OGC® DOCUMENT: 18-053R2

**External identifier of this OGC® document:** http://www.opengis.net/docs/CS/3DTiles/1.0

Open Geospatial Consortium

# OGC DOCUMENT TITLE

## COMMUNITY STANDARD

**APPROVED**

**Version:** 1.0
**Submission Date:** 2018-06-04
**Approval Date:** 2018-12-14
**Publication Date:** 2019-01-31
**Editor:** Patrick Cozzi, Sean Lilley

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# I ABSTRACT

<Insert Abstract Text here>

# II KEYWORDS

The following are keywords to be used by search engines and document catalogues.

keyword_1, keyword_2, keyword_3, etc.

# PREFACE

This document establishes the OGC CRS ontology and its submodules. The definition of elements of coordinate reference systems is an essential part of geospatial data provision. However, until now, coordinate reference systems and their components could not be represented in an OGC-standardized semantic web vocabulary. This document introduces the ontology model, its classes and properties, application examples and can serve as the foundation of a semantic web based coordinate system registry at OGC. Special attention is given to the compatibility of the CRS Ontology vocabulary to other OGC-endorsed Semantic Web standards such as GeoSPARQL and alignments to other data standards are provided as part of this specification.

**NOTE:** Insert Preface Text here. Give OGC specific commentary: describe the technical content, reason for document, history of the document and precursors, and plans for future work.

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# IV SECURITY CONSIDERATIONS

No security considerations have been made for this Standard.

# V SUBMITTERS

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# VI SOURCE OF THE CONTENT FOR THIS OGC DOCUMENT

# VII VALIDITY OF CONTENT

# VIII FUTURE WORK

**NOTE:** If you need to place any further sections in the preface area use the `[.preface]` attribute.

# CONTRIBUTORS

Additional contributors to this Standard include the following:

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# 1 SCOPE

# 1 SCOPE

<Insert Scope text here>

**NOTE:** Give the subject of the document and the aspects of that scope covered by the document.

# 2 CONFORMANCE

# 2 CONFORMANCE

<Insert conformance content here>

**NOTE:** Provide a short description of the content approached in subsequent sections and the main subject of the document

# 3 NORMATIVE REFERENCES

# 3 NORMATIVE REFERENCES

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

*Identification of Common Molecular Subsequences*. Smith, T.F., Waterman, M.S., J. Mol. Biol. 147, 195–197 (1981)

*ZIB Structure Prediction Pipeline: Composing a Complex Biological Workflow through Web Services*. May, P., Ehrlich, H.C., Steinke, T. In: Nagel, W.E., Walter, W.V., Lehner, W. (eds.) Euro-Par 2006. LNCS, vol. 4128, pp. 1148–1158. Springer, Heidelberg (2006)

*The Grid: Blueprint for a New Computing Infrastructure.*, Foster, I., Kesselman, C.. Morgan Kaufmann, San Francisco (1999).

*Grid Information Services for Distributed Resource Sharing*. Czajkowski, K., Fitzgerald, S., Foster, I., Kesselman, C. In: 10th IEEE International Symposium on High Performance Distributed Computing, pp. 181–184. IEEE Press, New York (2001)

# 4 TERMS AND DEFINITIONS

# 4 TERMS AND DEFINITIONS

This document uses the terms defined in OGC Policy Directive 49, which is based on the ISO/IEC Directives, Part 2, Rules for the structure and drafting of International Standards. In particular, the word “shall” (not “must”) is the verb form used to indicate a requirement to be strictly followed to conform to this document and OGC documents do not use the equivalent phrases in the ISO/IEC Directives, Part 2.

This document also uses terms defined in the OGC Standard for Modular specifications (OGC 08-131r3), also known as the ‘ModSpec’. The definitions of terms such as standard, specification, requirement, and conformance test are provided in the ModSpec.

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

## 4.1. example term

term used for exemplary purposes

**Note 1 to entry:** An example note.

Example Here’s an example of an example term.

[**SOURCE:** ]

5

# CONVENTIONS

# 5 CONVENTIONS

**NOTE:** This section provides details and examples for any conventions used in the document. Examples of conventions are symbols, abbreviations, use of XML schema, or special notes regarding how to read the document.

## 5.1. Identifiers

The normative provisions in this standard are denoted by the URI

`http://www.opengis.net/spec/{standard}/{m.n}`

All requirements and conformance tests that appear in this document are denoted by partial URIs which are relative to this base.

## 5.2. Other conventions

<Place any other convention needed with its corresponding title>

# 6

# CORE

# 6 CORE

This clause establishes the **Core** Requirements class, with IRI `/req/core`, which has a corresponding Conformance Class, **Core**, with IRI `/conf/core`.

The Core module establishes a set of classes and properties which define the building blocks of a spatial reference system definition. Some of the definitions are extended in specialized modules related to the Core module.

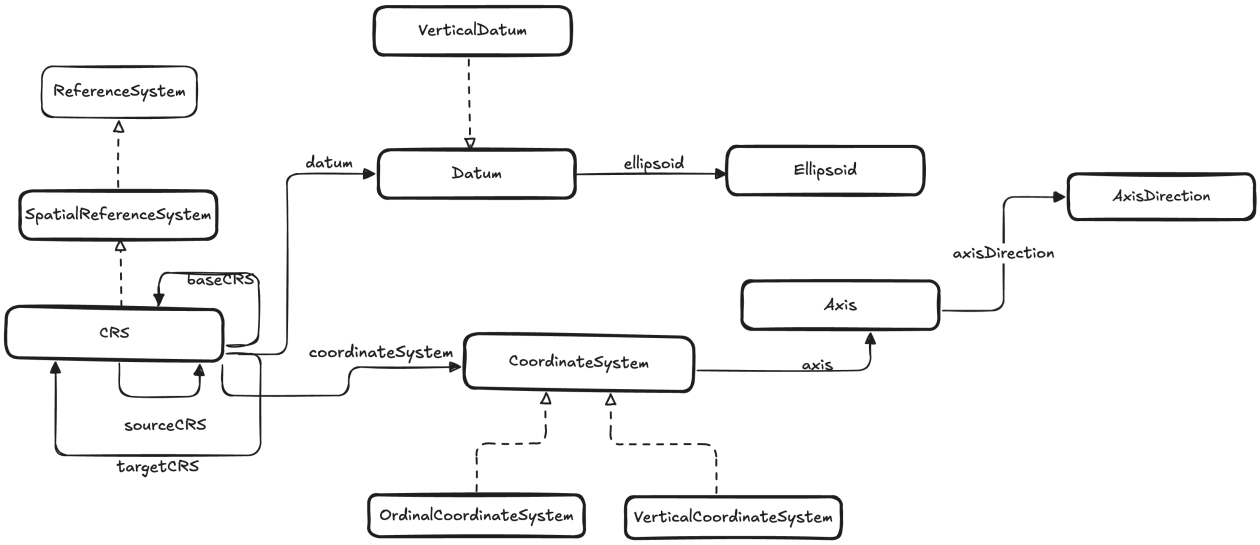


Figure 1

From a base class SpatialReferenceSystem, we define a class for a coordinate system, as the superclass of all spatial reference systems describing locations using coorindates. These SpatialReferenceSystems are described using a Datum and a coordinate system definitions with at least one coordinate axis. Together with several subtypes of coordnate reference system, these definitions complete the Core module.

| REQUIREMENTS CLASS 1: 06-CORE.ADOC EXTENSION | |
|---|---|
| **IDENTIFIER** | `/req/06-core.adoc` |
| **TARGET TYPE** | Implementation Specification |
| **REQUIREMENT** | /req/Coordinate_Reference_System_Parameters |
| | /req/Coordinate_Reference_System_Types |
| | /req/Coordinate_Reference_System_Properties |

## 6.1. Coordinate Reference System Parameters

| REQUIREMENT 1: COORDINATE REFERENCE SYSTEM PARAMETERS | |
|---|---|
| **IDENTIFIER** | `/req/Coordinate_Reference_System_Parameters` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:AreaOfUse, geosrs:Extent, geosrs:GeographicBoundingBox, geosrs:AxesList, geosrs:SingleCRSList to be used in SPARQL graph patterns. |

### 6.1.1. Class: geosrs:AreaOfUse

**Table 1** — geosrs:AreaOfUse

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/AreaOfUse |
| Definition | Area within which a coordinate operation may be used. |
| Example | geosrs:AreaOfUse |

### 6.1.2. Class: geosrs:Extent

**Table 2** — geosrs:Extent

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/Extent |
| Definition | Geographic area or time interval in which the referring object is valid. Cf. ISO 19115-1:2014:2014-04, part 6.6.1 and table B.15 line 335. |

### 6.1.3. Class: geosrs:GeographicBoundingBox

**Table 3** — geosrs:GeographicBoundingBox

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/GeographicBoundingBox |
| Definition | Frame delimiting an area of interest. See ISO 19115-1:2014:2014-04, part 6.6.1 and table B.15.1 line 344. |

### 6.1.4. Class: geosrs:AxesList

**Table 4** — geosrs:AxesList

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/AxesList |
| Definition | Ordered list of coordinate system axes. |

### 6.1.5. Class: geosrs:SingleCRSList

**Table 5** — geosrs:SingleCRSList

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/SingleCRSList |
| Definition | Ordered list of simple reference coordinate systems. |

## 6.2. Coordinate Reference System Properties

| REQUIREMENT 2: COORDINATE REFERENCE SYSTEM PROPERTIES | |
|---|---|
| **IDENTIFIER** | `/req/Coordinate_Reference_System_Properties` |
| **STATEMENT** | Implementations shall allow the RDFS properties geosrs:baseCRS, geosrs:conversion, geosrs:coordinateSystem, geosrs:datum, geosrs:datumEnsemble, geosrs:domainOfValidity, geosrs:method, geocrs:asProj4, geocrs:asProjJSON, geocrs:asWKT, geosrs:EPSGcode to be used in SPARQL graph patterns. |

### 6.2.1. Property: geosrs:baseCRS

**Table 6** — geosrs:baseCRS

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/baseCRS |
| Type | owl:ObjectProperty |

| | |
|---|---|
| Definition | The geodetic coordinate reference system on which a projected coordinate reference system is based. Cf. ISO 19111:2007:2007-07, table 11, association role base CRS. |
| Range | GeodeticCRS |
| Domain | ProjectedCRS |

### 6.2.2. Property: geosrs:conversion

**Table 7** — geosrs:conversion

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/conversion |
| Type | owl:ObjectProperty |
| Definition | The conversion used to define a projected coordinate reference system. Cf. ISO 19111:2007:2007-07, table 7, named association Definition. |
| Range | Conversion |
| Domain | CRS |

### 6.2.3. Property: geosrs:coordinateSystem

**Table 8** — geosrs:coordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/coordinateSystem |
| Type | owl:ObjectProperty |
| Definition | The property relates a coordinate reference system to its coordinate system |
| Range | CoordinateSystem |
| Domain | CRS |
| Example | geosrs:coordinateSystem |

### 6.2.4. Property: geosrs:datum

**Table 9** — geosrs:datum

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/datum |
| Type | owl:ObjectProperty |
| Definition | The property relates a coordinate reference system to a datum |
| Range | Datum |
| Domain | CRS |

### 6.2.5. Property: geosrs:datumEnsemble

**Table 10** — geosrs:datumEnsemble

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/datumEnsemble |
| Type | owl:ObjectProperty |
| Definition | Indicates a single CRS referring to a collection of one or more datums (Datum Ensemble) |
| Range | DatumEnsemble |
| Domain | SingleCRS |

### 6.2.6. Property: geosrs:domainOfValidity

**Table 11** — geosrs:domainOfValidity

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/domainOfValidity |
| Type | owl:ObjectProperty |
| Definition | Geographic area or time interval in which the referring object is valid. Cf. ISO 19111:2007:2007-07, tables 4, 33 and 42, attribute domainOfValidity. |

| | |
|---|---|
| Range | AreaOfUse |
| Domain | CRS |

### 6.2.7. Property: geosrs:method

**Table 12** — geosrs:method

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/method |
| Type | owl:ObjectProperty |
| Range | CoordinateOperation |
| Domain | CRS |

### 6.2.8. Property: geocrs:asProj4

**Table 13** — geocrs:asProj4

| | |
|---|---|
| URI | geocrs:asProj4 |
| Type | owl:DatatypeProperty |
| Definition | PROJ4 string defining a CRS. Note: this paradigm is ambiguous and presently considered outdated. |
| Range | proj4Literal |
| Domain | CRS |

### 6.2.9. Property: geocrs:asProjJSON

**Table 14** — geocrs:asProjJSON

| | |
|---|---|
| URI | geocrs:asProjJSON |
| Type | owl:DatatypeProperty |

| | |
|---|---|
| Definition | CRS definition encoded as a JSON object interpretable by PROJ4. |
| Range | projJSONLiteral |
| Domain | CRS |

### 6.2.10. Property: geocrs:asWKT

**Table 15** — geocrs:asWKT

| | |
|---|---|
| URI | geocrs:asWKT |
| Type | owl:DatatypeProperty |
| Definition | CRS definition encoded according to the Well Known Text structure. Cf. ISO 19162:2019. |
| Range | wktLiteral |
| Domain | CRS |

### 6.2.11. Property: geosrs:EPSGcode

**Table 16** — geosrs:EPSGcode

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/EPSGcode |
| Type | owl:DatatypeProperty |
| Definition | Identifier of this resource in the EPSG Geodetic Parameter Dataset. |
| Range | xsd:string |

## 6.3. Coordinate Reference System Types

| REQUIREMENT 3: COORDINATE REFERENCE SYSTEM TYPES | |
|---|---|
| **IDENTIFIER** | `/req/Coordinate_Reference_System_Types` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:BoundCRS, geosrs:CompoundCRS, geosrs:CRS, geosrs:EngineeringCRS, geosrs:GeocentricCRS, geosrs:GeodeticCRS, geosrs:GeographicCRS, geosrs:ParametricCRS, geosrs:ProjectedCRS, geosrs:SelenographicCRS, geosrs:ReferenceSystem, geosrs:SingleCRS, geosrs:SpatialReferenceSystem, geosrs:SpatioParametricCompoundCRS, geosrs:SpatioParametricTemporalCompoundCRS, geosrs:SpatioTemporalCompoundCRS, geosrs:StaticCRS, geosrs:TemporalCRS, geosrs:VerticalCRS to be used in SPARQL graph patterns. |

Coordinate reference systems are typed according to their area of application, e.g. Geodetic vs. Engineering vs. TemporalCRS and by their ability to contain further

### 6.3.1. Class: geosrs:BoundCRS

**Table 17** — geosrs:BoundCRS

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/BoundCRS |
| Super-classes | CRS |

