



Effects of the greenhouse gas increase to the quasi-biennial oscillation in the tropical stratosphere up to year 2100 as simulated with the chemistry-climate model of Meteorological Research Institute

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Simulations on the past and future middle atmosphere were made with the chemistry-climate model (CCM) of Meteorological Research Institute (MRI), MRI-CCM. Three different forcing runs were performed for 140 years from 1960 to 2100. The first run uses the SRES A1B GHG scenario and the adjusted A1 halogen scenario. The second uses the same SRES A1B GHG scenario with the halogens fixed at 1960 levels, and the third uses the same adjusted A1 halogen scenario with the GHGs fixed at 1960 levels. It is found that the QBO amplitude in zonal wind in the tropical stratosphere is decreased in future under the global warming due to the greenhouse gas increase, while the QBO amplitude is scarcely decreased under the fixed GHGs conditions.