



Coupling of inner and outer motions in turbulent boundary layers: Implications for near-wall models in LES

Ivan Marusic

(imarusic@unimelb.edu.au)

Recent studies in laboratory-scale, but high Reynolds number, turbulent boundary layers and in the atmospheric surface layer have revealed a strong coupling and interaction between the outer and inner flow motions. The interaction is well modelled by a superposition and modulation of the largest outer flow motions onto the scale-scale inner region motions, and examples of this will be presented in the talk.

The inner-outer interaction model (Marusic et al 2010) is also well suited to large-eddy simulation (LES) as the simulation is able to provide the large-scale information while the model is potentially capable of capturing the unresolved non-isotropic near-wall behaviour. The model has also been recently extended to include the wall-shear stress signal, which opens the way for a simple algebraic, but non-linear, near-wall model for LES.