Project support activity using numerical simulation

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Abstract

Utilize the simulation technology of Reserch Unit III to deal with the technical problem solving in current JAXA project, and respond to the request for the project concerning issue. In addition, it realizes "added value (efficiency improvement, high reliability, cost / period reduction, ripple effect, etc.)" unique to numerical simulation technology.

Ref. URL: http://www.kenkai.jaxa.jp/eng/research/software/software.html

Reasons and benefits of using JAXA Supercomputer System

In order to respond timely to project requirements, it is necessary to simulate complex geometries of actual spacecraft and to analyze a large number of conditions in a short period.

Achievements of the Year

With regard to H3, SLIM, HTV-X projects, evaluation of design and risks as well as studies for improvement were carried out

by making full use of the simulation technology of Reserch Unit III and JSS2/JSS3.

Publications

N/A

Usage of JSS

Computational Information

Process Parallelization Methods	MPI
Thread Parallelization Methods	FLAT
Number of Processes	100 - 400
Elapsed Time per Case	100 Hour(s)

Resources Used(JSS2)

Fraction of Usage in Total Resources[*1](%): 0.53

Details

Computational Resources		
System Name	Amount of Core Time (core x hours)	Fraction of Usage[*2](%)
SORA-MA	1,243,280.40	0.24
SORA-PP	83,576.72	0.66
SORA-LM	13,136.93	7.71
SORA-TPP	81,693.43	7.71

File System Resources		
File System Name	Storage Assigned (GiB)	Fraction of Usage[*2](%)
/home	9,660.14	8.85
/data	149,050.69	2.88
/ltmp	21,610.56	1.84

Archiver Resources		
Archiver Name	Storage Used (TiB)	Fraction of Usage[*2](%)
J-SPACE	146.59	4.85

[*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](%): 1.04

Details

Computational Resources		
System Name	Amount of Core Time (core x hours)	Fraction of Usage[*2](%)
TOKI-SORA	4,050,464.24	0.87
TOKI-RURI	132,231.58	0.76
TOKI-TRURI	47,716.11	3.85

File System Resources		
File System Name	Storage Assigned (GiB)	Fraction of Usage[*2](%)
/home	14,285.28	9.79
/data	264,047.14	4.42
/ssd	9,488.52	4.95

Archiver Resources		
Archiver Name	Storage Used (TiB)	Fraction of Usage[*2](%)
J-SPACE	146.59	4.85

[*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.