

# The Impact of Anthropogenic Forcing on ENSO Amplitude

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## ENSO is Becoming Stronger (Past year results)

- Increase in ENSO intensity in both ensembles.
- Increase slows down in CESM1 and decreases in CESM2 after around 2050.

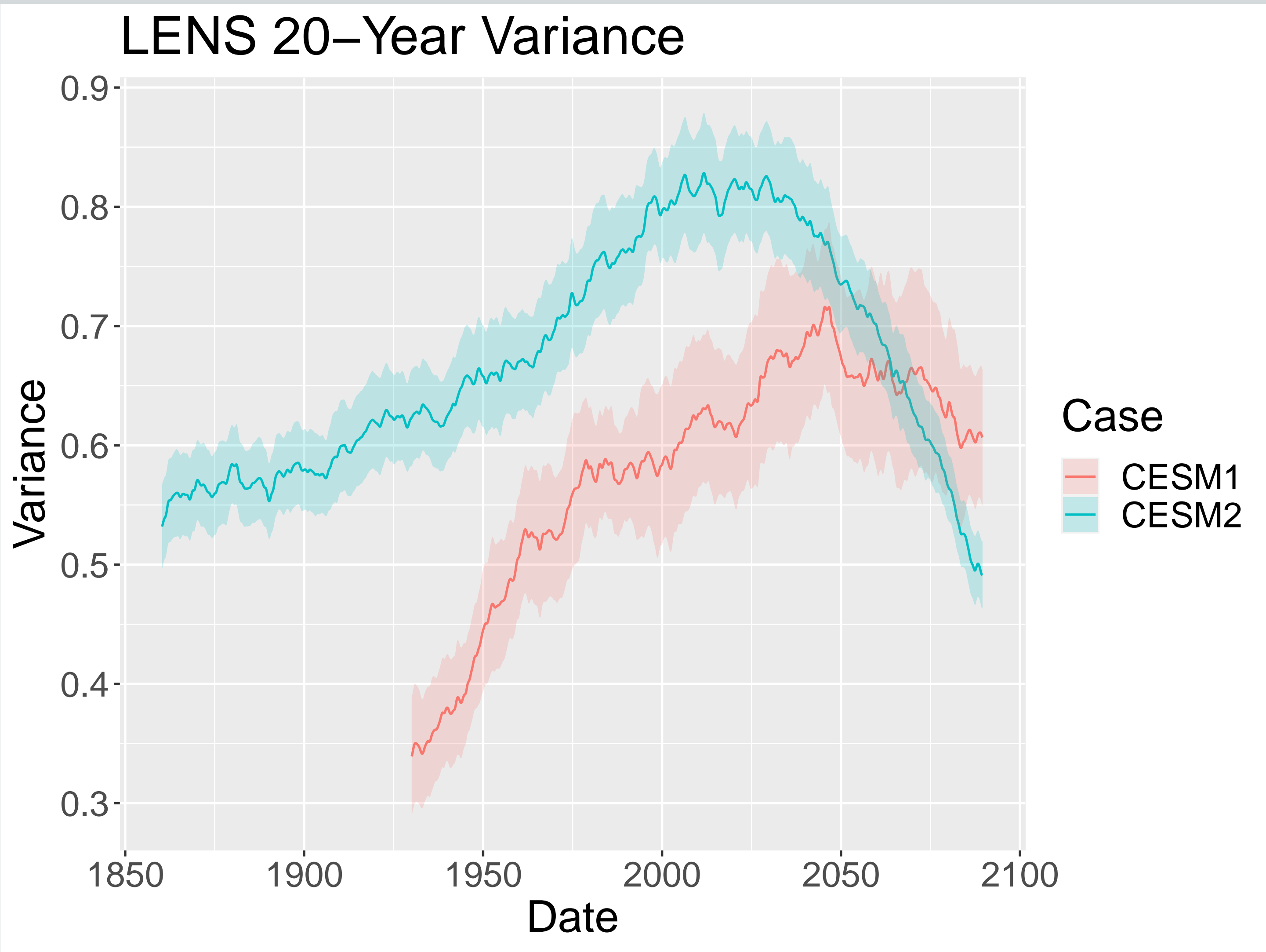


Figure 1: ENSO intensity ensemble mean and standard error for CESM1 and CESM2

## Influence of Aerosols and Greenhouse Gasses (Past year results)

- Influence of each factor on ENSO amplitude.
- Increased variance due to greenhouse gas emissions.
- Somewhat increased variance from aerosol emissions, but not linear.

