

# **The predictability of eastern Mediterranean weather regimes**

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## **Abstract:**

The atmosphere is a chaotic system displaying recurrent configurations such as low and high pressure systems. Recent developments in dynamical systems theory allow to describe these configurations in terms of the local dimension, i.e., an estimate for the number of options an atmospheric state can evolve to/from – and persistence in phase space – which can be interpreted as persistence in time. These properties provide information on the intrinsic predictability of an atmospheric state. This technique is applied to the typical weather regimes characterizing the eastern Mediterranean. It is shown that local dimension and persistence of the daily sea-level pressure fields, derived from reanalysis and from global climate models, can serve as an informative qualitative method for evaluating the predictability of these weather regimes. The metrics may serve as a valuable complement to operational weather forecasting as well as effective tools for climate model evaluation.