Environmental & Energy Management Newsletter

E&EM Student Successfully Defends Doctoral Dissertation

Dr. Howard Eisner; Dr. Jonathan Deason; Dr. Jack Harrald; Dr. Michael Stankosky Dr. William Wynne, Defense Threat Reduction Agency; Sue Hall; Mark Carolla, National Geospatial Intelligence Agency

Doctoral Candidate Sue Hall successfully defended her doctoral dissertation on November 30, 2005. Sue's dissertation was entitled "Improving the Integration of Imagery and Remote Sensing Resources for Environmental Emergency Preparedness and Response in the United States: Operationalizing the Open Skies Concept for All-Weather Airborne Data Collection."

Sue's research was focused on optimizing utilization of the great advances that have been made in recent years in the use of imagery and remote sensing for monitoring and protecting the environment, and in disaster preparedness and response. Environmental emergency preparedness planners now have a vast "constellation" of imagery and remote sensing resources available to observe and respond to environmental disasters. These resources are used to prepare for hurricanes and floods as well as recover from their effects; observe wildfires and forest fires and work to contain them; and respond to other disasters, thus protecting lives, valuable property, and the environment.

Unfortunately, these imagery resources and their associated systems, as useful as they are, are not necessarily integrated nor marshaled in any coherent web in support of those protecting lives, property or the environment. With the new openness, declassification and commercial availability of high-resolution imagery, remote-sensing capabilities now available to preparedness and response individuals range from satellite sensors to aircraft platforms.

Sue's dissertation, utilizing the operational concept envisioned in the preamble of the Open Skies Treaty, involved the development of an improved methodology for integrating imagery resources into airborne command-and-control systems for dealing with environmental protection and disasters. The focus of the research was on the use of all-weather airborne platforms. The Open Skies All Weather Airborne Data Collection System was used as a test bed to verify and validate the integration methodology that was developed.

The research provided evidence of an airborne system with multiple interchangeable sensors and a cooperative operational concept that could be applied to many environmental problems. Through numerous case studies, the research examined the results of extensive deployment and testing in the context of real domain experts doing real work. It evaluated applications of the system in multiple case studies and compared the efficacy of this type of system with that of commercial satellites.

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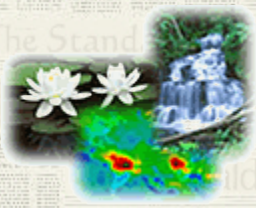

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