

@article{Joh2026,

abstract = {Decadal synchronization between the Gulf Stream and Kuroshio currents has recently been reported. Given the large-scale coupled variability of western boundary currents and extensions (WBCEs), further investigation into its seasonality, predictability, and potential future changes is needed. Observations and high-resolution climate simulations reveal distinctive covariance between North Pacific and North Atlantic WBCE sea surface temperatures during boreal summer, possibly linked to preceding Arctic sea-ice variability. Model simulations suggest that cold-season Greenland and Barents Sea ice loss enhances anomalous planetary-scale atmospheric waves and meridional jet shifts, contributing to summertime WBCE temperature anomalies. Although we show that summer WBCE covariability arises from intrinsic variability, future climate projections and targeted model experiments imply that this internal coupled variability may be modulated by radiatively forced changes. Our findings suggest that summer WBCE covariability has increased in the historical record but may weaken in response to future reductions in Arctic sea ice under higher radiative forcing.},

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