

Understanding El Niño in Ocean-Atmosphere General Circulation Models: progress and challenges

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Predicting the characteristics of El Niño occurrence, amplitude and remote impacts over the next ten to hundred years remains a difficult scientific challenge. Advanced ocean-atmosphere Coupled General Circulation Models (CGCMs) are routinely used both to analyze El Niño mechanisms and to predict its evolution on a broad range of timescales. The ability to simulate El Niño as an emergent property of these models has been largely improved over the last few years. Nevertheless, diverse model simulations of El Niño contribute to large uncertainties in our ability to simulate and explain changes in El Niño characteristics. A review of several factors that contribute to this diversity, as well as potential means to improve the models, are presented.