New Gravity and Magnetic Data of the Al Hoceima Bay and Boudinar Basins

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Al Hoceima bay and Boudinar basins, are located in the north sector of central Rif, westwards of Nekor fault. They are separated by the Intrarif and the volcanic rocks of Ras Tarf. During the Neogene and Quaternary, the local tectonic regime changed with a first episode of southwestwards motion followed by the relief uplift producing a complex overprinting of structures.

The combined geophysical researches, using together new gravity and magnetic data, allow to identify and precise the features of the deep structure, thickness of sediments, and the main contacts with the basement rocks. The large faults determining the development of the basins, sometimes covered, constitute the main active seismogenic structures of the region. In addition, these new data allow to determine the position of magnetic anomalous bodies that corresponds to basic igneous rocks.

In Al Hoceima bay we realised two profiles. Gravity and magnetic models determine the location of two normal fault sets at both sides of the basin. Covered faults produce internal steps mainly in the western part of the basin, tha may therefore be considered as a graben, filled by Neogene and Quaternary sediments. The Bouguer anomaly profiles show that the basin is asymmetric and the depocenter is located in its eastern side. These results are similar in both models.

In Boudinar basin we acquired the gravity and magnetic data along two profiles. The northern one is measured near the volcanic rocks. The anomaly model show two normal fault sets near the surface, determining graben and horst structures. The other one is acquired around Oued Amekran. The profile is also asymmetrical, as the determined in Al Hoceima bay, but the graben depocenter is located at its western side suggesting that the Ras Tarf represent a main horst that is undergoing active uplift.

Key words: Geophysical methods, asymmetric basins, faults, volcanic rocks, Al Hoceima region.