E3SMv1 DECK Future Projections under the High-Emission SSP5-8.5 Scenario

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E3SMv1 has a strong aerosol-related effective radiative forcing and a high equilibrium climate sensitivity. To better understand the regional impacts of forcings other than the Greenhouse Gas (GHG) forcing on the future climate projection in E3SMv1, we analyzed standard resolution E3SMv1 historical simulations, high-emission SSP5-8.5 scenario simulations and SSP5-8.5 GHG-only simulations.

Our preliminary results suggest that forcings other than GHG forcing have larger regional impacts over land than over ocean. The results from the comparison between SSP5-8.5 full scenario and GHG-only scenario also support the hypothesis that the unmasking of aerosol forcing after ~2015 causes the future warming in E3SMv1 to be larger than the warming in models with similar climate sensitivity.

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