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CHINA FIRST SMALL SATELLITE CONSTELLATION FOR DISASTER AND ENVIRONMENT
MONITORING AND ITS APPLICATION

Abstract

China is one of the countries suffered from many kinds of natural disasters with high frequency, broad distribution and great losses, meanwhile environment protection is a very important task in the country. Because of its unique characteristic, for example, fast revisit, high resolution, large coverage and long life, satellite remote sensing technology can play an important role in disaster mitigation and environment protection. Therefore, Chinese government invested capital in building the specified small satellite constellation which consists of two optical satellites and one S band synthetic aperture radar (SAR) satellite. Two optical satellites are equipped with multi-spectrum CCD cameras, infrared scanner, and hyper-spectrum imager. And optical satellites are distributed in a near noon orbit and the SAR satellite is distributed in a dawn-dark orbit. Revisit interval of CCD camera is 2 days, and revisit interval of infrared scanner and hyper-spectrum is 4 days respectively, and the SAR satellite has an ability to rotate its antenna in order to change incidence angle and an ability to operate in day and night, its revisit interval is 4 days. This constellation is now operating well serves as basic space facilities. Two optical satellites have produced a mass of remote sensing data since their launch on 2008, and the data has been used in many application fields. Since its launch on November 19, 2012, the SAR satellite has down-linked a great deal of S band raw data, after imaging algorithm is performed correctly by ground processor, excellent SAR images with high resolution, low noise and low ambiguity have been obtained. These S band SAR data will play a unique role in microwave remote sensing field worldwide. In our paper, we will present more detailed information about the constellation and its application.