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THE APPLICATION OF SPACE INFORMATION SYSTEM IN NATURAL DISASTER

Abstract

Natural disasters, such as earthquake, tsunami, landslide and dam breaking, often take place abruptly and result in fatal damage. It leads to more serious loss in those cities and towns with large density of population. As everyone knows, the earthquake in Wenchuan of Sichuan 08' made China in deep grief. Although the Chinese government had done a lot, we have to confess that the human beings are not able to deal with those disasters as good as expectation. To improve the disaster handling ability greatly depends on the rapid response and correct decision-making of the emergency system. There is an increasing interest in utilizing the useful information, such as global observation, communication relay, navigation and location, providing by the space information system, to rapidly locate the position of disaster. Furthermore, the emergency handling system based on the space information system offers the government well decision-making support. Besides, the space information system, obviously, will not suffer from the disaster. This paper proposed the framework and application pattern of the space information system aiming to deal with the natural disaster. 1 Framework: The space information system dealing with the natural disaster includes satellites such as earth observation satellites, communication satellites, tracking and data relay satellites(TDRS), and global navigation satellites. It also includes the emergency detection and communication system such as unmanned aerial vehicle(UAV)equipped with over the horizon data link and the command and control system which can receive disaster information in real time and make decision correctly and rapidly. 2 Application Pattern: The application process of space information system in natural disaster involves pre-disaster warning and after-disaster evaluation. Pre-disaster warning mostly depends on analyzing the data from the earth observation satellite. After-disaster evaluation executes following steps: coarse detection by the swinging mode of satellite, accurate detection by the unmanned aerial vehicle(UAV), and evaluation of the command and control system. Although the space information system has not yet constructed maturely enough in many countries, the system, with the developing of space technology, will definitely provide more important and necessary information to help the human beings to cope with the future natural disasters.