**Assessment of Infrastructure Vulnerability to**

**Tsunamis upon the Coastal Zone of Oman Using GIS**

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Abstract: The coastal zones of Oman are frequently exposed to tropical cyclones and are expected to be overwhelmed by tsunami waves that originate from marine earthquakes in the Indian Ocean. Inundation of low-lying coastal lands is, hence, inevitable. This study aims to provide a spatial database of the major infrastructure of Oman in relation to their vulnerability to the sea-level rise by tsunamis. This investigation relied on high-resolution elevation data obtained from the Advanced Spaceborne Thermal Emission and Reflection Radiometer-Global Digital Elevation Model (ASTER GDEM) and eleven infrastructure variables acquired from the Oman National Spatial Data Infrastructure. These variables include: schools, hospitals, banks, mosques, fuel stations, police centers, shopping centers, archeological sites, vegetation cover, roads and built-up areas. A Geographical Information System (GIS) analysis was carried out to delineate and quantify the features along the coast with elevation ranges between 1 and 10 m above the current sea-level. Four tsunami scenarios were investigated depending on historical and expected estimations of tsunami heights of 2, 5, 8 and 10 m at the shoreline from previous studies. Results provide spatial vulnerability maps and databases that could be of the utmost importance to planners and developers. Al-Batinah coastal plain of northern Oman is the most vulnerable location to tsunami hazards due to its low-elevated coastal plain and high concentration of population, infrastructure and services. The study asserts the benefits of GIS as a geospatial analysis tool for risk assessment.