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Relevance of identification of structural framework on potential of tsunami on the Makran coast, Oman Sea

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The Makran Accretionary Complex is bounded to the north by the Jaz Murian and Hamun Mashkel depressions and to the south-east is marked by the base of the continental slope, some 150 km offshore. To the south and west, the area is bounded by the narrow and steep continental margin of Oman. The Makran subduction zone with a length of about 900 km display, progressively older and highly deformed sedimentary units northward from the coast, together with an increase in elevation of the ranges. North of the Makran ranges are large subsiding basins, flanked to the north by active volcanoes.

Based on detailed analysis of 2D seismic reflection data on the northeastern part of the Arabian Plate five structural provinces and elements—the Musendam High, the Musendam Peneplain, the Musendam Slope, the Dibba Zone, and the Abyssal Plain have been identified. Further, the Offshore Makran Accretionary Complex shown to be consisted of Accretionary Prism and the For-Arc Basin, while the Accretionary Prism has been subdivided into the Accretionary Wedge and the Accreted/Colored Mélange.

The occurrence of tsunamigenic earthquake in the eastern segment has been documented, but well defined large earthquakes in the west so far is lacking. This could either be that the western Makran is capable of producing great earthquakes or it could rupture as a number of segments in somewhat smaller-magnitude events. Alternatively, it is possible that western Makran is significantly different from eastern Makran and experiences largely aseismic slip at all times. Knowledge of the velocity structure and nature of the state of consolidation or lithification of rocks at depth in the interior por-

tion of the fore-arc of western Makran should help to ascertain whether that portion of the plate boundary moves aseismically or ruptures in large to great earthquakes. A resolution of this question has important implications for seismic hazard assessment of the western Makran.

In this presentation based on the above the potential of tsunamigenic earthquake occurrence on both eastern and western Makran region will be discussed. In addition tsunami hazard assessment, preparation of evacuation maps and hazard reduction strategy will be elaborated.