

China In Your Hands

Imaging the entire country of China within 6 month



Challenge

Today, the availability of timely, accurate and reliable Earth Observation data is important for governmental bodies, as it serves as reference information for their country's strategic decision making and planning. Since most infrastructure management is dependent on modern GIS technologies, the ability to extract meaningful information is dependent on fresh Earth Observation data.

For larger countries, it can be difficult or impossible to obtain full, high resolution coverage of their land mass within a growing season or even a calendar year. Complete and uniform coverage is critical for mapping and change detection work by governmental agencies. Additionally, in areas where cloud coverage is an obstacle, returning to an area frequently for re-imaging to obtain data with no or low cloud cover is important for customers demanding reliability. The Ministry of Land and Resources in China was looking for an Earth Observation system that was up to these challenges.

When governments contract for data collection they want it delivered on time and without having to negotiate extended delivery time lines. Local distributors also do not want to get caught in the middle as they usually assume the business risk from a delayed collection program.

Solution

The RapidEye satellite constellation is the first, and currently the only, operational system with the combination of capabilities which allow for repetitive coverage of large areas acquiring consistent data in high resolution with an option for daily revisit to an area. With its capability to generate orthorectified imagery with five meter pixel size in five spectral bands, RapidEye is an ideal data source for mapping, monitoring and change detection. The utilization of the five spectral bands allows for differentiation between vegetation types, and with five meterpixel size, key infrastructure features (such as bridges, buildings, and roads) can be detected. The entire system can image up to 4 Million square kilometers of the Earth daily. RapidEye products can be seamlessly integrated into any GIS system. This data is then available for analysis by RapidEye or the customer's experts. In January 2010, RapidEye successfully completed a 6 month contract to image 80 percent (7.8 million km²) of China. The contract between RapidEye and the Ministry of Land and Resources (MLR) for the People's Republic of China was coordinated through RapidEye's Chinese distributor Beijing Earth Observation (BEO). Imaging started in August 2009 and was completed 6 months later in January 2010. Due to the weather conditions, certain areas in China are quite difficult to image with low cloud



The Customer

The Ministry of Land and Resources is responsible for the planning, administration, protection and rational utilization of natural resources like land, mineral and marine resources in the People's Republic of China. www.mlr.gov.cn »



“ We have never had this sort of comprehensive reference of China. This is ideal for the MLR for change detection in the country. We were very pleased with the way that this project was planned, executed and delivered. RapidEye made the best use of their resources, and delivered quality imagery of over 75% of the area within the first three months, which is remarkable. Our client is very satisfied, and in turn, so are we.

Bing Sun, RapidEye distributor of China

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cover. The five RapidEye satellites were an ideal choice to take on this challenge. In January 2010 RapidEye had completed the task and delivered to the MLR 99.8 % of the requested area with an average cloud cover of less than 6%.

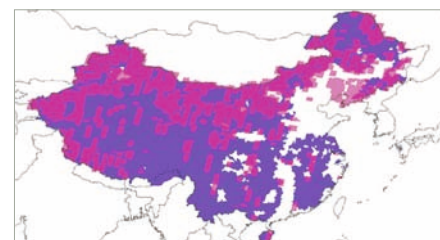
Results

Between August 2009 and January 2010, over 8 Million square kilometers of China, with less than 6% cloud cover were collected and delivered to The Ministry of Land and Resources for the People's Republic of China. The largest and most challenging project that RapidEye had ever accepted was completed ahead of schedule and RapidEye produced a very happy customer for their efforts. Over the course of the image collection, RapidEye successfully overcame the considerable data management challenges involved with such a large and complex task. In order to overcome weather related issues over China, RapidEye relied heavily on the latest cloud forecasting. This information allowed for optimal collection of low or cloud-free data. RapidEye performed quality control on its data on a daily basis and then immediately delivered the data to the customer. Originally, the MLR requested that RapidEye collect imagery on a county by county basis. Due to unfavorable weather conditions and constraints that needed to be taken into consideration for the imaging campaign, this approach was eventually abandoned and a more opportunistic method of collection was adopted. In order to manage the data, RapidEye developed an in-house software tool to generate semi-automated shapefiles for the customer to outline the daily collection areas. These were delivered along with the data via an FTP server daily. This allowed the MLR to keep track of the areas that had been successfully imaged. After the first month, RapidEye

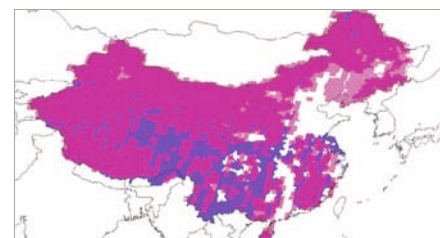
collected more than 23% of the entire area requested, and by the second month, more than 40% of the project was completed. By the end of the third month of image acquisition, over 75% of the area of interest was collected and delivered. Because of challenging weather conditions and the requirement by the MLR that some areas be absolutely cloud-free, many areas were imaged 4 or 5 times before an acceptable image could be obtained. The actual number of tiles delivered each month far exceeded the plan and the expectations of the MLR. 99.96% of the project was completed one month prior to the requested time window.

Benefits

Now that the RapidEye imagery has been delivered, it is up to The Ministry of Land and Resources to piece all of the tiles together to create a mosaic. Satellite imagery has been used by the MLR for over 10 years and this is the first time they have had the entire country imaged within one year. The MLR has several potential uses for the imagery, including using it to monitor their agricultural lands and protecting it from illegal urban sprawl. Even though the contract with the Chinese Ministry of Land Resources was for 80% of the country, RapidEye imaged China in its entirety (9.6 Million km²). All of this imagery is now available in the RapidEye Library. The RapidEye Library contains more than 2.4 billion km² of satellite imagery (as of September 2011). The library offers customers access to all Standard Image Products and is continuously growing as new images are downloaded from the satellite constellation daily. The library not only offers the most up-to-date data, but also all previously acquired data including multi-temporal datasets with unrivaled repeat coverage.



September 2009



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January 2010