OMAN METEORITE SEARCH PROJECT 2001-2009: STATUS AND SUMMARY. B. A. HOFMANN[1], E. GNOS[2], F. J. ZURFLUH[1,3], M. D. GISCARD[4], A.J.T. JULL[4], P. WEBER[5] and S. H. Al BUSAIDI[6]. [1]Natural History Museum Bern, Switzerland. E-mail: beda.hofmann@geo.unibe.ch. [2]Natural History Museum Geneva, Switzerland, [3]Institute of Geological Sciences, University of Bern, Switzerland, [4]NSF Arizona AMS Laboratory, University of Arizona, Tucson, USA, [5]Laboratory for High Energy Physics, Physics Institute, University of Bern, Switzerland, [6]Directorate General of Minerals, Ministry of Commerce and Industry, Muscat, Sultanate of Oman.

Introduction: Systematic meteorite search activities have been conducted in Oman every winter since January 2001 (except 2004). The current 3rd phase of the project aims at a correlation of meteorite finds and all their properties with find locations and surface characteristics using GIS. All major surfaces of the country are being investigated, with the main aim to produce a map delineating suitable search areas.

Find statistics: Fieldwork invested is 2.6 man years. A total of 5237 meteorite samples (totalling ~4000 kg) were recovered, representing ~600 fall events. The estimated density of meteorites as found by car search is 0.58/km^2 (range 0.35-0.79 for different campaigns), corresponding to 1259 km^2 searched (~1% of the suitable area of Oman). Limited foot searches resulted in slightly higher yields. Three large strewn fields (lengths of 19-51 km) were discovered. The situation in Oman is unique in providing a large number of finds combined with known fall locations.

Meteorite statistics: After correction for pairing the Oman population shows some interesting peculiarities. Abundances of OC, achondrites and iron as well as the H/L ratio are similar as for Saharan finds [1]. Especially the size-frequency distribution for H and L chondrites shows a predominance of H for small samples while large meteorites are dominated by L, the contrary of what is observed in recent falls. Among 14 achondrites there are 7 HED's and 4 ureilites.

Terrestrial ages: 117 meteorite samples have been ^{14}C-dated, yielding a mean age of 20.8 kyr. In order to control for a possible sampling bias, all LL meteorites were dated, yielding a similar mean terrestrial age of 17.7 kyr (n=13). The age distribution shows a pronounced lack of samples younger than 10-20 kyr. The reason for this under-representation is still poorly understood, there is no obvious correlation with known arid and moist climatic periods. Terrestrial ages show a positive correlation with the degree of weathering. ^{14}C ages of terrestrial carbonates in the meteorites are mainly recent to 10 kyr old.

The least weathered meteorites were analyzed by gamma-spectroscopy, resulting in the recognition of two meteorites with detectable ^{22}Na ($T^1/_2$ 2.6 yr), indicating a terrestrial age <20 years. In relation to the searched surface a fall rate of 79 events per million square kilometers and year is derived, similar to the figure given by [2].

Outlook: A GIS-based map is planned presenting major characteristics of the meteorites including terrestrial contamination based on handheld XRF and soil characteristics.

References:

[1] Bevan, A.W.R. 2006. In: The history of meteoritics and key meteorite collections: Fireballs, falls and finds, Geol. Soc. Spec. Pub. 256, 325-343. [2] Halliday, I. et al. 1989. *Meteoritics* 24, 173-178.