### 6.3.2. Class: geosrs:CompoundCRS

**Table 18** — geosrs:CompoundCRS

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/CompoundCRS |
| Definition | Coordinate reference system using at least two independent single coordinate reference systems. Cf. ISO 19111:2007:2007-07, parts 8.2.3.c, 8.2.4, table 6 and annex B.1.2.4. |
| Super-classes | CRS |
| Example | geosrs:CompoundCRS |

### 6.3.3. Class: geosrs:CRS

**Table 19** — geosrs:CRS

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/CRS |
| Definition | Depending on the spatial dimension of coordinates (1D, 2D, 3D), this piece of metadata is used for specifying the elements of definition associated to a given set of coordinates: its datum, its ellipsoid, its prime meridian, the type of coordinates (geocentric, geographic, projected,...), the coordinates units of measure, when appropriate the cartographic projection used, the vertical coordinate reference system. |
| Super-classes | SpatialReferenceSystem |

## 6.3.4. Class: geosrs:EngineeringCRS

**Table 20** — geosrs:EngineeringCRS

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/EngineeringCRS |
| Definition | A contextually local coordinate reference system which can be divided into two broad categories: — earth-fixed systems applied to engineering activities on or near the surface of the earth; — CRSs on moving platforms such as road vehicles, vessels, aircraft or spacecraft. |
| Super-classes | CRS |

## 6.3.5. Class: geosrs:GeocentricCRS

**Table 21** — geosrs:GeocentricCRS

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/GeocentricCRS |
| Definition | A cartesian coordinate reference system that represents locations in the vicinity of the Earth (including its surface, interior, atmosphere, and surrounding outer space) as X, Y, and Z measurements from its center of mass. Commonly used to track the orbits of satellites. |
| Super-classes | CRS |
| Example | geosrs:GeocentricCRS |

### 6.3.6. Class: geosrs:GeodeticCRS

**Table 22** — geosrs:GeodeticCRS

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/GeodeticCRS |
| Definition | Coordinate Reference System associated with a geodetic datum. Cf. ISO 19111:2007:2007-07, part 8.2.2.a, table 10 and annex B.1.2.1.a. |
| Super-classes | CRS |

### 6.3.7. Class: geosrs:GeographicCRS

**Table 23** — geosrs:GeographicCRS

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/GeographicCRS |
| Definition | Coordinate Reference System that has a geodetic reference frame and an ellipsoidal coordinate system |
| Super-classes | CRS |
| Example | geosrs:GeographicCRS |

### 6.3.8. Class: geosrs:ParametricCRS

**Table 24** — geosrs:ParametricCRS

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/ParametricCRS |
| Definition | Coordinate Reference System based on a parametric datum |
| Super-classes | CRS |

### 6.3.9. Class: geosrs:ProjectedCRS

**Table 25** — geosrs:ProjectedCRS

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/ProjectedCRS |
| Definition | Coordinate Reference System derived from a two-dimensional geodetic coordinate reference system by applying a map projection. Cf. ISO 19111:2007:2007-07, part 8.2.3.b, table 11 and annex B.1.2.3. |
| Super-classes | CRS |
| Example | geosrs:ProjectedCRS |

## 6.3.10. Class: geosrs:SelenographicCRS

**Table 26** — geosrs:SelenographicCRS

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/SelenographicCRS |
| Definition | Coordinate Reference System to refer locations on the surface of the Earth's Moon. |
| Super-classes | CRS |

## 6.3.11. Class: geosrs:ReferenceSystem

**Table 27** — geosrs:ReferenceSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/ReferenceSystem |
| Definition | An abstract coordinate system, whose origin, orientation and scale are specified in physical space. It is based on a set of reference points, defined as geometric points whose position is identified physically and mathematically. |

## 6.3.12. Class: geosrs:SingleCRS

**Table 28** — geosrs:SingleCRS

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/SingleCRS |

| | |
|---|---|
| Definition | Coordinate reference system consisting of one coordinate system and one datum. Cf. ISO 19111:2007:2007-07, table 5. |
| Super-classes | CRS |

## 6.3.13. Class: geosrs:SpatialReferenceSystem

**Table 29** — geosrs:SpatialReferenceSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/SpatialReferenceSystem |
| Definition | A spatial reference system (SRS) is a system for establishing spatial position. A spatial reference system can use geographic identifiers (place names, for example), coordinates (in which case it is a coordinate reference system), or identifiers with structured geometry (in which case it is a discrete global grid system). |
| Super-classes | ReferenceSystem |

## 6.3.14. Class: geosrs:SpatioParametricCompoundCRS

**Table 30** — geosrs:SpatioParametricCompoundCRS

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/SpatioParametricCompoundCRS |
| Definition | A spatio-parametric coordinate reference system is a compound CRS in which one component is a geographic 2D, projected 2D or engineering 2D CRS, supplemented by a parametric CRS to create a three-dimensional CRS |
| Super-classes | CompoundCRS |

## 6.3.15. Class: geosrs:SpatioParametricTemporalCompoundCRS

**Table 31** — geosrs:SpatioParametricTemporalCompoundCRS

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/SpatioParametricTemporalCompoundCRS |

| | |
|---|---|
| Definition | Coordinate reference system combining a spatio-parametric reference system with at least one temporal reference system |
| Super-classes | SpatioParametricCompoundCRS |

### 6.3.16. Class: geosrs:SpatioTemporalCompoundCRS

**Table 32** — geosrs:SpatioTemporalCompoundCRS

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/SpatioTemporalCompoundCRS |
| Definition | Coordinate reference system combining a spatial reference system with at least one temporal reference system |
| Super-classes | CompoundCRS |

### 6.3.17. Class: geosrs:StaticCRS

**Table 33** — geosrs:StaticCRS

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/StaticCRS |
| Definition | Coordinate Reference System that has a static reference frame |
| Super-classes | CRS |

### 6.3.18. Class: geosrs:TemporalCRS

**Table 34** — geosrs:TemporalCRS

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/TemporalCRS |
| Definition | Coordinate Reference System based on a temporal datum |
| Super-classes | CRS |

## 6.3.19. Class: geosrs:VerticalCRS

**Table 35** — geosrs:VerticalCRS

| | |
|---|---|
| URI | https://w3id.org/geosrs/srs/VerticalCRS |
| Definition | One-dimensional coordinate reference system associated with a vertical datum and used for recording heights or depths.Ellipsoidal heights are not captured in a vertical coordinate reference system but as part of a 3D coordinates tuple defined in a geodetic 3D coordinate reference system. Cf. ISO 19111:2007:2007-07, parts 8.2.2.b, table 14 and annex B.1.2.1.b. |
| Super-classes | CRS |
| Example | geosrs:VerticalCRS |

7

# COORDINATE OPERATION MODULE

# 7 COORDINATE OPERATION MODULE

This clause establishes the **Co** Requirements class, with IRI `/req/co`, which has a corresponding Conformance Class, **Co**, with IRI `/conf/co`.

| REQUIREMENTS CLASS 2: 07-CO_MODULE.ADOC EXTENSION | |
|---|---|
| **IDENTIFIER** | `/req/07-co_module.adoc` |
| **TARGET TYPE** | Implementation Specification |
| **REQUIREMENT** | /req/Coordinate_Operation_Methods<br>/req/Coordinate_Operation_Parameters<br>/req/Coordinate_Operation_Categories<br>/req/Coordinate_Operation_Properties |

## 7.1. Coordinate Operation Categories

| REQUIREMENT 4: COORDINATE OPERATION CATEGORIES | |
|---|---|
| **IDENTIFIER** | `/req/Coordinate_Operation_Categories` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:GeographicObject, geosrs:Register Operations, geosrs:ScaleOperation, geosrs:RotationOperation, geosrs:IdentityOperation, geosrs: ShearOperation, geosrs:TranslationOperation, geosrs:AffineTransformationOperation, geocrs: CoordinateTransformationOperation to be used in SPARQL graph patterns. |

### 7.1.1. Class: geosrs:GeographicObject

**Table 36** — geosrs:GeographicObject

| | |
|---|---|
| URI | https://w3id.org/geosrs/co/GeographicObject |
| Definition | Identifier of a geographic feature of which the coordinates are used as operation parameters. |

| | |
|---|---|
| Super-classes | iso19107:Geometry[iso19107:Geometry] |

### 7.1.2. Class: geosrs:RegisterOperations

**Table 37** — geosrs:RegisterOperations

| | |
|---|---|
| URI | https://w3id.org/geosrs/co/RegisterOperations |
| Definition | Operations supported in the Coordinate Operations package. |

### 7.1.3. Class: geosrs:ScaleOperation

**Table 38** — geosrs:ScaleOperation

| | |
|---|---|
| URI | https://w3id.org/geosrs/co/ScaleOperation |
| Definition | Scale transformation operation |
| Super-classes | AffineTransformationOperation |

### 7.1.4. Class: geosrs:RotationOperation

**Table 39** — geosrs:RotationOperation

| | |
|---|---|
| URI | https://w3id.org/geosrs/co/RotationOperation |
| Definition | Rotation transformation operation |
| Super-classes | AffineTransformationOperation |

### 7.1.5. Class: geosrs:IdentityOperation

**Table 40** — geosrs:IdentityOperation

| | |
|---|---|
| URI | https://w3id.org/geosrs/co/IdentityOperation |

| | |
|---|---|
| Definition | Identity transformation operation |
| Super-classes | AffineTransformationOperation |

### 7.1.6. Class: geosrs:ShearOperation

**Table 41** — geosrs:ShearOperation

| | |
|---|---|
| URI | https://w3id.org/geosrs/co/ShearOperation |
| Definition | Shear transformation operation |
| Super-classes | AffineTransformationOperation |

### 7.1.7. Class: geosrs:TranslationOperation

**Table 42** — geosrs:TranslationOperation

| | |
|---|---|
| URI | https://w3id.org/geosrs/co/TranslationOperation |
| Definition | Translation transformation operation |
| Super-classes | AffineTransformationOperation |

### 7.1.8. Class: geosrs:AffineTransformationOperation

**Table 43** — geosrs:AffineTransformationOperation

| | |
|---|---|
| URI | https://w3id.org/geosrs/co/AffineTransformationOperation |
| Definition | Affine coordinate transformation operation |
| Super-classes | CoordinateTransformationOperation [] |

### 7.1.9. Class: geocrs:CoordinateTransformationOperation

**Table 44** — geocrs:CoordinateTransformationOperation

| | |
|---|---|
| URI | geocrs:CoordinateTransformationOperation[] |
| Definition | Coordinate operation in which the two coordinate reference systems are based on different datums. |
| Super-classes | SingleOperation |

## 7.2. Coordinate Operation Methods

| REQUIREMENT 5: COORDINATE OPERATION METHODS | |
|---|---|
| **IDENTIFIER** | `/req/Coordinate_Operation_Methods` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:CoordinateOperation, geosrs:PassThrough Operation, geosrs:ConcatenatedOperation, geosrs:SingleOperation, geosrs:Transformation, geosrs:Conversion, geosrs:PointMotionOperation, geosrs:OperationMethod to be used in SPARQL graph patterns. |

### 7.2.1. Class: geosrs:PassThroughOperation

**Table 45** — geosrs:PassThroughOperation

| | |
|---|---|
| URI | https://w3id.org/geosrs/co/PassThroughOperation |
| Definition | Specification of a subset of coordinate tuples that is subject to a coordinate operation |
| Super-classes | CoordinateOperation |

### 7.2.2. Class: geosrs:ConcatenatedOperation

**Table 46** — geosrs:ConcatenatedOperation

| | |
|---|---|
| URI | https://w3id.org/geosrs/co/ConcatenatedOperation |
| Definition | Ordered sequence of two or more single coordinate operations. Note: The sequence of coordinate operations is constrained by the requirement that the source |

| | |
|---|---|
| | coordinate reference system of step (n + 1) shall be the same as the target coordinate reference system of step (n). The source coordinate reference system of the first step and the target coordinate reference system of the last step are the source and target coordinate reference system associated with the concatenated coordinate operation. For a concatenated coordinate operation sequence of n coordinate operations: source CRS (concatenated coordinate operation) .eq. source CRS (coordinate operation step 1) target CRS (coordinate operation step i) .eq. source CRS (coordinate operation step i + 1); i .eq. 1 ...(n — 1) target CRS (concatenated coordinate operation) .eq. target CRS (coordinate operation step n) Instead of a forward coordinate operation, an inverse coordinate operation may be used for one or more of the coordinate operation steps mentioned above, if the inverse coordinate operation is uniquely defined by the forward coordinate operation method. |
| Super-classes | CoordinateOperation |

### 7.2.3. Class: geosrs:PointMotionOperation

**Table 47** — geosrs:PointMotionOperation

| | |
|---|---|
| URI | https://w3id.org/geosrs/co/PointMotionOperation |
| Definition | Mathematical operation that decribes the change of coordinate values within one coordinate reference system due to the motion of the point between one coordinate epoch and another coordinate epoch Note: In this document the motion is due to tectonic plate movement or deformation. |
| Super-classes | SingleOperation |

## 7.3. Coordinate Operation Parameters

| REQUIREMENT 6: COORDINATE OPERATION PARAMETERS | |
|---|---|
| **IDENTIFIER** | `/req/Coordinate_Operation_Parameters` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:GeneralOperationParameter, geosrs:OperationParameterGroup, geosrs:OperationParameter, geosrs:GeneralParameterValue, geosrs:ParameterValueGroup, geosrs:OperationParameterValue to be used in SPARQL graph patterns. |

### 7.3.1. Class: geosrs:OperationParameterGroup

**Table 48** — geosrs:OperationParameterGroup

| | |
|---|---|
| URI | https://w3id.org/geosrs/co/OperationParameterGroup |
| Definition | Definition of a group of related parameters used by a coordinate operation method. |
| Super-classes | GeneralOperationParameter |

### 7.3.2. Class: geosrs:ParameterValueGroup

**Table 49** — geosrs:ParameterValueGroup

| | |
|---|---|
| URI | https://w3id.org/geosrs/co/ParameterValueGroup |
| Definition | Group of related parameter values. Note: The same group can be repeated more than once in a coordinate operation or higher level ParameterValueGroup, if those instances contain different values of one or more ParameterValues which suitably distinguish among those groups. |
| Super-classes | GeneralParameterValue |

## 7.4. Coordinate Operation Properties

| REQUIREMENT 7: COORDINATE OPERATION PROPERTIES | |
|---|---|
| **IDENTIFIER** | `/req/Coordinate_Operation_Properties` |
| **STATEMENT** | Implementations shall allow the RDFS properties geosrs:derivingConversion, geosrs:parameter, geosrs:sourceCRS, geosrs:targetCRS to be used in SPARQL graph patterns. |

### 7.4.1. Property: geosrs:derivingConversion

**Table 50** — geosrs:derivingConversion

| | |
|---|---|
| URI | https://w3id.org/geosrs/co/derivingConversion |
| Type | owl:ObjectProperty |
| Definition | Relates a derived CRS to a conversion |
| Range | Conversion |
| Domain | DerivedCRS |

### 7.4.2. Property: geosrs:parameter

**Table 51** — geosrs:parameter

| | |
|---|---|
| URI | https://w3id.org/geosrs/co/parameter |
| Type | owl:ObjectProperty |
| Definition | Value of the datum-defining parameter |
| Range | OperationParameter |
| Domain | Conversion |

### 7.4.3. Property: geosrs:sourceCRS

**Table 52** — geosrs:sourceCRS

| | |
|---|---|
| URI | https://w3id.org/geosrs/co/sourceCRS |
| Type | owl:ObjectProperty |
| Definition | The coordinate reference system associated to the data used as input of a given operation. Cf. ISO 19111:2007:2007-07, table 42, named association Source. |
| Range | CRS |
| Domain | CoordinateOperation |
| Example | geosrs:sourceCRS |

## 7.4.4. Property: geosrs:targetCRS

**Table 53** — geosrs:targetCRS

| | |
|---|---|
| URI | https://w3id.org/geosrs/co/targetCRS |
| Type | owl:ObjectProperty |
| Definition | The coordinate reference system associated to the data obtained as output of a given operation. Cf. ISO 19111:2007:2007-07, table 42, named association Target. |
| Range | CRS |
| Domain | CoordinateOperation |

8

# COORDINATE SYSTEM MODULE

# 8 COORDINATE SYSTEM MODULE

This clause establishes the **CS** Requirements class, with IRI `/req/cs`, which has a corresponding Conformance Class, **CS**, with IRI `/conf/cs`.

