Summary of surface information extraction based on remote sensing technology

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Abstract: Man machine interactive remote sensing interpretation method of satellite image is an important means to understand the basic situation of land background and human interference activities. This paper briefly summarizes the remote sensing interpretation methods and the information extraction experience of different spatial resolution data in different research areas.

1. Introduction
Satellite remote sensing image interpretation is a necessary way to fully understand the information of China's geographical conditions, as well as an important way to grasp the basic information of China's land ecological nature and human tectonic activities [1]. In the census of geographical conditions, the extraction of land cover classification information is one of its important contents. How to quickly and accurately extract land cover classification information of ground features has become a key link in the census of geographical conditions. China has carried out and completed the second national land survey since 2007. The survey is mainly aimed at rural land survey, urban land survey, basic farmland survey, and survey data into the corresponding database and cadastral information management system, to achieve scientific information management [2]. The extraction of land cover classification information is the process of remote sensing interpretation of the remote sensing images of the census of geographical conditions.

Liu peng, li qingfeng et al., by means of remote sensing technology, analyzed the landscape pattern of the proposed qingshuihe-dayipu highway area to study the current situation of natural ecological environment and its spatial characteristics, and provided decision basis for environmental assessment, landscape ecological design and economic development [3]. Jia zhige, yuan xiping, gan shu, liu xiaoli et al measured and analyzed the information of the change of land surface vegetation cover in the area along the highway by using multi-temporal remote sensing image and GPS positioning survey data [4]. Yang shengtian et al used NDVI to divide vegetation coverage into four types: high, medium, high and low [5]. CHEN yun-hao et al studied the variation rule of NDVI in China during the decade 1989-1999 using remote sensing data [6].

Up to now, remote sensing image interpretation technology can be divided into three categories: manual visual interpretation, computer automatic interpretation and computer interactive interpretation [7]. Human-computer interactive remote sensing interpretation method is a method that enables human and computer to cooperate with each other and conduct remote sensing analysis at the same time. This paper analyzes and summarizes the information extraction methods of land cover classification, and briefly describes the information extraction experience of different resolution data in different research...
areas.

2. Classification information extraction method
The generation of ecological mapping is based on the combination of field investigation and indoor interpretation, according to the determined ecological classification type. In order to make the map information as accurate as possible, the field investigation, it is best to collect the relevant information after the place, in order to mutual correction. Such as local vegetation survey data, soil and water conservation planning, topographic map, etc. Remote sensing image processing software is applied to interpret the images interpersonally and refine the classification results, so as to obtain the results of different phases of the study area, which lays a data foundation for the analysis of land cover changes in different time periods in the next step.

Human-machine interactive interpretation, based on remote sensing software and GIS software production platform, artificial identification of ground objects inversion road table information and mapping.

(1) Access satellite image data. It is important to note that satellite images must be downloaded with gis.

(2) Add project area to generate evaluation range. The boundary of the evaluation range needs to check the layout diagram repeatedly to make it accurately positioned, which is the basic of the later interpretation.

(3) A new vector surface element was created to draw the patch of land use type of evaluation area. Based on the previous field investigation and visual interpretation, the different land use types are indicated on the satellite images. Land use type classification adopts the corresponding national standard.

(4) All features in the evaluation area are checked and assigned. Each patch corresponds to a land use type, and the type name needs to be entered in the property sheet. Here I usually start with a code for each object, because the Numbers are faster to enter; The field calculator is then used to calculate the ground object type corresponding to each code. This step can also start the input one by one when drawing.

(5) The generated land use status map is filled with color. When filling the color, pay attention to the color collocation, contrast prominent, but also to combine the characteristics of the ground. Proper color matching is not only conducive to the reader to quickly identify the map information, but also to make the map beautiful and generous. There are some customary color combinations, such as: woodland dark green, grass light green, farmland yellow, residential pink or light red, industrial land red, water blue, and so on. Specific drawing, can choose a good chart, at any time for reference.

(6) The layout of the status map of land use. Enter the layout mode, and then add the guide needle, scale and legend, respectively, for trimming. The placement of various elements (compass needle, scale and legend) should be coordinated as far as possible; The opacity of the layer can be adjusted appropriately; Use mask, highlight text, etc., so that the drawing will become more beautiful.

(7) Mark the eia project objects. Indicate the location of the eia project in the land use type map. In addition to reflecting the relevant topic, the various ecological maps also annotate other auxiliary information in as much detail as possible, so that the reader can better understand the content of the map. For example, highway projects should have pile number, interchange and tunnel location, administrative boundary, the name of the main administrative district or city, and so on.

3. Summary experience
(1) Select appropriate remote sensing data
The choice of satellite data is the choice of resolution first. Large-scale evaluation scope, such as long-distance water transfer project, highway and railway project, planning environmental assessment project, etc., is more suitable for Landsat_TL image (resolution 30m). However, the evaluation range of small scale, such as airports, mines and other point-like research areas, is suitable for remote sensing data below 5m resolution. In addition, it is also important to choose the chronology of the images. In
northern areas, images of vegetation growing season are selected. Sometimes, in order to distinguish the coniferous forest from the broad-leaved forest, images of winter and summer are purchased.

(2) Master relevant laws and regulations and relevant reference books

The division of land use types and soil erosion types, the proportion of maps, the scope of interpretation and so on, all have relevant laws and regulations and the requirements of the guidelines, such as the specification of category of the ecological environment of remote sensing survey, the land use classification standards for the classification of soil erosion classification standard "guidelines for the ecology, remote sensing image plan production specification etc.

Reference books can assist ecological mapping, such as vegetation of China, vegetation of provinces, atlas of vegetation of China, atlas of natural geography of China or related provinces, atlas or atlas of common plants in China, south, north or other related regions, flora of China or provinces.

(3) Pay attention to accumulate rich experience

The difference between the north and south of China and the east and west of China is very big. If you have rich experience, even if the cartographer is not on the scene, you can accurately judge the type of local features, otherwise it is easy to make mistakes. Coastal salt flats, for example, can easily be translated as fish ponds or shrimp ponds. Experience needs to be accumulated and used.

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