

## Analyses of landing site candidates for system-level technical studies

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Subject Category: Space Exploration

URL: <https://www.jss.jaxa.jp/en/ar/e2020/14245/>

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### ● Members

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### ● Abstract

Using existing lunar and planetary exploration data, we analyzed the topography, temperature, and spectra of candidate landing sites for system-level technical studies of lunar polar landing missions.

Ref. URL: [https://jlpeda.jaxa.jp/index\\_e.html](https://jlpeda.jaxa.jp/index_e.html)

### ● Reasons and benefits of using JAXA Supercomputer System

The extremely high processing power of the JAXA supercomputer is essential to process the large amount of terabytes to petabytes of lunar and planetary exploration data and to obtain high-resolution results.

### ● Achievements of the Year

A polar 9-band color map was created using the Multi-band Imager onboard JAXA's lunar exploration satellite SELENE. A high signal-to-noise ratio was achieved by using all images and giving the median value as each pixel value, instead of the conventional method of creating a mosaic image by stacking single images. The photometric correction was also made more accurate by taking the average of the observations under multiple illumination conditions.

### ● Publications

- Poster Presentations

Sato, H., S. Goossens, M. Ohtake, Y. Daket. Polar Color Mosaic Production from Kaguya MI Data, 52nd LPSC, #1032, 2021.

- Usage of JSS

- Computational Information

|                                 |                           |
|---------------------------------|---------------------------|
| Process Parallelization Methods | N/A                       |
| Thread Parallelization Methods  | Automatic Parallelization |
| Number of Processes             | 1                         |
| Elapsed Time per Case           | 1 Hour(s)                 |

- Resources Used(JSS2)

Fraction of Usage in Total Resources\*1(%): 0.03

Details

| Computational Resources |                                       |                        |
|-------------------------|---------------------------------------|------------------------|
| System Name             | Amount of Core Time<br>(core x hours) | Fraction of Usage*2(%) |
| SORA-MA                 | 0.00                                  | 0.00                   |
| SORA-PP                 | 5,858.61                              | 0.05                   |
| SORA-LM                 | 0.00                                  | 0.00                   |
| SORA-TPP                | 0.00                                  | 0.00                   |

| File System Resources |                        |                        |
|-----------------------|------------------------|------------------------|
| File System Name      | Storage Assigned (GiB) | Fraction of Usage*2(%) |
| /home                 | 78.51                  | 0.07                   |
| /data                 | 53,121.24              | 1.03                   |
| /ltmp                 | 5,977.07               | 0.51                   |

| Archiver Resources |                    |                        |
|--------------------|--------------------|------------------------|
| Archiver Name      | Storage Used (TiB) | Fraction of Usage*2(%) |
| J-SPACE            | 0.00               | 0.00                   |

\*1: Fraction of Usage in Total Resources: Weighted average of three resource types (Computing, File System, and Archiver).

\*2: Fraction of Usage : Percentage of usage relative to each resource used in one year.

- **Resources Used(JSS3)**

Fraction of Usage in Total Resources\*1(%): 0.04

Details

| Computational Resources |                                       |                        |
|-------------------------|---------------------------------------|------------------------|
| System Name             | Amount of Core Time<br>(core x hours) | Fraction of Usage*2(%) |
| TOKI-SORA               | 0.00                                  | 0.00                   |
| TOKI-RURI               | 0.00                                  | 0.00                   |
| TOKI-TRURI              | 0.00                                  | 0.00                   |

| File System Resources |                        |                        |
|-----------------------|------------------------|------------------------|
| File System Name      | Storage Assigned (GiB) | Fraction of Usage*2(%) |
| /home                 | 291.91                 | 0.20                   |
| /data                 | 58,776.75              | 0.98                   |
| /ssd                  | 151.00                 | 0.08                   |

Archiver Resources

| Archiver Name | Storage Used (TiB) | Fraction of Usage*2(%) |
|---------------|--------------------|------------------------|
| J-SPACE       | 0.00               | 0.00                   |

\*1: Fraction of Usage in Total Resources: Weighted average of three resource types (Computing, File System, and Archiver).

\*2: Fraction of Usage : Percentage of usage relative to each resource used in one year.