Special Section Guest Editorial: Satellite Remote Sensing for Disaster Monitoring and Risk Assessment, Management, and Mitigation

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Natural disasters caused by severe weather, hurricane, typhoon, heatwave, fire, flash flood, pollution, and volcano eruption are among the most destructive, frequent, and costly natural and man-made disasters endured by modern society, and they are expected to increase in severity and frequency that will greatly impact quality of life and commerce and create long-lasting consequences for climate change and civilization. Every year, new record severe weather, hurricanes, fires, and floods are widely reported. The uncommon is becoming common; the unusual is turning to usual. The toll of these disaster events in financial costs, displacement of individuals, and loss of properties and lives is substantial and continues to rise as climate change and human-induced activities generate more extreme weather and environment-related disaster events.

This special section called for unique study results to highlight the use of remote sensing measurements, theory, algorithms, techniques, and measurements, in combination, to address practical and quantitative approaches in monitoring, assessing, and quantifying disaster events.

Nauman et al. seek to identify opportunities to integrate Earth observations (EO) into flood forecast-based early action and promote collaboration between EO and humanitarian communities. Mason, Dance, and Cloke use synthetic aperture radar (SAR) and WorldDEM digital surface model (DSM) with change technique to detect flooding at high resolution in urban areas that contain dense housing to demonstrate the potential for operational use for detecting urban flooding in near real-time on a global basis. The paper by Ekici uses satellite images to determine the effects of natural disasters. It uses convolutional neural network (CNN) machine learning-based detection methods. In particular, it optimizes the hyperparameters of the CNN in the Bayesian optimization algorithm to obtain more accurate and reliable detection results. Rezaei et al. use three different Envisat tracks with interferogram stacking and time-series analysis to study the short-term and long-term behavior of the land subsidence. Gao et al. bypass the traditional drought monitoring due to the time lag of vegetation index, land surface temperature, and crop yield that adversely affected when drought is detected. It developed an early warning model, using the percentage of anomaly vegetation and fluorescence (PAVF) to determine drought risk level and development trends.

These five unique studies contributed innovative ways of harnessing active and passive remote sensing information as an efficient scientific means to address the impacts of disasters in various ways to, directly and indirectly, assist the increasing needs of mitigation and management of future disaster events that our world is facing.

Collectively, the authors, the reviewers, and the *Journal of Applied Remote Sensing* editorial team each contributed to making this peer-reviewed publication possible. On behalf of the guest editors, we want to acknowledge their efforts and show our appreciation for making it possible to share remote sensing technology to benefit society.