

20th SYMPOSIUM ON SMALL SATELLITE MISSIONS (B4)
Small Earth Observation Missions (4)

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GLOBAL DISASTER FORECASTING AND MONITORING SATELLITE SYSTEM

Abstract

In order to minimize the damage caused by various types of man-made and natural disasters, many countries and organizations offer to establish global disaster observation systems, such as Disaster Monitoring Constellation (DMC), Russia's Global Disaster Monitoring System, World Environment and Disaster Observation System, etc. But, there are two serious problems in these systems. First, all the participant countries are independent in the satellite management, which will lead to reduplicate investment and gigantic waste of fund; Second, the constellations of these systems are not so full-rigged that we can't obtain high resolution images all the H24, D365. Now, there isn't a really and truly global integrated disaster forecasting or monitoring satellite system yet. To build Global Disaster Forecasting and Monitoring Satellite System (GDFMS) is feasible for these reasons: First, the technical advancements about satellite are comprehensive; Second, small satellites researches have sprung up in recent years; Third, the global cooperation in space project has deepened. In this paper, two aspects of GDFMS are discussed mostly. First, how do we construct the constellation? GDFMSS need many satellites to make up of constellation to obtain all kinds of data all over the world. The cost will be very high if we use big satellites. The Disaster Monitoring Constellation (DMC) is cheaper, but the spatial resolution of it is not enough to make accurate predicting. The constellation can be designed as follows: Four or more GEO satellites are used to provide real-time global coverage, and small satellites are used as many as possible to provide high resolution images, from 32m to 2m GSD. Second, what mechanism does global cooperation use? The disaster forecasting service need to combines all kinds of satellite data, provided by space agencies all over the world such as NASA, ESA, etc. Big cooperation bring big data and new knowledge. This paper use CHARTER, IRDR mechanism for reference, to obtain a kind of more effectively combination of natural science and social science globally.