

Role of aerosol forcing for Atlantic climate variability

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The respective contributions of anthropogenic aerosols, volcanic eruptions and greenhouse-gas forcing in modulating the phasing and amplitude of Atlantic multi-decadal variability remain poorly understood, despite the attention that has been devoted to this question. However, understanding what drives multidecadal variability in the Atlantic is imperative for improving near-term climate projections.

Here, we show how different external forcing agents interact with internal climate variability to generate historical indices of multi-decadal variability in the Atlantic, using a large ensemble of historical simulations with HadGEM3-GC3.1 for the period 1850-2014, where anthropogenic aerosol emissions are scaled to sample a wide range in historical anthropogenic aerosol forcing.