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COMMENT

Discussion and comments on "Filtering of the gravimetric anomalies to the study of the geological structures of Oued Zarga (Septentrional Tunisia): structural implications", Arab J Geosci (2012) 5:169–180 by A. Ayed, M. Ghanmi and F. Zargouni

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We read with great interest the paper of Ayed, Ghanmi and Zargouni (2012; hereafter referred to as AGZ), because of the vicinity of their study area to northeastern Algeria. AGZ did good work in their case study; however, we have some comments regarding some points stated in their paper.

The first point in AGZ is their Figure 9. The descriptions of the 2.5D forward modelling relative to Figure 9 of AGZ are wrong. According to AGZ, the anomaly is negative and matches well the observed anomaly; however, we can clearly see that the anomaly presented in their figure is positive. AGZ did not show the location of the modelled profile on their residual or the Bouguer maps to facilitate whether the anomaly is positive or negative.

The second point in AGZ is the mean density of the Triassic evaporites used in gravity modelling. It seems that there is a controversy among Tunisian researchers relative to the mean density of Triassic diapirs. AGZ and Hamdi-Nasr et al. (2009) used a mean density ρ=2.51 g/cm^3, Amiri et al. (2011) used a mean density ρ=2.58 g/cm^3 whereas Jallouli et al. (2005), Benassi et al. (2006) and Tanfous et al. (2010) used a mean density ρ=2.27 g/cm^3.

The use of a high mean density (2.51 or 2.58 g/cm^3) for the Triassic evaporites is probably done to explain the positive anomalies observed over some diapiric structures in Tunisia. It should be noted that Benassi et al. (2006) have elegantly explained and modelled in the case of Jebel El Mourra, a diapiric structure causing a positive gravimetric anomaly with a mean density ρ=2.27 g/cm^3. Tanfous et al. (2010) also modelled the positive gravimetric anomaly over the Jebel Es Souda-Hmaeima structure with a mean density ρ=2.27 g/cm^3 using seismic reflexion constraints.

The mean density ρ=2.27 g/cm^3 for Tunisian Triassic diapirs is very close to their northeastern Algerian counterparts. From 27 samples over northeastern Algeria, the density varies between a minimum of 2.1 g/cm^3 and a maximum of 2.5 g/cm^3 with a mean value ρ=2.33 g/cm^3 (Boubaya et al. 2012).

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