Characterization of the interseismic loading of the Makran subduction zone using time series of Sentinel-1A interferograms

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Makran subduction zone, located in SE Iran and South Pakistan, is formed by subduction of the oceanic lithosphere of Arabian plate under Eurasian plate. Makran subduction zone represents different seismic behavior in the Western Makran (located in Iran) and Eastern Makran (located in Pakistan) (Byrne et al., 1992). Large and shallow earthquakes (Megathrust earthquakes) occurred in the eastern Makran (e.g. 27th November 1945 near Pasni). By contrast, the Western Makran exhibits an almost absence of megathrust earthquake in both instrumental and historical time periods. The difference in seismicity suggests that the megathrust in the western Makran is sliding continuously, rather than accumulating elastic strain (Byrne et al., 1992) and the eastern Makran is locked. We use Interferometric Synthetic Aperture Radar (InSAR) technique in this project to derive Interseimic surface displacements by processing Sentinel-1A images and then model the coupling percentage by applying backslip technique (Savage, 1983).

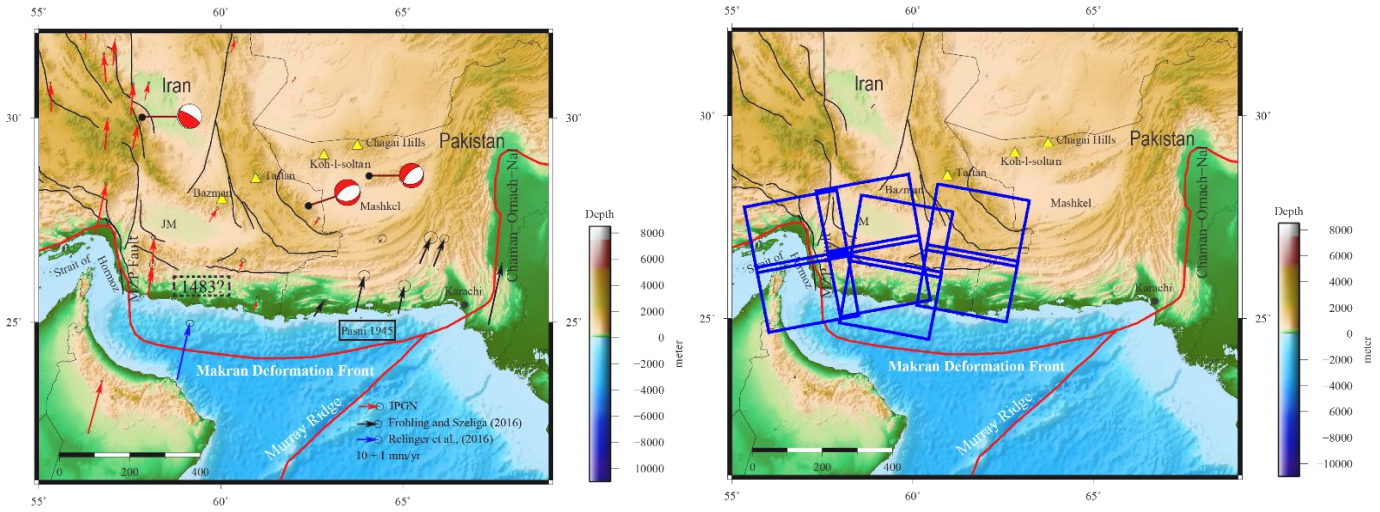

Fig. 1. Left. Map of the Makran subduction zone. Right, Spatial coverage of the Sentinel-1 images of the study area.