Rosa Bonheur Crater: a Unique Window into Rifting Processes on Venus.

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Introduction: The 102-km Rosa Boneur crater is located in the vicinity of the Devana Chasma rift zone. Interestingly, tectonic deformation appears to both predate and post-date the formation of the crater [1]. This "bookending" may provide a unique laboratory for measuring the heat flow associated with rifting processes on Venus.

Recently, Bjonnes et al. (2021) [2] demonstrated that the morphology of Mead Basin indicates low heat flow, implying that Venus was in a stagnant lid regime during the formation of Mead Basin. To our knowledge, simulations of other peak-ring basin formations with various heat flows has yet to be done. It is of interest to the Venus community to simulate other peak-ring basins since impact basin morphology can help estimate thermal conditions on Venus and learn about the past geological conditions of the planet. Simulations of other impact basins may reveal when a stagnant lid regime or active lid regime occurred during Venus' history. A prime candidate to explore the thermal conditions in Venus' past is Rosa Bonheur since there is a presence of bookended rifting which provides the benefit of better timing constraints. We present here our intention to do iSALE simulations of Rosa Bonheur's formation to possibly constrain the heat flux inside a rift zone during the period of active rifting.

References: [1] A. Basilevsky and J.W. Head. (2002) *Geology* 30.11: 1015-1018. [2] E. Bjonnes, B.C. Johnson, and A.J. Evans. (2021) *Nature Astronomy*, 5, 498-502.