

**ON THE ORIGIN OF THE AFLOU STRUCTURE (ALGERIA).**

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**Introduction:** The Aflou structure is located in central Algeria, at about 350 km south of Algiers. This structure is an oval depression, 3x5 km in size, and extended from SW to NE. It was first described by Marks et al. (1971) [1] assigning it a probable impact origin, based on the presence in the center of the structure of "vitreous" rocks which are interpreted as impact melts. Lambert et al. (1980) [2] noted the lack of evidence for impact crater and described it as an erosional and/or a dissolution feature. They related the igneous rocks to a magmatic activity that affected the area during the late Tertiary or Quaternary. Reimold and Koeberl (2014) [3] reviewed the current knowledge about this structure, listing it as a disproven impact crater in Africa. Although there is no doubt about the non-impact origin of the Aflou structure, the genetic options proposed by Lambert et al. (1980) [2] for this structure and its igneous rocks are still doubtful. For example, no recent magmatic activity is known in this part of Algeria, and the origin of the vitreous samples of the structure remains unknown. Here we report the results of our field observations in the Aflou structure and propose an interpretation of the origin of this structure.

**Results and discussion:** The Aflou depression is filled by variegated marly clay and a chaotic mass of evaporite lithology consisting mainly of gypsum. Within the red/green clay and evaporitic body, there are various rocks that mainly consist of limestones, dolomites, breccias, cellular dolomites (cargneules) and block of basaltic rocks (known as ophites). This lithological association is typical of diapiric Triassic of the Atlas domain of Algeria to which Aflou structure belongs. Consequently, the interpretation of Lambert et al. (1980) [2] who assigned this lithological association to the local Er Richa and Ed Dor formations that are deposited in a lake is most probably erroneous. Furthermore, volcanics that have been interpreted by Marks et al. (1972) [1] as an impact melt and by Lambert et al. (1980) [2] as Tertiary or Quaternary volcanic rocks, are in fact Triassic/Jurassic dolerites or basalts (ophites) within the Triassic formation. Such ophites are common within the Triassic diapirs of western Saharan Atlas in Algeria and are linked to the Central Atlantic Magmatic Province (ca ~ 200 Ma). Finally, the Aflou structure is shown on the Geological map of Laghouat at 1:200.000 as a diapiric structure, known as Ain el Harfi or Ain Fourene structure.

**Conclusion:** Based on our field investigations and geological data, the Aflou structure is interpreted as a Triassic diapir. The igneous rocks that outcrop in the area are Triassic/Jurassic ophites within the Triassic formation.

**References:** [1] Marks P. et al. 1972. *Verhandelingen der Koninklijke Akademie van Wetenschappen te Amsterdam, ser. B* 75: 348–355. [2] Lambert P. et al. 1980. *Meteoritics* 15: 157–179. [3] Reimold W.U., Koeberl C. 2014. *Journal of African Earth Sciences*, 93: 57-175.