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Title: Evaluation of AMSR2 Precipitation Algorithms

Evaluation of the Goddard Profiling Algorithm 2017 (GPROF2017) demonstrates that it is a suitable candidate to become the NOAA precipitation rate algorithm for the Advanced Scanning Microwave Radiometer 2 (AMSR2). GPROF2017 is developed by the NASA Global Precipitation Measurement (GPM) science team, and can be modified to operate in NOAA's near real-time environment. The fully Bayesian retrieval reduces the number of false alarms in the western United States (Fig. 1) and improves characterization of strong convection. The Critical Success Index, related to the probability of detection and false alarm rate, increased from 50% to 78% relative to the established NOAA AMSR2 algorithm. Prior to transition, the algorithm must be tested with ancillary data available to NOAA to ensure it meets near real-time accuracy and latency requirements mandated by JPSS.
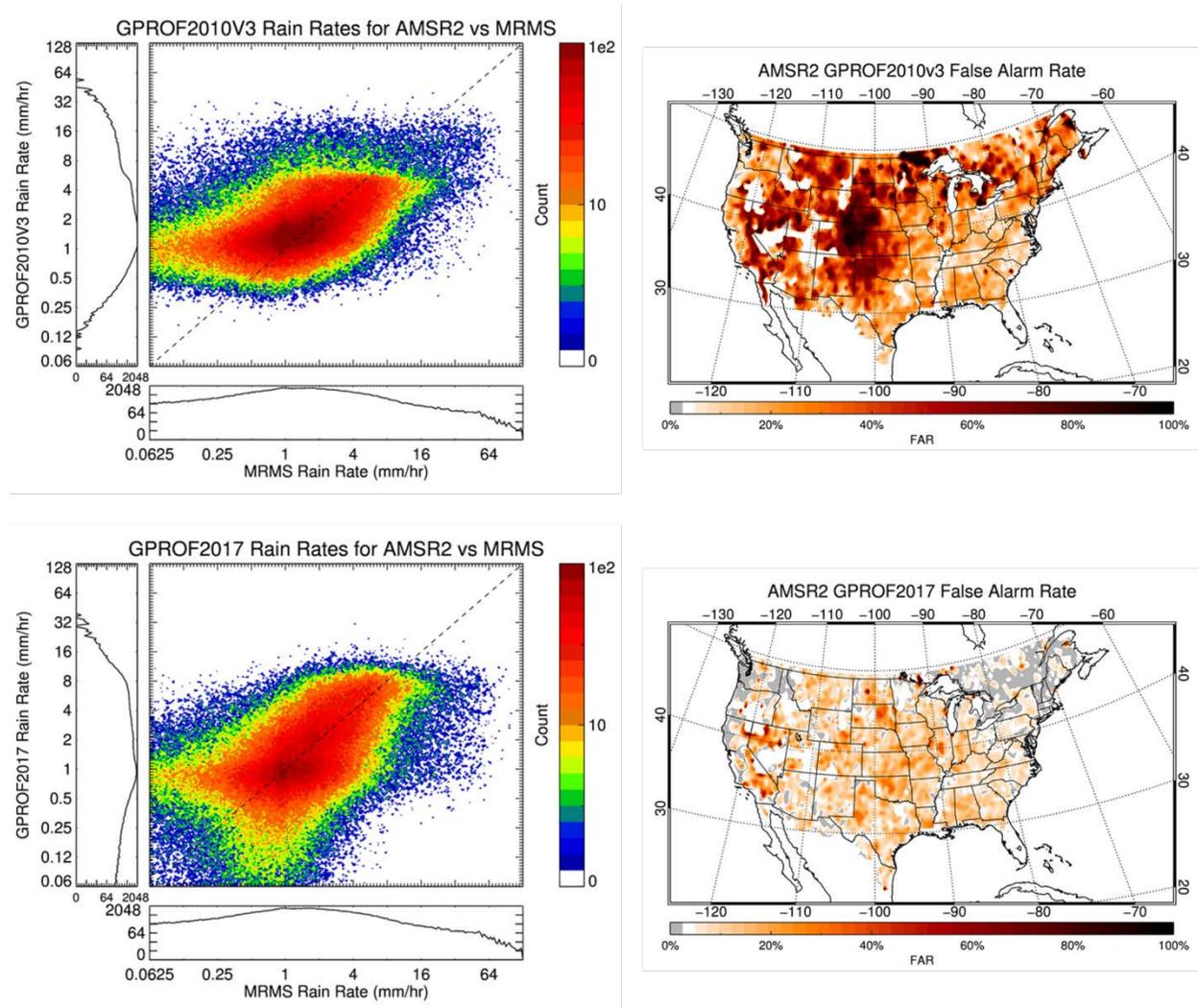

Fig. 1 –Evaluation of GPROF2010V3 (top) and GPROF2017 (bottom) relative to MRMS collocated to the 89GHz FOV. Overall probability of detection is comparable between the two algorithms, but False Alarm Rate (right) is dramatically better for G17 (10%) than G10 (35%).