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## DISASTER MANAGEMENT: SPACE-BASED SOLUTIONS FOR DEVELOPING NATIONS

**Abstract**

The disaster management policies implemented by developing nations often face numerous challenges in the four phases of the disaster management cycle; mitigation, preparedness, response and recovery. This paper represents the result of research done by 25 participants from 9 different nationalities. This international group focused on the importance of space-based positioning, navigation, and timing services to improve disaster management planning of developing nations. Indonesia and Chile were chosen as case studies for the report to identify some challenges each nation encounters, particularly in the need for early warning systems and communication networks during the mitigation and response phases of the disaster management cycle. These developing nations are located in the area called the “Ring of Fire”; so called because of its high seismic activity that could lead to natural disasters. This research addressed four issues (lack of internet, deficit of delivery of early warning messages, absence of updated evacuation information, and delay of early prediction warnings) affecting the developing nations’ infrastructure and population, and focused their recommendations for their decision makers, to consider and improve their national disaster management systems. In this manner, nations may be able to reduce the level of vulnerability to such events and the subsequent damages to their infrastructure and population. Different methods and technologies (such as Electromagnetic seismic predictors, IoT sensors, Stratospheric balloons and Crowd-sourced real-time data) were analyzed for an early prediction of earthquake events, and address the communication challenges that arise from this kind of events. This paper arises from the 2018 Southern Hemisphere Space Studies Program held in Adelaide, Australia, which brings to this issue the unique international, intercultural and interdisciplinary perspective that such programs of the International Space University are extolled.