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Thrilling complexity of Valles Marineris evolution revealed by structural mapping

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[POSTER]

In spite of intense erosion, the Valles Marineris region still bears evidence of tectonic deformation, some of it dating back to the earliest stages of trough system development, if not earlier. Ongoing structural mapping reveals an amazingly rich polyphase tectonic history, in which brittle shears (Hydrae Cavus) echo brittle-plastic shear zones (Ophir Chasma), crustal folds turn to volcanic complexes (Ophir Planum), dyke swarms denote chasma-parallel dilation, but also oblique and perpendicular dilation (Coprates and Ophir chasmata) kinematically consistent with overlooked normal faulting on the Valles Marineris plateau, and compressional wrinkle ridges follow narrow grabens. An overview of this diversity is presented.