AS/NZS ISO 19161.1:2020
ISO 19161-1:2020

Australian/New Zealand Standard™

Geographic information — Geodetic references

Part 1: International terrestrial reference system (ITRS)

AS/NZS ISO 19161.1:2020

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First published as AS/NZS ISO 19161.1:2020.

Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee IT-004, Geographical Information/Geomatics.

The objective of this document is to provide the basic information and the requirements related to the International Terrestrial Reference System (ITRS), its definition, its realizations and how to access and use these realizations.

This document —

(a) describes ITRS following the definitions and terminology adopted by the International Union of Geodesy and Geophysics (IUGG), the International Association of Geodesy (IAG) and the International Astronomical Union (IAU);

(b) describes different categories of ITRS realizations: its primary realization, labelled the International Terrestrial Reference Frame (ITRF), other existing realizations of reference systems that are mathematically derived from the ITRS, and realizations that are aligned to the ITRF, such as GNSS-specific reference frames; and

(c) categorizes procedures for realizing the ITRS.

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Contents

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 211, *Geographic information/Geomatics*.

A list of all parts in the ISO 19161 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document provides the basic information and definitions related to the International Terrestrial Reference System (ITRS), its realizations and how to access these realizations. These are consistent with the conventions adopted by the international scientific organizations that created this concept, which are the International Union of Geodesy and Geophysics (IUGG), specifically its association in charge of geodesy, the International Association of Geodesy (IAG), and the International Astronomical Union (IAU).

The various realizations of ITRS are then presented as crust-based reference frames, which are global, regional or local, and as satellite ephemerides, such as those broadcasted by satellite navigation systems.

Annex A of this document describes the access methods to ITRS and the various processes required to determine positions expressed in this system.

NOTES

Australian/New Zealand Standard

Geographic information — Geodetic references

Part 1: International terrestrial reference system (ITRS)

1 Scope

This document provides the basic information and the requirements related to the International Terrestrial Reference System (ITRS), its definition, its realizations and how to access and use these realizations.

This document:

— describes ITRS following the definitions and terminology adopted by the International Union of Geodesy and Geophysics (IUGG), the International Association of Geodesy (IAG) and the International Astronomical Union (IAU);

— describes different categories of ITRS realizations: its primary realization, labelled the International Terrestrial Reference Frame (ITRF), other existing realizations of reference systems that are mathematically derived from the ITRS, and realizations that are aligned to the ITRF, such as GNSS-specific reference frames;

— categorizes procedures for realizing the ITRS.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
coordinate system
set of mathematical rules for specifying how coordinates are to be assigned to points

[SOURCE: ISO 19111:2019, 3.1.11]

3.2
geocentric terrestrial reference system
GTRS
system of geocentric space-time coordinates within the framework of General Relativity, co-rotating with the Earth and related to the Geocentric Celestial Reference System by a spatial rotation which takes into account the Earth's orientation parameters

[SOURCE: IAG and IUGG resolutions of 1991 and 2007]

3.3
positioning process
computational process that determines, directly from measurements, the geodetic coordinates of points (absolute positioning), or that derives geodetic coordinates of points from previously determined geodetic coordinates (relative positioning)