

EARTH OBSERVATION SYMPOSIUM (B1)
Earth Observation Data Management Systems (4)

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FORMOSAT-2 DAILY MONITORING AROUND THE WORLD

Abstract

FORMOSAT-2 satellite is operated on a Sun-synchronous orbit of 14 rev/day with applications to many aspects including disaster investigation, environment monitoring, and vegetation evaluation. The satellite possesses the features of daily repeat, high altitude, and large field of regard, and has demonstrated that it is currently the unique high-resolution satellite having capabilities to daily image anywhere worldwide. Since launched in May 2004, FORMOSAT-2 has taken the first images and continuously monitoring after large disasters over the world to support the aftermath relief and precaution of secondary disasters, especially for the southern Asia tsunami on 2004.12.26, the Wilkins Ice Shelf disintegration on 2008.2.28, the Sichuan earthquake on 2008.5.12, the typhoon Morakot over Taiwan on 2009.8.8, and the Japan earthquake on 2011.3.11.

The satellite imaging can be divided as three categories, which are activated from request, disaster, or archive. The factors for successful imaging are the satellite availability, the revisit cycle, the weather, and the operations. FORMOSAT-2 imaged areas in eight years are about 6 times of the worldwide land areas. But due to poor resolution near the borders of the 14 strips of the coverage, rare population in some regions, and continuously imaging for the large disasters, FORMOSAT-2 has not yet completely covered the whole lands. In this paper, we display the FORMOSAT-2 quick-look images on the map, which shows it has taken images over 60 percent areas of the worldwide lands. Furthermore, we demonstrate the statistics of the response time, acquisition time, and delivery time for the large events. The average total time for successful imaging of FORMOSAT-2 is about 3 days, and the critical factor is the weather. To shorten the successful imaging time, we set up a website for users to communicate with the operations team for tasking and validation, build a distributed system for parallel processing, and distribute the images to the end users through internet or smartphone.