



Application of magnetotelluric in the modeling of underlying structure of Gour Oumelalen (Egere-Aleksod terrane, Central Hoggar, South of Algeria)

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The results of a magnetotelluric experiment crossing Ounane granodiorite to the east until the Amadrour Wadi to the West, passing through Adrar Ounane in our study area are presented. The magnetotelluric field survey was carried out in the Gour Oumelalen (GO) area during March 2015. We deployed 34 magnetotelluric sites along two parallel EW profiles of a hundred km long. Time series were collected using a V5 system 2000[®] of Phoenix Geophysics. The first profile located to the north is composed of 18 broadband measurement sites obtained from merging magnetotelluric with audio-magnetotelluric (AMT) data. The second one located 10 km south of the first, is composed of 15 MT sites. An inter-station distance of ~ 5 km provides good lateral resolution. The MT time series were recorded during about 20 hours which allows to reach a depth of 100 km or more and the AMT data 30 minutes. This allows to get broadband magnetotelluric soundings with good quality data in period range from 0.001 s to 3000 s. In this study we will use the south profile data for modeling the underlying structure of GO. The crustal part of the model shows a resistance bloc, divided by conductive parts which can be interpreted as faults, as regards the lithospheric part it is less resistant the upper part, the transition crust / mantle corresponding to MOHO is estimated at more or less 35 km.