



## **Calibration of GNSS-R surface wind retrievals using the ERA analysis**

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The Space GNSS Receiver Remote Sensing Instrument (SGR-ReSI) of the TechDemoSat-1 (TDS-1) satellite collected and processed about half a million fast delivery wind speed retrievals. Exploring ways to validate these data provides an opportunity, not just to quantify, but also potentially to reduce wind speed retrieval errors (in an ordinary least squares sense) and thereby improve the correspondence between the data to be calibrated and an unknown target wind analysis. The ERA Interim analysis is employed as a calibrated reference for the TDS-1 wind speed retrievals. Simultaneous assessment of error in these two collocated data leads to a global (i.e. for all collocations) and local (i.e. as a function of wind speed) determinations of statistical properties characterizing bias (both additive and multiplicative), RMS error, and correlation with an unknown target analysis. The approach taken is widely referred to as the triple collocation method (Stoffelen 1998, McColl et al. 2014), where a simplifying assumption is that three wind estimates can be obtained from these two datasets (TDS-1 and ERA).