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Geochemical mapping of radioactive elements using helicopter-borne gamma-ray spectrometry (Tiouit, Eastern Anti-Atlas, Morocco): Or occurrence and environmental impact.

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Abstract

The spectrometric prospection is a direct geophysical method based on the analysis of the radioactive elements spectra, due to three principal radioactive elements ^{40}K, ^{238}U and ^{232}Th. In order to measure the content of radioactive elements a geophysical helicopter survey was carried out to a flight altitude of 60 m from the subsoil, covering the geological map of Tiouit 1/50000 with an extent of 45.5×29 Km^2. In this paper, we propose an application in the environment and or occurrence by the production of maps concentration in K, U and Th to delimit the areas with purely natural radioactive risk by the calculation of the dose rate in mSv, the found values show a variation of 0,3 with 1,649 mSv with a median value of 0,831 mSv. Moreover, data processing as the horizontal gradient filter which allowed to amplify the spectrometric signatures, this one coupled to the upward continuation, lead us to a better