ID de Contribution: **7** Type: **Présentation orale**

Interactions multi-échelles en convection de Rayleigh Bénard avec une plaque rugueuse

mardi 18 juin 2024 09:50 (20 minutes)

Turbulent convection is a spontaneous physical process in natural environments and many industrial systems. However, most of these systems are not ideal in terms of underlying surfaces and involve specific topography or small-scale roughness. Interactions between plate roughness and nearby flow can induce changes in turbulence scales [1]. In addition, when the side walls of a cavity confine the flow or when it is enclosed by two large-scale horizontal walls, a large-scale circulation (LSC) is established in the fluid volume [2]. This work aims to reveal how the LSC changes small flow structures by considering either a cavity flow or a fluid layer of reduced size, particularly when a plate is rough.

This study considers three types of bottom plates: smooth plate and two plates with evenly distributed roughness elements. Three confined cavities and three periodic fluid domains are modeled using direct numerical simulations at constant Ra and P r, considering the different types of plates as indicated above.

Auteurs principaux: M. CARBONNEAU, Nathan (Lab. Interdisciplinaire des Sciences du Numérique); M. SALORT, Julien (LP, ENS Lyon); SERGENT, Anne (LISN / Sorbonne Université)

Orateur: M. CARBONNEAU, Nathan (Lab. Interdisciplinaire des Sciences du Numérique)

Classification de Session: Présentations

Classification de thématique: Convection and Buoyancy-Driven Flows