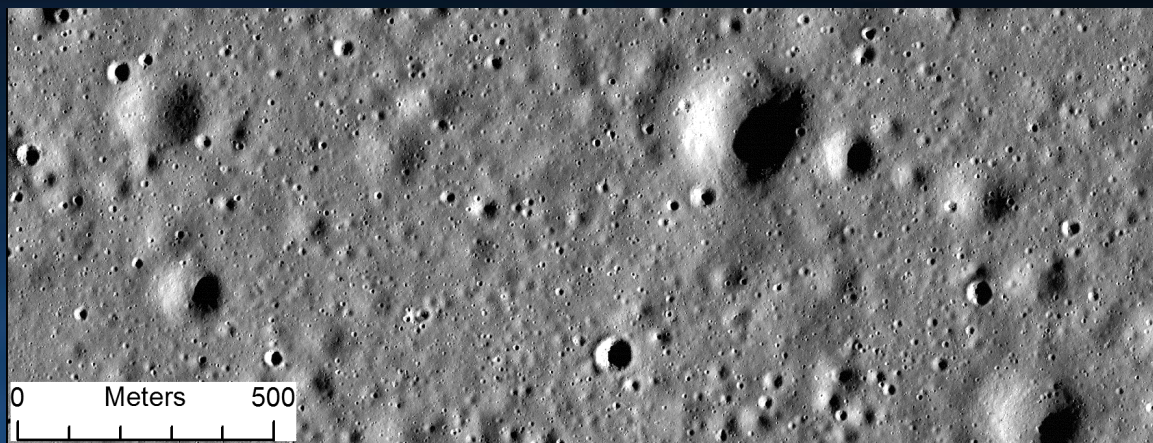
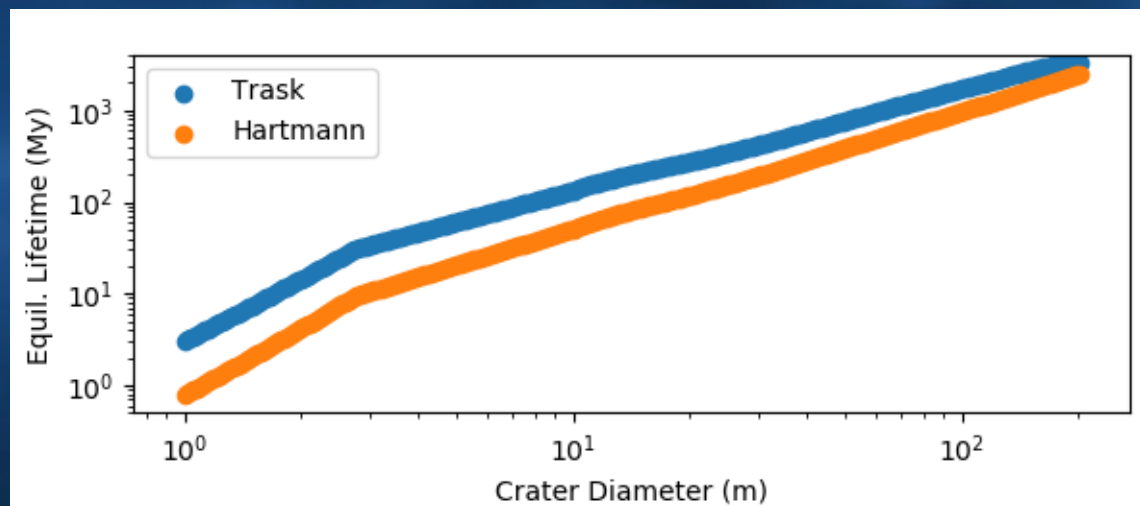


# Small Crater Lifetime on the Moon



*Example of a cratered terrain in equilibrium near A15 landing site.*



*Lifetime of craters of different sizes assuming Trask or Hartmann equilibrium, with a crater production model from Neukum.*

**Meter- to decameter-scale craters form regularly on the Moon. After formation, they start to widen and fill-in with regolith, and this infilling eventually makes them unrecognizable. We calculated rates for this process. Craters smaller than 4m survive less than 50 million years.**

- With estimates for crater production rates and two models for crater equilibrium (where crater destruction and production balance), we evaluated how topography of craters evolves at different scales.
- The lifetime of small craters is much shorter than large craters.
- If VIPER sees water ice in the interior of fresh, small craters, and evidence that it post-dated crater formation, it would imply volatiles were emplaced recently.

Fassett, Beyer, Deutsch, Hirabayashi, Leight, Mahanti, Nypaver, Thomson, & Minton (2023). *J. Geophys. Res.-Planets*, 24 November 2022, 10.1029/2022JE007510.