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The effect of climate change on internal wave activity in the Andaman Sea

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The Andaman Sea, located in the Indian Ocean's northeastern region, is well known for its large-amplitude internal waves. The Indian Ocean Dipole, according to recent research, has a significant impact on the interannual variability of density stratification and internal wave activity in this region. The global climate model CanESM5 has demonstrated a reasonable ability to capture the variability of the Indian Ocean Dipole in its historical simulations. As a result, the long-term variability of internal waves is investigated using the CanESM5 density stratification. The stratification showed an increasing trend in the upper 100 m since 1900 due to radiative forcing. Internal wave activity is expected to increase in the twenty-first century, altering the effects of climate change on coastal ecosystems. Additionally, model simulations utilizing the three-dimensional Massachusetts Institute of Technology general circulation model are conducted to investigate the impact of increasing stratification on internal tides. Variations in the generation, propagation, and dissipation of internal tides along with their basic characteristics are quantified.