

Seasonal and long-term variabilities of wind waves in the Sea of Japan estimated by a numerical model

*Uehara Katsuto¹

1. Kyushu University

The Sea of Japan (SOJ) is a semi-enclosed sea having limited access to adjacent seas. It is therefore expected that wind waves in SOJ are driven mostly by regional winds and are likely to be influenced by a regional climate change. To investigate seasonal and long-term changes in the wind-wave fields in SOJ, waves have been estimated by conducting numerical simulations using WW3 wave prediction model and ERA5 reanalysis winds (hourly and 1/4 degree interval) over several decades. Figure shows a preliminary result of the estimated monthly-mean wave heights at the center of SOJ (135E, 38.75N) for periods from June 1997 to May 2010. It was found that the temporal pattern of the monthly-mean wave height shows a clear annual cycle such as distinct peak during winter (Dec-Jan) and minimum during summer. In addition, the interannual variability of wave heights seems to have connected with that of regional climates. For example, the occurrence of strong (weak) wave heights during 2005-2006 (2006-2007) winter season correspond to the timing of record breaking cold (warm) winter.

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