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Re-examination of the population, stratigraphy, and sequence of mercurian basins: Implications for Mercury´s early impact history and comparison with the Moon.

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Mercury has one of the best-preserved impact records in the inner Solar System due to the absence of an atmosphere and relatively unmodified ancient surface. However, our knowledge of the early impact record, and the nature of the impacting projectiles are far from complete. To get a better understanding of the early impact history, we examined large impact basins (≥ 300 km) on Mercury. Here we catalogued 94 basins, 80 of which we classify as certain or probable, 1.7× times more than previously recognized [1]. We re-evaluate the crater densities of basins using the buffered non-sparseness correction technique, which we successfully applied for the Moon [2]. Based on these results and comparison with the Moon, we found no evidence for a change in the SFD of the impacting population, thus our results are consistent with a single impactor population that bombarded Mercury's surface.

[1] Fassett, C. I. et al. (2012) JGR 117, E00L08. [2] Orgel et al. (2018) JGR 123, 1–15.

Cite abstract as:
Orgel, C., Fassett, C.I., Michael, G.G., Riedel, C., et al. (2019) Re-examination of the population, stratigraphy, and sequence of mercurian basins: Implications for Mercury´s early impact history and comparison with the Moon. Paneth Kolloquium, Nördlingen (Germany), abstract URL: http://www.paneth.eu/PanethKolloquium/2019/0038.pdf (abstract #0038).