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

GB/T 16831-2013

Replacing GB/T 16831-1997

**Standard representation of geographic point location by
coordinates**

基于坐标的地理点位置标准表示法

(English Translation)

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Foreword

This standard is based on GB/T 1.1-2009 given rule drafting.

This standard replaces GB/T 16831-1997 "Geographic position latitude, longitude and elevation of the standard notation", and this standard GB/T 16831-1997 compared to the main changes are as follows.

--- Name change. "notation geographic position latitude, longitude and elevation of the standard" to "based on geographic location coordinates from the point Standard notation ";

--- Added "Conformance" "3 Normative references" "4 Terms and Definitions" "5 Acronyms" "Geographical position 6.1 Conceptual Model" "Geographical position 6.2 Basic Element" "6.3 coordinate reference system ID" "coordinate resolution 6.6" "7.1UML model" "7.2XML Representation, "and Appendix A ~ C, Appendix E ~ G and so on;

--- GB/T 16831-1997 Chapter 2 and Chapter 3 of this standard to 6.4, 6.5 and Appendix D, Appendix H, and other related content;

--- GB/T 16831-1997 The term "elevation (altitude, in the present standard which is defined as an elevation)" describes the vertical position, the present Standard uses a more generalized term "elevation (height)", and allows the vertical position using the term "depth" to describe.

This standard uses the translation method identical with the international standard ISO 6709:2008 "based on the geographic position coordinates of the standard notation." Correspondence between the consistency of the standards of international documents and normative references of the following documents.

- GB/T 19710-2005 Geographic Information Metadata (ISO 19115:2003, MOD)
- GB/T 23707-2009 geographic information spatial pattern (ISO 19107:2003, IDT)
- GB/T 30170-2013 Geographic information - Spatial referencing by coordinates (ISO 19111:2007, IDT)
- GB/T 30168-2013 Geographic information - Geodetic codes and parameters (ISO/T S19127.2005, IDT) the editorial changes made the following standard.
- Remove the ISO 6709:2008 in the scope of the third paragraph "Taking into account the previous version of the standard ISO 6709. 1983 is compatible with the needs of" the words;
- ISO 6709:2008 normative references in ISO/IEC 8859-1 and ISO 19118 only appear in the informative Appendix D Appendix G and informative, it is not part of normative references, this standard these two files from the "normative references" to "reference document "on;
- ISO 6709:2008 in FIG. 2 and FIG ETRS89 1 is replaced by the present standard CGCS2000.

This standard was proposed by the National Mapping Geographic Information Bureau.

This standard by the National Standardization Technical Committee on Geographical Information (SAC/TC230) centralized.

This standard drafting units. China National Institute of Standardization.

Introduction

Located on the ground, air or underground geographic point location data for effective exchange need be widely interpreted and identified data format.

This user in different disciplines may have different requirements. For example, when recording the longitude and latitude to take some degree and decimal degrees format Style, while others take the traditional degrees, minutes, and seconds; users may require different levels of precision, or use only the latitude and longitude instead Elevation.

Use of this standard will be able to.

- a) reduce the cost of data exchange;
- b) by providing a standard interchange format prior knowledge, to reduce the time in preparation for the exchange due to the conversion of non-standard coding structure caused delay;
- c) provide flexible support for geographic point notation.

Geographical position coordinates based on the standard notation

1 Scope

This standard applies to describe the geographical coordinates of the position switching point. This standard specifies the coordinate representation for data exchange, including latitude and longitude; also provides a location other than the level of geographic point latitude and longitude coordinate reference system used notation; also provides for the possibility of water Flat coordinates elevation and depth associated notation.

Representation includes units of measure and coordinate order.

This standard does not apply to computer memory during processing and measurement code parameter register information represents the earth.

This standard is supported by Extensible Markup Language (XML) representation of the position, and allows the use of a single alphanumeric string to describe Said position.

For computer data interchange of latitude and longitude, this standard recommends the use of general and decimal degrees; allowed six decimal notation Method. degrees, minutes and decimal minutes or degrees, minutes, seconds and decimal fractional seconds.

The standard in the implementation process does not require special internal procedures, file organization techniques, storage media, and other programming languages.

2 Conformance

To be consistent with this standard, based on the coordinate position coordinate representation shall meet the abstract test suite (see Appendix A) all of the specified condition.

3 Normative References

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

ISO/T S19103 geographic information conceptual schema language
(GeographicInformation-Conceptualschema language) ISO 19107 Geographic Information Spaces mode (GeographicInformation-Spatialschema) ISO 19111:2007 Geographic information - Spatial referencing by coordinates (GeographicInformation-Spatialreferencing bycoordinates) ISO 19115:2003 Geographic Information Metadata
(GeographicInformation-Metadata) ISO/T S19127 Geographic information - Geodetic encoding parameters (GeographicInformation-Geodeticcodesand parameters) ISO 19133 Geographic information tracking and navigation location-based services
(GeographicInformation-Locationbased services-Trackingandnavigation)

4 Terms and Definitions

The following terms and definitions apply to this document.

Accuracy

The closeness of test results or measurement results and the true value.

[ISO 3534-2:2006]