# FLUID FLOW OVER THREE-DIMENSIONAL SURFACE MOUNTED BLUFF BODIES

Background

Surface-mounted bluff bodies have a range of different shapes and are present in the fields of wind engineering, heat transfer from rough surfaces and aerodynamics.

Objective

To create a parallel code for numerical simulation of the fluid flow over surface-mounted slender bluff bodies, such as square cylinders and pyramids.
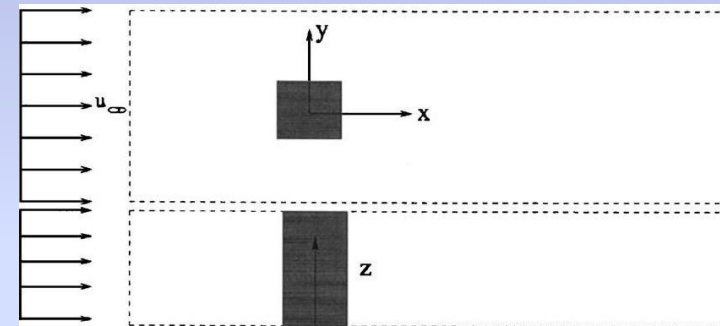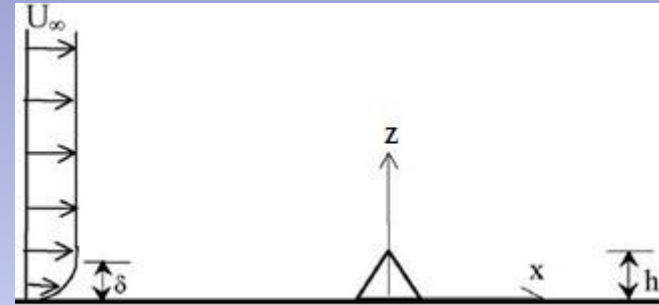
Flow past a pyramid and a cube
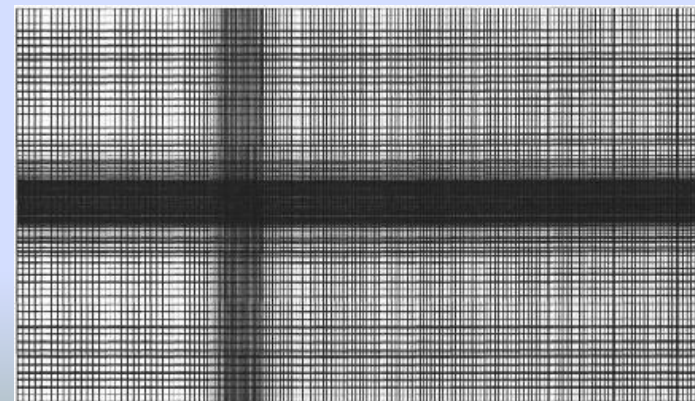
A non-uniform grid on the XY plane for the cube

Research Carried Out

A LES code has been written which is compatible with parallel programming and is also general enough to solve a wide range of CFD problems.

Key Findings

The existing code has been tested on the circular jet in cross-flow problem, to study the underlying flow physics, and the results have been validated with experimental data available in the literature.
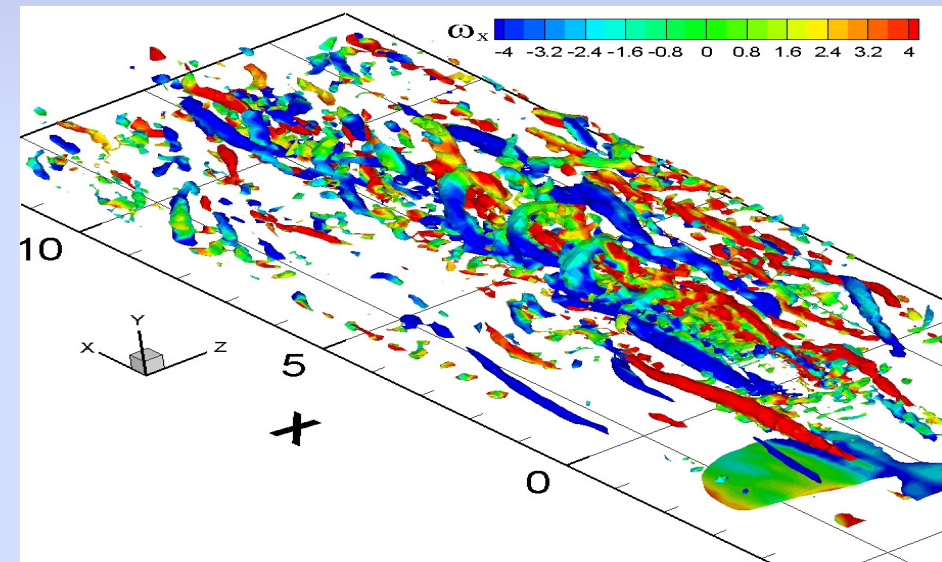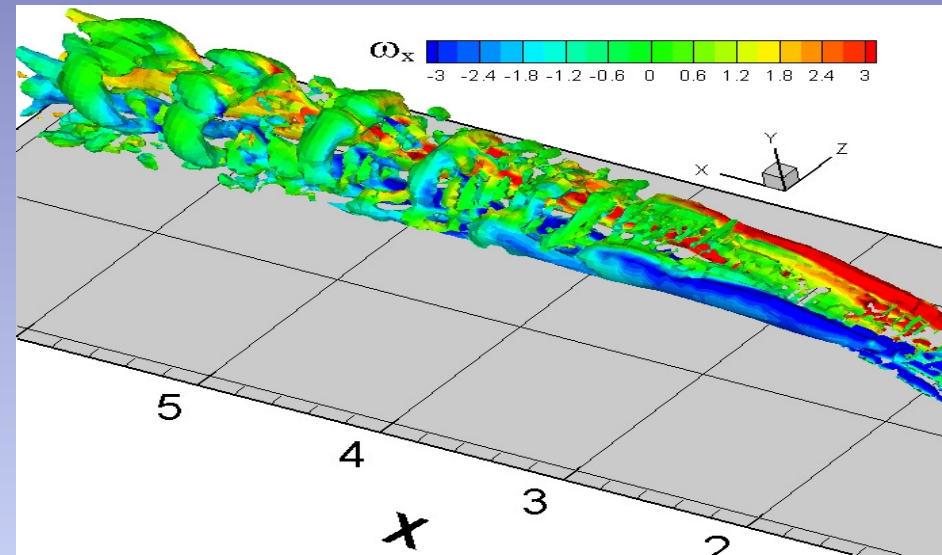
Coherent structures of a jet in cross flow with stream-wise vorticity contours; (top) Laminar Re=2,000, (bottom) Turbulent Re=12,000