Greenhouse gases Observing SATellite-2 (GOSAT-2) Project

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Abstract

GOSAT-2 project retrieve and estimate the global concentration distribution of major greenhouse gases including the sources and natural absorbers with high level of accuracy to contribute to environmental administration as follows.

- Improved precision of climate change predictions
- Early detection of changes in the Earth system
- Better understanding of emission reduction level of the anthropogenic greenhouse gases and changing natural sink
- Contribution to air pollution monitoring policies

Also, GOSAT-2 project researches and develops new earth observation technologies required for future earth observing satellites.

Ref. URL: http://global.jaxa.jp/projects/sat/gosat2/

Reasons and benefits of using JAXA Supercomputer System

GOSAT-2 project utilizes JSS2 as one of the GOSAT-2 Mission Operation System which processes the observation data of GOSAT-2. When processing algorithm is updated, JSS2 reprocesses all data observed in the past. Also, JSS2 is used as a remote storage of all data required for its reprocessing.

As the reprocessing targets of GOSAT-2 products extends to all data observed in the past, more computer resources (core, memory, storage, etc.) are required than in the real-time processing.

It is necessary to use JSS2 to shorten the reprocessing time and to provide the reprocessing products to GOSAT-2 users in a more timely manner.

Achievements of the Year

We have been transmitting L0 data from the GOSAT-2 Mission Operation System to JSS2 in preparation for reprocessing of L1 products on JSS2 since observation by TANSO FTS-2 and TANSO-CAI-2 started.

In FY2019, we have updated the L1 processing algorithm for TANSO-FTS-2 and TANSO-CAI-2 three times and reprocessed the past observation data on JSS2 each time.

The version-up history of GOSAT-2 TANSO-FTS-2 1B product is shown below.

- Version 002.004 : Apr.2019 Preparation for initial calibration version (L+6M)
- Version 100.100 : Jul.2019 After initial calibration version (L+9M) (Release to general users)
- Version 101.101 : Apr.2019 Bug fix

The version-up history of GOSAT-2 TANSO-CAI-2 1A product is shown below.

- Version 000.001 : Apr.2019 Preparation for initial calibration version (L+6M)
- Version 100.100 : Jul.2019 After initial calibration version (L+9M) (Release to general users)
- Version 101.101 : Apr.2019 Bug fix

The FTS-2 L1B and CAI-2 L1B product has been available to general users from "GOSAT-2 Product Archive" (https://prdct.gosat-2.nies.go.jp/en/index.html) since July 2019.

Publications

N/A

Usage of JSS2

Computational Information

Process Parallelization Methods	N/A
Thread Parallelization Methods	OpenMP
Number of Processes	1
Elapsed Time per Case	5 Minute(s)

Resources Used

Fraction of Usage in Total Resources[*1](%): 0.05

Details

Computational Resources		
System Name	Amount of Core Time (core x hours)	Fraction of Usage[*2](%)
SORA-MA	0.00	0.00
SORA-PP	14,958.23	0.10
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	148.93	0.12
/data	129,931.83	2.22
/ltmp	30,501.32	2.59

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.