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QBO influence on the ozone distribution in the extra-tropical stratosphere

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To study the influence of the quasi-biennial oscillation (QBO) on the inter-annual ozone variability in the tropics and extra-tropics we are using band-pass Fourier filtering to extract QBO-ozone signatures from model data with a particular focus on height resolved ozone anomalies that we construct as QBO total ozone maximum and minimum averages. By comparing the observational evidence with free-running and nudged EMAC data, we are able to characterise the models performance with respect to chemical and dynamical processes and increase our confidence and the description of QBO related processes. With this diagnostic we improve our understanding of the physical mechanisms that contribute to ozone variability and how an 'ozone change signal' can migrate from the tropics to the extra-tropics. Understanding the main mechanisms involved in this signal transfer lays the foundation for improved trend detection on decadal time scales.