



Change Detection Services Show Damages in Areas Affected by the 2010 Chilean Quake

Challenge

Natural disasters such as earthquakes, landslides, floods, fires and storms have increased in frequency and intensity over recent years. Extensive risk management is increasingly important in order to better prepare for the impact of disasters before they occur and to provide more efficient emergency response.

Fast data acquisition and extraction of relevant information on the extent and impact of earthquakes are important issues for mapping civil catastrophes today. By owning and operating a unique constellation of five Earth Observation satellites, RapidEye can provide high-resolution satellite imagery to crisis management authorities within 12-48 hours and have it delivered where and when it is needed. The RapidEye system has the capability to revisit an area daily if necessary, which accommodates frequent monitoring intervals and provides the most up-to-date information on environmental changes. With this capability, RapidEye can supply satellite imagery and analysis before and after an emergency event.

On February 27th, 2010 a heavy 8.8-magnitude earthquake struck the vicinity of Concepción, Chile at 3:34 a.m. local time. The area of Concepción was hit the hardest and was the most affected area in the region hit by the quake. Immediately after the news had spread to Europe, RapidEye imaged the area next to the epicenter of the earthquake, which covered a total area of 13,125 km². RapidEye used its own before and after imagery of the city to record the changes that were caused by the earthquake. RapidEye delivered these images to relief organizations who were in need of the most current and reliable Earth Observation information when trying to assess where the greatest efforts should be concentrated or to evaluate the full extent of a disaster.

Solution

RapidEye's change detection analysis clearly shows the affected areas in a high level of detail. They are based on images taken around one month before the earthquake (January 22nd, 2010) and images taken on Saturday, February 27th at around 11:00 a.m. local time, only hours after the earthquake hit the area at 3:34 a.m..

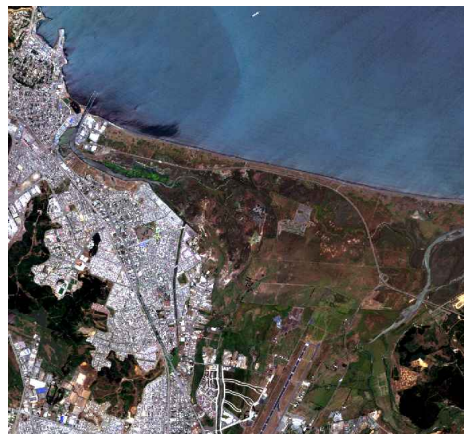


Image: RapidEye image of Concepción on January 22, 2010



Image: RapidEye image of Concepción on February 27, 2010. The red marked areas show the damaged areas after the quake hit the city.

Overview

Country: Chile
 Vicinity: City of Concepción
 Market: Emergency Response
 Change Detection
 Area: 756.950 km²
 Website: www.rapideye.de/chile_change

Challenge

Fast data acquisition and analysis of the impact of earthquakes are an important issue when mapping natural disasters today. On February 27th, 2010 a heavy 8.8-magnitude earthquake hit the area of Concepción, Chile. Relief organizations are in need of the most recent and reliable Earth Observation data and change detection analysis.

Solution

With its constellation of five Earth Observation satellites, RapidEye used its own before and after imagery of the city of Concepción to detect changes of the affected areas only a few hours after the earthquake hit the area.

Results

RapidEye's change detection analysis for the affected areas in the vicinity of Concepción shows clear vegetation changes in rural areas, oceanic disturbances, flooding in urban areas and can be used to support the humanitarian aid community in their efforts.

Key Benefits

RapidEye made a set of satellite images of the affected region in Chile available to governmental and non-governmental relief organizations and institutions. Additionally, RapidEye's satellite Imagery of the city of Concepción is available for download from its website at www.rapideye.de/concepcion, also imagery layers of the region affected in Chile can be viewed on Google Earth.

For more information about RapidEye's change detection services of the area affected by the earthquake and the following Tsunami, please visit the company's website at www.rapideye.de/chile_change.

RapidEye Emergency Response Services For The Chilean Earthquake

Image: Details of the urban area of Concepción imaged on January 22, 2010



Image: Details of the urban area of Concepción imaged on February 27, 2010. The dark colored water is clearly seen between the urban structures reaching far between the houses.



Image: Affected urban areas. The exact impact of the visible changes need to be assessed on the ground. The information is useful to direct ground staff to the right location.



Would you like to learn more about what RapidEye can do for your company? Please visit our website www.rapideye.de or e-mail us at sales@rapideye.de.

Results

With its detection of changes in the areas affected by the Chilean earthquake, RapidEye was able to demonstrate how quickly it can analyze a series of before and after images, which highlights the system's unique repetitive capabilities and the excellence of its analytical team. RapidEye's change detection maps serve as reference information and illustrate the spatial distribution of areas affected by the earthquake. The evaluation of the Chilean earthquake depicts vegetation changes in rural areas, flooding in urban areas, oceanic disturbances and can be used to support the humanitarian aid community in their efforts.

Before

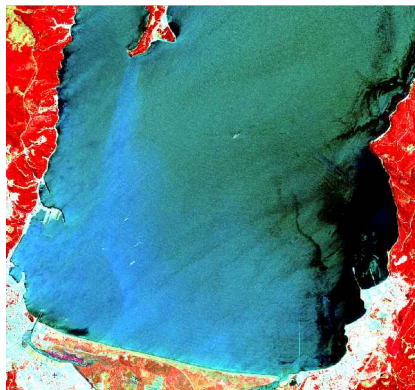


Image: The image shows the ocean before the earthquake on January 22nd, 2010. The red color in this image indicates healthy vegetation.

After

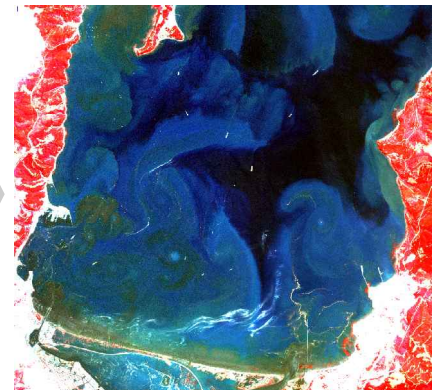


Image: The image was taken a few hours after the earthquake on February 27, 2010 and clearly shows the currents within the water body.



Image: Rural areas in the vicinity of the city of Concepción on January 22, 2010



Image: Vegetation damages in rural areas near the area of Concepción after the earthquake on February 27, 2010

Benefits

RapidEye made these and other images of the region of Concepción available at no cost to governmental and non-governmental organizations and institutions. These images have been able to assist in rescue and recovery efforts as well as for prioritizing clean-up and reconstruction activities. Additionally, imagery layers over the earthquake area in Chile have been made available for viewing on GoogleEarth. RapidEye's images of Concepción are also available for instant purchase and download via the RapidEye Geodata Kiosk at www.geodatakiosk.com.