



Changes in global ocean wave heights as projected using multimodel CMIP5 simulations

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Ocean surface waves can be major hazards in coastal and offshore activities. However, there exists very limited information on ocean wave behavior in response to climate change, because such information is not simulated in current global climate models. This study made statistical projections of changes in ocean wave heights using sea level pressure (SLP) information from 20 CMIP5 (Coupled Model Intercomparison Project Phase 5) global climate models for the twenty-first century. The results show significant wave height increases in the tropics (especially in the eastern tropical Pacific) and in southern hemisphere high-latitudes (south of 45S). Under the projected 2070-2099 climate condition of the rising high concentration pathway - the RCP8.5 scenario, the occurrence frequency of the present-day one-in-10-year extreme wave heights is likely to double or triple in several coastal regions around the world. These wave height increases are primarily driven by increased SLP gradients and hence increased surface wind energy.