

# **The symbiotic interaction between eddy lifecycles and the eddy-driven jet**

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## **Abstract**

The interaction between the midlatitude jet and eddies determines the vast majority of our weather and climate. Most theories of this interaction are based on zonally uniform circulations, but the continents of the northern hemisphere impose zonal asymmetries that localize (and to some extent separate) the regions where eddies grow and decay. Based on eddy lifecycle theories, we develop two dynamical systems that describe storm track behaviour in regions of eddy growth and eddy decay. Coupling of these dynamical systems reproduces some detailed observed properties of the North Atlantic and North Pacific storm tracks, including the timing and sign of jet latitude shifts immediately downstream of the storm tracks.