Cooperative Research on Airframe Noise Reduction Technology (FQUROH+) #2

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Abstract

This collaborative research is being carried out as part of the FQUROH (Flight Demonstration of Quiet Technology to Reduce Noise from High-Lift Configurations) project aimed at raising the technical maturity level of the noise reduction technology for high-lift devices and landing gear, which draws international attention to reduce noise in areas around airports, to a level applicable to future development of aircraft and related equipment. This contributes to reduction of aircraft noise in local communities around the airport and airline operating costs by reducing landing fee.

Ref. URL: http://www.aero.jaxa.jp/eng/research/ecat/fquroh/

Reasons and benefits of using JAXA Supercomputer System

It is necessary to carry out large-eddy simulations (LES) with hundred-million-node meshes, and large computing resources are essential to achieve the target resolution.

Achievements of the Year

LES analyses of the landing configuration of commercial aircraft were carried out, and important knowledge on the noise generation mechanism was obtained.

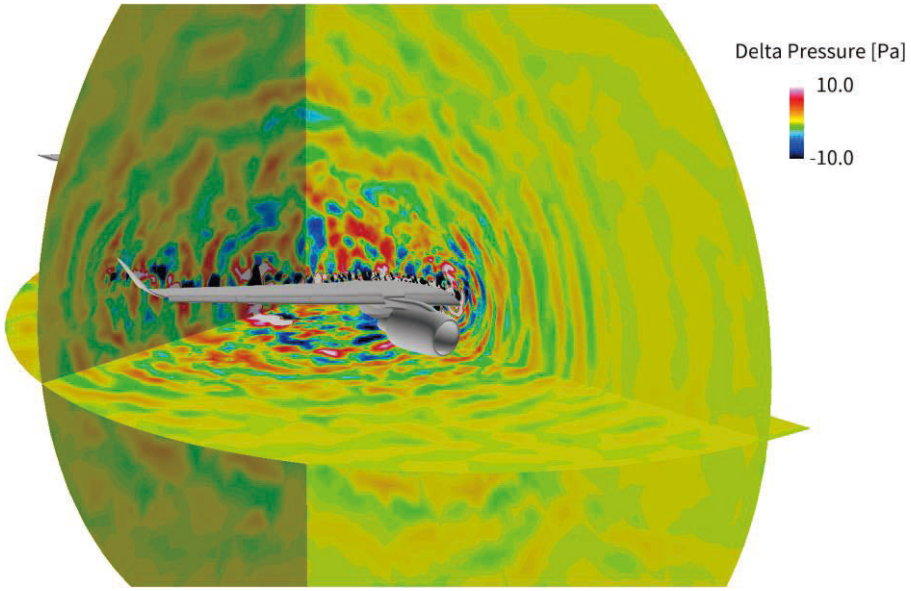

Fig. 1: LES analysis of the landing configuration of commercial aircraft (pressure distribution)

Publications

N/A

Usage of JSS2

Computational Information

Process Parallelization Methods	MPI
Thread Parallelization Methods	OpenMP
Number of Processes	120
Elapsed Time per Case	50 Hour(s)

Resources Used

Fraction of Usage in Total Resources[*1](%): 0.21

Details

Computational Resources		
System Name	Amount of Core Time (core x hours)	Fraction of Usage[*2](%)
SORA-MA	1,860,167.29	0.23
SORA-PP	13.52	0.00
SORA-LM	45.78	0.02
SORA-TPP	0.00	0.00

File System Resources		
File System Name	Storage Assigned (GiB)	Fraction of Usage*2(%)
/home	42.95	0.04
/data	4,602.35	0.08
/ltmp	1,706.77	0.15

Archiver Resources		
Archiver Name	Storage Used (TiB)	Fraction of Usage*2(%)
J-SPACE	109.78	2.76

*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.