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AN UPDATED INVENTORY OF METEORITE IMPACT STRUCTURES IN THE ARAB WORLD

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Abstract

Following to the inventory of meteorite impact structures in the Arab world presented at the 1st and 2nd Arab Impact Cratering and Astrogeology conferences [1,2], I present here an updated of this inventory based on the recent papers and works published over the last four years on impact structures in the countries of the Arab world. A summary of confirmed and possible impact structures is given in table 1.

On the basis of the discovery of widespread shatter cones and breccias [3,4], a new confirmed impact site was identified near Agoudal in Morocco. Since no impact structure was found in association with the shock metamorphism materials [4], the site is regarded as a remnant of an impact crater. This is the first discovered of an impact site in Morocco, which joins the six Arab countries (Algeria, Egypt, Jordan, Libya, Mauritania and Saudi Arabia) that have confirmed impact structures. Recently, a syngenetic origin of the strewn field of the Agoudal meteorite and the Agoudal relic impact structure was suggested by Lorentz et al. [5].

In a recent paper, Kenkmann et al. [6] reported definitive evidences of the existence of a new impact crater in Northwestern of Saudi Arabia, termed the Saqqar structure. With 34 km in diameter, it's the biggest impact crater in the Arab world, and the first buried structure recognized among the confirmed impact structures in the Arab countries. With these two new discoveries, the number of confirmed impact craters in the countries of the Arab world increased to 13 in December 2015.

In addition to the 17 features of possible impact origin compiled in [2], additional suspected meteorite impact sites have been recently reported (table 1). The newly discovered Saqqar structure was first described by Neville et al. [7] with four other buried circular features located in Saudi Arabia. These 4 structures are all good candidates for impact structure status. The other possible impact sites added to the list compiled in [2] are 3 sites in Sudan [18,19], 2 sites in Algeria (In Ezzane and Tigraou) [13,17], 2 in Libya [16,18], 1 in both Tunisia [14], Jordan [8,9], Syria [10], Egypt [15] and Saudi Arabia [11]. Thus, the number of possible impact craters in the Arab world increased to 33. Among these craters, the best candidates for a meteorite impact origin are TemimichatGhallaman located in Mauritania, and Jebel Rayah (Al-Madafi) [11] and Ash Shutbah [11,12] located in Saudi Arabia.

In December 2015, 13 confirmed and 33 suspected impact sites was recognized in the countries of the Arab world. This number is likely to increase significantly in the future due to the large area of the Arab world, mainly composed of good surfaces for the preservation of impact craters and the increase of researcher teams interested in the study of impact craters in the Arab countries. Unfortunately, political instability since 2011 in many of these countries (Libya, Syria, Yemen, Iraq) making field investigations in such countries impossible in the near future.