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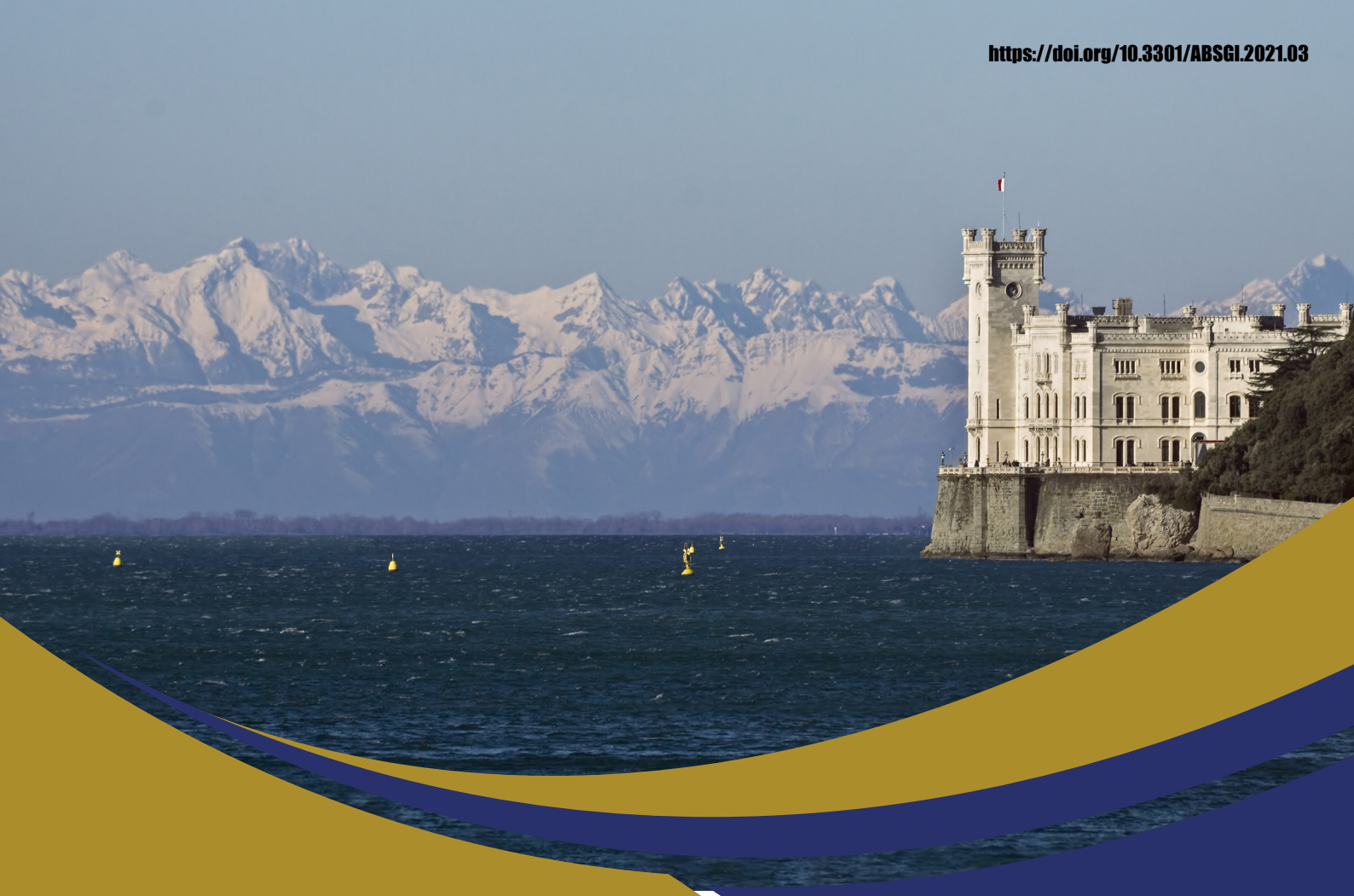

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ABSTRACT BOOK

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The western Durkan Complex (Makran Accretionary Prism, SE Iran): A Late Cretaceous tectonically disrupted seamounts chain and its role in controlling deformation style

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The subduction complexes develop at convergent plate boundaries and their architecture and the prevalent operating tectonic processes (e.g., accretion vs. erosion) are dependent on several factors. Among others, the occurrence of topographic reliefs along the subducting plates, such as oceanic seamounts, is believed to play a significant role in controlling the dynamic and the architecture of the frontal wedge. Studies of fossil accretionary complexes showing accreted seamounts can thus provide significant constraints to understand how the physiography of the subducting plate controls the tectonic evolution of the subduction complexes.

The Durkan Complex is a key tectonic element of the Makran Accretionary Prism (southeast of Iran) and it was interpreted as representing a continental margin succession (Hunziker et al., 2015). We present here a multidisciplinary study of the western Durkan Complex, which is based on new geological, stratigraphic, biostratigraphic data, as well as geochemical data of the volcanic rocks forming this complex. The new data show that this complex consists of distinct tectonic slices showing deformed successions recording volcanic activity and sedimentation in a seamount setting. Stratigraphic and biostratigraphic data allow us to recognize three types of successions. Type-I is composed of a Coniacian – early Campanian pelagic succession with intercalation of pillow lavas and minor volcaniclastic rocks recording the deep-water stages of growth of a seamount. Type-II succession includes a volcanic sequence passing to a volcano-sedimentary sequence with Cenomanian pelagic limestones, followed by a hemipelagic sequence. This succession is characterized by abundant mass-transport deposits. Type-III succession includes volcanic and volcano-sedimentary sequences, which are stratigraphically covered by a Cenomanian platform succession. Type-II and Type-III successions record volcanism and deposition along the flank and the summit of an emerged seamount. Differently from the interpretations so far proposed for the Durkan Complex, these results indicate that the western Durkan Complex represents fragments of oceanic seamounts tectonically incorporated in the Makran Accretionary Prism during the latest Late Cretaceous – Paleocene. The incorporation of Durkan seamounts in the frontal prism likely caused a shortening of the whole convergent margin and possibly controlled the deformation style in the Makran Accretionary Prism during Late Cretaceous–Paleocene times. These results further confirm that the physiography of the subducting plates plays a significant role for the tectonic evolution of the subduction complexes.

Hunziker D., Burg J.-P., Bouilhol P. & von Quadt A. (2015) - Jurassic rifting at the Eurasian Tethys margin: Geochemical and geochronological constraints from granitoids of North Makran, southeastern Iran. Tectonics 34, 571-593. https://doi.org/10.1002/2014TC003768.