**Takeaway:** Human activities are triggering predicted strengthening of ENSO.

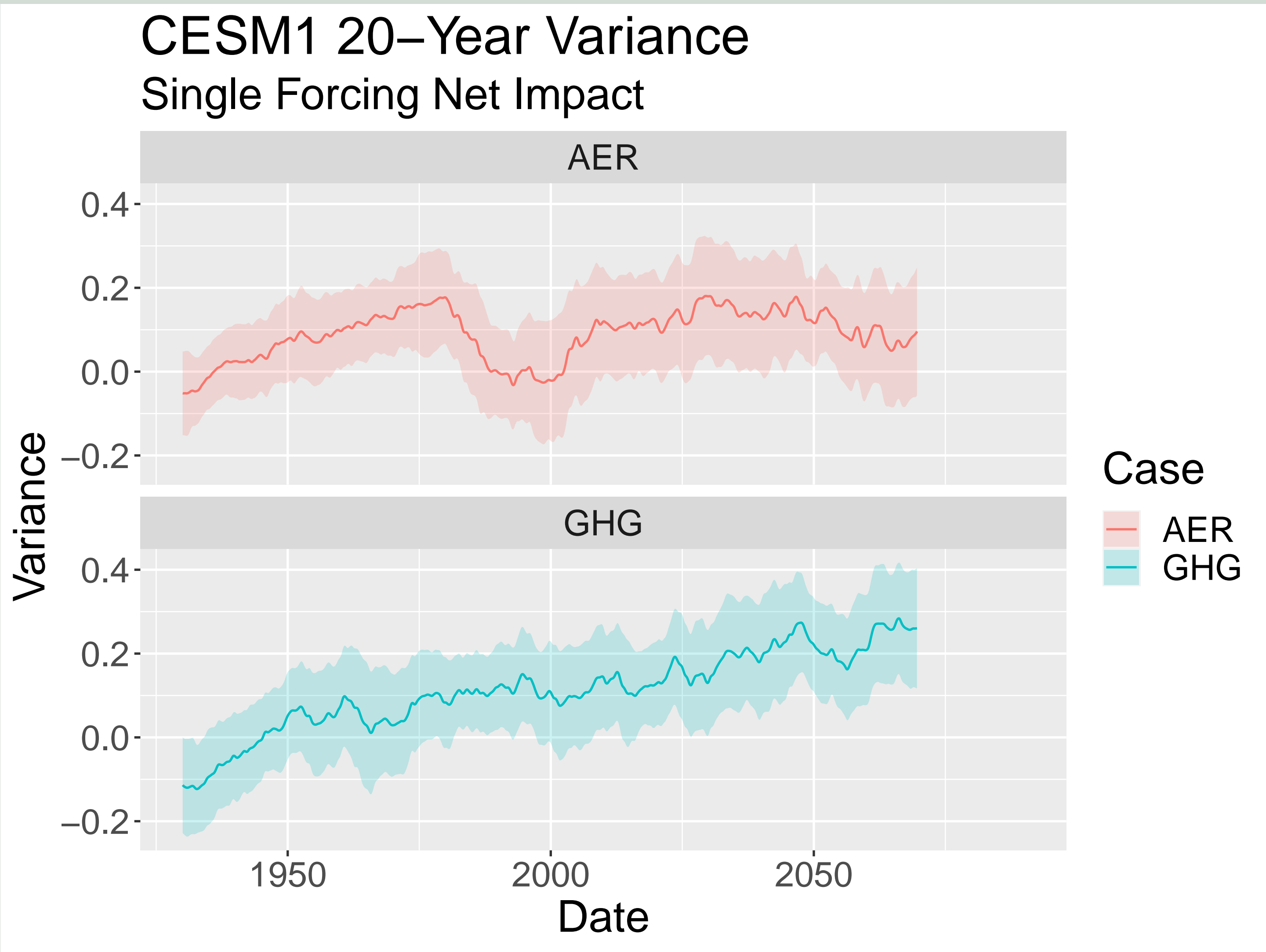


Figure 2: Influence of GHG, AER, and BMB forcing on ENSO amplitude in CESM1

## Correlation With Ocean Temperature (Current results)

- Correlation coefficient between ocean temperature and ENSO amplitude.
- Negative coefficient in subsurface layer.
- Positive coefficient in surface layer.
- Suggests that ocean stratification may be mediating global warming influence on ENSO.
- Difference in heating modifies mechanics of ENSO cycle.

