# SG2224
# Applied CFD

# 17 April 2012

# Today

- Individual task
- Project information
  - Time to start project work
  - Contact your project coordinator (appointment)
  - Use bilda – project group discussion forum
- Lectures:
  - boundary conditions
  - quality and best practice
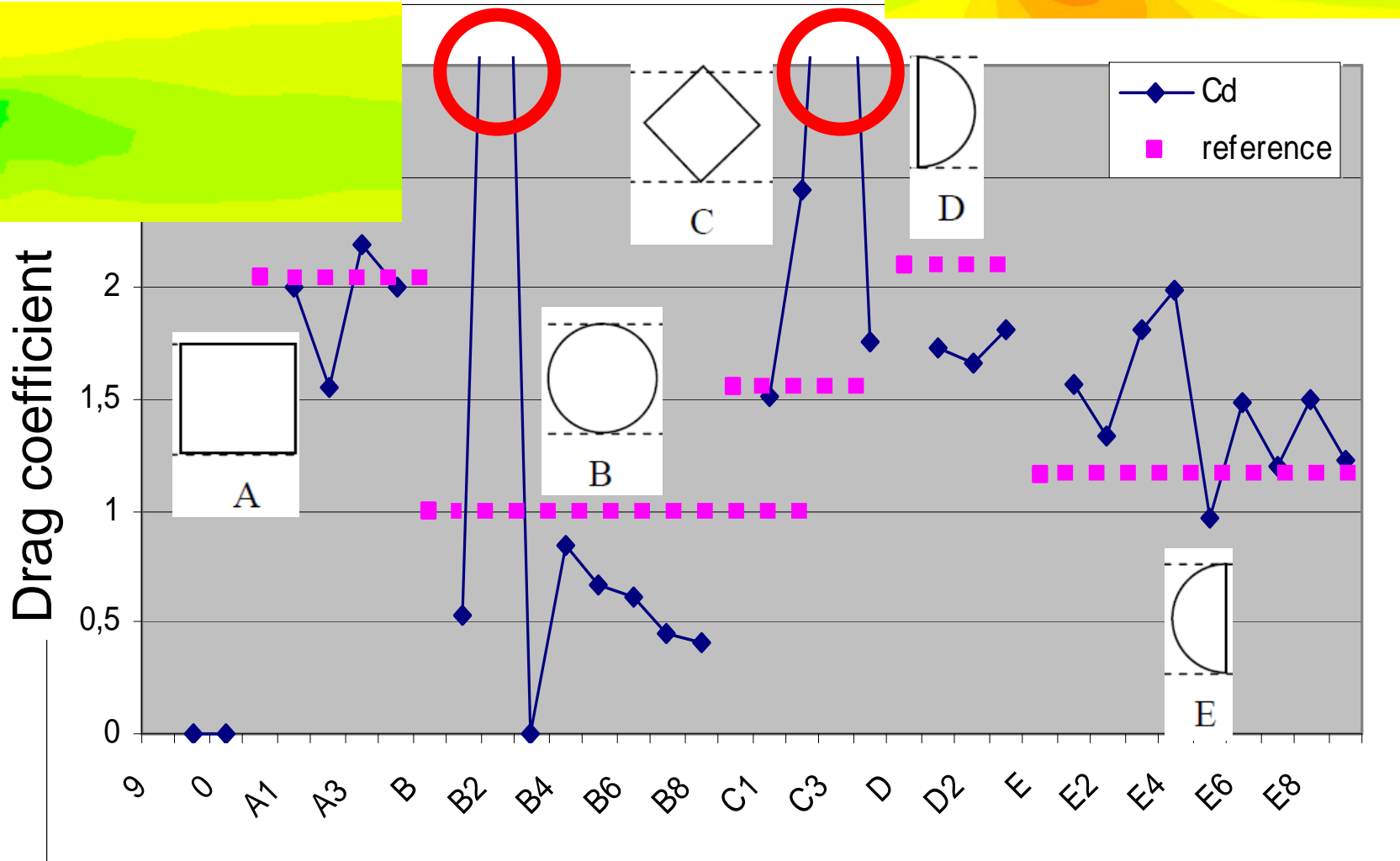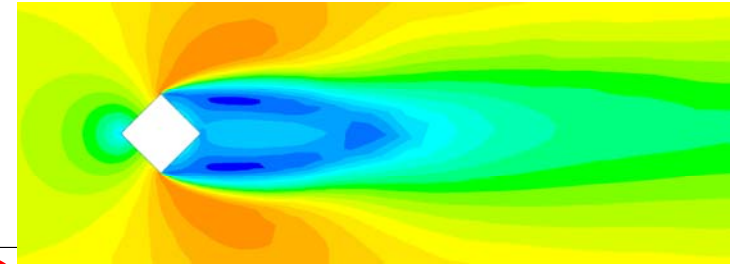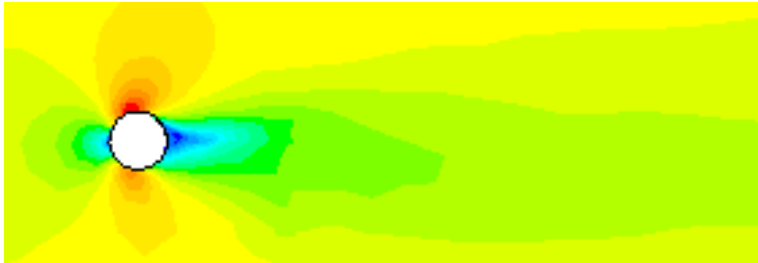
# Individual task

