Abstract Submitted
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Verification of Minimum Detectable Activity for Radiological Threat Source Search[1] HANNAH GARDINER, University of Florida, MITCHELL MYJAK, Pacific Northwest National Laboratory, JAMES BACIAK, University of Florida, REBECCA DETWILER, CAROLYN SEIFERT, Pacific Northwest National Laboratory — The Department of Homeland Security's Domestic Nuclear Detection Office is working to develop advanced technologies that will improve the ability to detect, localize, and identify radiological and nuclear sources from airborne platforms. The Airborne Radiological Enhanced-sensor System (ARES) program is developing advanced data fusion algorithms for analyzing data from a helicopter-mounted radiation detector. This detector platform provides a rapid, wide-area assessment of radiological conditions at ground level. The NSCRAD (Nuisance-rejection Spectral Comparison Ratios for Anomaly Detection) algorithm was developed to distinguish low-count sources of interest from benign naturally occurring radiation and irrelevant nuisance sources. It uses a number of broad, overlapping regions of interest to statistically compare each newly measured spectrum with the current estimate for the background to identify anomalies. We recently developed a method to estimate the minimum detectable activity (MDA) of NSCRAD in real time. We present this method here and report on the MDA verification using both laboratory measurements and simulated injects on measured backgrounds at or near the detection limits.

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