Chair: Physics of Fluids Group

Effects of Stratocumulus Clouds on the Earth's Boundary Layer

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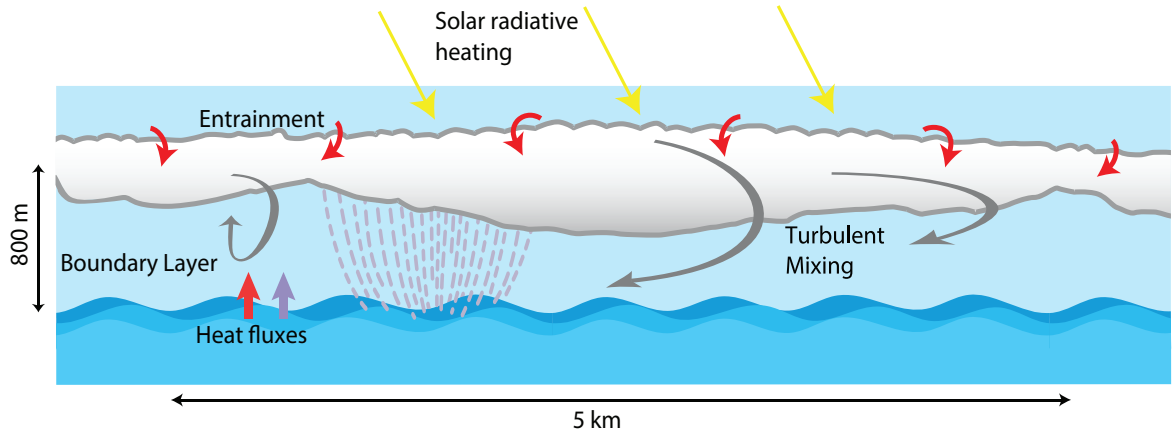
Description

This is a Bachelor assignment which aims at studying the effects that are induced by the presence of Stratocumulus Clouds on the Earth's boundary layer. It will be based on numerical simulations that will be run in EU supercomputers using our Large Eddy Simulation (LES) code.

Stratocumulus Clouds are the most common clouds on Earth. Although being very relevant for the climate, they are still poorly understood, and thus contributing to the uncertainty of climate predictions for the future. However, thanks to the advance of computational resources, it has been become recently possible to study their dynamics with numerical simulations, and thus allowing to study their dynamics more easily. In this project, main questions like the following will be addressed: "how and why does the wind profile change?"; "what are the effects on the Boundary Layer properties?"; "do they interphere with atmopsheric turbulence?". The student will be encouraged to give personal insights and suggestions throughout the whole project.



Suggested readings

- Mellado, J.P., *Cloud-Top Entrainment in Stratocumulus Clouds*, Annual Review of Fluid Mechanics, 2017.
  DOI: https://doi.org/10.1146/annurev-fluid-010816-060231.
- Wood, R., *Stratocumulus Clouds*, Monthly Weather Review, 2012.
  DOI: https://doi.org/10.1175/MWR-D-11-00121.1.