

The Makran Zone of active mud volcanoes, Pakistan- Tectonic and seismic implications

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The Makran Accretionary Belt, Pakistan, has a much larger number of mud volcanoes than those reported earlier. Using high resolution satellite images, over 70 active mud volcanoes were identified and mapped. These mud volcanoes occur within a well defined zone; known as the Makran Zone of Active Mud Volcanoes (MZAMV), which is parallel to the regional trend of the accretionary belt. Mud volcanoes within the zone occur as clusters, which form linear belts parallel to the regional thrusts and anticlines. The MZAMV zone also includes the offshore mud volcanoes found in the shallow shelf area, including the recurrently emerging mud islands. Occurrences of thick mud volcano deposits of Pleistocene (or even older age) are also present within this zone, which display recognizable features that are characteristic of the fossil mud volcanoes. We suggest that the MZAMV developed, and evolved in response to the continued compression within the Makran Accretionary Belt, which in turn is a response of the subduction process and that mud diapirism has been an ongoing phenomena since Pleistocene or even earlier times. The enhanced mud extrusion events in mud volcanoes and/or emergence of island(s) have relevance with seismic phenomena and therefore, may be closely monitored, as they may be precursors of future seismic events.