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Impact of atmosphere/ocean models' climate scenarios on angular momentum and related EOP parameters

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Changes to greenhouse gas (GHG) concentration are expected to impact the Earth's climate system, and indeed already appear to have done so. Part of the uncertainty in estimating such effects on the Earth system depends on how appropriate models include future forcing. The coupled ocean-atmosphere models simulate the consequencies of the various levels of GHG amounts using possible future scenarios. Using outputs from certain coupled models, we note how resulting changes in overall atmopsheric angular momentum (AAM) can lead to changes in the Earth rotation parameters over this century and beyond. For the axial component, we examine variations and trends in zonal AAM by latitude band and height from several models. Particularly strong increases in zonal winds can occur in the upper troposphere subtropics/lower stratosphere in both hemispheres, strengthening the zonal jets there, having an overall impact on the angular momentum balance, and espcially on length-of-day changes. We have results from several coupled models from CMIP3, the third phase of the Coupled Model Intercomparison Project on which these conclusions are based.