The coordinate system module introduces different types of coordinate systems which are dinstinguished in geospatial science and applications. Coordinate systems are distinguished by their area of use, i.e planetary or interstellar and by their multidimensionality.

| REQUIREMENTS CLASS 3: 08-CS_MODULE.ADOC EXTENSION | |
|---|---|
| **IDENTIFIER** | `/req/08-cs_module.adoc` |
| **TARGET TYPE** | Implementation Specification |
| **REQUIREMENT** | /req/Temporal_Coordinate_Systems<br>/req/3D_Coordinate_Systems<br>/req/Coordinate_System_Types<br>/req/Celestial_Coordinate_Systems<br>/req/Coordinate_System_Components<br>/req/Coordinate_System_Properties |

## 8.1. 3D Coordinate Systems

| REQUIREMENT 8: 3D COORDINATE SYSTEMS | |
|---|---|
| **IDENTIFIER** | `/req/3D_Coordinate_Systems` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:3DCoordinateSystem, geosrs:Conical CoordinateSystem, geosrs:CylindricalCoordinateSystem, geosrs:EllipsoidalCoordinateSystem, geosrs:SphericalCoordinateSystem to be used in SPARQL graph patterns. |

### 8.1.1. Class: geosrs:3DCoordinateSystem

The class geosrs:3DCoordinateSystem describes a coordinate system in three dimesions. These coordinate systems are common for 3D representations or 2D representations with a time aspect.

**Table 54** — geosrs:3DCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/3DCoordinateSystem |
| Definition | Non-repeating sequence of coordinate system axes that spans a given coordinate space in three dimensions |
| Super-classes | CoordinateSystem |
| Example | geosrs:3DCoordinateSystem |

### 8.1.2. Class: geosrs:ConicalCoordinateSystem

**Table 55** — geosrs:ConicalCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/ConicalCoordinateSystem |
| Definition | A conical coordinate system is a three-dimensional orthogonal coordinate system consisting of concentric spheres (described by their radius r) and by two families of perpendicular cones, aligned along the z- and x-axes, respectively |
| Super-classes | OrthogonalCoordinateSystem |

### 8.1.3. Class: geosrs:CylindricalCoordinateSystem

**Table 56** — geosrs:CylindricalCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/CylindricalCoordinateSystem |
| Definition | Three-dimensional coordinate system in Euclidean space in which position is specified by two linear coordinates and one angular coordinate |

| | |
|---|---|
| Super-classes | 3DCoordinateSystem |

## 8.2. Celestial Coordinate Systems

| REQUIREMENT 9: CELESTIAL COORDINATE SYSTEMS | |
|---|---|
| **IDENTIFIER** | `/req/Celestial_Coordinate_Systems` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:CelestialCoordinateSystem, geosrs:EclipticCoordinateSystem, geosrs:EquatorialCoordinateSystem, geosrs:GalacticCoordinateSystem, geosrs:HorizontalCoordinateSystem, geosrs:PerifocalCoordinateSystem, geosrs:SuperGalacticCS to be used in SPARQL graph patterns. |

### 8.2.1. Class: geosrs:CelestialCoordinateSystem

**Table 57** — geosrs:CelestialCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/CelestialCoordinateSystem |
| Definition | A coordinate system for specifying positions of celestial objects relative to physical reference points |
| Super-classes | CoordinateSystem |

### 8.2.2. Class: geosrs:EclipticCoordinateSystem

**Table 58** — geosrs:EclipticCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/EclipticCoordinateSystem |
| Definition | An ecliptic coordinate system is used for representing the apparent positions and orbits of solar system objects. |
| Super-classes | CelestialCoordinateSystem |

### 8.2.3. Class: geosrs:EquatorialCoordinateSystem

**Table 59** — geosrs:EquatorialCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/EquatorialCoordinateSystem |
| Definition | A celestial coordinate system in which an object's position on the celestial sphere is described in terms of its north-south declination and east-west right ascension, measured relative to the celestial equator and vernal equinox, respectively. |
| Super-classes | CelestialCoordinateSystem |

## 8.2.4. Class: geosrs:GalacticCoordinateSystem

**Table 60** — geosrs:GalacticCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/GalacticCoordinateSystem |
| Definition | A coordinate system with the Sun as its center, the primary direction aligned with the approximate center of the Milky Way Galaxy, and the fundamental plane parallel to an approximation of the galactic plane but offset to its north. |
| Super-classes | CelestialCoordinateSystem 3DCoordinateSystem |

## 8.2.5. Class: geosrs:HorizontalCoordinateSystem

**Table 61** — geosrs:HorizontalCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/HorizontalCoordinateSystem |
| Definition | A horizontal coordinate system is a celestial coordinate system that uses the observer's local horizon as the fundamental plane. |
| Super-classes | CelestialCoordinateSystem |

## 8.2.6. Class: geosrs:PerifocalCoordinateSystem

**Table 62** — geosrs:PerifocalCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/PerifocalCoordinateSystem |
| Definition | A frame of reference centered at the focus of the orbit, i. e. the celestial body about which the orbit is centered. |
| Super-classes | CelestialCoordinateSystem |

### 8.2.7. Class: geosrs:SuperGalacticCS

**Table 63** — geosrs:SuperGalacticCS

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/SuperGalacticCS |
| Definition | A reference frame for the supercluster of galaxies that contains the Milky Way galaxy, referenced to a local relatively flat collection of galaxy clusters used to define the supergalactic plane. |
| Super-classes | CelestialCoordinateSystem 3DCoordinateSystem |

## 8.3. Coordinate System Components

| REQUIREMENT 10: COORDINATE SYSTEM COMPONENTS | |
|---|---|
| **IDENTIFIER** | `/req/Coordinate_System_Components` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:CoordinateSystemAxis to be used in SPARQL graph patterns. |

## 8.4. Coordinate System Properties

| REQUIREMENT 11: COORDINATE SYSTEM PROPERTIES | |
|---|---|
| **IDENTIFIER** | `/req/Coordinate_System_Properties` |

| REQUIREMENT 11: COORDINATE SYSTEM PROPERTIES | |
|---|---|
| STATEMENT | Implementations shall allow the RDFS properties geosrs:axis, geosrs:axisDirection to be used in SPARQL graph patterns. |

### 8.4.1. Property: geosrs:axis

**Table 64** — geosrs:axis

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/axis |
| Type | owl:ObjectProperty |
| Definition | The property relates a coordinate system to one of its axis |
| Range | Axis |
| Domain | CoordinateSystem |

### 8.4.2. Property: geosrs:axisDirection

**Table 65** — geosrs:axisDirection

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/axisDirection |
| Type | owl:ObjectProperty |
| Definition | The direction of an axis. Cf. ISO 19111:2007:2007-07, table 27, attribute coordinate system axis direction. |
| Range | AxisDirection |
| Domain | Axis |
| Example | geosrs:axisDirection |

## 8.5. Coordinate System Types

| REQUIREMENT 12: COORDINATE SYSTEM TYPES | |
|---|---|
| **IDENTIFIER** | `/req/Coordinate_System_Types` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:CoordinateSystem, geosrs:AffineCoordinateSystem, geosrs:BarycentricCoordinateSystem, geosrs:CartesianCoordinateSystem, geosrs:CurvilinearCoordinateSystem, geosrs:EngineeringCoordinateSystem, geosrs:GeodeticCoordinateSystem, geosrs:GeographicalCoordinateSystem, geosrs:GridCoordinateSystem, geosrs:HexagonalCoordinateSystem, geosrs:LocalCoordinateSystem, geosrs:ObliqueCoordinateSystem, geosrs:OrdinalCoordinateSystem, geosrs:OrthogonalCoordinateSystem, geosrs:ParametricCoordinateSystem, geosrs:PlanarCoordinateSystem, geosrs:PolarCoordinateSystem, geosrs:VerticalCoordinateSystem to be used in SPARQL graph patterns. |

### 8.5.1. Class: geosrs:AffineCoordinateSystem

**Table 66** — geosrs:AffineCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/AffineCoordinateSystem |
| Definition | Coordinate system in Euclidean space with straight axes that are not necessarily mutually perpendicular |
| Super-classes | CoordinateSystem |

### 8.5.2. Class: geosrs:BarycentricCoordinateSystem

**Table 67** — geosrs:BarycentricCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/BarycentricCoordinateSystem |
| Definition | A coordinate system in which the location of a point is specified by reference to a simplex (a triangle for points in a plane, a tetrahedron for points in three-dimensional space, etc.) |
| Super-classes | CoordinateSystem |

### 8.5.3. Class: geosrs:CurvilinearCoordinateSystem

**Table 68** — geosrs:CurvilinearCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/CurvilinearCoordinateSystem |
| Definition | A coordinate system for the Euclidean space in which the coordinate lines may be curved |
| Super-classes | CoordinateSystem |

## 8.5.4. Class: geosrs:EngineeringCoordinateSystem

**Table 69** — geosrs:EngineeringCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/EngineeringCoordinateSystem |
| Definition | Coordinate system used by an engineering coordinate reference system, one of an affine coordinate system, a Cartesian coordinate system, a cylindrical coordinate system, a linear coordinate sytem, an ordinal coordinate system, a polar coordinate system or a spherical coordinate system |
| Super-classes | CoordinateSystem |

## 8.5.5. Class: geosrs:GeodeticCoordinateSystem

**Table 70** — geosrs:GeodeticCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/GeodeticCoordinateSystem |
| Definition | Coordinate system used by a Geodetic CRS, one of a Cartesian coordinate system or a spherical coordinate system. |
| Super-classes | CoordinateSystem |

## 8.5.6. Class: geosrs:GeographicalCoordinateSystem

**Table 71** — geosrs:GeographicalCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/GeographicalCoordinateSystem |

| | |
|---|---|
| Definition | Spherical or geodetic coordinate system for measuring and communicating positions directly on Earth as latitude and longitude. |
| Super-classes | SphericalCoordinateSystem GeodeticCoordinateSystem |

### 8.5.7. Class: geosrs:GridCoordinateSystem

**Table 72** — geosrs:GridCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/GridCoordinateSystem |
| Definition | A grid coordinate system identifies areas within a grid. |
| Super-classes | CoordinateSystem |

### 8.5.8. Class: geosrs:HexagonalCoordinateSystem

**Table 73** — geosrs:HexagonalCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/HexagonalCoordinateSystem |
| Definition | A hexagonal coordinate system identifies areas within a hexagonal lattice. |
| Super-classes | GridCoordinateSystem |

### 8.5.9. Class: geosrs:LocalCoordinateSystem

**Table 74** — geosrs:LocalCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/LocalCoordinateSystem |
| Definition | Coordinate system with a point of local reference. |
| Super-classes | CoordinateSystem |

## 8.5.10. Class: geosrs:ObliqueCoordinateSystem

**Table 75** — geosrs:ObliqueCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/ObliqueCoordinateSystem |
| Definition | A plane coordinate system whose axes are not perpendicular. |
| Super-classes | CoordinateSystem |

## 8.5.11. Class: geosrs:OrthogonalCoordinateSystem

**Table 76** — geosrs:OrthogonalCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/OrthogonalCoordinateSystem |
| Definition | A orthogonal coordinate system is a system of curvilinear coordinates in which each family of surfaces intersects the others at right angles. |
| Super-classes | CurvilinearCoordinateSystem |

## 8.5.12. Class: geosrs:PlanarCoordinateSystem

**Table 77** — geosrs:PlanarCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/PlanarCoordinateSystem |
| Definition | A two-dimensional measurement system that locates features on a plane based on their distance from an origin (0,0) along two perpendicular axes. |
| Super-classes | CoordinateSystem |
| Example | geosrs:PlanarCoordinateSystem |

## 8.6. Temporal Coordinate Systems

| REQUIREMENT 13: TEMPORAL COORDINATE SYSTEMS | |
|---|---|
| **IDENTIFIER** | `/req/Temporal_Coordinate_Systems` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:1DCoordinateSystem, geosrs:DateTimeTemporalCoordinateSystem, geosrs:TemporalCountCoordinateSystem, geosrs:TemporalCoordinateSystem, geosrs:TemporalMeasureCoordinateSystem to be used in SPARQL graph patterns. |

### 8.6.1. Class: geosrs:1DCoordinateSystem

The class geosrs:1DCoordinateSystem describes a coordinate system with only one dimension. Often, these definitions include temporal coordinate systems which only represent time using one coordinate system axis.

