

## Validation and intercomparison for high resolution gridded product of surface wind vectors over the global ocean

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Gridded products of surface wind vectors over the global ocean are constructed using multiple satellite data by microwave scatterometers and radiometers. Our new products, called the new version of the Japanese Ocean Flux data sets with Use of Remote-Sensing Observation (J-OFURO) V3, consist of various surface parameters such as sea surface temperature and specific humidity, and have temporal and spatial resolutions with daily mean and 0.25 x 0.25 degrees and cover a period from 1988 to the current. In our new procedure to derive gridded products of wind vectors with high resolutions, we combine data from microwave radiometers as well as scatterometers such as SSMI, AMSR-E, TMI, ERS-1,2, QuikSCAT, ASCAT. These gridded products are validated using our newly-designed quality control system (QCS) in which the reliabilities for various gridded products are examined by comparison with all available in-situ measurement data by moored buoys. Validations are also made by intercomparisons with other gridded products by single satellite (QSCAT and ASCAT), numerical model reanalysis (NRA-1, JRA55 and ERA-interim) and their combined "hybrid" (CCMP) products.

Results reveal that the J-OFURO3 product has relatively higher reliability than other satellite and reanalysis ones and lower than the hybrid one(CCMP), especially in the tropical Pacific region. Intercomparisons between the J-OFURO3 and CCMP exhibit noticeable spatial features in mean differences and correlations which are clearly dependent on buoy locations. This suggests that the CCMP product constructed by procedures including assimilation of buoy measurement data has inhomogeneous reliability in space, compared with our satellite-based product. Divergence and curl fields are derived from these gridded products of wind vectors, and similar spatial features are found in the tropical Pacific region.

Keywords: Wind vector, global ocean, multiple-satellite data