- Objective
    - Drag coefficient for a 2D object
- Before 16 April 12.00: Run the case – upload figures and drag
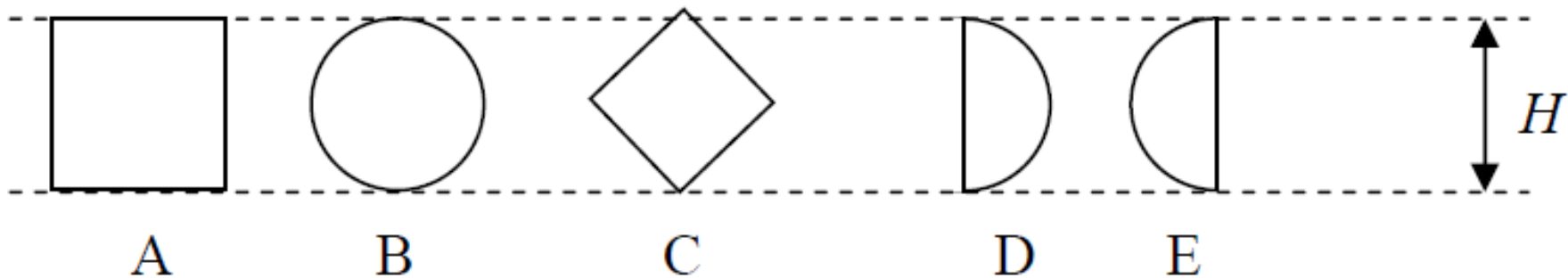
# What can we learn?
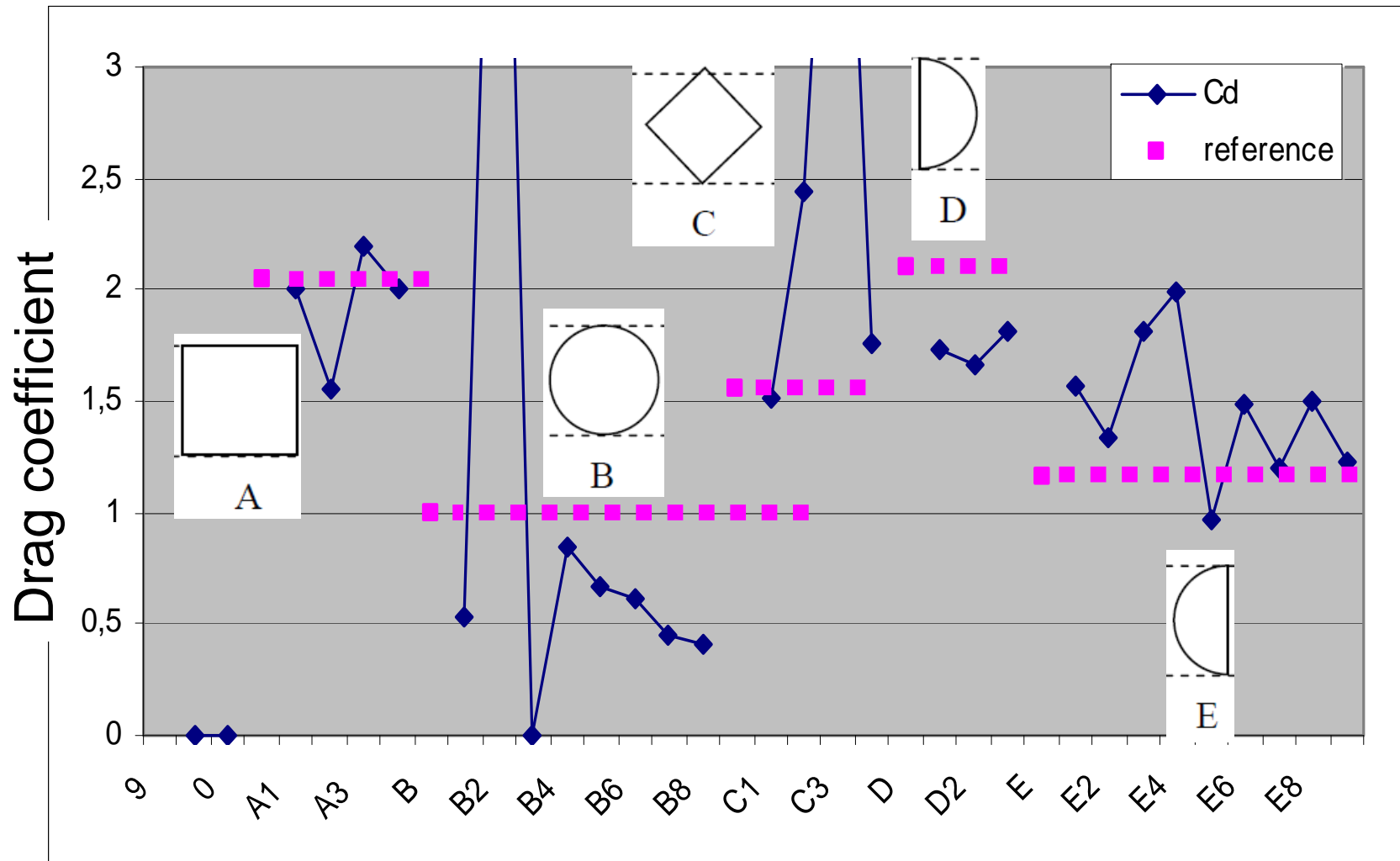
# Error?

