Introduction
- Boulder size-frequency distributions (SFD) play a key role in understanding small-scale erosion processes and the rate at which rock becomes regolith [1,2].
- Lunar Reconnaissance Orbiter (LRO) Narrow Angle Camera (NAC) images (resolution: 0.5-1 m/pixel, ~60°-80° incidence angle) are used to map boulders.

Results
- Calculations show an error range of 14-36% on boulder sizes.
- Error calculations performed for boulders with diameter ~2-5 m (2-10 pixels).
- This can be extended to larger boulders because uncertainty is independent of size (depends on rectangle-to-ellipse ratio).

Testing distinctness of slope
- Assume a normal error distribution and randomly sample from that distribution for each point in the original data, for multiple runs. Take μ = original boulder size and σ = uncertainty on size (10-40%).
- Slope of the linear range in SFD is calculated for each run, in order to compare to original slope.
- For errors in range of 30-40%, the distribution of slope spreads out more compared to the lower uncertainty values.

Comparison with mass wasting
- Slope of linear region in boulder SFD for Hadley Rille was calculated (Fig.8, top):
  - Region 1: -2.831
- The linear region can be separated into 3 different sections (Fig.8, bottom) which yields different slope measurements:
  - Region 2: -1.725
  - Region 3: -3.310
  - Region 4: -7.512

Conclusions and Future Work
- Monte Carlo runs show a small difference between original and mean slopes.
- Avery crater (slope = -3.120) is different from Humorum crater (slope = -2.305).
- Uncertainties on boulder sizes are one-sided, therefore we need to sample from a distribution other than a normal/Gaussian distribution (e.g. lognormal distribution).

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References: