



Detailed investigation of the role of buoy wind errors in buoy-scatterometer disagreement

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The comparison of equivalent neutral winds obtained from (a) four WHOI buoys in the subtropics and (b) scatterometer estimates at those locations reveals a very low root-mean-square difference (RMS) on the order of 0.5-0.7 m/s and a seasonal cycle in the RMS. To investigate this RMS, different buoy wind error sources were examined. Our buoys are particularly well suited to examine two important sources of buoy error: (1) redundant anemometers and a comparison with numerical flow simulations allow us to quantitatively assess flow distortion errors, and (2) one-minute sampling at the buoys allows us to examine the sensitivity of buoy temporal sampling/averaging in the buoy-scatterometer comparisons. The flow distortion can be estimated to up to 5% of the relative difference of the anemometers. Application of this error to the individual anemometer and subsequent comparison with scatterometer estimates show a good agreement. Application of a reasonable time averaging, subtraction of a mean bias, and application of a viscosity correction generally reduces the RMS but cannot explain the seasonal cycle of it.