# What is the question?

- Drag coefficient

$$C_D = \frac{2D}{\rho U^2 H}$$

- D=1.2, $\rho$=1.2, U=1, H=2 -> Cd=1.0, not 2.0 or 1.2

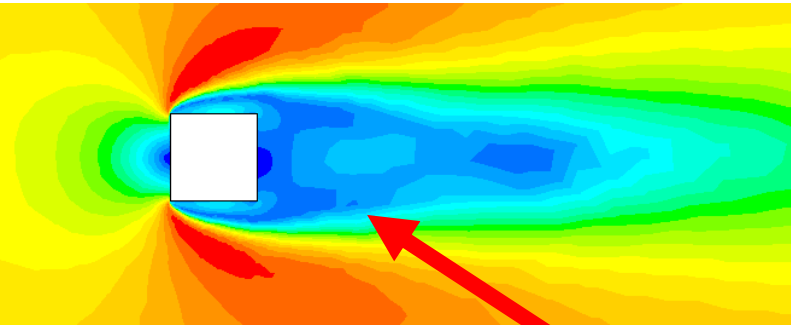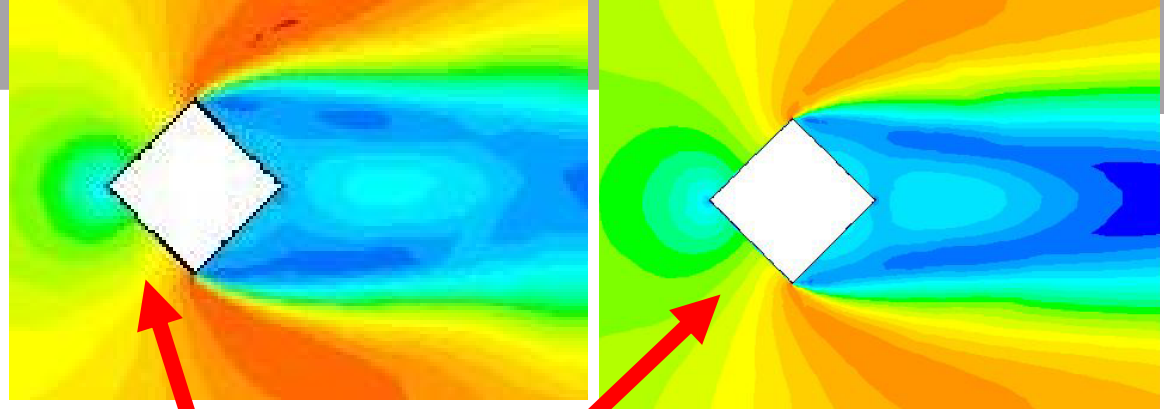```
Forces
                        Forces (n)
Zone                    Pressure                                          Viscous
object                  (1.2247356 -0.056028187 0)                        (-0.0087259216 4.0672516e-05
--------------------    -------------------------------------------       -------------------------------
Net                     (1.2247356 -0.056028187 0)                        (-0.0087259216 4.0672516e-05

Forces - Direction Vector (1 0 0)
                        Forces (n)                                        Coefficients
Zone                    Pressure        Viscous         Total             Pressure        Viscous
object                  1.2247356       -0.0087259216   1.2160097         1.9995684       -0.01424640
--------------------    ------------    -------------   -------------     -----------     ----------
Net                     1.2247356       -0.0087259216   1.2160097         1.9995684       -0.01424640
```

