



## Robbins Lunar Crater Database 2018-08-15

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This is a database of approximately 1.3 million lunar impact craters, approximately complete for all craters larger than about 1–2 km in diameter. Craters were manually identified and measured on Lunar Reconnaissance Orbiter (LRO) Camera (LROC) Wide-Angle Camera (WAC) images, in LRO Lunar Orbiter Laser Altimeter (LOLA) topography, SELENE Terrain Camera (TC) images, and a merged LOLA+TC DTM (Barker et al., 2016).

### Purpose

The purpose of this database is to have a uniform, complete census of lunar impact craters from which to conduct research studies. It is intended to save time for researchers, but researchers are strongly encouraged to understand the database by reading the first paper that describes its caveats, and to make sure that it is suitable for their individual needs.

### Completeness Report

Without another, independent crater database to even smaller craters, it is not possible to provide a true completeness report. However, based on several different metrics, including a statistical analysis using crater size-frequency distributions and attempts in isolated areas to identify all craters larger than ~100 meters, this database is estimated to be a complete census of all lunar craters larger than 1–2 km in diameter. The exact completeness point varies based on location (it is complete to smaller diameters in lunar maria where identifying impacts is more objective and terrain is flatter) and exact metric used. This database is meant to be accurate in the aggregate, and while every effort was made to ensure accuracy with each, individual crater, if one is only studying a very few craters, they may find it more accurate to build their own database.

### Process Description

Please see the primary database paper for an extensive description of the process to build this database. In brief, WAC (70–100 m/pix), TC (30 m/pix), and hillshade DTMs (5–60 m/pix) were searched several times each and crater rims were manually traced, where visible, with approximately 2.5 pixels per vertex point. Circles and ellipses were fit to the rim points. Projection issues were taken into account by using Great Circle distances and bearings, a process validated by returning a meaningful and correct fit for Shackleton crater that encompasses the lunar south pole.

[1] Robbins, S.J., (2018), A new global database of lunar impact craters >1–2 km: 1. Crater locations and sizes, comparisons with published databases, and global analysis, *Journal of Geophysical Research: Planets*, 123, <http://dx.doi.org/10.1029/2018JE005592>.