

Product solution for: Yunnan Provincial Institute of Mapping



## DigitalGlobe Imagery Helps Protect Farmland in Yunnan Province

Yunnan Province, located in the far southwest in the People's Republic of China, is both an important agricultural center and tourist destination. At times, these two industries conflict as farmers construct illegal residences after getting rich from tourism. To protect valuable farmland, the Yunnan Local Government relies on DigitalGlobe imagery to enforce land use regulations by detecting changes to the landscape.

### Construction of Illegal Structures on the Rise

Consisting mostly of mountainous terrain, only about five percent of Yunnan Province's land is suitable for farming. An important food source and a significant exporter of tobacco, Arabica coffee and cut flowers, agricultural production is critical to the region's sustenance and economy. Also critical to the economy is tourism, accounting for more than 12 percent of the Provincial GDP. Nearly three million Chinese tourists visit the Province during the October National Holiday alone.

"As farmers are getting rich from tourism, they are building illegal housing," says Lily Xu, General Manager of DigitalGlobe Certified Partner Siwei Worldview Technology (Beijing) Co. Ltd. "The Local Government has found that high resolution satellite imagery presents an ideal solution to identifying these structures."

### A Need for Ongoing Land Surveys

The Yunnan Provincial Institute of Mapping was established more than 20 years ago and is responsible for conducting basic survey work across the Province for both government and industry. The organization approached Siwei Worldview in 2012 to help plan a strategy to identify illegal structures in the Dali City region, a popular tourist destination on the shores of Erhai Lake.

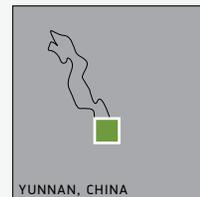
*"The Institute initially selected a 220 square kilometer area of farmland just west of Erhai Lake. DigitalGlobe presented the best solution because it's the only company that could meet the customer's requirements for monthly image collection, provide high resolution of 50 cm, and accuracy to <math><3.5m</math> CEgo to detect the smallest structural changes."*

LILY XU, SIWEI WORLDVIEW

### Company information

A DigitalGlobe certified partner, Siwei Worldview Technology (Beijing) Co., Ltd. (SWT) provides high resolution satellite imagery and value added product, consulting, and application services for government and a broad variety of commercial customers. Along with the resources of the China Aerospace Science and Technology Corporation, SWT combines remote sensing, GPS and GIS to provide industry leading high resolution earth imagery products and analysis services.

DALI



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## Satellite Imagery Best Suited to the Task

The first set of images were captured ten times at 40-day intervals from May 2012 to June 2013. The second set were captured six times at 78-day intervals from August 2013 to September 2014. WorldView-1, WorldView-2 and QuickBird were tasked for the project, collecting four band data with cloud cover <15%.

“The data collection phase was extremely successful,” Lily Xu says. “Images were requested ten times during the first phase, and DigitalGlobe successfully delivered nine times with one exception during the rainy season. Not only was the customer pleased with the imagery, they were pleased with the cost as aerial photos are about four times the prices of satellite images, and on-ground enforcement teams are expensive and cannot cover such a large area on a regular basis.”

## DigitalGlobe Imagery Produces Results

Upon completion of the imagery collection, the Yunnan Provincial Institute of Mapping created land use and land cover maps, overlaying the satellite images against vector data and other information. By comparing the latest images to the previous version, the Local Government was able to identify changes to the landscape. The changes were revealing, identifying more than 300 illegal structures, most of which were removed. During the following year, due to program awareness, the building of illegal structures in the area declined between 30 and 40 percent.

*“This is the first case in Yunnan Province to use high resolution images to regularly monitor farmland. Through continuous monitoring over more than two years, it has proven to be a straightforward way to protect farmland. The next phase has been confirmed and the total survey area will be expanded to more than 400 square kilometers. Moving forward the Provincial Government plans to extend the monitoring area to other areas and industries.”*

LILY XU, SIWEI WORLDVIEW

### Challenge

Develop a cost-effective solution to continuously monitor vast tracts of valuable farmland in Yunnan Province to identify the construction of illegal housing units.

### Solution

DigitalGlobe certified partner Siwei Worldview repeatedly procured high-resolution imagery of a 220 square kilometer area over a two-year period, producing land use and land cover maps.

### Results

The maps revealed more than 300 illegal structures, which were removed by the Local Government. In addition, new construction of such structures has declined nearly 40 percent and survey areas will be increased.

### INDUSTRIES

- » Land Management
- » Government

### USES

- » Mapping
- » Cadastral
- » Land Use/ Land Cover
- » Change detection

### PRODUCTS USED

- » 0.5 . 4-band data

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