**Table 78** — geosrs:1DCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/1DCoordinateSystem |
| Definition | Non-repeating sequence of coordinate system axes that spans a given coordinate space in one dimension |
| Super-classes | CoordinateSystem |

### 8.6.2. Class: geosrs:DateTimeTemporalCoordinateSystem

**Table 79** — geosrs:DateTimeTemporalCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/DateTimeTemporalCoordinateSystem |
| Definition | One-dimensional coordinate system used to record time in dateTime representation as defined in ISO 8601. |
| Super-classes | TemporalCoordinateSystem |

### 8.6.3. Class: geosrs:TemporalCountCoordinateSystem

**Table 80** — geosrs:TemporalCountCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/TemporalCountCoordinateSystem |
| Definition | One-dimensional coordinate system used to record time as an integer count. |
| Super-classes | TemporalCoordinateSystem |

### 8.6.4. Class: geosrs:TemporalCoordinateSystem

**Table 81** — geosrs:TemporalCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/TemporalCoordinateSystem |
| Definition | One-dimensionalcoordinate system where the axis is time. |
| Super-classes | 1DCoordinateSystem |

### 8.6.5. Class: geosrs:TemporalMeasureCoordinateSystem

**Table 82** — geosrs:TemporalMeasureCoordinateSystem

| | |
|---|---|
| URI | https://w3id.org/geosrs/cs/TemporalMeasureCoordinateSystem |
| Definition | One-dimensional coordinate system used to record a time as a real number. |
| Super-classes | TemporalCoordinateSystem |

9

# DATUM MODULE

# 9 DATUM MODULE

This clause establishes the **Datum** Requirements class, with IRI `/req/datum`, which has a corresponding Conformance Class, **Datum**, with IRI `/conf/datum`.

| REQUIREMENTS CLASS 4: 09-DATUM_MODULE.ADOC EXTENSION | |
|---|---|
| **IDENTIFIER** | `/req/09-datum_module.adoc` |
| **TARGET TYPE** | Implementation Specification |
| **REQUIREMENT** | /req/Datum_Types<br>/req/Datum_Parameters<br>/req/Spheroid_Types<br>/req/Datum_Properties<br>/req/Spheroid_Properties |

## 9.1. Datum Parameters

| REQUIREMENT 14: DATUM PARAMETERS | |
|---|---|
| **IDENTIFIER** | `/req/Datum_Parameters` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:PrimeMeridian, geosrs:DefiningParameter to be used in SPARQL graph patterns. |

### 9.1.1. Class: geosrs:DefiningParameter

**Table 83** — geosrs:DefiningParameter

| | |
|---|---|
| URI | https://w3id.org/geosrs/datum/DefiningParameter |
| Definition | Parameter value, an ordered sequence of values, or a reference to a file of parameter values that define |

| | |
|---|---|
| | a paramtric datum. Cf. ISO 19111:2019 Geographic information — Referencing by coordinates. |

## 9.2. Datum Properties

| REQUIREMENT 15: DATUM PROPERTIES | |
|---|---|
| **IDENTIFIER** | `/req/Datum_Properties` |
| **STATEMENT** | Implementations shall allow the RDFS properties geosrs:datumDefiningParameter, geosrs:ellipsoid, geosrs:primeMeridian to be used in SPARQL graph patterns. |

### 9.2.1. Property: geosrs:datumDefiningParameter

**Table 84** — geosrs:datumDefiningParameter

| | |
|---|---|
| URI | https://w3id.org/geosrs/datum/datumDefiningParameter |
| Type | owl:ObjectProperty |
| Definition | Parameter used to define the parametric datum |
| Range | DefiningParameter |
| Domain | ParametricDatum |

### 9.2.2. Property: geosrs:ellipsoid

**Table 85** — geosrs:ellipsoid

| | |
|---|---|
| URI | https://w3id.org/geosrs/datum/ellipsoid |
| Type | owl:ObjectProperty |
| Definition | The properties relates a datum to its ellipsoid definition |
| Range | Ellipsoid |

| | |
|---|---|
| Domain | Datum |
| Example | geosrs:ellipsoid |

### 9.2.3. Property: geosrs:primeMeridian

**Table 86** — geosrs:primeMeridian

| | |
|---|---|
| URI | https://w3id.org/geosrs/datum/primeMeridian |
| Type | owl:ObjectProperty |
| Definition | The prime meridian used by a geodetic datum. Cf. ISO 19111:2007:2007-07, table 34, association role prime Meridian. |
| Range | PrimeMeridian |
| Domain | Datum |
| Example | geosrs:primeMeridian |

## 9.3. Datum Types

| REQUIREMENT 16: DATUM TYPES | |
|---|---|
| **IDENTIFIER** | `/req/Datum_Types` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:Datum, geosrs:GeodeticDatum, geosrs:DynamicGeodeticReferenceFrame, geosrs:VerticalDatum, geosrs:DynamicVerticalDatum, geosrs:ParametricDatum, geosrs:EngineeringDatum, geosrs:TemporalDatum, geosrs:DatumEnsemble to be used in SPARQL graph patterns. |

### 9.3.1. Class: geosrs:DynamicGeodeticReferenceFrame

**Table 87** — geosrs:DynamicGeodeticReferenceFrame

| | |
|---|---|
| URI | https://w3id.org/geosrs/datum/DynamicGeodeticReferenceFrame |
| Definition | Geodetic reference frame in which some of the parameters describe time evolution of defining station coordinatesExample: defining station coordinates having linear velocities to account for crustal motion. |
| Super-classes | GeodeticDatum |

## 9.3.2. Class: geosrs:DynamicVerticalDatum

**Table 88** — geosrs:DynamicVerticalDatum

| | |
|---|---|
| URI | https://w3id.org/geosrs/datum/DynamicVerticalDatum |
| Definition | Vertical reference frame in which some of the defining parameters have time dependencyExample: Defining station heights have velocity to account for post-glacial isostatic rebound motion. Cf. ISO 19111:2019 Geographic information — Referencing by coordinates. |
| Super-classes | VerticalDatum |
| Example | geosrs:DynamicVerticalDatum |

## 9.3.3. Class: geosrs:ParametricDatum

**Table 89** — geosrs:ParametricDatum

| | |
|---|---|
| URI | https://w3id.org/geosrs/datum/ParametricDatum |
| Definition | Textual description and/or a set of parameters identifying a particular reference surface used as the origin of a parametric coordinate system, including its position with respect to the Earth. Cf. ISO 19111:2019 Geographic information — Referencing by coordinates. |
| Super-classes | Datum |

### 9.3.4. Class: geosrs:EngineeringDatum

**Table 90** — geosrs:EngineeringDatum

| | |
|---|---|
| URI | https://w3id.org/geosrs/datum/EngineeringDatum |
| Definition | Definition of the origin and orientation of an engineering coordinate reference systemNote: The origin can be fixed with respect to the Earth (such as a defined point at a construction site), or be a defined point on a moving vehicle (such as on a ship or satellite), or a defined point of an image. Cf. ISO 19111:2019 Geographic information — Referencing by coordinates. |
| Super-classes | Datum |

### 9.3.5. Class: geosrs:TemporalDatum

**Table 91** — geosrs:TemporalDatum

| | |
|---|---|
| URI | https://w3id.org/geosrs/datum/TemporalDatum |
| Definition | Definition of the relationship of a temporal coordinate system to an objectNote: The object is normally time on the Earth. Cf. ISO 19111:2019 Geographic information — Referencing by coordinates. |
| Super-classes | Datum |

### 9.3.6. Class: geosrs:DatumEnsemble

**Table 92** — geosrs:DatumEnsemble

| | |
|---|---|
| URI | https://w3id.org/geosrs/datum/DatumEnsemble |
| Definition | A collection of two or more datums (or if geodetic or vertical, a collection of two or more reference frames) that are realizations of one Conventional Reference System and which for all but the highest accuracy requirements may be considered to be insignificantly different from each other. Note: Within the datum ensemble every frame or datum is constrained to be |

| | |
|---|---|
| | a realization of the same reference system. Cf. ISO 19111:2019 Geographic information — Referencing by coordinates. |

## 9.4. Spheroid Properties

| REQUIREMENT 17: SPHEROID PROPERTIES | |
|---|---|
| **IDENTIFIER** | `/req/Spheroid_Properties` |
| **STATEMENT** | Implementations shall allow the RDFS properties geosrs:eccentricity, geosrs:inverseFlattening, geosrs:isSphere, geosrs:semiMajorAxis, geosrs:semiMinorAxis to be used in SPARQL graph patterns. |

### 9.4.1. Property: geosrs:eccentricity

**Table 93** — geosrs:eccentricity

| | |
|---|---|
| URI | https://w3id.org/geosrs/datum/eccentricity |
| Type | owl:DatatypeProperty |
| Definition | A measure of how much an ellipse deviates from a perfect circle. |
| Range | xsd:double |
| Domain | Ellipsoid |
| Example | geosrs:eccentricity |

### 9.4.2. Property: geosrs:inverseFlattening

**Table 94** — geosrs:inverseFlattening

| | |
|---|---|
| URI | https://w3id.org/geosrs/datum/inverseFlattening |
| Type | owl:DatatypeProperty |

| | |
|---|---|
| Definition | Indicates the inverse flattening value of an ellipsoid, expressed as a number or a ratio (percentage rate, parts per million, etc.). Cf. ISO 19111:2007:2007-07, table 37, attribute inverse flattening |
| Range | xsd:double |
| Domain | Ellipsoid |
| Example | geosrs:inverseFlattening |

### 9.4.3. Property: geosrs:isSphere

**Table 95** — geosrs:isSphere

| | |
|---|---|
| URI | https://w3id.org/geosrs/datum/isSphere |
| Type | owl:DatatypeProperty |
| Definition | Indicates whether the ellipsoid is a sphere. Cf. ISO 19111:2007:2007-07, table 37, attribute ellipsoid= sphere indicator. |
| Range | xsd:boolean |
| Domain | Ellipsoid |
| Example | geosrs:isSphere |

### 9.4.4. Property: geosrs:semiMajorAxis

**Table 96** — geosrs:semiMajorAxis

| | |
|---|---|
| URI | https://w3id.org/geosrs/datum/semiMajorAxis |
| Type | owl:DatatypeProperty |
| Definition | Indicates the length of the semi major axis of an ellipsoid. Cf. ISO 19111:2007:2007-07, table 36, attribute length of semi-major axis. |
| Range | xsd:double |

| | |
|---|---|
| Domain | Ellipsoid |
| Example | geosrs:semiMajorAxis |

### 9.4.5. Property: geosrs:semiMinorAxis

**Table 97** — geosrs:semiMinorAxis

| | |
|---|---|
| URI | https://w3id.org/geosrs/datum/semiMinorAxis |
| Type | owl:DatatypeProperty |
| Definition | Indicates the length of the semi minor axis of an ellipsoid. Cf. ISO 19111:2007:2007-07, table 37, attribute length of semi-minor axis. |
| Range | xsd:double |
| Domain | Ellipsoid |
| Example | geosrs:semiMinorAxis |

## 9.5. Spheroid Types

| REQUIREMENT 18: SPHEROID TYPES | |
|---|---|
| **IDENTIFIER** | `/req/Spheroid_Types` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:Ellipsoid, geosrs:TriaxialEllipsoid to be used in SPARQL graph patterns. |

### 9.5.1. Class: geosrs:TriaxialEllipsoid

**Table 98** — geosrs:TriaxialEllipsoid

| | |
|---|---|
| URI | https://w3id.org/geosrs/datum/TriaxialEllipsoid |

| | |
|---|---|
| Definition | Surface of an analytic ellipsoid defined by three axes of different length. Also referred as scalene ellipsoid. |

10

# SRS APPLICATION MODULE

# 10 SRS APPLICATION MODULE

This clause establishes the **SRSAPP** Requirements class, with IRI `/req/srsapp`, which has a corresponding Conformance Class, **SRSAPP**, with IRI `/conf/srsapp`.

| REQUIREMENTS CLASS 5: 10-SRSAPPLICATION_MODULE.ADOC EXTENSION | |
|---|---|
| **IDENTIFIER** | `/req/10-srsapplication_module.adoc` |
| **TARGET TYPE** | Implementation Specification |
| **REQUIREMENT** | /req/SRS_Application_Types<br>/req/Map_Types |

## 10.1. Map Types

| REQUIREMENT 19: MAP TYPES | |
|---|---|
| **IDENTIFIER** | `/req/Map_Types` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:CadastreMap, geosrs:NauticalChart, geosrs:ThematicMap, geosrs:TopographicMap, geosrs:WeatherMap to be used in SPARQL graph patterns. |

### 10.1.1. Class: geosrs:CadastreMap

**Table 99** — geosrs:CadastreMap

| | |
|---|---|
| URI | https://w3id.org/geosrs/application/CadastreMap |
| Definition | A map displaying a cadastre. |
| Super-classes | SRSApplication |
| Example | geosrs:CadastreMap |

### 10.1.2. Class: geosrs:NauticalChart

**Table 100** — geosrs:NauticalChart

| | |
|---|---|
| URI | https://w3id.org/geosrs/application/NauticalChart |
| Definition | A graphic representation of a sea area and adjacent coastal regions. |
| Super-classes | SRSApplication |

### 10.1.3. Class: geosrs:ThematicMap

**Table 101** — geosrs:ThematicMap

| | |
|---|---|
| URI | https://w3id.org/geosrs/application/ThematicMap |
| Definition | A map used to highlight a specific phenomenon. |
| Super-classes | SRSApplication |

### 10.1.4. Class: geosrs:TopographicMap

**Table 102** — geosrs:TopographicMap

| | |
|---|---|
| URI | https://w3id.org/geosrs/application/TopographicMap |
| Definition | A type of map characterized by large-scale detail and quantitative representation of relief. |
| Super-classes | SRSApplication |
| Example | geosrs:TopographicMap |

### 10.1.5. Class: geosrs:WeatherMap

**Table 103** — geosrs:WeatherMap

| | |
|---|---|
| URI | https://w3id.org/geosrs/application/WeatherMap |
| Definition | A map for showing the local direction in which weather systems are moving. |
| Super-classes | SRSApplication |

## 10.2. SRS Application Types

| REQUIREMENT 20: SRS APPLICATION TYPES | |
|---|---|
| **IDENTIFIER** | `/req/SRS_Application_Types` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:SRSApplication, geosrs:SpatialReferencing, geosrs:EngineeringSurvey, geosrs:SatelliteSurvey, geosrs:SatelliteNavigation, geosrs:Coastal Hydrography, geosrs:OffshoreEngineering, geosrs:Hydrography, geosrs:Drilling, geosrs:OilAndGas Exploration to be used in SPARQL graph patterns. |

### 10.2.1. Class: geosrs:SRSApplication

**Table 104** — geosrs:SRSApplication

| | |
|---|---|
| URI | https://w3id.org/geosrs/application/SRSApplication |
| Definition | An application for which a spatial reference system is used. |

### 10.2.2. Class: geosrs:SpatialReferencing

**Table 105** — geosrs:SpatialReferencing

| | |
|---|---|
| URI | https://w3id.org/geosrs/application/SpatialReferencing |
| Super-classes | SRSApplication |

### 10.2.3. Class: geosrs:EngineeringSurvey

**Table 106** — geosrs:EngineeringSurvey

| | |
|---|---|
| URI | https://w3id.org/geosrs/application/EngineeringSurvey |
| Super-classes | SRSApplication |
| Example | geosrs:EngineeringSurvey |

### 10.2.4. Class: geosrs:SatelliteSurvey

**Table 107** — geosrs:SatelliteSurvey

| | |
|---|---|
| URI | https://w3id.org/geosrs/application/SatelliteSurvey |
| Super-classes | SRSApplication |

