



## **The analyse of Internal Variability of a Regional Climate Model using the Singular Vectors**

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Regional Climate Models (RCM) simulate the atmospheric processes that are nonlinear by nature and their simulations are therefore characterised by Internal Variability (IV). The previous studies have demonstrated that the nested RCM have reduced IV compared to Global Climate Models due to the control exerted by lateral boundary conditions in nested models. RCM IV is function of variable that is studied, and varies with the domain size and location, the season, and the synoptic conditions.

In the present work, we focus on the physical understanding of the episodes with rapid growth of IV, using the Singular Vectors (SV) as perturbations upon the time evolution of an RCM. SV are calculated to identify the orthogonal set of perturbations that provide the maximum linear growth with respect to a given norm, over a finite time, during the course of the evolution of the RCM. Generally, SV match well with regions and periods characterised by an important hydrodynamical instability. Therefore, in this study we aim to analyse if the use of SV permits a better understanding of the IV taking place in RCM simulations.