

The digital processing applied out an image allowed obtaining a geological map and the geologic lineament map. The highest densities of lineament obtained are oriented NE-SW and with of the same faults F1' oriented NE-SW. The current seismic activity confirms the migration of the seismic activity towards the South-Est. The compression oriented NW-SE between African and Eurasian plate is causing faults and the current seismic activity. The simultaneous use of the techniques of digital processing of satellite images and a GIS made it possible to locate the active faults responsible for the seismic activity. This localization of the faults reduced the cost of investigation and allowed a better monitoring of the seismic activity.

7. Acknowledgements

This study was supported by the Scientific Institute, Mohamed V University, Rabat

References

- [1] Ayarza P, Alvarez-Lobato F, Teixell A, et al. 2005. Crustal structure under the central High Atlas Mountains (Morocco) from geological and gravity data. *Tectonophysics* (2005), 400: 67-84.
- [2] Beauchamp, W., R. W. Allmendinger, M. Barazangi, A. Demnati, M. El Alji, and M. Dahmani, 1999. Inversion tectonics and the evolution of the High Atlas Mountains, Morocco, based on a geological-geophysical transect, *Tectonics*, 18, 163–184.
- [3] *Caia, J. 1969. Les minéralisations plombo-cupro-zincifères stratiformes de la région des plis marginaux du Haut Atlas oriental. Not. Mém. Servi. Géol.*
- [4] Choubert, G. and A. Faure-Muret, 1962. Evolution du domaine atlasique marocain depuis les temps paleozoïques, in *Livre a la Memoire du Professeur Paul Fallot, Mem. hors Ser., vol. 1, pp. 447–527, Soc. Geol. de Fr., Paris.*
- [5] Du Dresnay R. 1979. Sédiments jurassique du domaine des chaines atlasiques du Maroc, *Symp Sédimentation jurassique W-européen, Paris 1977 , Pub. Spéc. Assoc. Sédimentol. Franç.1, 345-355.*
- [6] Dutour, A. and J. Ferrandini 1985. Nouvelles observations neotectoniques dans le Haut Atlas de Marrakech, et le Haouz central (Maroc): Apports sur l'évolution recente d'un segment du bati atlasique, *Rev. Geol. Dyn. Geogr. Phys., 26(5), 285–297.*
- [7] El Harfi, A., Lang J., and Salomon J. 1996. Le remplissage continental cenozoïque du bassin d'avant-pays de Ouarzazate: Implications sur l'évolution geodynamique du Haut-Atlas central (Maroc), *C. R. Acad. Sci., Ser. II, 323, 623–630.*
- [8] Fraissinet, C., E. M. Zouine, J.-L. Morel, A. Poisson, J. Andrieux, and A. Faure-Muret, 1988. Structural evolution of the southern and northern central High Atlas in Paleogene and Mio-Pliocene times, in *The Atlas System of Morocco*, edited by V. Jacobshagen, p. 273–291, Springer-Verlag, New York.
- [9] Gorler, K., F.-F. Helmdach, P. Gaemers, K. Heissig, W. Hinsch, K. Madler, W. Schwarzahans, and M. Zucht 1988. The uplift of the central High Atlas as deduced from Neogene continental sediments of the Ouarzazate province, Morocco, in *The Atlas System of Morocco*, edited by V. Jacobshagen, pp. 361–404, Springer-Verlag, New York.
- [11] Hamid Haddoumi H., Charriere A., Andreu B., P.O. 2008. Middle Jurassic to Lower Cretaceous continental deposits from eastern High Atlas (Morocco): successive paleoenvironments and paleogeographic significance.
- [12] Herbig H.G. 1988. Synsedimentary tectonics in the northern Middle Atlas (Morocco) during the late Cretaceous and Tertiary. In: JACOBSHAGEN V.H. (ed.), *The Atlas system of Morocco. Studies on its geodynamic evolution.-Lecture Notes in Earth Sciences*, Springer, Berlin, vol. 15, p. 321-337.
- [13] Hervouet Y. 1985. Géodynamique alpine (Trias-Actuel) de la marge septentrionale de l'Afrique, au Nord du Bassin de Guercif (Maroc oriental).- *Thèse Doctorat ès Sciences, Université de Pau et Pays de l'Adour, 367 p. (inédit).*
- [14] Jacobshagen, V., R. Brede, M. Hauptmann, W. Heinitz, and R. Zylka 1988. Structure and post-paleozoic evolution of the central High Atlas, in *The Atlas System of Morocco*, edited by V. Jacobshagen, pp. 245–271, Springer-Verlag, New York.
- [15] Kassou A., Ali Essahlaoui A., Aissa M. 2012. Extraction of structural lineaments from satellite images landsat 7 ETM+ of Tighza Mining District (Central Morocco).
- [16] Laille, E., and A. Pique 1992. Jurassic penetrative deformation and Cenozoic uplift in the central High Atlas (Morocco): A tectonic model, *Structural and orogenic inversions*, *Geol. Rundsch.*, 81, 157–170.
- [17] Mattauer, M., P. Tapponier, and F. Proust 1977. Sur les mecanismes deformation des chaines intracontinentales: L'exemple des chaines atlasiques du Maroc, *Bull. Soc. Geol. Fr. 77(7), t. XIX, 521–526.*
- [18] Medina F. & Cherkaoui T.-E. 1991. Focal mechanisms of the Atlas earthquakes and tectonic implications. *Geol. Rundsch.*, 80, 639-648.
- [19] Moore G.K., 1983. Objective procedures for lineament enhancement and extraction. *Photogrammetric Engineering and Remote sensing*, vol.49, n°5, p 641-647.
- [20] Morel, J.-L., Zouine M., and Poisson A. 1993: Relations entre la subsidence des bassins moulouyens et la creation des reliefs atlasiques (Maroc) : Un exemple d'inversion tectonique depuis le Neogene, *Bull. Soc. Geol. Fr.*, 93(1), t. 164, 79–91, 1993.
- [21] Missenard Y, Zeyen H, de Lamotte DF, et al. 2006. Crustal versus asthenospheric origin of relief of the Atlas Mountains of Morocco. *Journal of Geophysical Research-Solid Earth* (2006); 111.

- [22] Pique ,A., M. Charroud, E. Laville, and M. Amrhar 2000. The Tethys southern margin in Morocco: Mesozoic and Cainozoic evolution of the Atlas domain, Mem. Mus. Natl. Hist. Nat., 182, 93–106.
- [23] Schaer, J. P. 1987. Evolution and structure of the High Atlas of Morocco, in The Anatomy of Mountain Ranges, edited by J. P. Schaer and J. Rodgers, pp. 107–127, Princeton Univ. Press, Princeton, N. J.
- [24] Teixell A, Ayarza P, Zeyen H, Fernandez M, Arboleya ML. 2005. Effects of mantle upwelling in a compressional setting: the Atlas Mountains of Morocco. Terra Nova (2005); 17: 456-61.
- [25] Timoulali Y., Hni L., Bouaouda H. 2010. Cartographie des structures géologiques de la région de Talsint (Maroc oriental) : Apport de la télédétection et SIG à l'analyse de la sismicité. XIIème Journées Scientifique du Réseau de Télédétection de l'UREF, Tunis 2010, p.228-229.
- [26] Zeyen H, Ayarza P, Fernandez M, Rimi A. 2005. Lithospheric structure under the western African-European plate boundary; a transect across the Atlas Mountains and the Gulf of Cadiz. Tectonics (2005); 24.

