

Monitor illegal forestry

Success story to assess deforestation ©RapidEye 2013

Summary

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Minas Gerais needed current, high- quality remote sensing data to monitor environmental changes; primarily focusing on illegal deforestation throughout their state and on the cerrado ecosystem areas in particular. RapidEye system possesses the capability to revisit frequently cloudy areas such as Minas Gerais, allowing for a full coverage of these difficult areas in a short period of time. RapidEye successfully imaged the entire state of Minas Gerais three times in a nine month time window. The data collection was highly successful. The customer required 10% cloud cover or less, and RapidEye's final delivery had cloud coverage of less than 5%.

Project Background

Minas Gerais, covering an area over 587,000 km²,222 is the fourth largest state in Brazil. One of its government's greatest challenges is monitoring illegal deforestation activities. The two most common problems stem from clear-cutting done by farmers to expand their agricultural lands and mining companies, which use illegally obtained wood from the forests to fuel their kilns. Part of one of the world's most biologically rich savannah ecosystems, the cerrado, is located in Minas Gerais. The cerrado, is also the most threatened ecosystem in Brazil. While beef ranches, soybeans, corn and coffee are all grown in this region, farmers are continually trying to extend their lands, which threatens the protected cerrado land.

Issues & Needs

The manner in which deforestation is transparently monitored, managed and controlled is very serious business. Many other states are looking to Minas Gerais to set an example of how to deal with this situation. The fact that other government agencies can view and use the RapidEye data that Minas Gerais purchases is politically important and key to the ongoing success of conservation efforts.

Solution

In autumn of 2009, Minas Gerais released a re- quest for proposal (RFP) to obtain three satellite imagery coverages of the state with a resolution of eight meters or better. Previous attempts to have their state images had failed because it was so large, and Minas Gerais wanted the data provider that won their RFP to prove their ability to rapidly and repetitively collect imagery overlarge areas. One of their requirements was to have data of the state collected, processed and delivered within three days of placing their order. Since the RapidEye system combines the strengths of large area coverage with quick return capabilities and speedy delivery times, Santiago & Cintra Consultoria, RapidEye's sales partner in Brazil successfully won the bid to cover Minas Gerais. Once RapidEye's five meter imagery was reviewed by the government decision-makers, they were so satisfied with the spatial resolution, the information that could be extracted and the revisit rate that they decided additional very high resolution satellite imagery was not necessary.

The government of Minas Gerais required three coverages of the state so that a real-time monitoring and assessment program could be implemented. The time window for the first coverage was from September to December 2009, the second was from January to April 2010, and the third from May to July 2010. These specific date ranges were chosen because most illegal logging and associated illegal activities occur just before and during these periods. With the very quick turnaround of the data, the state can monitor and identify any issues almost immediately. The imagery, as requested by Minas Gerais, was to have no more than 10% cloud coverage per tile. RapidEye achieved an extremely high success rate; the actual data delivered was with less than 5% cloud cover per tile. January through March is the most difficult time to collect imagery in that area due to stormy weather and cloudy conditions. The weather was even worse than normal during that period in 2010, with most days presenting between 60 and 80 percent cloud coverage. However, the majority of the data was successfully collected in the requested time window. The third coverage (May-July) was easily completed in the given time frame, as this was during the South American winter, when there are frequent cold fronts which produce clear skies. RapidEye delivered all of the data over Minas Gerais as orthorectified level 3A tiles. Santiago & Cintra used the 3A tiles to create a mosaic and color-balanced it to create a uniform seamless image for online access.

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Results & Perspectives

The Ministry of Forestry is the main user of the data, but each of the state's government agencies are able to access and use it. The Ministry has 200 offices around the state and must have immediate access to the data in order to quickly act on monitoring, assessment and enforcement of the laws. Santiago & Cintra designed a web service in order for various departments within the Ministry to access the data. It is capable of delivering the mosaicked RapidEye tiles in 10 x 10 minute tiles (approximately 11 km²), for faster serving and planning.

The office of the Forestry Minister of Minas Gerais is the main user of the data, however all government agencies within the state can access and use the data. The Ministry has 200 offices around the state and must have immediate access to the data in order to quickly monitor, assess and enforce the laws. The entire state of Minas Gerais is now available in the RapidEye Library. visit EyeFind to browse Minas Gerais or any other area on earth. RapidEye's imagery is mainly used for environmental monitoring, change detection and to expose illegal deforestation.

Related Info

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