

Journal of Terrestrial Observation

Volume 2, Issue 1

Winter 2010

Article 2

Editors' Introduction

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Remote Sensing's Methodological Introspection and Expanding Applicability

The constant quest to improve the state of science is propaedeutic to its expansion to an ever widening array of practical applications. In the case of a relatively young science, such as remote sensing, the perceived and immediately apparent urgent benefits of earth observing technological deployment to support time-critical events may sometimes outpace the requisite analytical rigor and prudent logistical coordination of multiple technical personnel, representing a wide array of agencies, with access to data from global heterogeneous sources. As a case in point, in his Foreword to Volume 2, Issue 1 of the *Journal of Terrestrial Observation*, Dr. Jie Shan of Purdue University's School of Civil Engineering and a Liaison with the International Charter for Space and Major Disasters, shares his insights on the nuances, opportunities and constraints of deployment of remote sensing technologies for disaster management and mitigation initiatives, based upon his direct involvement with utilization of remote sensing for monitoring the floods in Indiana in June, 2008, in Georgia in October of 2009 and with Haiti's catastrophic earthquake on the January 12, 2010 and sequellae.

Food security has traditionally been a defined application of remote sensing, as evidenced by the early involvement, circa 1985, of USAID, UN FAO, NASA Goddard Space Flight Center and Tulane University's School of Public Health and Tropical Medicine in the evolution of the Famine Early Warning System (FEWS) <http://www.fews.net/Pages/default.as>. Advances in Food Security can be approached from multiple disciplinary perspectives, including Nobel laureate Norman Borlaug, considered the father of the Green Revolution, as well as contributions by World Food Prize winners, Nevin Scrimshaw, who along with Gordon and Taylor, established the synergistic relationship between malnutrition and infection; Philip Nelson, who pioneered bulk aseptic food processing of fruit and vegetables to extend long-term storage and transport; and Gebisa Ejeta, whose drought resistant and Striga resistant Sorghum varieties have significantly increased food production in Africa. Within the context of research impacting food security, Cheryl L. Reese, Daniel Long, Sharon Clay, David Clay, and Dwayne Beck elucidate the potential utility of remote sensing for determination of Nitrogen stress and water stress affecting wheat yields, through multi-temporal plot experiments and use of a handheld spectral radiometer to measure canopy reflectance.

The proliferation of earth observing satellite remote sensing, which has now extended beyond the USA, Canada, Europe and Russia to include an array of countries in Africa, Asia and South America, quite unlike the proliferation of weapons of mass destruction, is heralded as an extremely positive scientific and technological development, which is already making significant contributions to disaster mitiga-

tion, sustainable development and environmental sustainability. Notwithstanding justifiable euphoria with respect to the embrace of such space-based technologies by the developing countries, there is still a legitimate supportive role that is being played by airborne monitoring.

In Volume 2, Issue 1 of the *Journal of Terrestrial Observation*, two articles are illustrative of the continued relevance of archival and contemporary imagery from fixed wing aircraft. Greg C. Liknes, Charles H. Perry, and Dacia M. Meneguzzo address the comparative advantage of using aerial imagery vs. NASA's Moderate Resolution Imaging Spectroradiometer (MODIS) satellite derived data for forest inventory assessment, particularly given the need to "capture narrow linear plantings of trees." Moreover, Jae Sung Kim, Christopher C. Miller, and James Bethel, as clearly implied by the title of their article, articulate a method for automatically georeferencing historical aerial photography, through detection of corner points within the built environment.

Finally, in their opening contribution, "From Science to Applications: Determinants of Diffusion in the Use of Earth Observations," Molly Macauley, Joe Maher and Jih-Shyang Shih, of Resources for the Future, "offer a framework to improve understanding of diffusion of applications of Earth Observations" and observe an "increasing rate of peer-reviewed applications of Earth observations in a broadening range of topics and geographic regions." Their research vindicates emergence of journals that embrace "cross-scholar communication in social science applications of Earth observations," as well as increasing use of time series data, thereby supporting long-term continuing data archives, such as the Landsat continuity mission.

The Editors wish to acknowledge the contributions of Guest Editor, Dr. Soizik Laguette, Chair of Earth Systems Science and Policy at the University of North Dakota's John D. Odegard School of Aerospace Sciences, for her assistance in recruiting and reviewing several of the manuscripts accepted for *JTO* Volume 2, Issues 1 and 2.