

Warfighter Integration to Enhance Operational Utility of Emerging Technologies

Micro-Air Vehicle Enabled Remote Environmental Chemical Sensing (MAVERECS)

Michael von Fahnstock, US Pacific Command
Alan Samuels, Edgewood Chemical Biological Center
Vincent McHugh, Edgewood Chemical Biological Center
Harold Wylie, Edgewood Chemical Biological Center
Lester Strauch, Edgewood Chemical Biological Center
Mark Colgan, Edgewood Chemical Biological Center

The MAVERECS project demonstrated the realization of tactical remote chemical environmental sensing by incorporating a chemical detection module (a miniaturized ion mobility spectrometer) and "Gumstix" computer into a compact module that was fully integrated into the Honeywell T-Hawk unmanned aerial vehicle (UAV) electronics. A software implementation of the Chemical Biological Radiological Nuclear (CBRN) common sensor interface (CCSI) was run on the Gumstix to demonstrate this standard interface technology on a working CBRN UAV platform. The MAVERECS team coded a real-time chemical contamination mapping capability that output KML files directly into the UAV ground control station to display geo-referenced detection "heat maps" that are readily exportable to any common operational environment, including the Joint Warning and Reporting Network (JWARN). The fully functional MAVERECS system was operated on several sorties during the S/K Challenge III event at Dugway Proving Grounds in August, 2016, and successfully generated detection events for several of the chemical simulant releases. This project, an OSD Enabling Technology project, demonstrated the feasibility of tactical remote environmental chemical sensing with real-time data transmission using the standard CCSI interface and an open data format compatible with the Army's Integrated Sensor Architecture.

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