### 10.2.5. Class: geosrs:SatelliteNavigation

**Table 108** — geosrs:SatelliteNavigation

| | |
|---|---|
| URI | https://w3id.org/geosrs/application/SatelliteNavigation |
| Super-classes | SRSApplication |

### 10.2.6. Class: geosrs:CoastalHydrography

**Table 109** — geosrs:CoastalHydrography

| | |
|---|---|
| URI | https://w3id.org/geosrs/application/CoastalHydrography |
| Super-classes | SRSApplication |
| Example | geosrs:CoastalHydrography |

### 10.2.7. Class: geosrs:OffshoreEngineering

**Table 110** — geosrs:OffshoreEngineering

| | |
|---|---|
| URI | https://w3id.org/geosrs/application/OffshoreEngineering |
| Super-classes | SRSApplication |
| Example | geosrs:OffshoreEngineering |

### 10.2.8. Class: geosrs:Hydrography

**Table 111** — geosrs:Hydrography

| | |
|---|---|
| URI | https://w3id.org/geosrs/application/Hydrography |
| Super-classes | SRSApplication |
| Example | geosrs:Hydrography |

### 10.2.9. Class: geosrs:Drilling

**Table 112** — geosrs:Drilling

| | |
|---|---|
| URI | https://w3id.org/geosrs/application/Drilling |
| Super-classes | SRSApplication |
| Example | geosrs:Drilling |

### 10.2.10. Class: geosrs:OilAndGasExploration

**Table 113** — geosrs:OilAndGasExploration

| | |
|---|---|
| URI | https://w3id.org/geosrs/application/OilAndGasExploration |

| | |
|---|---|
| Super-classes | SRSApplication |

# 11

# PROJECTIONS MODULE

# 11 PROJECTIONS MODULE

This clause establishes the **PROJ** Requirements class, with IRI `/req/proj`, which has a corresponding Conformance Class, **PROJ**, with IRI `/conf/proj`.

| REQUIREMENTS CLASS 6: 11-PROJECTIONS_MODULE.ADOC EXTENSION | |
|---|---|
| **IDENTIFIER** | `/req/11-projections_module.adoc` |
| **TARGET TYPE** | Implementation Specification |
| **REQUIREMENT** | /req/Lenticular_Projections<br>/req/Conformal_Projections<br>/req/Minimum_Error_Projections<br>/req/Pseudo_Azimuthal_Projections<br>/req/Equal_Area_Projections<br>/req/Pseudo_Conical_Projections<br>/req/Globular_Projections<br>/req/Pseudo_Cylindrical_Projections<br>/req/Cylindrical_Projections<br>/req/Compromise_Projections<br>/req/Polyhedral_Projections<br>/req/Equidistant_Projections<br>/req/Conical_Projections<br>/req/Azimuthal_Projections<br>/req/Perspective_Projections<br>/req/Polyconic_Projections<br>/req/Stereographic_Projections |

# 11.1. Azimuthal Projections

| REQUIREMENT 21: AZIMUTHAL PROJECTIONS | |
|---|---|
| **IDENTIFIER** | `/req/Azimuthal_Projections` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:BreusingGeometricProjection, geosrs:BreusingHarmonicProjection, geosrs:GinzburgIIProjection, geosrs:GinzburgIProjection, geosrs:GnomonicProjection, geosrs:JamesAzimuthalProjection to be used in SPARQL graph patterns. |

## 11.1.1. Class: geosrs:BreusingGeometricProjection

**Table 114** — geosrs:BreusingGeometricProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/BreusingGeometricProjection |
| Super-classes | AzimuthalProjection |

## 11.1.2. Class: geosrs:BreusingHarmonicProjection

**Table 115** — geosrs:BreusingHarmonicProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/BreusingHarmonicProjection |
| Super-classes | AzimuthalProjection |

## 11.1.3. Class: geosrs:GinzburgIIProjection

**Table 116** — geosrs:GinzburgIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/GinzburgIIProjection |
| Super-classes | AzimuthalProjection |

### 11.1.4. Class: geosrs:GinzburgIProjection

**Table 117** — geosrs:GinzburgIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/GinzburgIProjection |
| Super-classes | AzimuthalProjection |

### 11.1.5. Class: geosrs:GnomonicProjection

**Table 118** — geosrs:GnomonicProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/GnomonicProjection |
| Super-classes | AzimuthalProjection |

### 11.1.6. Class: geosrs:JamesAzimuthalProjection

**Table 119** — geosrs:JamesAzimuthalProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/JamesAzimuthalProjection |
| Super-classes | AzimuthalProjection |

## 11.2. Compromise Projections

| REQUIREMENT 22: COMPROMISE PROJECTIONS | |
|---|---|
| **IDENTIFIER** | `/req/Compromise_Projections` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:ArmadilloProjection, geosrs:BakerDinomic Projection, geosrs:BertinProjection, geosrs:ChamberlinTrimetricProjection, geosrs:DenoyerSemi EllipticalProjection, geosrs:FairgrieveProjection, geosrs:LarriveeProjection, geosrs:PetermannStar Projection, geosrs:SpilhausOceanicProjection, geosrs:VanDerGrintenIIIProjection, geosrs:Winkel |

| REQUIREMENT 22: COMPROMISE PROJECTIONS | |
|---|---|
| | IIProjection, geosrs:WinkelIProjection, geosrs:WinkelSnyderProjection to be used in SPARQL graph patterns. |

## 11.2.1. Class: geosrs:ArmadilloProjection

**Table 120** — geosrs:ArmadilloProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/ArmadilloProjection |
| Super-classes | CompromiseProjection |

## 11.2.2. Class: geosrs:BakerDinomicProjection

**Table 121** — geosrs:BakerDinomicProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/BakerDinomicProjection |
| Super-classes | CompromiseProjection |

## 11.2.3. Class: geosrs:BertinProjection

**Table 122** — geosrs:BertinProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/BertinProjection |
| Super-classes | CompromiseProjection |

## 11.2.4. Class: geosrs:ChamberlinTrimetricProjection

**Table 123** — geosrs:ChamberlinTrimetricProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/ChamberlinTrimetricProjection |
| Super-classes | CompromiseProjection |

### 11.2.5. Class: geosrs:DenoyerSemiEllipticalProjection

**Table 124** — geosrs:DenoyerSemiEllipticalProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/DenoyerSemiEllipticalProjection |
| Super-classes | CompromiseProjection |

### 11.2.6. Class: geosrs:FairgrieveProjection

**Table 125** — geosrs:FairgrieveProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/FairgrieveProjection |
| Super-classes | CompromiseProjection |

### 11.2.7. Class: geosrs:LarriveeProjection

**Table 126** — geosrs:LarriveeProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/LarriveeProjection |
| Super-classes | CompromiseProjection |

### 11.2.8. Class: geosrs:PetermannStarProjection

**Table 127** — geosrs:PetermannStarProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/PetermannStarProjection |
| Super-classes | CompromiseProjection |

### 11.2.9. Class: geosrs:SpilhausOceanicProjection

**Table 128** — geosrs:SpilhausOceanicProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/SpilhausOceanicProjection |
| Super-classes | CompromiseProjection |

## 11.2.10. Class: geosrs:VanDerGrintenIIIProjection

**Table 129** — geosrs:VanDerGrintenIIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/VanDerGrintenIIIProjection |
| Super-classes | CompromiseProjection |

## 11.2.11. Class: geosrs:WinkelIIProjection

**Table 130** — geosrs:WinkelIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/WinkelIIProjection |
| Super-classes | CompromiseProjection |

## 11.2.12. Class: geosrs:WinkelIProjection

**Table 131** — geosrs:WinkelIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/WinkelIProjection |
| Super-classes | CompromiseProjection |

## 11.2.13. Class: geosrs:WinkelSnyderProjection

**Table 132** — geosrs:WinkelSnyderProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/WinkelSnyderProjection |

| | |
|---|---|
| Super-classes | CompromiseProjection |

## 11.3. Conformal Projections

| REQUIREMENT 23: CONFORMAL PROJECTIONS | |
|---|---|
| **IDENTIFIER** | `/req/Conformal_Projections` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:AdamsProjection, geosrs:AdamsWorldInASquareIIProjection, geosrs:AdamsWorldInASquareIProjection, geosrs:AugustEpicycloidalProjection, geosrs:CoxConformalProjection, geosrs:EisenlohrProjection, geosrs:GS50Projection, geosrs:PeirceQuincuncialProjection, geosrs:StereographicProjection to be used in SPARQL graph patterns. |

### 11.3.1. Class: geosrs:AdamsProjection

**Table 133** — geosrs:AdamsProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/AdamsProjection |
| Super-classes | ConformalProjection |

### 11.3.2. Class: geosrs:AdamsWorldInASquareIIProjection

**Table 134** — geosrs:AdamsWorldInASquareIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/AdamsWorldInASquareIIProjection |
| Super-classes | ConformalProjection |

### 11.3.3. Class: geosrs:AdamsWorldInASquareIProjection

**Table 135** — geosrs:AdamsWorldInASquareIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/AdamsWorldInASquareIProjection |
| Super-classes | ConformalProjection |

## 11.3.4. Class: geosrs:AugustEpicycloidalProjection

**Table 136** — geosrs:AugustEpicycloidalProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/AugustEpicycloidalProjection |
| Definition | A projection in which every angle between two curves that crosss each other on a celestical body is preserved in the image of the projection |
| Super-classes | ConformalProjection |

## 11.3.5. Class: geosrs:CoxConformalProjection

**Table 137** — geosrs:CoxConformalProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/CoxConformalProjection |
| Super-classes | ConformalProjection |

## 11.3.6. Class: geosrs:EisenlohrProjection

**Table 138** — geosrs:EisenlohrProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/EisenlohrProjection |
| Super-classes | ConformalProjection |

## 11.3.7. Class: geosrs:GS50Projection

**Table 139** — geosrs:GS50Projection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/GS50Projection |
| Super-classes | ConformalProjection |

### 11.3.8. Class: geosrs:PeirceQuincuncialProjection

**Table 140** — geosrs:PeirceQuincuncialProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/PeirceQuincuncialProjection |
| Super-classes | ConformalProjection |

### 11.3.9. Class: geosrs:StereographicProjection

**Table 141** — geosrs:StereographicProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/StereographicProjection |
| Super-classes | ConformalProjection |
| Example | geosrs:StereographicProjection |

## 11.4. Conical Projections

| REQUIREMENT 24: CONICAL PROJECTIONS | |
|---|---|
| **IDENTIFIER** | `/req/Conical_Projections` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:BipolarObliqueConicConformalProjection, geosrs:CentralConicProjection, geosrs:HerschelConformalConicProjection, geosrs:Krovak, geosrs:LambertConformalConicProjection, geosrs:MurdochIIIProjection, geosrs:MurdochIIProjection, geosrs:MurdochIProjection, geosrs:SchjerningIProjection, geosrs:VitkovskyIProjection to be used in SPARQL graph patterns. |

### 11.4.1. Class: geosrs:BipolarObliqueConicConformalProjection

**Table 142** — geosrs:BipolarObliqueConicConformalProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/BipolarObliqueConicConformalProjection |
| Super-classes | ConicalProjection |

### 11.4.2. Class: geosrs:CentralConicProjection

**Table 143** — geosrs:CentralConicProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/CentralConicProjection |
| Super-classes | ConicalProjection |

### 11.4.3. Class: geosrs:HerschelConformalConicProjection

**Table 144** — geosrs:HerschelConformalConicProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/HerschelConformalConicProjection |
| Super-classes | ConicalProjection |

### 11.4.4. Class: geosrs:Krovak

**Table 145** — geosrs:Krovak

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/Krovak |
| Super-classes | ConicalProjection |
| Example | geosrs:Krovak |

### 11.4.5. Class: geosrs:LambertConformalConicProjection

**Table 146** — geosrs:LambertConformalConicProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/LambertConformalConicProjection |
| Super-classes | ConicalProjection |

### 11.4.6. Class: geosrs:MurdochIIIProjection

**Table 147** — geosrs:MurdochIIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/MurdochIIIProjection |
| Super-classes | ConicalProjection |

### 11.4.7. Class: geosrs:MurdochIIProjection

**Table 148** — geosrs:MurdochIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/MurdochIIProjection |
| Super-classes | ConicalProjection |

### 11.4.8. Class: geosrs:MurdochIProjection

**Table 149** — geosrs:MurdochIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/MurdochIProjection |
| Super-classes | ConicalProjection |

### 11.4.9. Class: geosrs:SchjerningIProjection

**Table 150** — geosrs:SchjerningIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/SchjerningIProjection |
| Super-classes | ConicalProjection |

### 11.4.10. Class: geosrs:VitkovskyIProjection

**Table 151** — geosrs:VitkovskyIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/VitkovskyIProjection |
| Super-classes | ConicalProjection |

## 11.5. Cylindrical Projections

| REQUIREMENT 25: CYLINDRICAL PROJECTIONS | |
|---|---|
| **IDENTIFIER** | `/req/Cylindrical_Projections` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:ArdenCloseProjection, geosrs:Braun PerspectiveProjection, geosrs:CompactMillerProjection, geosrs:CylindricalStereographicProjection, geosrs:KarchenkoShabanovaProjection, geosrs:LabordeProjection, geosrs:MercatorProjection, geosrs:MillerProjection, geosrs:PattersonCylindricalProjection, geosrs:PavlovProjection, geosrs: ToblerCylindricalIIIProjection, geosrs:ToblerCylindricalIProjection, geosrs:UrmayevIIIProjection, geosrs:WebMercatorProjection to be used in SPARQL graph patterns. |

### 11.5.1. Class: geosrs:ArdenCloseProjection

**Table 152** — geosrs:ArdenCloseProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/ ArdenCloseProjection |
| Super-classes | CylindricalProjection |

### 11.5.2. Class: geosrs:BraunPerspectiveProjection

**Table 153** — geosrs:BraunPerspectiveProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/BraunPerspectiveProjection |
| Super-classes | CylindricalProjection |

### 11.5.3. Class: geosrs:CompactMillerProjection

**Table 154** — geosrs:CompactMillerProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/CompactMillerProjection |
| Super-classes | CylindricalProjection |

### 11.5.4. Class: geosrs:CylindricalStereographicProjection

**Table 155** — geosrs:CylindricalStereographicProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/CylindricalStereographicProjection |
| Super-classes | CylindricalProjection |

### 11.5.5. Class: geosrs:KarchenkoShabanovaProjection

**Table 156** — geosrs:KarchenkoShabanovaProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/KarchenkoShabanovaProjection |
| Super-classes | CylindricalProjection |

