

Systematic improvement of build and comparison of aerodynamic models of aircraft

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● Abstract

A research to realize efficient validation of numerical simulation using experimental data such as flight test and wind tunnel test data utilizing mathematical model.

● Reasons and benefits of using JAXA Supercomputer System

It is necessary to perform CFD computation including flow around a whole aircraft because it requires highly parallelized computation. Additionally, the JSS2 was chosen because the FaSTAR CFD solver is optimized, as well.

● Achievements of the Year

To compare flight test results with ground test, such as wind tunnel testing and computational fluid dynamics (CFD), CFD analysis was performed. It includes Reynolds number effect confirmation and stabilizer deflection angle effect estimation in comparison between wind tunnel testing and flight test.

(Figures are not presented because the results are not public at this moment.)

● Publications

N/A

- Usage of JSS2

- Computational Information

Process Parallelization Methods	MPI
Thread Parallelization Methods	N/A
Number of Processes	25
Elapsed Time per Case	12.5 Hour(s)

- Resources Used

Fraction of Usage in Total Resources*1(%): 1.43

Details

Computational Resources		
System Name	Amount of Core Time (core x hours)	Fraction of Usage*2(%)
SORA-MA	12,790,706.82	1.55
SORA-PP	7,780.47	0.05
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	645.38	0.54
/data	73,106.68	1.25
/ltmp	4,689.42	0.40

Archiver Resources		
Archiver Name	Storage Used (TiB)	Fraction of Usage*2(%)
J-SPACE	1.25	0.03

*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.