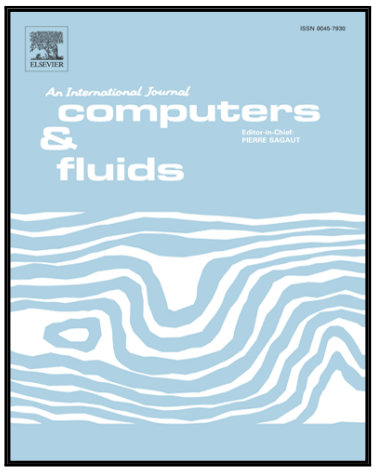

Viscous flow simulations at high Reynolds numbers without wall functions: is $y^+ \simeq 1$ enough for the near-wall cells?

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Highlights

- Importance of numerical errors/uncertainties in the comparison of solutions obtained with different eddy-viscosity models.
- Estimation of the influence of the near-wall cell size on the numerical accuracy offriction and pressure forces.
- Inadequacy of the rule of thumb $y_2^+ \simeq 1$ for the k - ω two-equation models.
- Examples ranging from a simple flat plate to the flow around a tanker at full scale Reynolds number.