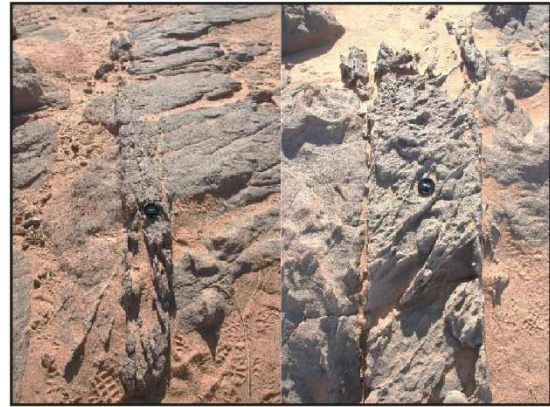


Photo of the Tchirezrine II outcrop showing faults made of cataclastic deformation bands clusters near the DASA site



Cataclastic deformation bands with one open side from Tchirezrine II unit at Imouraren site (Orano Internal Report).



Photo of the Tchirezrine II outcrop showing orthogonal joint sets near the DASA site



Cataclastic deformation bands crosscutting a clayey pebble from Tchirezrine II unit at Imouraren site (Orano Internal Report).



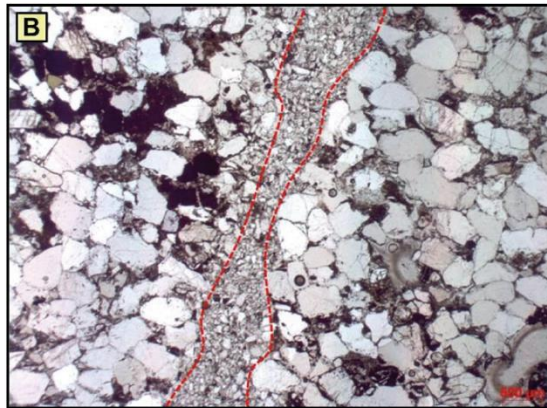
Open joint with some uranium oxides from Tchirezrine II unit at Imouraren site (Orano Internal Report).



Mode I fracture with calcite seal in fine sandstone from Tchirezrine II unit at Imouraren site



Structure vertical change as fonction of lithology, from cataclastic deformation band in very coarse sandstone to Mode I fracture in fine-medium sandstone from Tchirezrine II unit at Imouraren site



Thin section showing a cataclastic deformation band with trans-granular fracturing from Tchirezrine II unit at Imouraren site. From Mamane Mamadou (2016)

10 Fig. S3: Exponent of the negative exponential trend for each set of orientation as a function of the area of the sampling window. If the variations in circle size were to induce a bias in the length distribution of a trending set, the exponent should approach zero as the window area increases. However, this is not the case, as variations in the length distribution described by the data reflect variations in the mechanical-stratigraphic properties of the different sampling windows.

