High resolution climatology
- towards climate change services

Large Eddy Simulation over three-dimensional mountain topography

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A new generation Large-Eddy Simulation (LES) is applied to study wind fields and the influence of local topography. In this study we focus on the implementation of three-dimensional topography in our LES algorithm using an immersed boundary method. To validate the model, the LES results are compared with measurements from wind tunnel studies taken from the literature.
The code is then used to model the flow across the Gaudergrat (at 2280m in the Graubünden, Switzerland) where a field experiment took place in 2003, monitored by WSL scientists in the context of GAUDEX field campaign. A flow perpendicular to the Gaudergrat appears even when the wind is blowing parallel to the ridge. We model different situations with small changes in the direction of wind to investigate this cross-flow.