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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 43995-2024

**Digital space photogrammetry - Specifications for aerial
triangulation**

数字航天摄影测量 空中三角测量规范

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Foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting: Please note that some of the contents of this document may involve patents: The issuing organization of this document does not assume the responsibility for identifying patents: This document is proposed by the Ministry of Natural Resources of the People's Republic of China: This document is under the jurisdiction of the National Technical Committee for Geographic Information Standardization (SAC/TC230): This document was drafted by: Institute of Surveying and Mapping Standardization, Ministry of Natural Resources, China Academy of Surveying and Mapping, Second Topographic Survey, Ministry of Natural Resources Team, Zhejiang Hexin Geographic Information Technology Co., Ltd., the First Aerial Survey and Remote Sensing Institute of the Ministry of Natural Resources, Shenzhen Surveying and Mapping Institute (Group) Co., Ltd., Sichuan Surveying and Mapping Product Quality Supervision and Inspection Station of the Ministry of Natural Resources, Wuhan University, the First Topographic Survey Team of the Ministry of Natural Resources, and Tianjin Institute of Surveying and Mapping: The main drafters of this document are: Ma Congli, Zhang Li, Zhao Wenpu, Zhang Jing, Wang Xiping, Zhang Ying, Fu Xiaoshan, Liu Nian, Peng Feiyu, Wang Zhihao, Huang Xianzhi, Zhang Guo, Zhu Zhengrong, Chen Jun, Ren Genlong, Zhang Zhijun, Huang Chen, Yao Na, Duan Yihong:

With the continuous development of aerospace technology, remote sensing satellite image data has gradually become a widely used data source due to its advantages of fast acquisition, low cost and small regional restrictions: At present, high-resolution remote sensing satellite images have gradually become an important means of obtaining spatial

information: The main data source for sensing applications: In order to adapt to the current technological development status and actual technical requirements of information acquisition based on satellite images, it is necessary to establish a complete aerospace The photogrammetry standard system fills the gap in digital aerospace photogrammetry standards: Aerial triangulation is one of the This document is an important link, and it is necessary to formulate this document to specify the relevant work content, technical process and technical requirements: Documents used in conjunction with this document Including GB/T 40766 "Specifications for Control Measurement of Digital Space Photogrammetry" and GB/T 40527 "Specifications for Digital Space Photogrammetry and Mapping": Specification for aerial triangulation of digital aerospace photogrammetry

1 Scope

GB/T 43995-2024 specifies aerial triangulation for digital satellite photogrammetry - the adjustment that ties satellite imagery to the ground and produces the orientation parameters from which every downstream map, DEM and orthophoto is made. Satellite imagery differs from aerial imagery in that the sensor is a pushbroom rather than a frame camera and the geometry is described by rational polynomial coefficients rather than by a bundle of rays from one perspective centre, so the classical block adjustment has to be reformulated and the control requirements are different. The standard sets the general requirements covering the spatial reference, the image control data, the satellite image data, the accuracy indices and the orientation parameters, then the preparation - data collection, data analysis and technical design - the measurement methods, and the workflows for single-view and single-model oriented triangulation and for block adjustment, followed by the quality inspection and the deliverables. It took effect on 1 September 2024.

This document specifies the general requirements, preparation, technical requirements, quality control, The results compilation and submission content describes the measurement methods and work processes: This document is applicable to 1:5000, 1:10000, 1:25000, Production operations of 1:50000 and 1:100000 basic geographic information digital results in the aerial triangulation stage:

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document: For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document:

GB/T 18316-2008 Quality inspection and acceptance of digital surveying and mapping results

GB/T 40766 Digital aerospace photogrammetry control measurement specification CH/T 1001 Rules for the preparation of surveying and mapping technical summaries CH/T 1004 Specification for Surveying and Mapping Technical Design

3 Terms and definitions

The following terms and definitions apply to this document: 3:

1 Based on the continuous digital images of the ground obtained by the sensors carried by the spacecraft, combined with the plane and elevation information of the control points obtained in the field, Information, the entire process of measuring and producing basic geographic information digital results using software systems: [Source: GB/T 40766-2021, 3:1] 3:

2 Stereosatellite image Satellites with the capability of stereo imaging in the same or different orbits can form stereo image pairs (the spatial intersection angle of the same-name light rays is greater than 10°): Satellite imagery: [Source: GB/T 40766-2021, 3:2] 3:

3 Satellite images acquired by satellites without stereo imaging capabilities, or satellite images acquired by satellites with stereo imaging capabilities that cannot form a stereo image For satellite images (the spatial intersection angle of the same-name rays is less than 10°): [Source: GB/T 40766-2021, 3:3] 3:

4 Image control point imagecontrolpoint A control point located at a specific position and target in the image and having coordinate information in the mapping coordinate system: