

# Cartography and Information Systems for the Luna-Glob Landing Sites

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## 1. Introduction

We provide cartography and information system support to the LUNA-GLOB mission and assess candidate landing sites [1] on the basis of different available remote sensing data sets. The main goal of our work is to identify science opportunities in the sub-polar areas and to detect possible hazards for any landing spacecraft.

## 2. Sources

For mapping, we used images and Digital Elevation Models (DEM) of the area obtained by LRO: WAC orthoimages and the DEM “GLD 100” [4, 6], LOLA topographic profiles [7], LOLA gridded data products [8], LOLA-based DEMs with spatial resolution 30 m per pixel (LDEM\_1024 [9]), available NAC images [10], images from MRF LRO [11]. We also use images and DEM data from SELENE (Kaguya) [12].

## 3. Mapping results

For the general area of interest, we have compiled a geodatabase containing vector data, images and DEMs with different resolutions (Fig. 1a,b). Using GIS techniques for characterization of the surface, we created several types of thematic maps [3]. Using ISIS software we created about 100 LRO NAC orthoimages on the base of the LDEM that cover the area of target ellipses of candidate landing sites (Fig. 2).

## 4. Future works

In the next step, we will create a catalog of craters containing crater locations, diameters (> 20 m) and depths (Fig. 3). This catalog will allow us to calculate

statistical parameters including crater cumulative size distribution and spatial density maps. Crater statistics based on GIS-tools and high resolution DEMs has previously been successfully tested for the Lunokhod-1 area [2]. We expect that high-resolution stereo images from the LRO NAC will become available soon, from which we will create new DEMs with much improved spatial resolution [5]. The infrared images from MRF LRO will be used for calculating of boulder distributions in the landing site areas.

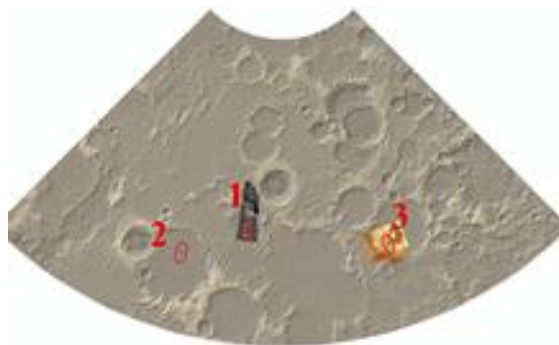


Figure 1a. General sub-polar landing area for LUNA-GLOB with 3 proposed candidate landing sites. (background – color shaded relief from “GLD100”)

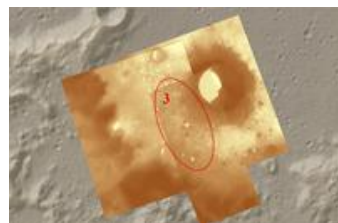


Figure 1b. Kaguya stereo DTMs for Target ellipse 3

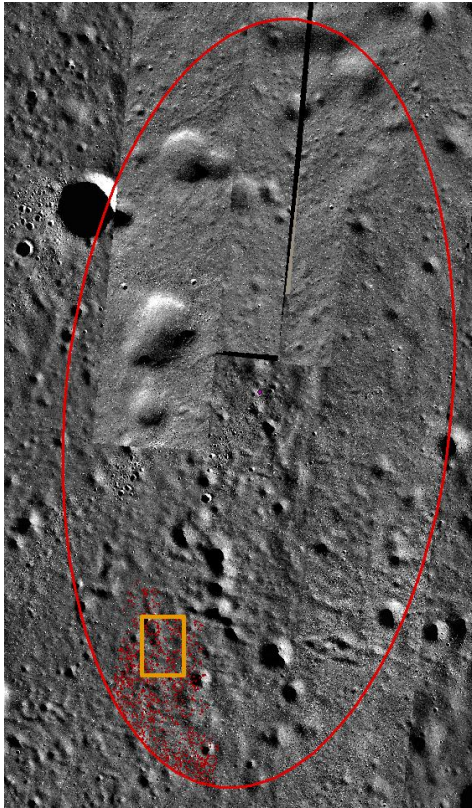


Figure 2a: LRO NAC orthomosaic for Target ellipse 1 and selected area with digitized craters

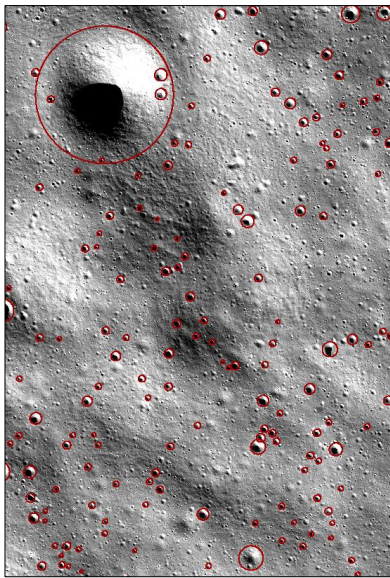


Figure 2b: High resolution LRO NAC image with digitized craters within Target ellipse 1

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## References

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