



## **How orography affects jet tilt biases in climate models**

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Climate models tend to underestimate the south-east to north-west tilt of the North Atlantic jet and the associated storm track. This has been shown to affect models' ability to simulate blocking over Europe correctly, and undermines our ability to predict the circulation response to climate change, and thus the specific regional effects of a warming planet.

In the present study, we show that the inter-model mean wintertime circulation bias over Western Europe is largely caused by a) too weak orographic forcing by the Rocky Mountains in a number of models and b) the jet not interacting with the Greenland topography in a realistic way in about a quarter of the CMIP5 models. We discuss options for alleviating these biases through parametrisation improvement where they cannot be solved through higher resolution.