### 11.5.6. Class: geosrs:LabordeProjection

**Table 157** — geosrs:LabordeProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/LabordeProjection |
| Super-classes | CylindricalProjection |
| Example | geosrs:LabordeProjection |

## 11.5.7. Class: geosrs:MercatorProjection

**Table 158** — geosrs:MercatorProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/MercatorProjection |
| Super-classes | CylindricalProjection |
| Example | geosrs:MercatorProjection |

## 11.5.8. Class: geosrs:MillerProjection

**Table 159** — geosrs:MillerProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/MillerProjection |
| Super-classes | CylindricalProjection |

## 11.5.9. Class: geosrs:PattersonCylindricalProjection

**Table 160** — geosrs:PattersonCylindricalProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/PattersonCylindricalProjection |
| Super-classes | CylindricalProjection |

## 11.5.10. Class: geosrs:PavlovProjection

**Table 161** — geosrs:PavlovProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/PavlovProjection |
| Super-classes | CylindricalProjection |

## 11.5.11. Class: geosrs:ToblerCylindricalIIIProjection

**Table 162** — geosrs:ToblerCylindricalIIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/ToblerCylindricalIIIProjection |
| Super-classes | CylindricalProjection |

## 11.5.12. Class: geosrs:ToblerCylindricalIProjection

**Table 163** — geosrs:ToblerCylindricalIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/ToblerCylindricalIProjection |
| Super-classes | CylindricalProjection |

## 11.5.13. Class: geosrs:UrmayevIIIProjection

**Table 164** — geosrs:UrmayevIIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/UrmayevIIIProjection |
| Super-classes | CylindricalProjection |

## 11.5.14. Class: geosrs:WebMercatorProjection

**Table 165** — geosrs:WebMercatorProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/WebMercatorProjection |

| | |
|---|---|
| Super-classes | CylindricalProjection |

## 11.6. Equal Area Projections

| REQUIREMENT 26: EQUAL AREA PROJECTIONS | |
|---|---|
| **IDENTIFIER** | `/req/Equal_Area_Projections` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:AlbersEqualAreaProjection, geosrs:AzimuthalEqualAreaProjection, geosrs:CylindricalEqualArea, geosrs:GallPetersProjection, geosrs:HoboDyerProjection, geosrs:LambertAzimuthalEqualArea, geosrs:TrystanEdwardsProjection, geosrs:WiechelProjection to be used in SPARQL graph patterns. |

### 11.6.1. Class: geosrs:AlbersEqualAreaProjection

**Table 166** — geosrs:AlbersEqualAreaProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/AlbersEqualAreaProjection |
| Super-classes | EqualAreaProjection |
| Example | geosrs:AlbersEqualAreaProjection |

### 11.6.2. Class: geosrs:AzimuthalEqualAreaProjection

**Table 167** — geosrs:AzimuthalEqualAreaProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/AzimuthalEqualAreaProjection |
| Super-classes | EqualAreaProjection |

### 11.6.3. Class: geosrs:CylindricalEqualArea

**Table 168** — geosrs:CylindricalEqualArea

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/CylindricalEqualArea |
| Super-classes | EqualAreaProjection |
| Example | geosrs:CylindricalEqualArea |

### 11.6.4. Class: geosrs:GallPetersProjection

**Table 169** — geosrs:GallPetersProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/GallPetersProjection |
| Super-classes | EqualAreaProjection |

### 11.6.5. Class: geosrs:HoboDyerProjection

**Table 170** — geosrs:HoboDyerProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/HoboDyerProjection |
| Super-classes | EqualAreaProjection |

### 11.6.6. Class: geosrs:LambertAzimuthalEqualArea

**Table 171** — geosrs:LambertAzimuthalEqualArea

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/LambertAzimuthalEqualArea |
| Super-classes | EqualAreaProjection |

### 11.6.7. Class: geosrs:TrystanEdwardsProjection

**Table 172** — geosrs:TrystanEdwardsProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/TrystanEdwardsProjection |

| | |
|---|---|
| Super-classes | EqualAreaProjection |

### 11.6.8. Class: geosrs:WiechelProjection

**Table 173** — geosrs:WiechelProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/WiechelProjection |
| Super-classes | EqualAreaProjection |

## 11.7. Equidistant Projections

| REQUIREMENT 27: EQUIDISTANT PROJECTIONS | |
|---|---|
| **IDENTIFIER** | `/req/Equidistant_Projections` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:AzimuthalEquidistantProjection, geosrs:BerghausStarProjection, geosrs:CassiniProjection, geosrs:EquidistantConicProjection, geosrs:EquidistantCylindricalProjection, geosrs:EquirectangularProjection, geosrs:ObliquePlateCarreeProjection, geosrs:PlateCarreeProjection, geosrs:TwoPointEquidistantProjection to be used in SPARQL graph patterns. |

### 11.7.1. Class: geosrs:AzimuthalEquidistantProjection

**Table 174** — geosrs:AzimuthalEquidistantProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/AzimuthalEquidistantProjection |
| Super-classes | EquidistantProjection |
| Example | geosrs:AzimuthalEquidistantProjection |

### 11.7.2. Class: geosrs:BerghausStarProjection

**Table 175** — geosrs:BerghausStarProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/BerghausStarProjection |
| Super-classes | EquidistantProjection |

## 11.7.3. Class: geosrs:CassiniProjection

**Table 176** — geosrs:CassiniProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/CassiniProjection |
| Definition | A map projection first described in an approximate form by César-François Cassini de Thury in 1745 |
| Super-classes | EquidistantProjection |
| Example | geosrs:CassiniProjection |

## 11.7.4. Class: geosrs:EquidistantConicProjection

**Table 177** — geosrs:EquidistantConicProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/EquidistantConicProjection |
| Super-classes | EquidistantProjection |

## 11.7.5. Class: geosrs:EquidistantCylindricalProjection

**Table 178** — geosrs:EquidistantCylindricalProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/EquidistantCylindricalProjection |
| Super-classes | EquidistantProjection |
| Example | geosrs:EquidistantCylindricalProjection |

## 11.7.6. Class: geosrs:EquirectangularProjection

**Table 179** — geosrs:EquirectangularProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/EquirectangularProjection |
| Super-classes | EquidistantProjection |

## 11.7.7. Class: geosrs:ObliquePlateCarreeProjection

**Table 180** — geosrs:ObliquePlateCarreeProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/ObliquePlateCarreeProjection |
| Super-classes | EquidistantProjection |

## 11.7.8. Class: geosrs:PlateCarreeProjection

**Table 181** — geosrs:PlateCarreeProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/PlateCarreeProjection |
| Super-classes | EquidistantProjection |

## 11.7.9. Class: geosrs:TwoPointEquidistantProjection

**Table 182** — geosrs:TwoPointEquidistantProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/TwoPointEquidistantProjection |
| Super-classes | EquidistantProjection |

# 11.8. Globular Projections

| REQUIREMENT 28: GLOBULAR PROJECTIONS | |
|---|---|
| **IDENTIFIER** | `/req/Globular_Projections` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:ApianGlobularIProjection, geosrs:Bacon GlobularProjection, geosrs:FournierGlobularIProjection to be used in SPARQL graph patterns. |

## 11.8.1. Class: geosrs:ApianGlobularIProjection

**Table 183** — geosrs:ApianGlobularIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/ApianGlobularIProjection |
| Super-classes | GlobularProjection |

## 11.8.2. Class: geosrs:BaconGlobularProjection

**Table 184** — geosrs:BaconGlobularProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/BaconGlobularProjection |
| Super-classes | GlobularProjection |

## 11.8.3. Class: geosrs:FournierGlobularIProjection

**Table 185** — geosrs:FournierGlobularIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/FournierGlobularIProjection |
| Super-classes | GlobularProjection |

## 11.9. Lenticular Projections

| REQUIREMENT 29: LENTICULAR PROJECTIONS | |
|---|---|
| **IDENTIFIER** | `/req/Lenticular_Projections` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:A4Projection, geosrs:BriesemeisterProjection, geosrs:CiricIProjection, geosrs:CupolaProjection, geosrs:DedistortProjection, geosrs:DietrichKitada Projection, geosrs:FranculaIIIProjection, geosrs:FranculaIVProjection, geosrs:FranculaIXProjection, geosrs:FranculaVIIIProjection, geosrs:FranculaVProjection, geosrs:FranculaXIIIProjection, geosrs: FranculaXIIProjection, geosrs:FranculaXIVProjection, geosrs:HamusoidalProjection, geosrs:Kiss Projection to be used in SPARQL graph patterns. |

### 11.9.1. Class: geosrs:A4Projection

**Table 186** — geosrs:A4Projection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/A4Projection |
| Super-classes | LenticularProjection |

### 11.9.2. Class: geosrs:BriesemeisterProjection

**Table 187** — geosrs:BriesemeisterProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/ BriesemeisterProjection |
| Super-classes | LenticularProjection |

### 11.9.3. Class: geosrs:CiricIProjection

**Table 188** — geosrs:CiricIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/CiricIProjection |
| Super-classes | LenticularProjection |

### 11.9.4. Class: geosrs:CupolaProjection

**Table 189** — geosrs:CupolaProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/CupolaProjection |
| Super-classes | LenticularProjection |

### 11.9.5. Class: geosrs:DedistortProjection

**Table 190** — geosrs:DedistortProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/DedistortProjection |
| Super-classes | LenticularProjection |

### 11.9.6. Class: geosrs:DietrichKitadaProjection

**Table 191** — geosrs:DietrichKitadaProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/DietrichKitadaProjection |
| Super-classes | LenticularProjection |

### 11.9.7. Class: geosrs:FranculaIIIProjection

**Table 192** — geosrs:FranculaIIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/FranculaIIIProjection |
| Super-classes | LenticularProjection |

### 11.9.8. Class: geosrs:FranculaIVProjection

**Table 193** — geosrs:FranculaIVProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/FranculaIVProjection |
| Super-classes | LenticularProjection |

## 11.9.9. Class: geosrs:FranculaIXProjection

**Table 194** — geosrs:FranculaIXProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/FranculaIXProjection |
| Super-classes | LenticularProjection |

## 11.9.10. Class: geosrs:FranculaVIIIProjection

**Table 195** — geosrs:FranculaVIIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/FranculaVIIIProjection |
| Super-classes | LenticularProjection |

## 11.9.11. Class: geosrs:FranculaVProjection

**Table 196** — geosrs:FranculaVProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/FranculaVProjection |
| Super-classes | LenticularProjection |

## 11.9.12. Class: geosrs:FranculaXIIIProjection

**Table 197** — geosrs:FranculaXIIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/FranculaXIIIProjection |
| Super-classes | LenticularProjection |

## 11.9.13. Class: geosrs:FranculaXIIProjection

**Table 198** — geosrs:FranculaXIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/FranculaXIIProjection |
| Super-classes | LenticularProjection |

## 11.9.14. Class: geosrs:FranculaXIVProjection

**Table 199** — geosrs:FranculaXIVProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/FranculaXIVProjection |
| Super-classes | LenticularProjection |

## 11.9.15. Class: geosrs:HamusoidalProjection

**Table 200** — geosrs:HamusoidalProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/HamusoidalProjection |
| Super-classes | LenticularProjection |

## 11.9.16. Class: geosrs:KissProjection

**Table 201** — geosrs:KissProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/KissProjection |
| Super-classes | LenticularProjection |

## 11.10. Minimum Error Projections

| REQUIREMENT 30: MINIMUM ERROR PROJECTIONS | |
|---|---|
| **IDENTIFIER** | `/req/Minimum_Error_Projections` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:AiryProjection to be used in SPARQL graph patterns. |

### 11.10.1. Class: geosrs:AiryProjection

**Table 202** — geosrs:AiryProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/AiryProjection |
| Definition | An azimuthal minimum error projection for the region within the small or great circle defined by an angular distance, from the tangency point of the plane |
| Super-classes | MinimumErrorProjection |
| Example | geosrs:AiryProjection |

## 11.11. Perspective Projections

| REQUIREMENT 31: PERSPECTIVE PROJECTIONS | |
|---|---|
| **IDENTIFIER** | `/req/Perspective_Projections` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:CentralCylindricalProjection, geosrs:General VerticalPerspectiveProjection, geosrs:GilbertTwoWorldPerspectiveProjection, geosrs:LaHire Projection, geosrs:LorgnaProjection, geosrs:LowryProjection, geosrs:OrthographicProjection, geosrs:PerspectiveConicProjection, geosrs:TiltedPerspectiveProjection, geosrs:VerticalPerspective Projection to be used in SPARQL graph patterns. |

### 11.11.1. Class: geosrs:CentralCylindricalProjection

**Table 203** — geosrs:CentralCylindricalProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/CentralCylindricalProjection |
| Super-classes | PerspectiveProjection |
| Example | geosrs:CentralCylindricalProjection |

### 11.11.2. Class: geosrs:GeneralVerticalPerspectiveProjection

**Table 204** — geosrs:GeneralVerticalPerspectiveProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/GeneralVerticalPerspectiveProjection |
| Super-classes | PerspectiveProjection |

### 11.11.3. Class: geosrs:GilbertTwoWorldPerspectiveProjection

**Table 205** — geosrs:GilbertTwoWorldPerspectiveProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/GilbertTwoWorldPerspectiveProjection |
| Super-classes | PerspectiveProjection |

### 11.11.4. Class: geosrs:LaHireProjection

**Table 206** — geosrs:LaHireProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/LaHireProjection |
| Super-classes | PerspectiveProjection |

### 11.11.5. Class: geosrs:LorgnaProjection

**Table 207** — geosrs:LorgnaProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/LorgnaProjection |
| Super-classes | PerspectiveProjection |

### 11.11.6. Class: geosrs:LowryProjection

**Table 208** — geosrs:LowryProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/LowryProjection |
| Super-classes | PerspectiveProjection |

### 11.11.7. Class: geosrs:OrthographicProjection

**Table 209** — geosrs:OrthographicProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/OrthographicProjection |
| Super-classes | PerspectiveProjection |

### 11.11.8. Class: geosrs:PerspectiveConicProjection

**Table 210** — geosrs:PerspectiveConicProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/PerspectiveConicProjection |
| Super-classes | PerspectiveProjection |

### 11.11.9. Class: geosrs:TiltedPerspectiveProjection

**Table 211** — geosrs:TiltedPerspectiveProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/TiltedPerspectiveProjection |
| Super-classes | PerspectiveProjection |

### 11.11.10. Class: geosrs:VerticalPerspectiveProjection

**Table 212** — geosrs:VerticalPerspectiveProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/VerticalPerspectiveProjection |
| Super-classes | PerspectiveProjection |

