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Surface behavior of the Makran accretionary wedge in Iran from 10Be analyses of river sands and terraces.

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The Makran subduction zone hosts in SE Iran and SW Pakistan one of the largest exposed accretionary wedges in the world. However, the western and eastern Makran accretionary wedge differ remarkably in topography and seismicity. While the eastern Makran experienced large earthquakes (e.g. Mw 8.1 in 1945), the western part is seismically quieter. Besides, the surface topography shows more maturity in the western than in the eastern part.
How topography evolves with wedge accretion and whether the topography reached steady states are open questions. We measured catchment wide 10Be in five major catchments draining intramountain basins of the on-shore Iranian Makran. Combined with data from previous studies on incision rates from fluvial terraces found in the same catchments (Haghipour et al., 2012) we provide new arguments for the steady state topography of the wedge on a regional scale.
Another aim of this study was to examine the possible temporal variability of CRN-derived signals driven by climate changes during the Pleistocene and Holocene by comparing modern river derived denudation rates with paleo estimates obtained on the fluvial terraces. Results complement existing information on temporal changes in sediment fluxes, which might point to climatic events in this part of Southwest Asia.

References cited:
Haghipour et al.2012, EPSL, Vol 355-356, p 187-198.