

Remote Sensing Image in the Application of Agricultural Tourism Planning

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Received: 2013 /Accepted: 14 June 2013 /Published: 25 June 2013

Abstract: This paper introduces the processing technology of high resolution remote sensing image, the specific making process of tourism map and different remote sensing data in the key application of tourism planning and so on. Remote sensing extracts agricultural tourism planning information, improving the scientificity and operability of agricultural tourism planning. Therefore remote sensing image in the application of agricultural tourism planning will be the inevitable trend of tourism development. *Copyright © 2013 IFSA.*

Keywords: Remote sensing image, Agriculture tourism, Tourism, Tourism planning application.

1. Introduction

Coincidence with the prosperous development of economy and improvement of people's living standards, tourism, which has gradually become an important industry in the national economy, has also rapidly developed; all governments attach importance to the growth in the number of tourists and tourism income. In this international trend, making full use of all kinds of technology means to research, developing tourism resources and making tourism planning have realistic and long-time significance. Hence, all scenic spots are quickening the steps in planning and development construction. Various new technologies and methods have been gradually applied to it. Modern remote sensing information technology has the advantages of fast, accurate, periodic, macroscopic and real-time in gaining geographical environment condition as well as changing data,

meanwhile, data processing analysis system geographical information system have varieties of data comprehensive treatment analysis ability. Thus, it has been widely used. Remote sensing data in tourism planning has also got various applications [1-3].

2. The Processing Technology of High Resolution Remote Sensing Image

Remote sensing image has become an important source of data in map-making. At present, the price of satellite images has substantially dropped; the resolution of remote sensing image has been greatly improved, some of which has reached 1m ground resolution (Table 1). Obviously, remote sensing image used in dynamic, changeable, rich-information tourism map-making should be possible in regard to the characteristics of tourism map [4].

Table 1. Common ground resolution contrast of remote sensing image.

Remote Sensing image	TM	SPOT5	KONOS (panchromatic)	QU ICK Bird (panchromatic)
Ground resolution (m)	30	2.5	1	0.61

2.1. Geometric Correction

The purpose of geometric correction is mainly to correct the geometric distortion resulting from nonlinear the system itself has or different shooting angles or other reasons. In the processing of image forming in the geometric correction processing, it gives image coordinates and projection information at the same time [5].

2.2. Image Fusion

Uses PCI, ENVI and other professional remote sensing image processing software for image fusion and chooses suitable sampling methods for re-sampling. In the processing of image fusion, the selection of resampling methods is a very important aspect. Commonly used resampling methods are the adjacent element method, bilinear interpolation and three interpolations. Hardware conditions permitting, it's best to choose bilinear interpolation effect.

2.3. Image Color and Tone

The image after the complete of image color and hue control fusion will normally appear the phenomenon of partial color, color reunion cluster, big contrast or else. To improve images general visual effect, we need to make adjustment to it. In order to achieve the purposes of correcting color partial, weakening chromophore and reducing contrast, it often uses Adobe Photoshop software through the levels, curve adjustment, color balance adjustment, brightness/contrast adjustment, hue/saturation adjustment and other means of it [6].

3. Utilizing Remote Sensing Image to Gain Agricultural Tourism Planning Information, Develop Tourism Information System and Making Tourism Map

3.1. The Quantity and Quality of Agricultural Tourism Resources

The quantity of agricultural tourism resources with quality grade in equality is various. Conventional methods used in checking, it is not only time-consuming, and laborious; but also it has many omissions, Adopting high resolution remote sensing

image can have a plain sight of resource condition in agricultural tourism area. To the check of mountain, water, plants and other natural agricultural tourism resources, it often adopts visible light near infrared image. The image standard false color composited, all the features will display with special tonal, such as plants displays depth range leaden and so on. To Pavilion, balcony, building and other fully human landscape, besides using red light near infrared image, it can directly use par for interpretation. According to the images of each spot shape, scope, texture, etc, it can check out the quantity and quality of agricultural tourism resources. [7]

3.2. Agricultural Tourism Area in Geographical Location and Environment

Agricultural tourism area is an open natural synthesis. To know its outside geographical environment and the location it lies in macroscopically, we can use map and another approach is to use remote sensing image. According to the splashes of color, shape, size, shadow and combination pattern, etc between feature images, we can deduce the logic relations between features and information that indirectly reflect from the image. For instance, from the linear distribution, we can deduce fault existence; from the vegetation clustering distribution, we can deduce the soil, below, geological condition, further deducing the cause of the phenomenon. Remote sensing image can specifically reflect the surrounding environment of agricultural tourist area. And according to note, and numbers of the image, we can know the geographical natural terrain, further, combining relevant text data and map to know the soil, plant, heat, water, earth crust and geological condition of the area. Obviously, the use of remote sensing image can be more comprehensive that the map to reflect the agricultural tourism area in the geographical position and environment [8].