## 11.12. Polyconic Projections

| REQUIREMENT 32: POLYCONIC PROJECTIONS | |
|---|---|
| **IDENTIFIER** | `/req/Polyconic_Projections` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:GinzburgIVProjection, geosrs:GinzburgIXProjection, geosrs:GinzburgVIProjection, geosrs:GinzburgVProjection, geosrs:GottWagnerProjection, geosrs:HillEucyclicProjection, geosrs:LagrangeProjection, geosrs:LaskowskiProjection, geosrs:RectangularPolyconicProjection, geosrs:StabiusWernerIIIProjection, geosrs:StabiusWernerIProjection, geosrs:VanDerGrintenIIProjection, geosrs:VanDerGrintenIProjection, geosrs:VanDerGrintenIVProjection, geosrs:WagnerIXProjection, geosrs:WagnerVIIIProjection, geosrs:WagnerVIIProjection to be used in SPARQL graph patterns. |

### 11.12.1. Class: geosrs:GinzburgIVProjection

**Table 213** — geosrs:GinzburgIVProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/GinzburgIVProjection |
| Super-classes | PolyconicProjection |

### 11.12.2. Class: geosrs:GinzburgIXProjection

**Table 214** — geosrs:GinzburgIXProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/GinzburgIXProjection |
| Super-classes | PolyconicProjection |

### 11.12.3. Class: geosrs:GinzburgVIProjection

**Table 215** — geosrs:GinzburgVIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/GinzburgVIProjection |
| Super-classes | PolyconicProjection |

### 11.12.4. Class: geosrs:GinzburgVProjection

**Table 216** — geosrs:GinzburgVProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/GinzburgVProjection |
| Super-classes | PolyconicProjection |

### 11.12.5. Class: geosrs:GottWagnerProjection

**Table 217** — geosrs:GottWagnerProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/GottWagnerProjection |
| Super-classes | PolyconicProjection |

### 11.12.6. Class: geosrs:HillEucyclicProjection

**Table 218** — geosrs:HillEucyclicProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/HillEucyclicProjection |
| Super-classes | PolyconicProjection |

## 11.12.7. Class: geosrs:LagrangeProjection

**Table 219** — geosrs:LagrangeProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/LagrangeProjection |
| Super-classes | PolyconicProjection |

## 11.12.8. Class: geosrs:LaskowskiProjection

**Table 220** — geosrs:LaskowskiProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/LaskowskiProjection |
| Super-classes | PolyconicProjection |

## 11.12.9. Class: geosrs:RectangularPolyconicProjection

**Table 221** — geosrs:RectangularPolyconicProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/RectangularPolyconicProjection |
| Super-classes | PolyconicProjection |

## 11.12.10. Class: geosrs:StabiusWernerIIIProjection

**Table 222** — geosrs:StabiusWernerIIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/StabiusWernerIIIProjection |
| Super-classes | PolyconicProjection |

## 11.12.11. Class: geosrs:StabiusWernerIProjection

**Table 223** — geosrs:StabiusWernerIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/StabiusWernerIProjection |
| Super-classes | PolyconicProjection |

## 11.12.12. Class: geosrs:VanDerGrintenIIProjection

**Table 224** — geosrs:VanDerGrintenIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/VanDerGrintenIIProjection |
| Super-classes | PolyconicProjection |

## 11.12.13. Class: geosrs:VanDerGrintenIProjection

**Table 225** — geosrs:VanDerGrintenIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/VanDerGrintenIProjection |
| Super-classes | PolyconicProjection |

## 11.12.14. Class: geosrs:VanDerGrintenIVProjection

**Table 226** — geosrs:VanDerGrintenIVProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/VanDerGrintenIVProjection |
| Super-classes | PolyconicProjection |

## 11.12.15. Class: geosrs:WagnerIXProjection

**Table 227** — geosrs:WagnerIXProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/WagnerIXProjection |
| Super-classes | PolyconicProjection |

### 11.12.16. Class: geosrs:WagnerVIIIProjection

**Table 228** — geosrs:WagnerVIIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/WagnerVIIIProjection |
| Super-classes | PolyconicProjection |

### 11.12.17. Class: geosrs:WagnerVIIProjection

**Table 229** — geosrs:WagnerVIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/WagnerVIIProjection |
| Super-classes | PolyconicProjection |

## 11.13. Polyhedral Projections

| REQUIREMENT 33: POLYHEDRAL PROJECTIONS | |
|---|---|
| **IDENTIFIER** | `/req/Polyhedral_Projections` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:AuthaGraphProjection, geosrs:CahillKeyes Projection, geosrs:CollignonButterflyProjection, geosrs:DodecahedralProjection, geosrs:Dymaxion Projection, geosrs:GnomonicButterflyProjection, geosrs:GnomonicCubedSphereProjection, geosrs: GnomonicIcosahedronProjection, geosrs:GuyouProjection, geosrs:IcosahedralProjection, geosrs:Lee Projection, geosrs:MyrahedalProjection, geosrs:OctantProjection, geosrs:QuadrilateralizedSpherical CubeProjection, geosrs:WatermanButterflyProjection to be used in SPARQL graph patterns. |

### 11.13.1. Class: geosrs:AuthaGraphProjection

**Table 230** — geosrs:AuthaGraphProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/AuthaGraphProjection |
| Super-classes | PolyhedralProjection |

### 11.13.2. Class: geosrs:CahillKeyesProjection

**Table 231** — geosrs:CahillKeyesProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/CahillKeyesProjection |
| Super-classes | PolyhedralProjection |

### 11.13.3. Class: geosrs:CollignonButterflyProjection

**Table 232** — geosrs:CollignonButterflyProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/CollignonButterflyProjection |
| Super-classes | PolyhedralProjection |

### 11.13.4. Class: geosrs:DodecahedralProjection

**Table 233** — geosrs:DodecahedralProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/DodecahedralProjection |
| Super-classes | PolyhedralProjection |

### 11.13.5. Class: geosrs:DymaxionProjection

**Table 234** — geosrs:DymaxionProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/DymaxionProjection |
| Super-classes | PolyhedralProjection |

## 11.13.6. Class: geosrs:GnomonicButterflyProjection

**Table 235** — geosrs:GnomonicButterflyProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/GnomonicButterflyProjection |
| Super-classes | PolyhedralProjection |

## 11.13.7. Class: geosrs:GnomonicCubedSphereProjection

**Table 236** — geosrs:GnomonicCubedSphereProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/GnomonicCubedSphereProjection |
| Super-classes | PolyhedralProjection |

## 11.13.8. Class: geosrs:GnomonicIcosahedronProjection

**Table 237** — geosrs:GnomonicIcosahedronProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/GnomonicIcosahedronProjection |
| Super-classes | PolyhedralProjection |

## 11.13.9. Class: geosrs:GuyouProjection

**Table 238** — geosrs:GuyouProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/GuyouProjection |

| | |
|---|---|
| Super-classes | PolyhedralProjection |

## 11.13.10. Class: geosrs:IcosahedralProjection

**Table 239** — geosrs:IcosahedralProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/IcosahedralProjection |
| Super-classes | PolyhedralProjection |

## 11.13.11. Class: geosrs:LeeProjection

**Table 240** — geosrs:LeeProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/LeeProjection |
| Super-classes | PolyhedralProjection |

## 11.13.12. Class: geosrs:MyrahedalProjection

**Table 241** — geosrs:MyrahedalProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/MyrahedalProjection |
| Super-classes | PolyhedralProjection |

## 11.13.13. Class: geosrs:OctantProjection

**Table 242** — geosrs:OctantProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/OctantProjection |
| Super-classes | PolyhedralProjection |

### 11.13.14. Class: geosrs:QuadrilateralizedSphericalCubeProjection

**Table 243** — geosrs:QuadrilateralizedSphericalCubeProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/QuadrilateralizedSphericalCubeProjection |
| Super-classes | PolyhedralProjection |

### 11.13.15. Class: geosrs:WatermanButterflyProjection

**Table 244** — geosrs:WatermanButterflyProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/WatermanButterflyProjection |
| Super-classes | PolyhedralProjection |

## 11.14. Pseudo Azimuthal Projections

| REQUIREMENT 34: PSEUDO AZIMUTHAL PROJECTIONS | |
|---|---|
| **IDENTIFIER** | `/req/Pseudo_Azimuthal_Projections` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:AitoffObliqueProjection, geosrs:Aitoff Projection, geosrs:HammerProjection, geosrs:Strebe1995Projection, geosrs:WinkelTripel Projection to be used in SPARQL graph patterns. |

### 11.14.1. Class: geosrs:AitoffObliqueProjection

**Table 245** — geosrs:AitoffObliqueProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/AitoffObliqueProjection |
| Super-classes | PseudoAzimuthalProjection |

## 11.14.2. Class: geosrs:AitoffProjection

**Table 246** — geosrs:AitoffProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/AitoffProjection |
| Definition | A modified azimuthal projection whose graticule takes the form of an ellipse |
| Super-classes | PseudoAzimuthalProjection |

## 11.14.3. Class: geosrs:HammerProjection

**Table 247** — geosrs:HammerProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/HammerProjection |
| Super-classes | PseudoAzimuthalProjection |

## 11.14.4. Class: geosrs:Strebe1995Projection

**Table 248** — geosrs:Strebe1995Projection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/Strebe1995Projection |
| Super-classes | PseudoAzimuthalProjection |

## 11.14.5. Class: geosrs:WinkelTripelProjection

**Table 249** — geosrs:WinkelTripelProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/WinkelTripelProjection |
| Super-classes | PseudoAzimuthalProjection |

## 11.15. Pseudo Conical Projections

| REQUIREMENT 35: PSEUDO CONICAL PROJECTIONS | |
|---|---|
| **IDENTIFIER** | `/req/Pseudo_Conical_Projections` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:AmericanPolyconicProjection, geosrs:BonneProjection, geosrs:BottomleyProjection, geosrs:NicolosiGlobularProjection, geosrs:PtolemyIIProjection, geosrs:WernerProjection to be used in SPARQL graph patterns. |

### 11.15.1. Class: geosrs:AmericanPolyconicProjection

**Table 250** — geosrs:AmericanPolyconicProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/AmericanPolyconicProjection |
| Super-classes | PseudoConicalProjection |
| Example | geosrs:AmericanPolyconicProjection |

### 11.15.2. Class: geosrs:BonneProjection

**Table 251** — geosrs:BonneProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/BonneProjection |
| Super-classes | PseudoConicalProjection |

### 11.15.3. Class: geosrs:BottomleyProjection

**Table 252** — geosrs:BottomleyProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/BottomleyProjection |
| Super-classes | PseudoConicalProjection |

### 11.15.4. Class: geosrs:NicolosiGlobularProjection

**Table 253** — geosrs:NicolosiGlobularProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/NicolosiGlobularProjection |
| Super-classes | PseudoConicalProjection |

### 11.15.5. Class: geosrs:PtolemyIIProjection

**Table 254** — geosrs:PtolemyIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/PtolemyIIProjection |
| Super-classes | PseudoConicalProjection |

### 11.15.6. Class: geosrs:WernerProjection

**Table 255** — geosrs:WernerProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/WernerProjection |
| Super-classes | PseudoConicalProjection |

## 11.16. Pseudo Cylindrical Projections

| REQUIREMENT 36: PSEUDO CYLINDRICAL PROJECTIONS | |
|---|---|
| **IDENTIFIER** | `/req/Pseudo_Cylindrical_Projections` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:ApianIIProjection, geosrs:AtlantisProjection, geosrs:BaranyiIIIProjection, geosrs:BaranyiIIProjection, geosrs:BaranyiIProjection, geosrs:BaranyiIVProjection, geosrs:BoggsEumorphicProjection, geosrs:BromleyProjection, geosrs:CabotProjection, geosrs:CollignonProjection, geosrs:CrasterParabolicProjection, geosrs:DeakinMinimumErrorProjection, geosrs:Eckert1Projection, geosrs:Eckert2Projection, geosrs:Eckert3Projection, geosrs: |

| REQUIREMENT 36: PSEUDO CYLINDRICAL PROJECTIONS |
| --- |
| Eckert4Projection, geosrs:Eckert5Projection, geosrs:Eckert6Projection, geosrs:EqualEarth Projection, geosrs:FaheyProjection, geosrs:FoucautProjection, geosrs:FoucautSinusoidalProjection, geosrs:FournierIIProjection, geosrs:GinzburgVIIIProjection, geosrs:GoodeHomolosineProjection, geosrs:HEALPixProjection, geosrs:HufnagelProjection, geosrs:Kavrayskiy7Projection, geosrs: LoximuthalProjection, geosrs:MayrProjection, geosrs:McBrydeThomasFlatPolarParabolicProjection, geosrs:McBrydeThomasFlatPolarQuarticProjection, geosrs:McBrydeThomasFlatPolarSinusoidal Projection, geosrs:McBrydeThomasIIProjection, geosrs:McBrydeThomasIProjection, geosrs:Natural Earth2Projection, geosrs:NaturalEarthProjection, geosrs:NellHammerProjection, geosrs:Nell Projection, geosrs:OrteliusOvalProjection, geosrs:PutninsP1Projection, geosrs:PutninsP2Projection, geosrs:PutninsP3Projection, geosrs:PutninsP5Projection, geosrs:PutninsP6Projection, geosrs: QuarticAuthalicProjection, geosrs:RobinsonProjection, geosrs:SinusoidalProjection, geosrs:The TimesProjection, geosrs:ToblerG1Projection, geosrs:ToblerHyperellipticalProjection, geosrs:Wagner IIIProjection, geosrs:WagnerIIProjection, geosrs:WagnerIProjection, geosrs:WagnerIVProjection, geosrs:WagnerVIProjection, geosrs:WagnerVProjection, geosrs:WerenskioldIProjection, geosrs: PutninsP3'Projection, geosrs:PutninsP4'Projection, geosrs:PutninsP5'Projection, geosrs:Putnins P6'Projection to be used in SPARQL graph patterns. |

## 11.16.1. Class: geosrs:ApianIIProjection

**Table 256** — geosrs:ApianIIProjection

| | |
| --- | --- |
| URI | https://w3id.org/geosrs/projection/ApianIIProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.2. Class: geosrs:AtlantisProjection

**Table 257** — geosrs:AtlantisProjection

| | |
| --- | --- |
| URI | https://w3id.org/geosrs/projection/AtlantisProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.3. Class: geosrs:BaranyiIIIProjection

**Table 258** — geosrs:BaranyiIIIProjection

| | |
| --- | --- |
| URI | https://w3id.org/geosrs/projection/BaranyiIIIProjection |

| | |
|---|---|
| Super-classes | PseudoCylindricalProjection |

## 11.16.4. Class: geosrs:BaranyiIIProjection

**Table 259** — geosrs:BaranyiIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/BaranyiIIProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.5. Class: geosrs:BaranyiIProjection

