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LOW CLOUDS ANTHROPOGENIC CHANGES IN CALIFORNIA

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Résumé :

In this study, we use a regional model to evaluate the future changes in low cloud cover over the California region. Four general circulation models representing the full range of CMIP5 projections in sea surface temperature and inversion strength are dynamically downscaled with the Weather Research and Forecasting (WRF) model. WRF future simulations exhibit a systematic decrease in low cloud cover. To identify the physical factors contributing to these changes, we will present a methodology of analysis that relies on an analytical decomposition of a relative humidity-based variable. Our results show that WRF future decrease in low cloud cover is due primarily to a reduction of the coupling between boundary layer top and surface. Our results also suggest that the reduction of the boundary layer coupling is driven by the relative drying of the free troposphere in comparison to the surface in future climate.