[EE] Evening Poster | H (Human Geosciences) | H-DS Disaster geosciences

[H-DS08]Natural hazards impacts on the society, economics and technological systems

convener:ELENA PETROVA(Lomonosov Moscow State University, Faculty of Geography), Hajime Matsushima(Research Faculty of Agriculture, Hokkaido University), Vivek Shandas Wed. May 23, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe) The decade between 2007 and 2017 set a record for the number and scale of natural disasters and demonstrates high vulnerability of human society. The most serious consequences have the so-called natural-technological disasters in which natural hazards trigger accidents at technology and infrastructure such as nuclear power and chemical plants, oil refineries and pipelines, buildings and roads. A distinctive feature of natural-technological events, such as of the 2011 Tohoku earthquake, is their multi-hazard and synergistic nature, which creates cascading impacts, resulting in simultaneous occurrences of myriad catastrophes. The main goal of this multidisciplinary session is to summarize case studies of relationships between natural hazards and technological disasters, their social and economic consequences; and to encourage a discussion about tools and methods to prevent disasters and to minimize their consequences, disaster reconstruction, tourism for reconstruction, Eco-DRR, and green infrastructure.

[HDS08-P02]Flood Inundation Mapping and Management using RISAT-1 derived flood inundation areas, Cartosat-1 DEM and a river flow model

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The frequent occurrence of repeated flood events in many regions of the world causing damage to human life and property has augmented the need for effective flood risk management. Microwave satellite data is becoming an indispensable asset for monitoring of many environmental and climatic applications as numerous space-borne synthetic aperture radar (SAR) sensors are offering the data with high spatial resolutions and multi-polarization capabilities. The implementation and execution of Flood mapping, monitoring and management applications has become easier with the availability of SAR data which has obvious advantages over optical data due to its all weather, day and night capabilities. In this study, the exploitation of the SAR dataset for hydraulic modelling and disaster management has been highlighted using feature extraction techniques for water area identification and water level extraction within the floodplain. The availability of high precision digital elevation model generated from the Cartosat-1 stereo pairs has enhanced the capability of retrieving the water depth maps by incorporating the SAR derived flood extent maps. This paper illustrates the flood event on June 2013 in Yamuna River, Haryana, India. The water surface profile computed by combining the topographic data with the RISAT-1 data accurately reflects the true water line. Water levels that were computed by carrying out the modelling using hydraulic model in HECRAS also suggest that the water surface profiles provided by the combined use of topographic data and SAR accurately reflect the true water line. The proposed approach has also been found better in extraction of inundation within vegetated areas.