

HJ

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

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Technical specification for remote sensing monitoring of human activities in protected areas

自然保护区人类活动遥感监测技术规范

(English Translation)

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1 Scope of application

This standard specifies the main content, technical procedures, methods and technical requirements of remote sensing monitoring of human activities in nature reserves.

This standard is applicable to remote sensing monitoring of human activities in nature reserves of all levels and types within the territory of the People's Republic of China.

2 Normative references

This standard refers to the following documents or their clauses. For dated reference documents, only the dated version is applicable to this standard.

For undated references, the latest version (including all amendments) is applicable to this standard.

GB/T 21010-2017 Classification of land use status "Guiding Opinions on Establishing a Natural Reserve System with National Parks as the Main Body" (Zhongbanfa [2019] No. 42)

3 Terms and definitions

The following terms and definitions apply to this standard.

Protected areas

Refers to the legally defined or confirmed by governments at all levels, the importance of important natural ecosystems, natural relics, natural landscapes and the natural resources they carry the land or sea area where sources, ecological functions and cultural values are subject to long-term protection.

Human activities in protected areas Refers to all types of development, construction, production, and living that occur in nature reserves and affect the protection objects and ecological environment of nature reserves.

Activities, including mineral resource development, industrial development, energy development, tourism development, transportation development, breeding development, agricultural development, residential areas and other activities.

Remote sensing monitoring of human activities in protected areas Refers to the monitoring of human activities in nature reserves using remote sensing technology, including the acquisition, processing, extraction, and analysis of data and information and report preparation, etc.

Changes of human activities in protected areas Refers to the changes in the nature or area of land (use of sea) caused by human activities in nature reserves, including new additions, expansions, and reductions.

Center latitude and longitude Refers to the longitude and latitude of the center of mass coordinates of the polygon.

6.1.1 Boundary data of nature reserves

The boundary vector data of the nature reserve in the monitoring area.

6.1.2 Administrative division data

The vector data of the administrative division where the monitoring area is located.

6.1.3 Format

Vector format.

6.2.1 Image selection

- a) The spatial resolution of the image is better than or equal to 2 m, and the image within the boundary of the nature reserve should generally be free of cloud cover. The cloud cover of the single scene image the ratio should generally be less than 10%.
- b) The image has no obvious noise and missing lines.

6.2.2 Image orthorectification

- a) Take the scene as the unit, use the base map image as the correction basis, and select the image to be corrected for orthorectification.
- b) It is required that the registration accuracy after orthorectification of images in plain areas is within 1 pixel, in hilly areas within 2 pixels, and in some mountainous areas.

The area is within 4 pixels.

6.2.3 Image Fusion

Take the scene as the unit to fuse the panchromatic and multi-spectral images that meet the accuracy requirements after orthorectification. The fused image is required.

- a) The texture information can be clearly expressed, and the main land types (such as mineral resource development, industrial development, etc.) can be highlighted.
- b) The image tone is uniform, the contrast is moderate, and there is no ghosting and blurring. The spectral characteristics are restored to be true and accurate, and there is no obvious light in the monitoring area.

The spectrum is abnormal.

6.2.4 Format

Img or GeoTIFF format.

7.1 Extraction of human activity change patterns

Use classification methods such as visual interpretation or artificial intelligence to compare the changes in the ground features in the later images and the earlier images to protect the natural coverage.

The images of the protected area are fully checked and interpreted, and the patterns of changes in human activities are extracted. Railways, hardened roads and other roads generally follow linear layers Extraction, other types of human activities are extracted according to the surface layer.

- a) The smallest extraction unit of the changing pattern Regarding the four types of human

activities. mineral resource development, industrial development, tourism development, and energy development, regardless of the size of the change map, Extract all; for other types, the minimum extraction area of the patch on the planar layer is 2x2 pixels.

b) Change pattern extraction the extraction principles of different types of human activity change patterns are as follows.

1) New image spot extraction. according to the newly added human activity texture edge extraction in the later image.

2) Enlarged map spot extraction. Based on the map spot of the human activity data of the previous period, the image texture edge extracted along the area expansion or intensity enhancement.

3) Extraction of reduced image spots. Based on the image spots of the human activity data of the previous period, the edges of the image texture with reduced area or weakened intensity are extracted.

7.2 Assignment of Attributes of Human Activity Change Maps

Assign attribute values to the extracted human activity change patterns. See Appendix C for the name, type and length requirements of each attribute field.

a) Unique code

1) Encoding based on the unique encoding of the human activity data attribute table in the previous issue. The naming rule is. the province where the human activity map belongs Part code-nature reserve type code-nature reserve code-primary human activity type code-serial number, such as "41-C-001-MD-0001", among them.

--Human activity map and province code. see Appendix D for each province code.

--Type code of nature reserve. For the type of nature reserve, please refer to the "Regarding the Establishment of a Natural Reserve System with National Parks as the Main Body" Guiding Opinions, see Appendix E for the codes of different types and levels of nature reserves.

--Nature protected area code. The code of a single nature reserve in the same type of nature reserve in its province, which is a three-digit number, from 001 starts coding.

--First-level human activity type code. See Appendix A for the first-level human activity type code.

--Serial number. The serial number of the same human activity type is coded starting from 0001. If there are multiple places in the same human activity data map space Change, add -A (B, C) after the serial number.

2) The unique code of the new patch is extended on the basis of the existing unique code of