Modelling and Simulation for Air Quality at the Scientific Computing Department


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The Scientific Computing Department (SCD) provides computational science support and development for modern Research.

SCD in numbers

- The department is divided into two sites: RAL (Oxfordshire) and Daresbury Laboratory (Cheshire).
- Department has 180 computational scientists and software engineers.

R&D activities cover a wide range of topics

- Data Analysis (JASMIN, DAFNI)
- Data Storage
- Software Development
- Advance Modelling and Simulation

Computational Science and Engineering

- SCD has 4 different divisions and @DL people mainly sit in the Computational Science and Engineering Division (CSE).
- CSE provides modelling and simulation capabilities for a large variety of science and applications with the common denominator to intensively employ HPC.

Air Quality @ SCD
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**Computational Science and Engineering**

CEEG

Air Quality @ SCD
**Code_Saturne**

General purpose, open source CFD code developed by EDF R&D and mainly used for heat transfer applications, nuclear engineering, and turbo-machinery. It has also an atmospheric module widely used in EDF and other French National Labs (CEREA).

Modelling of the flow in Canada Square, London
The Multiscale Universal Interface (MUI) is a collaboration between Brown University, IBM Research, LBNL, and STFC.

- Header-only C++ library, couples using a set of discrete data samples and **interface**
- Uses MPI MPMD ⇒ Portable across most HPC system in the World
- At the centre of all multi-scale/physics work carried out by the CEG group in FSI, nuclear engineering and aeroacoustic
- Possibility for **CFD-Mesoscale Weather coupling** for atmospheric modelling in urban environments
- Work is also on going in the field of **particle dynamics** within fluid flows
- [https://github.com/MxUI](https://github.com/MxUI)