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Modeling the influence of the 11-year solar cycle and the QBO on the atmosphere

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The 11-year solar cycle has an impact on the chemical, thermal, and dynamical structure of the atmosphere. Observational and modeling studies have shown that direct radiative changes in the upper stratosphere can lead to indirect dynamical changes throughout the atmosphere. However, the understanding of the interaction with the equatorial Quasi-Biennial Oscillation is still a challenging topic. Discrepancy exists in separating the solar and QBO signals in observations partly due to the short length of existing data sets. Therefore modeling studies are useful to enhance the understanding of the underlying physical mechanims. The effects of the solar cycle and the equatorial QBO on the atmosphere will be discussed by analyzing the results of global climate model experiments.