3.3. Making Agricultural Tourism Map

The agricultural tourism map is a thematic map which combines nature and humanistic landscape; it centrally reflects the information of natural landscape and humanistic landscape, providing great convenience for people's travelling and agricultural tourism operators. Based on the processing technology of remote sensing image, the author cites an example of TM image and spot agricultural tourism map. (Fig. 1).

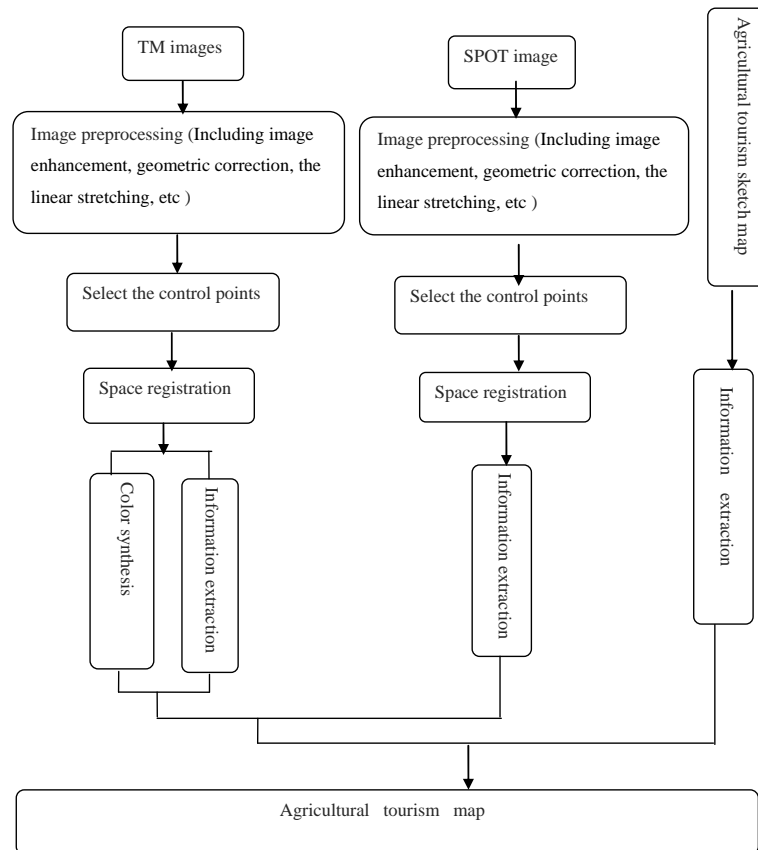


Fig. 1. Agricultural tourism map production process.

4. Questions and Discussions

4.1. Advantages

Rich information. The agricultural tourism scenic spot nowadays, generally speaking, has richer information, tourists' demands for the agricultural tourism information are more and more, what's more, their requests are also higher and higher. Making use of information collection technology of the traditional agricultural tourism, it's time-consuming and the information is comprehensive. While the sensing aviation and satellite image has the obvious space advantages, such as wide horizon, strong intuitive, rich information and so on. On the image can a large surface area be seen, and a large amount of agricultural tourism resources information is extracted from it.

The way to combine remote sensing data and translation plays a more and more important role in the process of the survey of agricultural tourism resources in the large area.

High accuracy. Compared with the traditional field survey technology, the remote sensing technology has a higher scientificness and accuracy. Taking advantage of the remote sensing technology to conduct the survey of agricultural tourism resource is not only faster, but the accuracy is higher. Saving the man power, material, resources, financial resources and time [9].

Being convenient to make elegantly dynamic tourist map and agricultural tourism planning map. Agricultural tourism map is the commodity of development potential. The agricultural tourism tourist map regarded as the base map is the popular new products among the tourists in the market of agricultural tourism tourist map, and the map representation is new and beautiful, having the strong practicality and extension.

