Namelist SGS_Model

This data setup allows the user to use a LES subgrid model to modelize the subgrid scales effects of turbulence.
The different models are proposed here to take into account the dynamical scales and the thermal scales (when heat transfer is considered). Some LES models results from the research performed at LIMSI. Their use depends on the type of flow considered.

LES_Enabled

- Type : boolean value
- This data enables the LES models (if it is set to .true.)

Type_of_kinematic_Model

- Type : integer value
- This data allows the user to select the LES model related to the dynamic scales of the flow to define a subgrid viscosity term in the momentum equations.
    - 0 : No kinematic LES model
    - 1 : Static model of Mansour (like Smagorinsky model with the vorticity tensor considered in place of the constraint tensor)
    - 2 : Mixed scales model (Mansour + Bardina approach to estimate the subgrid scales)
    - 11 : Dynamic model based on the Germano procedure applied to the Mansour's model
    - 20 : Entropic viscosity model (Developed by J.L. Guermond in order to get a suitable solution "a la Leray")

Type_of_Thermal_Model

- Type : integer value
- This data allows the user to select the LES model related to the dynamic scales and/or the thermal scales of the flow to define a subgrid thermal conductivity term in the enthalpy equation.
    - 0 : No thermal LES model
    - 1 : Static model based on Mansour's model with a constant value of the subgrid Prandtl number
    - 2 : Static model based on functional approach similar to the Mansour's model for heat flux
    - 3 : Mixed scales model (Static + Bardina approach in order to estimate the subgrid scales of heat flux)
    - 10 : Dynamic model based on the Germano procedure applied to the static model (1) in order to estimate a local value of the subgrid Prandtl number
    - 11 : Dynamic model based on a Reynolds analogy in order to estimate a local value of the subgrid Prandtl number
    - 20 : Dynamic model based on the Germano procedure applied to the static model (2) in order to estimate a local value of the subgrid Prandtl number

Constant_Kinematic_Model

- Type : real value
- This is the reference value of the constant parameter that is used in LES models related to the momentum equations. See the literature in relation with your simulation case in order to define the suitable constant.

Constant_Thermal_Model

- Type : real value
- This is the reference value of the constant parameter that is used in LES models related to the enthalpy equation. See the literature in relation with your simulation case in order to define the suitable constant.

Weight_Of_Grid_Filtering

- Type : real value
- This data is associated to the length-scale of the filter chosen in some LES models such as dynamic models or mixed-scales models in order to estimate the subgrid turbulence scales. The most classical values are :
    - Weight_Of_Grid_Filtering= 2 - $\hat{\Delta}= \sqrt{6}.\Delta$