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COMMUNITY ATMOSPHERE MODEL SIMULATIONS OF THE RESPONSE TO OCEAN FRONTS.

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This presentation investigates climate responses to western boundary currents using the Community Atmosphere Model (CAM). Recent observational and regional model studies performed at high resolution have revealed a significant impact of western boundary currents on the atmosphere. However the typical grid spacing of most climate models is too coarse to resolve the large air-sea heat fluxes and sea surface temperature gradients occurring at ocean fronts. Here we employ global atmospheric simulations at 1/2deg. or finer which both better resolve the fronts and also allow for determination of distant responses. Particular focus areas are i) how does the coupling between SST and surface momentum and heat fluxes vary with resolution in the horizontal and vertical? ii) what are the local effects of western boundary currents on the atmosphere and iii) what is the far-field atmospheric response to western boundary currents?

Keywords: Air-Sea Interaction, Ocean Fronts, Community Atmosphere Model