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Eddy-driven jet sensitivity to diabatic heating in an idealised model

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The eddy-driven jet is studied using a dry idealized model to determine its sensitivity to thermal forcings. The jet latitude, speed, and variability are investigated under a series of Gaussian patch thermal forcing simulations applied systematically on a latitude–sigma grid in the troposphere. This work builds on previous studies by isolating the responses of the jet speed and latitude as opposed to combining them into a single annular mode index. These jet features are found to have different sensitivity distributions from each other, which also vary between summer and winter. In the cases analyzed, the jet response to forcing scales approximately linearly with the strength of the forcing and when forcings are applied in combination. The findings show a rich latitude–pressure distribution of jet sensitivities to thermal forcings, which will aid interpretation of jet responses to a range of drivers.