Analysis of landing site candidates for system-level technical studies

● **Responsible Representative**

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● **Abstract**

Using existing multiband image data, we calculate the Hapke parameter map for the lunar polar region (over 60 degrees in latitude for both north and south poles) and use it to calculate the photometrically normalized color mosaic maps. These data products are necessary to study landing sites and route plannings for JAXA's up coming lunar polar missions.

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

To process large amounts of planetary remote-sensing data ranging from terabytes to petabytes and to obtain high-resolution results in a relatively short time scale, a parallel computer with a very large number of cores, such as JSS3, is very effective.

● **Achievements of the Year**

We have improved the accuracy of Hapke's parameter map of the lunar polar regions using data from the Wide Angle Camera onboard NASA's Lunar Reconnaissance Orbiter. The new map is based on a new fitting algorithm with higher efficiency and performance than the previous one, and the parameter calculation is more accurate than before, enabling more precise photometric correction. Based on the new map, it is now possible to create a more accurate polar color map, which can be used as a basis for planning and operational support of polar exploration.

● **Publications**

N/A

🔵 **Usage of JSS**

● **Computational Information**

Process Parallelization Methods	MPI
Thread Parallelization Methods	Manual parallelization by own script
Number of Processes	12 - 36
Elapsed Time per Case	1 Hour(s)

● **JSS3 Resources Used**

Fraction of Usage in Total Resources[1](%): 0.01

Details

Computational Resources		
System Name	CPU Resources Used (core x hours)	Fraction of Usage[2](%)
TOKI-SORA	0.00	0.00
TOKI-ST	0.00	0.00
TOKI-GP	0.00	0.00
TOKI-XM	0.00	0.00
TOKI-LM	0.00	0.00
TOKI-TST	0.00	0.00
TOKI-TGP	0.00	0.00
TOKI-TLM	0.00	0.00

File System Resources		
File System Name	Storage Assigned (GiB)	Fraction of Usage[*2] (%)
/home	208.59	0.14
/data and /data2	59,783.52	0.29
/ssd	30,720.00	1.65

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.

● **ISV Software Licenses Used**

ISV Software Licenses Resources		
	ISV Software Licenses Used (Hours)	Fraction of Usage[*2] (%)
ISV Software Licenses (Total)	0.00	0.00

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