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Impact of satellite data assimilation in atmospheric reanalysis on marine wind and wave climate

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This study investigated the impact of assimilating satellite data into atmospheric reanalyses on trends in ocean surface winds and waves. Two experiments were performed using a numerical wave model forced by near-surface winds: one derived from the Japanese Reanalysis for 55 years (JRA-55) (Exp.A) and the other derived from the JRA-55C that assimilated conventional observations only (Exp.B). The results showed that the satellite data assimilation reduced upward trends of the annual mean of wave energy flux (WEF) in the midlatitude North Pacific and Southern Ocean south of Australia from 1959 to 2012. We also found that assimilation of scatterometer winds reduced the near-surface wind speed in the midlatitude North Pacific after the mid-1990s, which resulted in the reduced trend of WEF from 1959 to 2012. In contrast, assimilation of the satellite radiance for 1973–1994 increased near-surface wind speed in the Southern ocean south of Australia, while the assimilation of the scatterometer winds after the mid-1990s reduced wind speed. The latter led to the reduced trend of WEF south of Australia from 1959 to 2012.

Oral

- **Data homogenization (benchmarking, bias adjustments, step change analysis, metadata)**