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NATURAL HAZARDS AND DISASTERS – OVERVIEW OF INTERNATIONAL STRATEGIES FOR
RISK MANAGEMENT AND SUSTAINABLE DEVELOPMENT

Abstract

Global systemic changes in the environment manifest within the entire Earth System and represent the global effects of societal pressure on the environment. These changes include climate change, ozone depletion, biogeochemical cycles deviations, hydrological cycles and water resources, rising planetary ocean levels, as well as changes in thermohaline circulation and intensification of the ENSO (El Niño-Southern Oscillation) phenomenon. However, what do we do when these changes trigger natural disasters? Disasters are unpredictable and represent a constant threat to sustainable societal development, causing many casualties each year, and negatively impacting the economic development of the affected states. UN expert estimates show that by 2050 these phenomena will result in more than 100,000 lives affected every year and that the damage will reach \$300 billion. Currently, over the past two decades, various natural disasters have claimed more than 3 million lives, brought disease, poverty and much suffering to more than 1 billion people, and caused hundreds of billions of dollars in property damage. In view of these issues, the European Commission and UN have organised comprehensive research programs, such as the Global Human Settlement, the Emergency Management Service, the INFORM risk index framework (by Joint Research Program) or the International Decade for Natural Disaster Reduction (UN IDNDR, 1987). The UN program aimed at effective international collaboration to reduce human lives, loss of material possessions and economic and social disruptions due to natural disasters, especially in developing countries. Subsequently, starting with the 2000s, the international cooperation developed another international program called "The International Strategy for Disaster Reduction (ISDR)". Currently, its strategy includes the International Wildfire Preparedness Mechanism (IWPM) portal and the Sendai Framework for Natural Disaster Reduction 2015-2030. Natural disasters such as earthquakes, volcanic eruptions, avalanches and landslides, cyclones, tornadoes, floods, and droughts were studied during these programs. This study shows how space technology, from Earth Observation to thematic satellite missions, has been used over the past two decades (2000 – 2021) to understand and reduce the effects of these disasters. Given that societies worldwide are affected, their reduction involves the interdisciplinary study of hazards, vulnerability and risk, and especially the information and education of the population, taking into account that humans can cause some disasters.