

## Correlation properties of global empirical and CCMVal-2 ozone time series

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Validation of chemistry-climate models (CCMs) is an important task to ensure the correct operation of the models. We performed detailed spectral analysis and detrended fluctuation analysis (DFA) of empirical (NIWA data base compiled by Greg Bodeker) and CCMVal-2 ozone simulations. The results indicate that the correlation properties of model data are roughly consistent with the measurements. However, we could clearly detect the presence of anomalies in the simulated time series. For example, the spectral weight of quasi-biennial oscillations (QBO) along the Equator is very low compared to the observations (see the figure 1 below). Instead, the spectral weight of the annual periodicity in this region is similarly large as at higher latitudes, which represents also a marked deviation from empirical data. Furthermore, measurements reveal a strong semi-annual oscillation over the southern Indian-ocean, which can be identified also in the model data, however in a different geographic location.

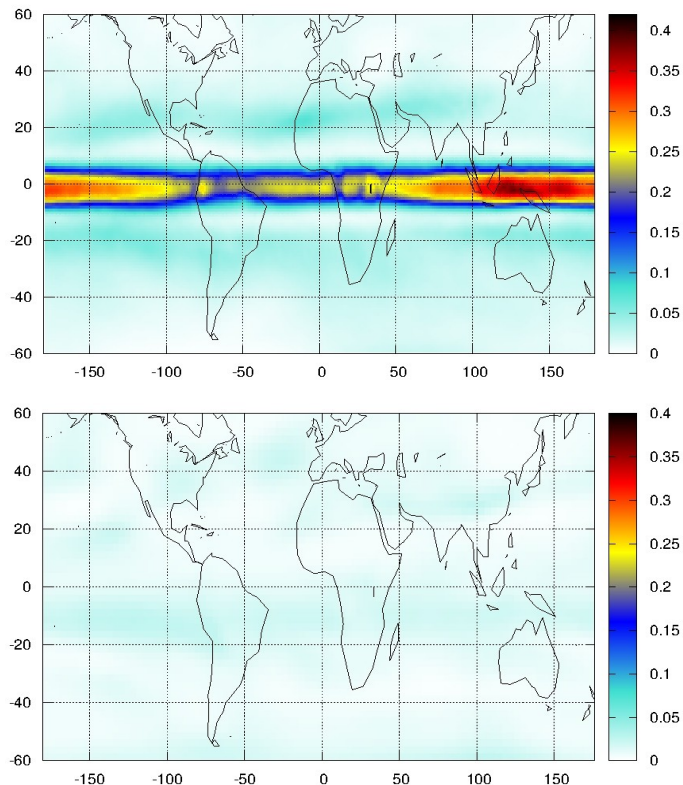


Fig. 1. Spectral intensity of the QBO peak in the empirical (*top*) and the simulated (*bottom*) time series.