# Quality?

Drag coefficient

| | | |
|---|---|---|
| | Cd | |
| | reference | |

2

1,5

1

0,5

A  B  C  D  E

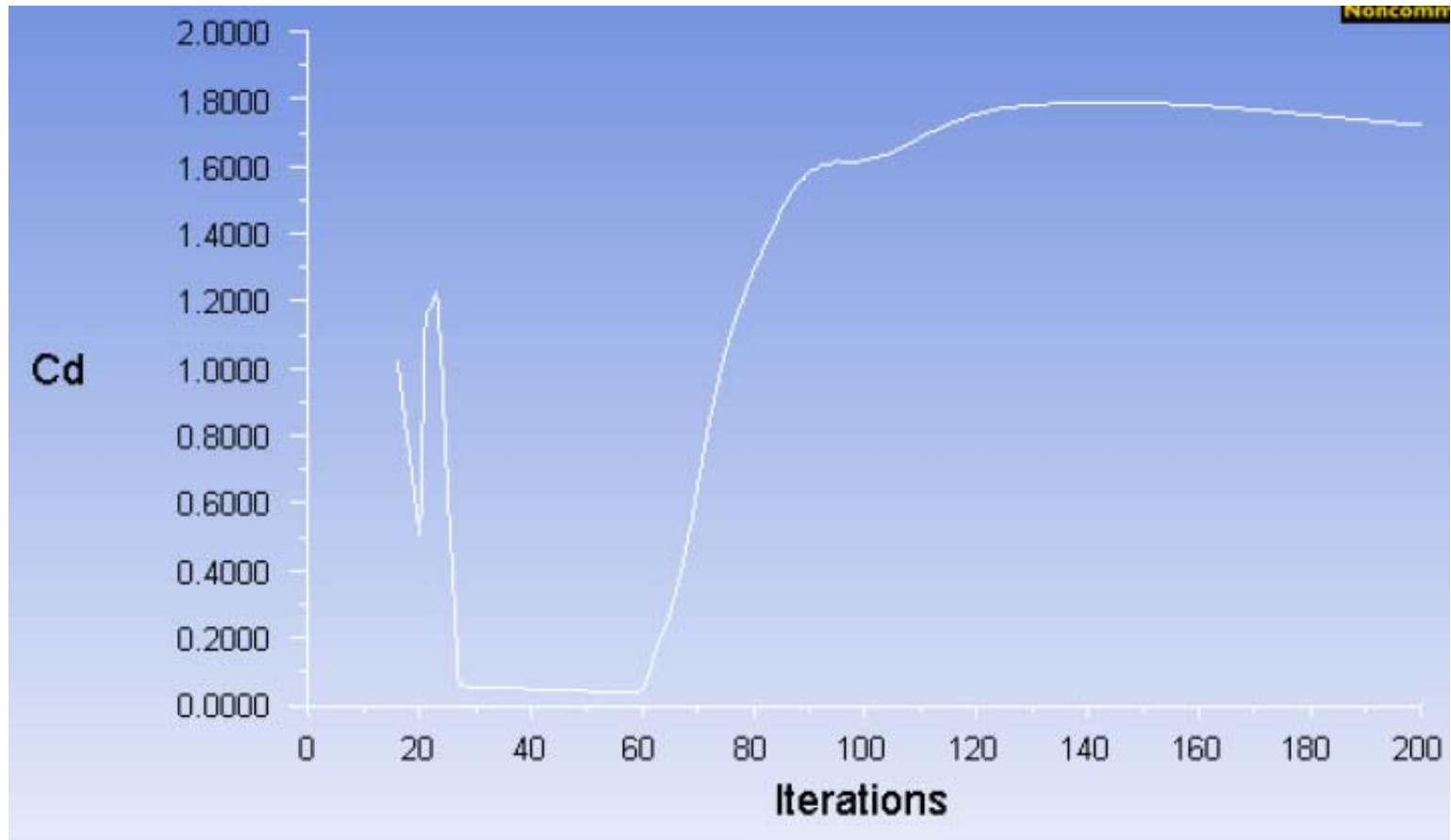