Uncertainty quantification on satellite thermal design

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Responsible Representative

Eiji Shima, Research and Development Directorate, Research Unit

Contact Information

Hiroshi Kato　kato.hiroshi@jaxa.jp

Members

Hiroshi Kato

Abstract

Our purpose is to improving the satellite thermal design process by developing a key technology of "satellite thermal environment uncertainty quantification".

Reasons for using of JSS2

There is no environment to perform the satellite thermal analyses of numerous samples under realistic time.

Achievements of the Year

We developed an method to create emulator for satellite thermal simulator using the Gauss process regression. The method was applied to actual satellite thermal problems, and the effectiveness was shown. JSS 2 was employed to study the speedup of calculation of the Gaussian process regression.

Publications

- Peer-reviewed papers

1) Hiroshi Kato, Makiko Ando, and Yasuhiro Fukuzoe, "Toward Uncertainty Quantification in Satellite Thermal Design," Transactions, 2017. (Accepted)

- Presentations

1) Hiroshi Kato, Makiko Ando, and Yasuhiro Fukuzoe, "Toward Uncertainty Quantification in Satellite Thermal Design," 31st International Symposium on Space Technology and Science, June 9, 2017, Matsuyama, Japan.

Usage of JSS2

Computational Information

Parallelization Methods	MPI
Thread Parallelization Methods	OpenMP
Number of Processes	64
Elapsed Time per Case	0.00 seconds

Resources Used

Fraction of Usage in Total Resources*1 (%): 0.00

Details

Computing Resources		
System Name	Amount of Core Time (core x hours)	Fraction of Usage*2 (%)
SORA-MA	0.36	0.00
SORA-PP	0.00	0.00
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	011.92	0.01
/data	2,384.19	0.04
/ltmp	488.28	0.04

Archiver Resources		
Archiver System 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