

Precise Orbit Determination by using MADOCA on JSS2

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Subject Category: Space Technology

URL: <https://www.jss.jaxa.jp/en/ar/e2020/14377/>

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● Abstract

Satellite Navigation Unit has been generating the precise orbit and clock products of GNSS satellites by using MADOCA (Multi-GNSS Advanced Demonstration tool for Orbit and Clock Analysis), and been distributing to user via network routinely. On the JSS2, we aim to realize fast computation for the long-term data analysis and simulation.

Ref. URL: https://ssl.tksc.jaxa.jp/madoca/public/public_index_en.html

● Reasons and benefits of using JAXA Supercomputer System

To improve the MADOCA products accuracy, we need to do long-term data analysis. By using JSS2, we have been expecting the reduction of the data analysis time.

● Achievements of the Year

In this fiscal year, we decided to postpone the plan of using JSS to next fiscal year, because of the COVID-19 state of emergency and also the renewal of JSS2 system to JSS3. Therefore, we don't have any result in this fiscal year.

We are planning to re-analysis of our MADOCA offline product by using latest MADOCA software and JSS3 in the next fiscal year.

● Publications

N/A

● Usage of JSS

● Computational Information

Process Parallelization Methods	N/A
Thread Parallelization Methods	OpenMP
Number of Processes	1
Elapsed Time per Case	30 Minute(s)

● Resources Used(JSS2)

Fraction of Usage in Total Resources*1(%): 0.02

Details

Computational Resources		
System Name	Amount of Core Time (core x hours)	Fraction of Usage*2(%)
SORA-MA	0.00	0.00
SORA-PP	0.00	0.00
SORA-LM	0.00	0.00
SORA-TPP	12,323.36	1.16

File System Resources		
File System Name	Storage Assigned (GiB)	Fraction of Usage*2(%)
/home	100.14	0.09
/data	2,584.46	0.05
/ltmp	1,953.13	0.17

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(%): 0.00

Details

Computational Resources		
System Name	Amount of Core Time (core x hours)	Fraction of Usage*2(%)
TOKI-SORA	0.00	0.00
TOKI-RURI	0.00	0.00
TOKI-TRURI	2,230.21	0.18

File System Resources		
File System Name	Storage Assigned (GiB)	Fraction of Usage*2(%)
/home	100.14	0.07
/data	2,489.09	0.04
/ssd	95.37	0.05

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.