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Validation of year-round Stepped Frequency Microwave Radiometer (SFMR) measurement of sea surface wind speed around the Korean Peninsula during 2018-2019

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Korea Meteorological Administration/National Institute of Meteorological Sciences (KMA/NIMS) has adopted KMA/NIMS Atmospheric Research Aircraft (NARA) since the beginning of 2018. NARA has performed year-round airborne measurement of Sea surface Wind Speed (SWS) using Stepped Frequency Microwave Radiometer (SFMR) during 2018-2019. Total 84 flights of SFMR SWS measurements during this period were analyzed by comparing to concurrent measurements of KMA marine buoy. SFMR SWS around the Korean peninsula during the same period was 6.34±4.95 m s^{-1}. SFMR SWS was appeared to be 12.3% larger than those of KMA marine buoy and mean Bias Difference (BD) was 0.69 m s^{-1}. However, SFMR SWS and KMA marine buoy were correlated well to each other (R^2~0.80). The BD was decreased with increasing SWS, this agreed well with results of previous studies (Klotz et al., 2014), however, SFMR SWS measurement showed still reliable even in low SWS environment (< 15 m s^{-1}). For more accurate measurement of SFMR SWS, parameters such as the flight altitude (swath area) and pre-input values (sea surface temperature, salinity) should also be considered. Also, this result can be a comparison reference for those of satellite-borne sensors, as well.