

34th IAA SYMPOSIUM ON SPACE AND SOCIETY (E5)
Space Assets and Disaster Management (4)

Author: Dr. Farhan M. Asrar
University of Toronto, Canada

Dr. Seyed Ali Nasser
Space Generation Advisory Council (SGAC), Canada

Dr. Petros Dinas
FAME Laboratory, School of Physical Education, Sport Science and Dietetics, University of Thessaly,
Greece

Dr. Helena Chapman
Earth Science Division, NASA Goddard Space Flight Center, United States

Ms. Stéphanie Brazeau
Canadian Space Agency, Canada

Prof. Scott Madry
International Space University (ISU), United States

Dr. Jonathan Clark
Center for Space Medicine, Baylor College of Medicine, United States

Dr. Ross Upshur
University of Toronto, Canada

UTILIZING REMOTE SENSING AND INNOVATIVE SPACE TECHNOLOGY TO ENHANCE
DISASTER MANAGEMENT AND RELIEF

Abstract

Disaster management represents a crucial element of public health and emergency preparedness, disrupting society, damaging physical infrastructure, and affecting human, animal, and environmental health. Natural hazards, such as drought, earthquakes, flooding, hurricanes, tsunamis, and volcanoes, can increase risk of population displacement, economic hardship, and physical and mental health. The recent floods in Pakistan and earthquake in Turkey and Syria represent key examples that have increased morbidity and mortality rates and altered natural and built environments. The World Bank estimates that natural hazards are attributed to economic hardship, with more than 26 million people entering poverty and causing over US 500 billion in annual expenditure loss.

Over the past decades, space-based technology has contributed to disaster relief efforts across the world, especially in regions with limited ground-based monitoring and management options. In this study, we aimed to investigate innovative approaches where remote sensing satellites, sensors, and other space-based technologies can enhance disaster management efforts. Recommendations include the need to identify an integrated approach of applying remote sensing and in situ data with portable medical equipment to assist disaster medical assistance teams (DMAT) with medical diagnosis and management.

These recommendations further support a One Health framework to help stakeholders address disaster management and relief efforts and achieve the targets of the 2030 Agenda for Sustainable Development.