Abstract

This MSc thesis presents a study of the network of fractures that surrounds the Mena de la Sal Diapir (Basque-Cantabrian Basin). Different remote sensing methods were used to obtain data at different scales (meters-hundreds of meters). For the meter scale orthophotos from drone flights were used, while for the larger scale Google Earth orthophotos were utilized. The main objective was to unravel the origin of the fractures surrounding the diapir, *i.e.,* whether they were affected by its rise and/or collapse or if they are regional fractures not related to salt flow. Also, this case study is used as an analog for similar reservoirs in the subsurface, to predict the degree and orientation of fracture permeability anisotropy. The remote sensing data was processed with software to analyze the statistics of fracture networks, including the fracture direction, length, connectivity and permeability tensors. The results indicate that some fractures can be related to the ascent of the diapir, since it can be intuited a radial pattern within the main directions of the fractures. In terms of permeability anisotropy, there are some isotropic areas, but in general there is an anisotropy with an azimuth of k_1 that coincides with the perceived radial pattern.