Contribution of remote sensing for geological study of the southeast of Constantine Basin, Algeria

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The main objectives of this work are to map and characterize the fracture networks developed in major carbonated deposits of southeast Constantine Basin. It is a contribution to a better knowledge of the geometry of existing surface fracture networks and their extension at subsurface. To achieve this goal, the tools of remote sensing and seismic data were used.

Using remote sensing data, our study enabled us to draw up a lineament map, along with tectonic analysis, where we could draw up a list of 409 lineaments. Such lineaments are divided into 9 classes according to their directions, among which the main directions of the NW-SE fracture network are: H (N1300-N1500), G (N1100-N1300) and F (N900-N1100).

These three classes are in agreement with the major faults recognized in the region, e.g. the Biskra-Outaya, Ouinet-Morsott-Tebessa faults and the dextral shears.

After the deferential work carried out on the southeast Constantine area, and the results obtained by seismic reflection, as well as the well log data, summarize that our reservoirs are characterized by a mainly low to medium porosity and low permeability. These carbonated reservoirs are affected by the majority of vulnerabilities detected at surface, but do not contribute to the improvement of the petrophysical characteristics. This can be reported to the clogging of the cracks.

Keywords: Algeria, southeast Constantine Basin, remote sensing, fracture network, carbonate reservoirs, petrophysical characteristics