

25th IAA SYMPOSIUM ON SPACE ACTIVITY AND SOCIETY (E5)
Space Assets and Disaster Management (5)

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DEIMOS-1 24/7 SERVICE IN SUPPORT TO EMERGENCY RESPONSES

Abstract

Elecnor Deimos is a private Spanish company, part of the Elecnor industrial group, which owns and operates Deimos-1, the first Spanish Earth Observation satellite. Deimos-1, launched in 2009, is a member of the second generation of the Disaster Monitoring Constellation (DMC), and it is among the world leading sources of high resolution data. The Deimos-1 satellite provides 22m, 3-band imagery (R, G, NIR) with a very wide 650-km swath. It has been specifically designed to assure very-high-frequency revisit on large areas (every 3 days on average for any mid-latitude region), making it a perfect tool for the monitoring of areas affected by natural disasters. Deimos-1 is operated 24/7 by Elecnor Deimos Imaging, and its system has been continuously improved during its first years of operations, in order to maximize its reactivity and reduce to the minimum the end-to-end delay between a tasking order and the delivery of the image properly processed. Thanks to its two ground stations (in Spain and Norway), the 24/7 ops team is capable of communicating with the Deimos-1 satellite at least once each orbit, uploading new tasks and/or downloading telemetry and imagery. As of today, the Deimos-1 system can upload an image tasking, acquire the image, download it, and deliver it to the client in less than two hours. This rapid response capability has already been used many times since the beginning of the mission, in support to the response to natural emergencies worldwide. Deimos-1 routinely provides pre and post imagery of fires and floods to the ESA/EC Copernicus program, to the United States Department of Agriculture and to national Spanish authorities. Moreover, Deimos-1 has participated in the relief support efforts during the large floodings in Thailand in 2011, during various flooding events in Australia between 2011 and 2013, and it was the first mission to deliver to the UN fresh imagery of the Japan tsunami in 2011, just one day after the event. This paper describes the main features of the Deimos-1 end-to-end system, and the most successful cases of support to emergency operations during its first five years of mission.