

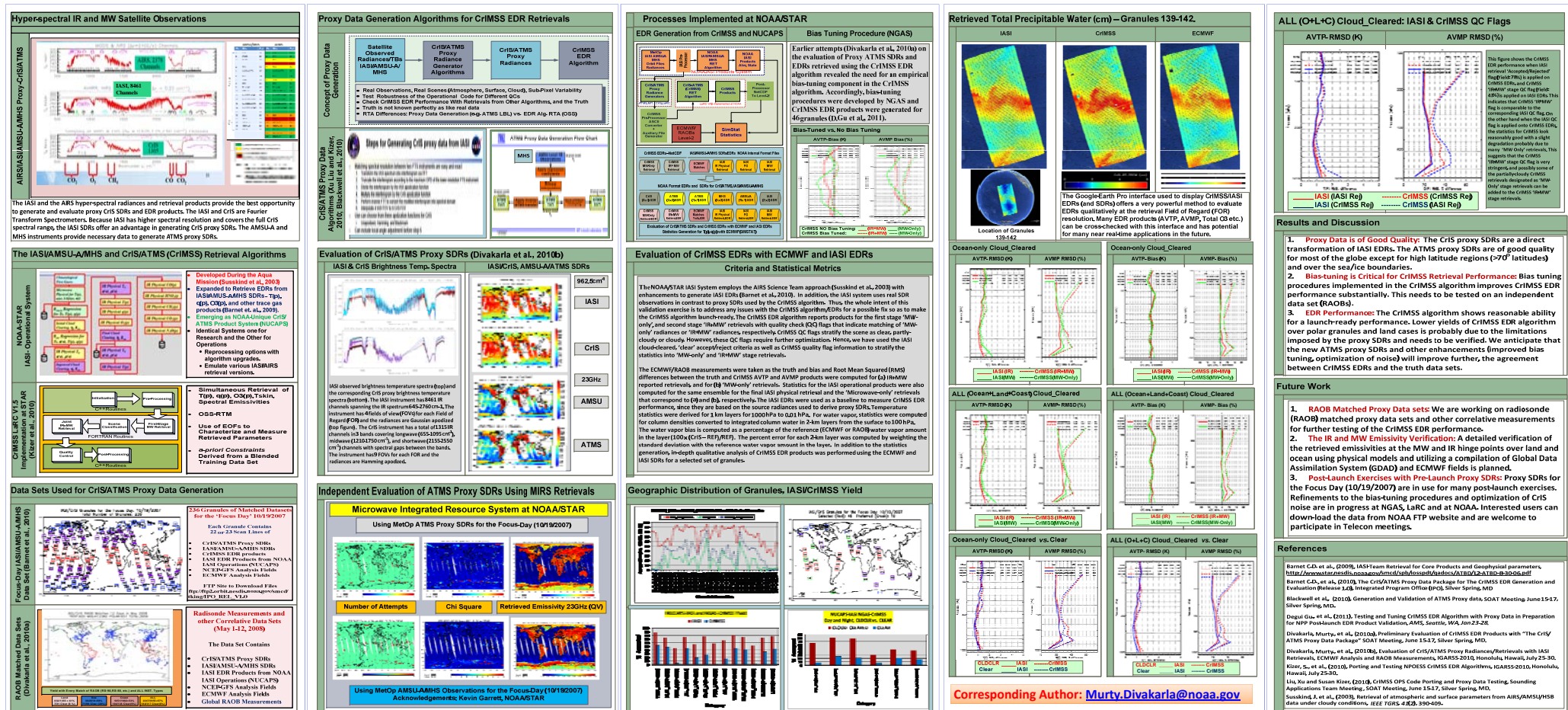


Validation of CrIMSS EDR Products with Matched ECMWF Analysis, RAOB Measurements, and IASI Retrievals

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Abstract: Atmospheric Vertical Temperature Profiles (AVTP), Atmospheric Vertical Moisture profiles (AVMP), and other Environmental Data Records (EDRs) retrieved by the Cross-track Infrared Sounder and Advanced Technology Microwave Sounder Suite (CrIMSS) EDR algorithm were evaluated using matched European Center for Medium-Range Weather Forecasts (ECMWF) analysis fields, radiosonde (RAOB) measurements, and independent retrieval products from Infrared Atmospheric Sounding Interferometer (IASI) observations. The proxy CrIS and ATMS Sensor Data Records (SDRs) needed to generate CrIMSS EDR products were derived for the "Focus Day," October 19, 2007, using IASI, Advanced Microwave Sounding Unit (AMSU), and Microwave Humidity Sounder (MHS) observations, respectively. Empirical bias tuning procedures were employed in the CrIMSS EDR algorithm to make the proxy SDRs consistent with the forward model used in the CrIMSS algorithm. The CrIMSS AVTP and AVMP products were evaluated for 42 granules of the focus day data set. Using the ECMWF/RAOB measurements as the truth, bias and RMS differences were computed for the CrIMSS and IASI EDR products. The results of the evaluation reveal that bias correction of forward model errors and sensor errors is critical to the CrIMSS algorithm performance. Evaluation of the 'infrared plus microwave' AVTP and AVMP retrievals reveals reasonable agreement with the ECMWF and IASI retrieval products. Further assessment of the CrIMSS EDRs with RAOBs and other correlative data sets is in progress to demonstrate launch-readiness.



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