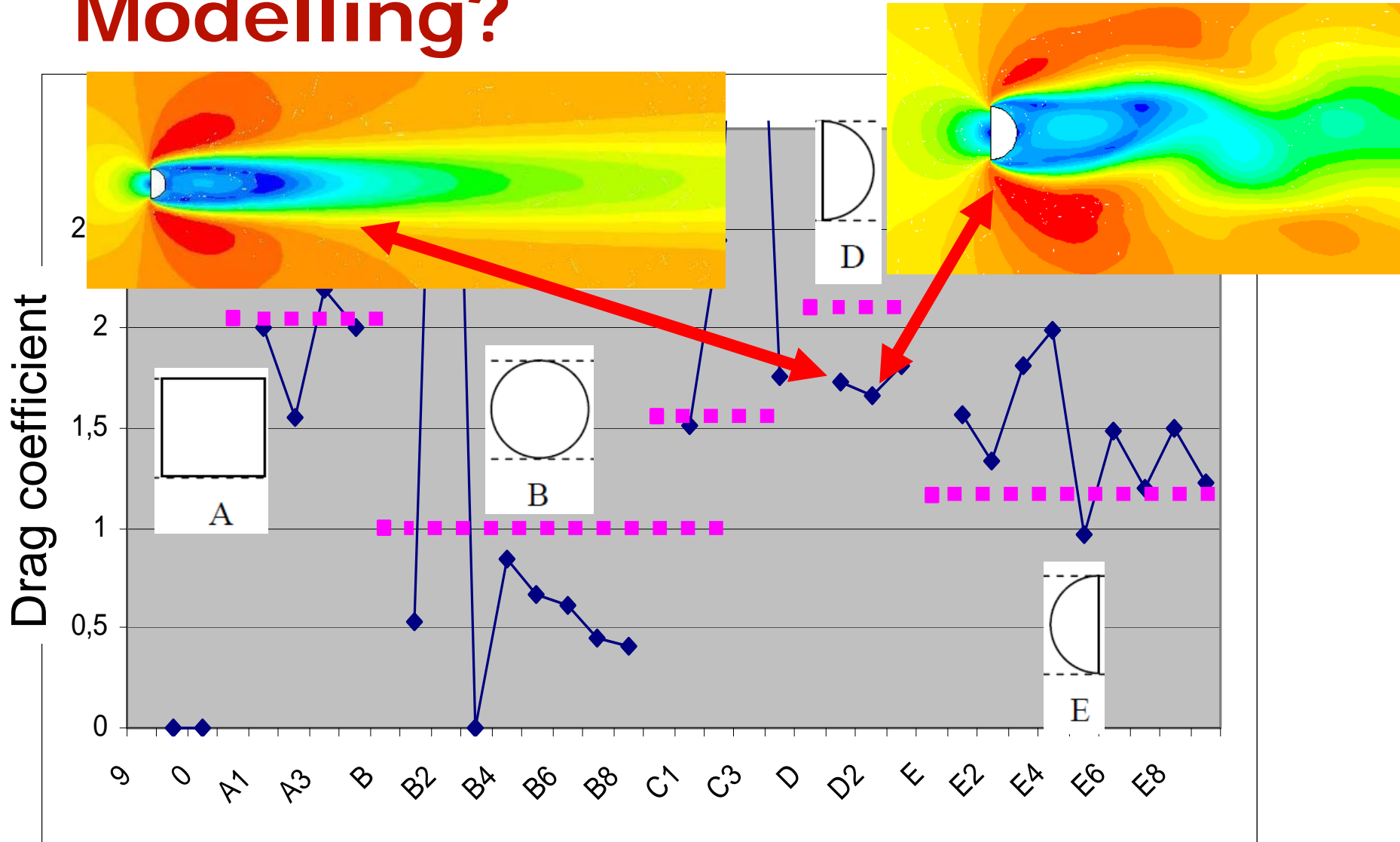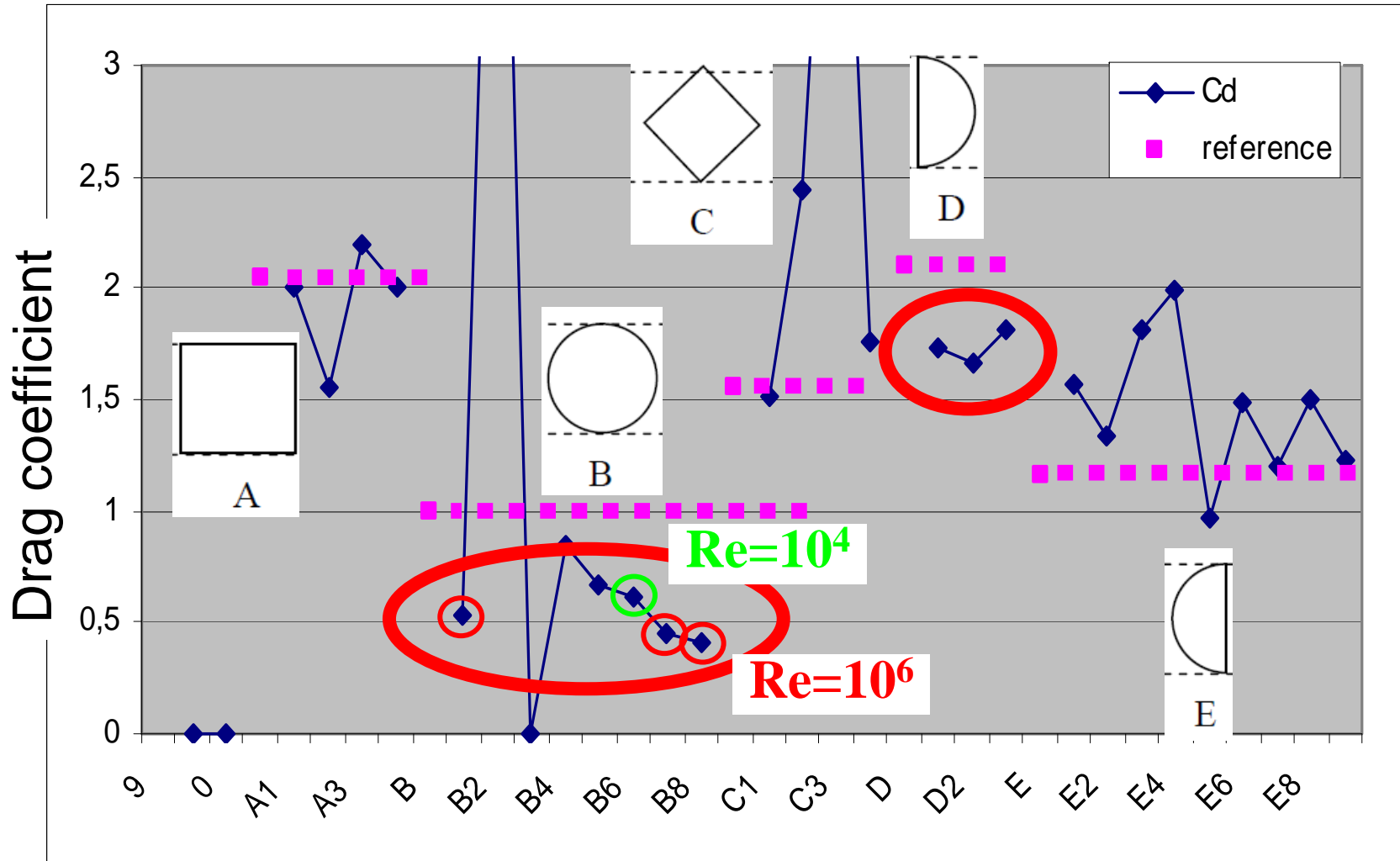B6  B8  C1  C3  D  D2  E  E2  E4  E6  E8

