PE&RS SPECIAL ISSUE

REMOTE SENSING AND GIS FOR HAZARDS

FOREWORD

We are pleased to bring you the first *PE&RS* Special Issue on the use of remote sensing and geographic information systems (GIS) for hazards. Since the original satellite images of Hurricane Camille in 1969, remote sensing and GIS increasingly have been used for researching hazards issues and for practical applications related to them. This increase has stimulated existing research dealing with hazards, yielding new methods and technologies to increase our knowledge base. In this issue of *PE&RS*, we wanted to expose readers to a diversified set of methods and applications that represent a look at hazards-related state-of-the-art/state-of-the-practice. We w ant to promote a discussion on the topic of hazards and the use of remote sensing and other spatial information. Hopefully this will initiate a closer relationship between the hazards' research and remote sensing communities.

From a large number of articles submitted, we selected five that span an array of sensors and hazard phenomena. These articles were organized into different aspects of the "hazard cycle." The first two articles focus on the use of remote sensing for emergency response and damage assessment associated with a natural hazard event. The integrated use of airborne thermal imagery, GIS, and satellite-based telecommunications for real-time response to a wildfire is presented by Vincent Ambrosia, Sally Buechel, James Brass, James Peterson, Richard Davies, Ronald Kane, and Steve Spain. Using pre- and post-event imagery with advanced change detection algorithms, Paolo Gamba and Fabio Casciati present a decision support system for detecting structural damages from earthquakes.

The last three articles may be categorized as hazard analysis, mitigation, and/or preparation. Patrick Bresnahan presents an example of using a more exotic remote sensing data source, airborne gamma data, in the article. The final two articles focus on the use of remote sensing and GIS for water-borne hazards. John Jensen, Joanne Hall, and Jacqueline Michel review the mapping and modeling applications under the environmental sensitivity paradigm. Floyd Hendersen, Thomas Hart, Laura Orlando, Brian Heaton, James Portolese, and Robert Chasan present the methods and results for modeling non-point source pollution in a New York watershed.

We also call your attention to two additional reports in this issue related to the use of remote sensing and GIS for hazards - the Highlight article and the Remote Sensing Column. Nancy Podger, James Gage, Ronald Teeter, and Thomas Lillesand discuss a fire-fighting application guided by a heads-up cockpit display that includes forward looking thermal imagery, GPS, and high resolution basemap imagery. In another application of post-disaster damage assessment, Charles Mondello and Franz Scneider present the use of high resolution visible imagery for assessing damage patterns related to a recent tornado.

Having participated in several disaster responses and search and rescue efforts we are convinced that, while there are opportunities for methods and technology development, the largest impediment to the constructive use of remote sensing technology is administrative in nature. A clear process for response with specific responsibilities for the use of remote sensing and spatial information technologies would do more to save lives and property and assess damage than new technology.

We complete the writing of this forward as the Eastern Coast of the United States braces for the onset of yet another hurricane - Hurricane Bonnie. During the few days before the hurricane strikes, voluntary or mandatory evacuations of coastal environments are issued emergency response personnel and resources are called into action and the remote sensing overflights for post-disaster assessment are organized, or, unfortunately, left for tomorrow when the organization is too late. We both feel that remote sensing for the emergency response event often requires pre-event imagery (that is almost non-existent) and pre-event administrative linkages. To make appropriate use of the technology, administrative linkages between response personnel, decision-makers, local, state and federal agencies, and the remote sensing providers must occur prior to the event.

The hazards field is quite broad and brings together a wide range of scientists and managers. We feel these articles provide a good mixture on the use of remote sensing for detecting, monitoring, and modeling of technological and natural hazards. We extend a sincere thanks to the 31 professionals who served as reviewers. These reviewers and the Technical Editor James B. Case, were graciously willing to work with the time constraints for this Special Issue. We also extend our appreciation to Stan Morain, editor, and Kimberly Tilley, executive editor, for their promotion, guidance, and support on bringing this hazards topic to the fore in PE&RS. We hope you enjoy this issue and encourage the continued cross-fertilization of scientists and decision-makers in the remote sensing, GIS, and hazards community.

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