

Digital tuft; measurement system of surface physical quantity for aircraft

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● Abstract

Development of measurement system of surface physical quantity for aircraft

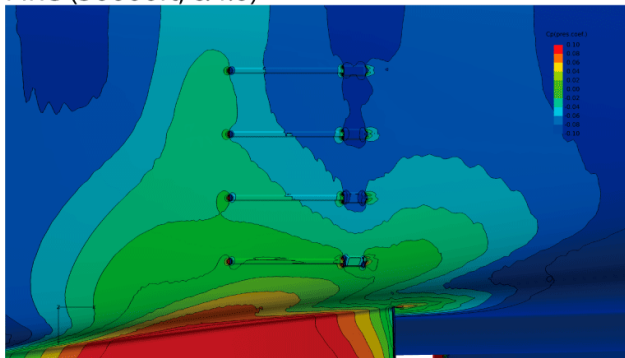
● Reasons and benefits of using JAXA Supercomputer System

The purpose is to perform CFD analyses for estimation of aerodynamic penalty of aircraft equipped with the developed sensor system. The advantage of JSS2 is its speed and preciseness of calculation.

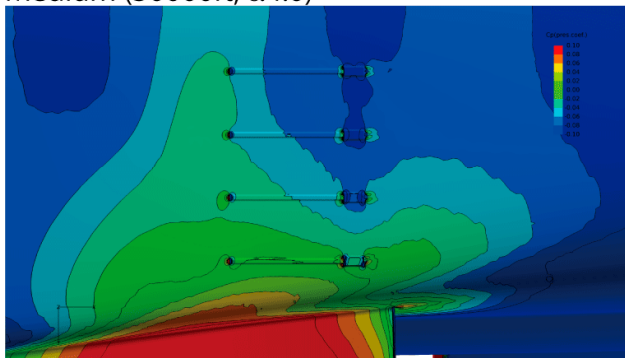
● Achievements of the Year

The comparisons of the calculation results show that the grid density does not significantly affect the flow around the additional sensor system equipped on the surface of a target aircraft.

Fine (30000ft, $\alpha 4.0$)



Medium (30000ft, $\alpha 4.0$)



Coarse (30000ft, $\alpha 4.0$)

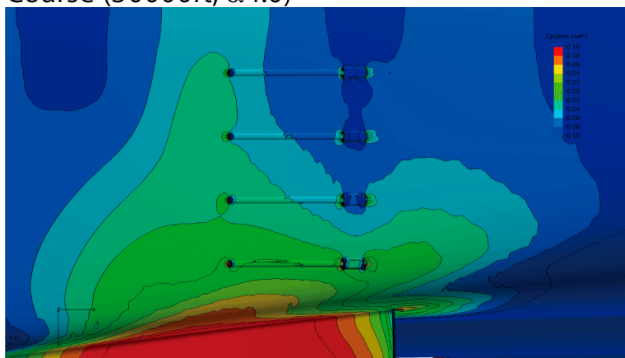


Fig. 1: Comparison of Cp around sensor systems between grid density

● **Publications**

N/A

● **Usage of JSS**

● **Computational Information**

Process Parallelization Methods	MPI
Thread Parallelization Methods	N/A
Number of Processes	512
Elapsed Time per Case	5 Hour(s)

- **Resources Used(JSS2)**

Fraction of Usage in Total Resources^{*1}(%): 0.11

Details

Computational Resources		
System Name	Amount of Core Time (core x hours)	Fraction of Usage ^{*2} (%)
SORA-MA	654,815.43	0.12
SORA-PP	1,324.87	0.01
SORA-LM	42.14	0.02
SORA-TPP	0.00	0.00

File System Resources		
File System Name	Storage Assigned (GiB)	Fraction of Usage ^{*2} (%)
/home	3.58	0.00
/data	1,244.55	0.02
/ltmp	732.42	0.06

Archiver Resources		
Archiver Name	Storage Used (TiB)	Fraction of Usage ^{*2} (%)
J-SPACE	1.36	0.04

^{*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	0.00	0.00

File System Resources		
File System Name	Storage Assigned (GiB)	Fraction of Usage*2(%)
/home	3.58	0.00
/data	1,244.55	0.02
/ssd	35.76	0.02

Archiver Resources		
Archiver Name	Storage Used (TiB)	Fraction of Usage*2(%)
J-SPACE	1.36	0.04

*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.