KTH
VETENSKAP
OCH KONST
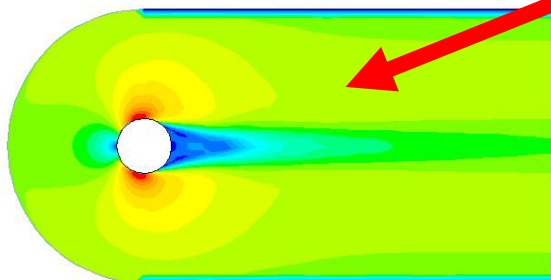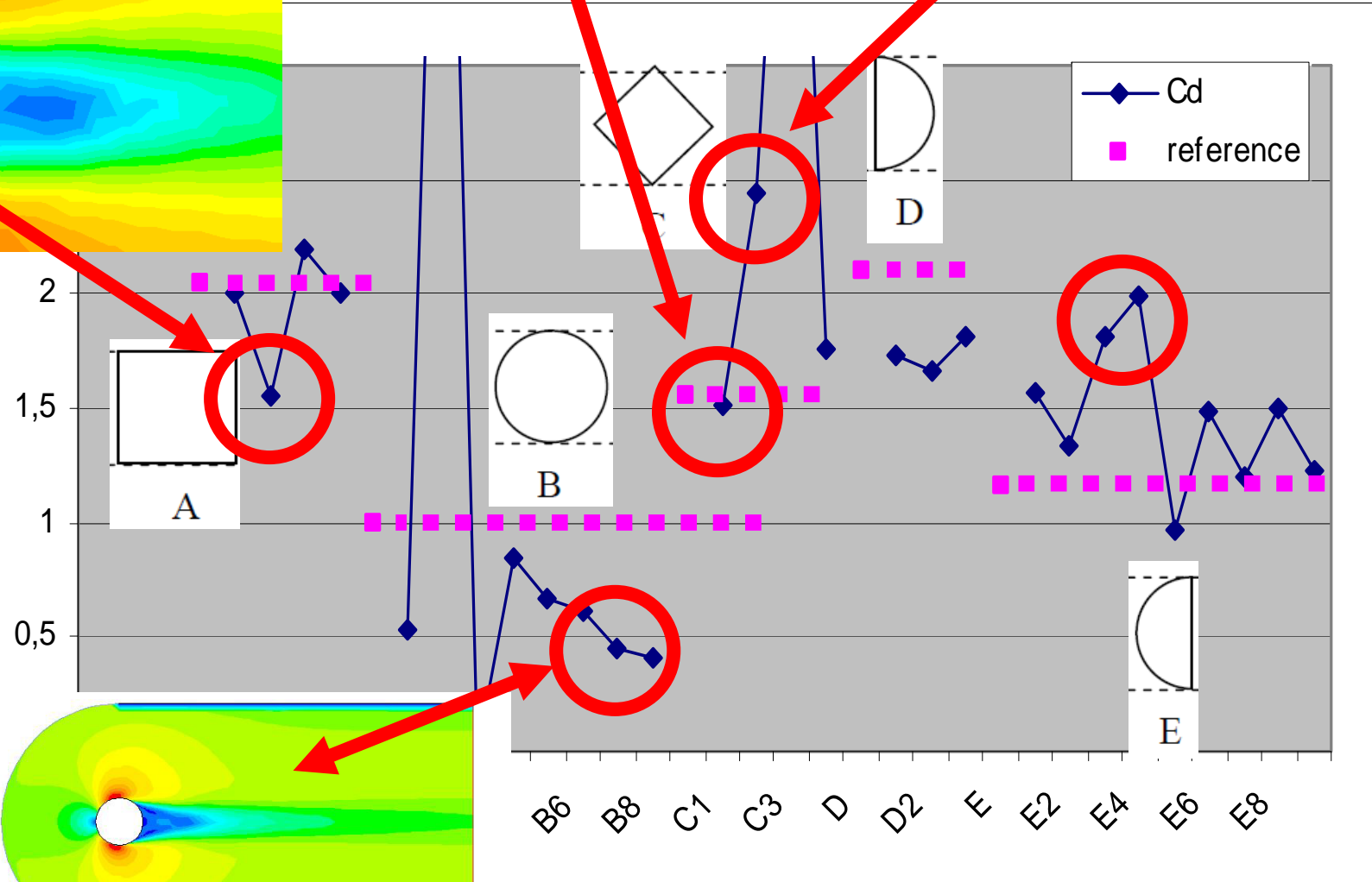
# Convergence?

- Quantities of interest should not change with iteration

# Modelling?

# Systematic error?

# Transition?

- Reynolds number L=1m, U=1m/s, air -> Re~$10^5$