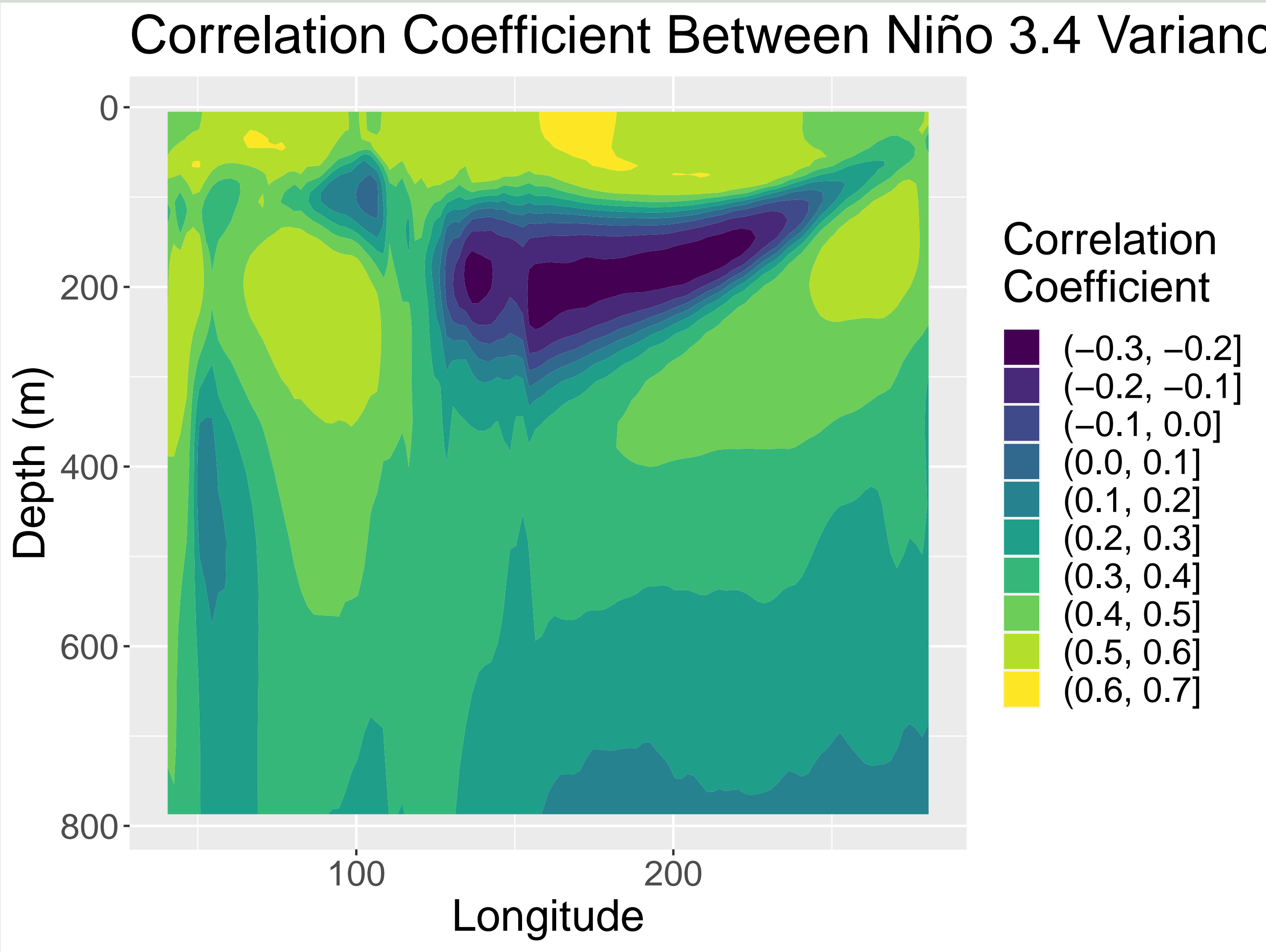


Figure 3: Correlation coefficient between ENSO amplitude and ocean temperature in equatorial cross-section in the fully-forced CESM1 ensemble