System Operation of the Digital/Analog-Hybrid Wind Tunnel (DAHWIN)

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Abstract

Through the operation of the JAXA Digital/Analog-Hybrid Wind Tunnel (DAHWIN), we aim to realize the complementary use of Experimental Fluid Dynamics (EFD) and Computational Fluid Dynamics (CFD). Specifically, a series of DAHWIN functions (e.g. CFD before wind tunnel testing, test preparation using pre-CFD data, real time EFD/CFD data monitoring, and EFD/CFD data integration) are served to the system users.

http://www.aero.jaxa.jp/eng/research/basic/aerodynamic/dahwin/

Reasons for using of JSS2

DAHWIN performs a number of high-fidelity and large-scaled computations (3D RANS analysis) based on the JAXA 2m x 2m transonic wind tunnel testing, and then the use of JSS2 is necessary.

Achievements of the Year

For the CFD analysis using DAHWIN, the system was applied to a total of two JAXA 2m x 2m transonic wind tunnel tests.

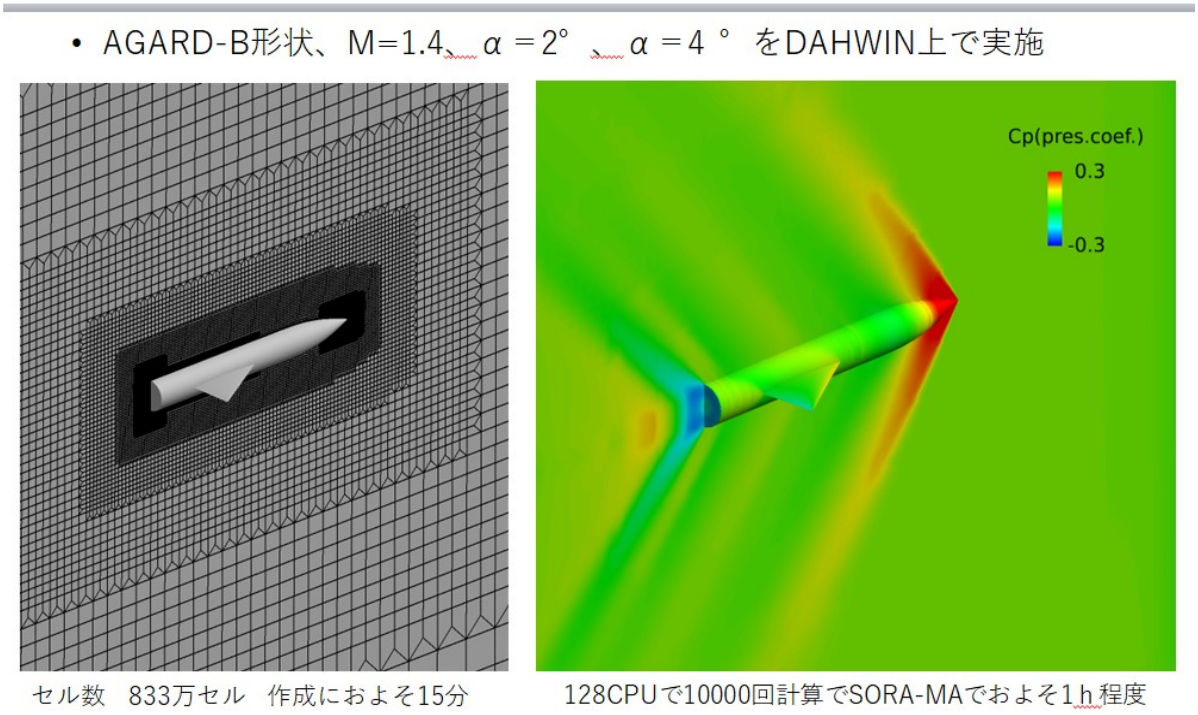

Fig.1 CFD results for the AGARD-B model using DAHWIN

Publications

N/A

Usage of JSS2

Computational Information

Parallelization Methods	MPI
Thread Parallelization Methods	N/A
Number of Processes	16 - 96
Elapsed Time per Case	1.25 hours

Resources Used

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

Details

Computing Resources		
System Name	Amount of Core Time (core x hours)	Fraction of Usage*2 (%)
SORA-MA	5,099.41	0.00
SORA-PP	28.83	0.00
SORA-LM	56.49	0.03
SORA-TPP	0.00	0.00

File System Resources		
File System Name	Storage assigned(GiB)	Fraction of Usage*2 (%)
/home	649.68	0.45
/data	22,918.60	0.42
/ltmp	7,525.62	0.57

Archiver Resources		
Archiver System Name	Storage used(TiB)	Fraction of Usage*2 (%)
J-SPACE	0.71	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