4.2. Shortcomings

Agricultural tourism planning today is mostly the overall plan, which is designed in detail and substantial, Detailed plans that have concrete, definite and clear map are fewer, the first id that the demand of agricultural tourism scenic spot for the detailed plan is less; the second is that the detailed agricultural tourism planning is difficult and expensive, while the demand of overall planning for data is less strict than the demand of detailed plan. The talent team of agricultural tourism planning today is still in the hybrid stage, some of the talents of agricultural tourism detailed plan shift from other professions, their computer level is limited and they have some difficulties learning remote sensing image [10].

5. Conclusions

In the process of the survey of traditional agricultural tourism resources, on-the-spot investigation is the main means to get the information of agricultural tourism resources. However, with the development of modern information technology and people's demand for high technology, this kind of means can far not satisfy the requirement for the agricultural tourism planning today, only when the technology constantly updated is and the planning technique is constantly innovated can the agricultural tourism planning produce the competitive. Produce and serve the people. Although remote sensing image itself has a certain shortcomings, with the development of society it will be extensively applied in the agricultural tourism planning.

Tourism scenic area is an open complex nature. The structure and function is closely linked with its geographical environment and geographic location. So you can't just consider tourist area itself. And should be considered from macroscopic. However to macroscopic understanding of the outside of the geographic environment and of the location, a map can be used. Map can reflect the tourist area and the surrounding terrain. But the map after the cartographic generalization, there may be many tiny, is very useful information cannot be reflected. Another method is to use remote sensing image. Remote sensing image without cartographic generalization, in its resolution permitting, reflects almost all greater than or equal to the size of its ground resolution features. And according to the feature image between the tonal, shape, size, shadow, combination can deduce the logical relationship between ground objects such as design, Such as distribution of linear springs to infer the existence of fault, By clustering distribution of the vegetation infer its lower soil, geology, then infer the causes of this phenomenon. I used to take part in a tomb, the tourism planning, Tomb of the pyramid-shaped mound and the surrounding hilly landform is very consistent, But due to soil horses were brought in from elsewhere, Significantly different soil conditions and the surrounding area, So that the growth of vegetation also has the very big difference, Which can determine the distribution of the ancient tombs, as well as the size of each tomb.

Also remote sensing technology adopted by ultraviolet (uv) other than the visible light, infrared, microwave band. So the image can reflect the surface above the eye visible features. It can also be reflected in many of the features of the human eye is not visible. Such as thermal infrared remote sensing can detect the distribution and intensity of heat source object scope, Microwave remote sensing can penetrate rain forests, soil, snow cover, geomorphology, detect the surface covering the following orebody, karst caves and underground rivers and lakes, etc. Determination of tourist area of the macro environment on the remote sensing image spatial resolution requirement is extremely low.

General LANDSAT MSS images of ground resolution of 79×79 m can reflect the tourist area of the surrounding environment in detail, Meteorological satellite ground resolution of 1.1 km can more macroscopic study of its environment. Get tourist area and the surrounding of remote sensing image later can according to the notes on the images and Numbers, understand the tourist area's geographical natural areas, thus according to the relevant written materials, maps and other data to understand the region's soil, vegetation, heat, water and the earth's crust and geological conditions. So remote sensing image can reflect more fully than map tourist area's geographical location and geographical environment. With the development of the tourism industry all the scenic spots in speed up the pace of development and construction planning.

All kinds of new technology and new method are gradually applied to them. Remote sensing is the kind of technology that can judge determination and analysis of target properties far away from the target without direct contact then. Remote sensing technology with its large range of observation, access to large amount of information, quick speed, good real-time, strong dynamic, etc, especially the improvement of spatial resolution remote sensing data and now widely used.

Remote sensing data have also been various applications in tourism planning.

China is an agricultural country in the world today. How to improve the economic value of agriculture, promote agricultural modernization pace, is one of the problems to be solved for a long time. Agricultural tourism is a really feasible way to solve this problem. Remote sensing technology has a great significance in promoting the development of agriculture tourism. Let's take it for an example. On December 1, 2012, *Remote Sensing Satellite, No. 4* successfully launched in China. One of its main functions is to collect data and monitor crops. Satellite remote sensing of telemetry technology in monitoring and forecasting accuracy has reached more than 90 %. It provides a shortcut for agricultural tourism planning in terms of data access. In recent years, remote sensing technology has been successfully applied to agriculture tourism, especially in agricultural tourism planning and scientific and efficient management, accelerating China's agricultural industrialization and modernization.

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