



## **The Western Arabian intracontinental volcanic fields as a potential UNESCO World Heritage site**

Károly Németh (1) and Mohammed R. Moufti (2)

(1) Massey University, Institute of Agriculture and Environment, Turitea Campus, Palmerston North, New Zealand, (2) King Abdulaziz University, Geohazards Research Centre, Jeddah, Kingdom of Saudi Arabia

UNESCO promotes conservation of the geological and geomorphological heritage through promotion of protection of these sites and development of educational programs under the umbrella of geoparks among the most globally significant ones labelled as UNESCO Global Geoparks. UNESCO also maintains a call to list those natural sites that provide universal outstanding values to demonstrate geological features or their relevance to our understanding the evolution of Earth. Volcanoes currently got a surge in nomination to be UNESCO World Heritage sites. Volcanic fields in the contrary fell in a grey area of nominations as they represents the most common manifestation of volcanism on Earth hence they are difficult to view as having outstanding universal values. A nearly 2500-km long 300-km wide region of dispersed volcanoes located in the Western Arabian Peninsula mostly in the Kingdom of Saudi Arabia form a near-continuous location that carries universal outstanding value as one of the most representative manifestation of dispersed intracontinental volcanism on Earth to be nominated as an UNESCO World Heritage site. The volcanic fields formed in the last  $\sim 20$  Ma along the Red Sea as group of simple basaltic to more mature and long-lived basalt to trachyte-to-rhyolite volcanic fields each carries high geoheritage values. While these volcanic fields are dominated by scoria and spatter cones and transitional lava fields, there are phreatomagmatic volcanoes among them such as maars and tuff rings. Phreatomagmatism is more evident in association with small volcanic edifices that were fed by primitive magmas, while phreatomagmatic influences during the course of a larger volume eruption are also known in association with the silicic eruptive centres in the harrats of Rahat, Kishb and Khaybar. Three of the volcanic fields are clearly bimodal and host small-volume relatively short-lived lava domes and associated block-and-ash fans providing a unique volcanic landscape commonly not considered to be associated with dispersed intracontinental volcanic fields. In addition the nominated volcanic region also hosts the largest and youngest historic eruption (Al Madinah Eruption) in Western Saudi Arabia took place at 1256-AD, lasted  $\sim 52$  days and produced at least 0.29-km<sup>3</sup> of pahoehoe-to-aa transitional lava fields that were emitted through a 2.3 km-long fissure and associated spatter-to-scoria cone complexes. The Western Arabian intracontinental volcanic fields provide the best exposed and most diverse type of intracontinental volcanic fields on Earth that also occupies the largest surface area. In addition, this chain of volcanic fields are also host significant archaeological and human occupation sites help to understand early human evolution as well as hosting several historic locations with high cultural heritage values. These generally intact and well-exposed volcanic zones hosting globally unique geoheritage sites can form the basis of complex geoeducational programs through the establishment of various volcanic geoparks in the region that can link together a UNESCO World Heritage Site on the basis of their global universal volcanic geoheritage values.