

EARTH OBSERVATION SYMPOSIUM (B1)
Interactive Presentations (IP)

Author: Dr. Hongbo JIANG

Institute of crustal dynamics, China earthquake administration, China, jhb810912@163.com

Dr. Jingfa Zhang

Institute of Crustal Dynamics, CEA, China, zhangjingfa@hotmail.com

Prof. Xuhui Shen

Institute of Crustal Dynamics, CEA, China, shenxh@seis.ac.cn

Dr. Yanfang Dong

Institute of Earthquake Science, CEA, China, dyfgis@163.com

Dr. Lixia Gong

Institute of Crustal Dynamics, CEA, China, xiaolongzhu1900@hotmail.com

MAIN APPLICATIONS OF GEOSYNCHRONOUS SYNTHETIC APERTURE RADAR IN
EARTHQUAKE RESPONSE**Abstract**

Remote sensing has been proved to be a unique source of information on the Earth. Geosynchronous Synthetic Aperture Radar (GeoSAR) is a thriving area of satellite plan in recent years as an unprecedented technique for tectonic mapping and disaster management. Many countries, such as America, Italy and China have planned to develop a GeoSAR or geosynchronous radar constellation to monitor disasters because GeoSAR has significant potential advantages over conventional low-Earth orbit (LEO) radars. The very short revisit time is the main advantage of it therefore earthquake response has been considered the most relevant. In this article, based on the introduction of the GeoSAR features, two main applications of GeoSAR in earthquake response are discussed: (1) Rapid determination of heavy disaster area. Rapid determination of heavy disaster position and range is a key factor for emergency decision making. GeoSAR can respond to the earthquake disaster for the first time and rapidly acquire the image series of the disaster area. However, due to the image low resolution of high orbit satellite, only general situation of the disaster area can be observed and the buildings damage which caused large casualties cannot be identified. Thus, one of the most important contents in earthquake emergency response is the general earthquake damage rapid discrimination of disaster areas based on the GeoSAR satellite images. Here we discuss how to use the GeoSAR to identify the disaster areas rapidly. (2) Rapid determination of road traffic capacity. Rapid determination of road traffic capacity of the disaster area is important to preserve life and property. The revisit ability of GeoSAR can effectively make up for the other technologies limitation in the rapid identification of traffic capacity in the earthquake-stricken area. However, due to the imaging mode, influencing factors and spatial resolution of the GeoSAR, the image features of road is different from the traditional low and middle orbit remote sensing satellite. So how to rapidly and effectively identify the traffic capacity of the important roads in the earthquake disaster area and serve the earthquake emergency response is also one of the key technologies. Here we discuss how to use the GeoSAR to identify the traffic capacity rapidly in disaster areas.