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## Evaluation of frontal precipitation in CMIP6 models

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Process-based evaluation of precipitation is key to understanding climate model biases. It is vital to ensure that precipitation is produced in the model due to the correct mechanisms (or weather system). Atmospheric fronts have been shown to be responsible for a large proportion of total and extreme precipitation in the mid-latitudes. Therefore, representation of precipitation associated with fronts in climate models needs to be tested.

We applied objective front identification to the historical simulations from the CMIP6 archive and linked them with their 6-hourly precipitation accumulations. We compared the model outputs to the results from observationally constrained datasets. The fronts were identified from ERA5 and linked to precipitation estimates from sources including ERA5, and satellite products. This allows the precipitation errors to be decomposed into components associated with the frequency and intensity of frontal and non-frontal precipitation.

The diagnostics from the analysis have been made into metrics which could be used to evaluate model performance and aid in focussing future model development.