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Najd Wrench Fault System and Dead Sea Shear Zone in the Arabian Plate: Like Father Like Son

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This presentation draws on features common to the Precambrian Najd Wrench Fault System (NWFS) and the Neogene Dead Sea Shear Zone (DSSZ) in the Arabian Plate. It illustrates the general overall similarities between these two major geological settings in the region. Both tectonic elements exhibit upper crustal sinistral deformation which is manifested primarily by strike-slip faults and fractures. Features compared include age and longevity, orientation, length and width of faults, fault zones and strands and their spacing, domain size, pull-apart grabens and duplexes, sense of motion and stress fields, periods of rejuvenation, associated volcanism and contemporaneous sedimentation, and mineralization. Similarities are described and differences are outlined. Differences are shown to reflect wholly longevities; larger and wider aspects of the NWFS are attributed to its 620 my history, whereas smaller and narrower embryonic aspects of the DSSZ are a function of its geologically shorter history of 30 my.

Time is viewed as the primary cause of the differences. Given sufficient time, forward projection of the DSSZ probably leads to a future setting similar to the present NWFS, whereas backward projection of the NWFS in time will most likely result eventually into an incipient stage of development akin to the present DSSZ. I conclude that the evolution of the DSSZ in the Neogene resembles the early stage of evolution of the NWFS in the Precambrian, and that its future evolution and destiny may be analogous to those of the present NWFS, given sufficient geological time. Assumptions are discussed.

