

The diapiric province of north-eastern Algeria and Tunisia extends NE–SW over several hundreds of kilometres. Available, geophysical and geological investigations were focused on the study of known diapiric outcrop. In contrast to the existing work, our study is focused on to identify a new hidden near surface salt diapir in the Guelma Basin, north-east of Algeria. Integrated geophysical study comprising aeromagnetic, gravimetric and DC resistivity data calibrated with existing well information provides new insights into the geometry of the geologic structure of Guelma Basin. Spatial correlation between magnetic low, strong gravity minimum and resistivity high reveal a hidden near surface salt diapir. The Guelma salt diapir is topped by a local topographic high which follows exactly the underlying salt body. Joint gravity-magnetic modelling indicates that salt is deeply rooted and has a dome-like shape. The Guelma salt diapir was triggered by normal faulting and is directly controlled by regional extension