

### A NEW METEORITE DENSE CONCENTRATION AREA IN SOUTHERN MOROCCO.

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**Introduction:** Due to undocumented collection, location data is known for only a fraction of the meteorites recovered in Morocco. For the bulk of meteorites from Northwest Africa, find locations are unrecorded, thus complicating pairing and preventing the determination of the flux of meteorites per area unit [1] [2].

With the objective to obtain a suite of meteorites with documented find data and in order to determine meteorite density in the Moroccan Sahara, three field campaigns were conducted in Southern Morocco. The first (2010) led to the discovery of the Bou Kra DCA [3]. The second (2012) and third (2013) campaigns resulted in the discovery of a new DCA south of Hasi Aridal.

**Field work:** After the discovery of the Bou Kra DCA in 2010 (Bou Kra 002 – Bou Kra 005) [3], a second search area measuring 5,875 km<sup>2</sup> between Boujdour and Guelta Zemmour was targeted. During two field trips (2012, 2013) systematic search was conducted from the car and to a lesser extent on foot by a team of six prospectors in three vehicles. In 20 search days 4,800 km of search tracks were completed. The total search time was 960 man-hours. The surface systematically covered amounted to 58 km<sup>2</sup> or 1.2 percent of the total search area. In total, 29 meteorite find locations were GPS-recorded, representing >133 fragments with a total weight of 10.995 kg. Pairing suggests the presence of 16 separate meteorite fall events. The resulting statistical distribution is one meteorite find per 2 km<sup>2</sup>. All finds were made on Pleistoceneserir surfaces with a center near Hasi Aridal, 65 km southwest of Boujdour. Meteorites in the Aridal area DCA are not distributed uniformly but occur in clusters. Reasons are partly of geomorphologic nature and partly due to extensive and undocumented meteorite collection by locals. All finds in the new DCA are located on the dividing plane of a watershed and within a very narrow range of altitude at 163 m ASL ± 8 m. The confinements of the Aridal meteorite aggregation area are defined by drainage basins.

**Conclusion and outlook:** Systematic meteorite prospection in Southern Morocco resulted in the provision of samples for dating and pairing research conducted at CEREGE and the University of Casablanca [4].

While terrestrial ages for the Aridal area meteorites are pending, the lack of hydraulic gradient on the find surfaces appears to be a key factor for the in situ preservation of meteorites, in particular during the Saharan Neolithic Subpluvial, which ended 3,000 BCE [2]. Further research is necessary to establish the density of paired meteorites per unit area and to provide insight in the flux of meteorites in the Moroccan Sahara as well as the climatic and environmental process controlling their concentration in certain areas.

**References:** [1] Schlüter et al. 2002. *Meteoritics & Planet. Sci.* 37, 1079-1093. [2] Welten K.C. et al. 2004. *Meteoritics & Planet. Sci.* 39, Nr 3, 481–498. [3] Meteoritical Bulletin Database (<http://www.lpi.usra.edu/meteor/metbull.php>). [4] Aboulahris M. et al. 2014 Met Soc Conference