**Table 260** — geosrs:BaranyiIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/BaranyiIProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.6. Class: geosrs:BaranyiIVProjection

**Table 261** — geosrs:BaranyiIVProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/BaranyiIVProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.7. Class: geosrs:BoggsEumorphicProjection

**Table 262** — geosrs:BoggsEumorphicProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/BoggsEumorphicProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.8. Class: geosrs:BromleyProjection

**Table 263** — geosrs:BromleyProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/BromleyProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.9. Class: geosrs:CabotProjection

**Table 264** — geosrs:CabotProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/CabotProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.10. Class: geosrs:CollignonProjection

**Table 265** — geosrs:CollignonProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/CollignonProjection |
| Definition | An equal-area pseudocylindrical projection that maps the sphere onto a triangle or diamond |
| Super-classes | PseudoCylindricalProjection |

## 11.16.11. Class: geosrs:CrasterParabolicProjection

**Table 266** — geosrs:CrasterParabolicProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/CrasterParabolicProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.12. Class: geosrs:DeakinMinimumErrorProjection

**Table 267** — geosrs:DeakinMinimumErrorProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/DeakinMinimumErrorProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.13. Class: geosrs:Eckert1Projection

**Table 268** — geosrs:Eckert1Projection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/Eckert1Projection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.14. Class: geosrs:Eckert2Projection

**Table 269** — geosrs:Eckert2Projection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/Eckert2Projection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.15. Class: geosrs:Eckert3Projection

**Table 270** — geosrs:Eckert3Projection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/Eckert3Projection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.16. Class: geosrs:Eckert4Projection

**Table 271** — geosrs:Eckert4Projection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/Eckert4Projection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.17. Class: geosrs:Eckert5Projection

**Table 272** — geosrs:Eckert5Projection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/Eckert5Projection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.18. Class: geosrs:Eckert6Projection

**Table 273** — geosrs:Eckert6Projection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/Eckert6Projection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.19. Class: geosrs:EqualEarthProjection

**Table 274** — geosrs:EqualEarthProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/EqualEarthProjection |
| Super-classes | PseudoCylindricalProjection |
| Example | geosrs:EqualEarthProjection |

## 11.16.20. Class: geosrs:FaheyProjection

**Table 275** — geosrs:FaheyProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/FaheyProjection |

| | |
|---|---|
| Super-classes | PseudoCylindricalProjection |

## 11.16.21. Class: geosrs:FoucautProjection

**Table 276** — geosrs:FoucautProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/FoucautProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.22. Class: geosrs:FoucautSinusoidalProjection

**Table 277** — geosrs:FoucautSinusoidalProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/FoucautSinusoidalProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.23. Class: geosrs:FournierIIProjection

**Table 278** — geosrs:FournierIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/FournierIIProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.24. Class: geosrs:GinzburgVIIIProjection

**Table 279** — geosrs:GinzburgVIIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/GinzburgVIIIProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.25. Class: geosrs:GoodeHomolosineProjection

**Table 280** — geosrs:GoodeHomolosineProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/GoodeHomolosineProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.26. Class: geosrs:HEALPixProjection

**Table 281** — geosrs:HEALPixProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/HEALPixProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.27. Class: geosrs:HufnagelProjection

**Table 282** — geosrs:HufnagelProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/HufnagelProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.28. Class: geosrs:Kavrayskiy7Projection

**Table 283** — geosrs:Kavrayskiy7Projection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/Kavrayskiy7Projection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.29. Class: geosrs:LoximuthalProjection

**Table 284** — geosrs:LoximuthalProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/LoximuthalProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.30. Class: geosrs:MayrProjection

**Table 285** — geosrs:MayrProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/MayrProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.31. Class: geosrs:McBrydeThomasFlatPolarParabolicProjection

**Table 286** — geosrs:McBrydeThomasFlatPolarParabolicProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/McBrydeThomasFlatPolarParabolicProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.32. Class: geosrs:McBrydeThomasFlatPolarQuarticProjection

**Table 287** — geosrs:McBrydeThomasFlatPolarQuarticProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/McBrydeThomasFlatPolarQuarticProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.33. Class: geosrs:McBrydeThomasFlatPolarSinusoidalProjection

**Table 288** — geosrs:McBrydeThomasFlatPolarSinusoidalProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/McBrydeThomasFlatPolarSinusoidalProjection |

| | |
|---|---|
| Super-classes | PseudoCylindricalProjection |

## 11.16.34. Class: geosrs:McBrydeThomasIIProjection

**Table 289** — geosrs:McBrydeThomasIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/McBrydeThomasIIProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.35. Class: geosrs:McBrydeThomasIProjection

**Table 290** — geosrs:McBrydeThomasIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/McBrydeThomasIProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.36. Class: geosrs:NaturalEarth2Projection

**Table 291** — geosrs:NaturalEarth2Projection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/NaturalEarth2Projection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.37. Class: geosrs:NaturalEarthProjection

**Table 292** — geosrs:NaturalEarthProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/NaturalEarthProjection |
| Definition | A pseudocylindrical map projection designed by Tom Patterson and introduced in 2008 |
| Super-classes | PseudoCylindricalProjection |

## 11.16.38. Class: geosrs:NellHammerProjection

**Table 293** — geosrs:NellHammerProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/NellHammerProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.39. Class: geosrs:NellProjection

**Table 294** — geosrs:NellProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/NellProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.40. Class: geosrs:OrteliusOvalProjection

**Table 295** — geosrs:OrteliusOvalProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/OrteliusOvalProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.41. Class: geosrs:PutninsP1Projection

**Table 296** — geosrs:PutninsP1Projection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/PutninsP1Projection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.42. Class: geosrs:PutninsP2Projection

**Table 297** — geosrs:PutninsP2Projection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/PutninsP2Projection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.43. Class: geosrs:PutninsP3Projection

**Table 298** — geosrs:PutninsP3Projection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/PutninsP3Projection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.44. Class: geosrs:PutninsP5Projection

**Table 299** — geosrs:PutninsP5Projection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/PutninsP5Projection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.45. Class: geosrs:PutninsP6Projection

**Table 300** — geosrs:PutninsP6Projection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/PutninsP6Projection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.46. Class: geosrs:QuarticAuthalicProjection

**Table 301** — geosrs:QuarticAuthalicProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/QuarticAuthalicProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.47. Class: geosrs:RobinsonProjection

**Table 302** — geosrs:RobinsonProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/RobinsonProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.48. Class: geosrs:SinusoidalProjection

**Table 303** — geosrs:SinusoidalProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/SinusoidalProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.49. Class: geosrs:TheTimesProjection

**Table 304** — geosrs:TheTimesProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/TheTimesProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.50. Class: geosrs:ToblerG1Projection

**Table 305** — geosrs:ToblerG1Projection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/ToblerG1Projection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.51. Class: geosrs:ToblerHyperellipticalProjection

**Table 306** — geosrs:ToblerHyperellipticalProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/ToblerHyperellipticalProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.52. Class: geosrs:WagnerIIIProjection

**Table 307** — geosrs:WagnerIIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/WagnerIIIProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.53. Class: geosrs:WagnerIIProjection

**Table 308** — geosrs:WagnerIIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/WagnerIIProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.54. Class: geosrs:WagnerIProjection

**Table 309** — geosrs:WagnerIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/WagnerIProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.55. Class: geosrs:WagnerIVProjection

**Table 310** — geosrs:WagnerIVProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/WagnerIVProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.56. Class: geosrs:WagnerVIProjection

**Table 311** — geosrs:WagnerVIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/WagnerVIProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.57. Class: geosrs:WagnerVProjection

**Table 312** — geosrs:WagnerVProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/WagnerVProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.58. Class: geosrs:WerenskioldIProjection

**Table 313** — geosrs:WerenskioldIProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/WerenskioldIProjection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.59. Class: geosrs:PutninsP3'Projection

**Table 314** — geosrs:PutninsP3'Projection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/PutninsP3'Projection |
| Super-classes | PseudoCylindricalProjection |

## 11.16.60. Class: geosrs:PutninsP4'Projection

**Table 315** — geosrs:PutninsP4'Projection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/PutninsP4'Projection |
| Super-classes | PseudoCylindricalProjection |

### 11.16.61. Class: geosrs:PutninsP5'Projection

**Table 316** — geosrs:PutninsP5'Projection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/PutninsP5'Projection |
| Super-classes | PseudoCylindricalProjection |

### 11.16.62. Class: geosrs:PutninsP6'Projection

**Table 317** — geosrs:PutninsP6'Projection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/PutninsP6'Projection |
| Super-classes | PseudoCylindricalProjection |

## 11.17. Stereographic Projections

| REQUIREMENT 37: STEREOGRAPHIC PROJECTIONS | |
|---|---|
| **IDENTIFIER** | `/req/Stereographic_Projections` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:MillerOblatedStereographicProjection, geosrs:RoussilheProjection to be used in SPARQL graph patterns. |

### 11.17.1. Class: geosrs:MillerOblatedStereographicProjection

**Table 318** — geosrs:MillerOblatedStereographicProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/MillerOblatedStereographicProjection |
| Super-classes | StereographicProjection |

## 11.17.2. Class: geosrs:RoussilheProjection

**Table 319** — geosrs:RoussilheProjection

| | |
|---|---|
| URI | https://w3id.org/geosrs/projection/RoussilheProjection |
| Super-classes | StereographicProjection |

12

# PLANET MODULE

# 12 PLANET MODULE

This clause establishes the **PLANET** Requirements class, with IRI `/req/planet`, which has a corresponding Conformance Class, **PLANET**, with IRI `/conf/planet`.

| REQUIREMENTS CLASS 7: 12-PLANET_MODULE.ADOC EXTENSION | |
|---|---|
| **IDENTIFIER** | `/req/12-planet_module.adoc` |
| **TARGET TYPE** | Implementation Specification |
| **REQUIREMENT** | /req/Interstellar_Body |

## 12.1. Interstellar Body

| REQUIREMENT 38: INTERSTELLAR BODY | |
|---|---|
| **IDENTIFIER** | `/req/Interstellar_Body` |
| **STATEMENT** | Implementations shall allow the RDFS classes geosrs:ArtificialSatellite, geosrs:Asteroid, geosrs:Comet, geosrs:DwarfPlanet, geosrs:InterstellarBody, geosrs:Moon, geosrs:NaturalSatellite, geosrs:Planet, geosrs:PlanetStatus, geosrs:Plutoid, geosrs:Star to be used in SPARQL graph patterns. |

### 12.1.1. Class: geosrs:ArtificialSatellite

**Table 320** — geosrs:ArtificialSatellite

| | |
|---|---|
| URI | https://w3id.org/geosrs/planet/ArtificialSatellite |

### 12.1.2. Class: geosrs:Asteroid

**Table 321** — geosrs:Asteroid

| | |
|---|---|
| URI | https://w3id.org/geosrs/planet/Asteroid |

### 12.1.3. Class: geosrs:Comet

**Table 322** — geosrs:Comet

| | |
|---|---|
| URI | https://w3id.org/geosrs/planet/Comet |

### 12.1.4. Class: geosrs:DwarfPlanet

**Table 323** — geosrs:DwarfPlanet

| | |
|---|---|
| URI | https://w3id.org/geosrs/planet/DwarfPlanet |

### 12.1.5. Class: geosrs:InterstellarBody

**Table 324** — geosrs:InterstellarBody

| | |
|---|---|
| URI | https://w3id.org/geosrs/planet/InterstellarBody |

### 12.1.6. Class: geosrs:Moon

**Table 325** — geosrs:Moon

| | |
|---|---|
| URI | https://w3id.org/geosrs/planet/Moon |

### 12.1.7. Class: geosrs:NaturalSatellite

**Table 326** — geosrs:NaturalSatellite

| | |
|---|---|
| URI | https://w3id.org/geosrs/planet/NaturalSatellite |

### 12.1.8. Class: geosrs:Planet

**Table 327** — geosrs:Planet

| | |
|---|---|
| URI | https://w3id.org/geosrs/planet/Planet |

### 12.1.9. Class: geosrs:PlanetStatus

**Table 328** — geosrs:PlanetStatus

| | |
|---|---|
| URI | https://w3id.org/geosrs/planet/PlanetStatus |

### 12.1.10. Class: geosrs:Plutoid

**Table 329** — geosrs:Plutoid

| | |
|---|---|
| URI | https://w3id.org/geosrs/planet/Plutoid |

### 12.1.11. Class: geosrs:Star

**Table 330** — geosrs:Star

| | |
|---|---|
| URI | https://w3id.org/geosrs/planet/Star |

13

# COMMON INSTANCES

# 13 COMMON INSTANCES

This clause establishes common instances which are needed in CRS specifications as Requirement class **INSTANCES**, with IRI `/req/instances`, which has a corresponding Conformance Class, **INSTANCES**, with IRI `/conf/instances`.

| REQUIREMENTS CLASS 8: 13-INSTANCES.ADOC EXTENSION | |
|---|---|
| **IDENTIFIER** | `/req/13-instances.adoc` |
| **TARGET TYPE** | Implementation Specification |
| **REQUIREMENT** | /req/SRS_Literal_Types<br>/req/Coordinate_System_Axis<br>/req/Spheroids |

## 13.1. Coordinate System Axis

| REQUIREMENT 39: COORDINATE SYSTEM AXIS | |
|---|---|
| **IDENTIFIER** | `/req/Coordinate_System_Axis` |
| **STATEMENT** | Implementations shall allow the RDFS instances geosrs:down, geosrs:east, geosrs:north, geosrs:south, geosrs:up, geosrs:west to be used in SPARQL graph patterns. |

### 13.1.1. Instance: geosrs:down

**Table 331** — geosrs:down

| | |
|---|---|
| URI | https://w3id.org/geosrs/down |
| Type | geosrs:AxisDirection |
| Definition | Downwards axis direction |

### 13.1.2. Instance: geosrs:east

**Table 332** — geosrs:east

| | |
|---|---|
| URI | https://w3id.org/geosrs/east |
| Type | geosrs:AxisDirection |
| Definition | east axis direction |

### 13.1.3. Instance: geosrs:north

**Table 333** — geosrs:north

| | |
|---|---|
| URI | https://w3id.org/geosrs/north |
| Type | geosrs:AxisDirection |
| Definition | North axis direction |

### 13.1.4. Instance: geosrs:south

**Table 334** — geosrs:south

| | |
|---|---|
| URI | https://w3id.org/geosrs/south |
| Type | geosrs:AxisDirection |
| Definition | South axis direction |

### 13.1.5. Instance: geosrs:up

**Table 335** — geosrs:up

| | |
|---|---|
| URI | https://w3id.org/geosrs/up |

| | |
|---|---|
| Type | geosrs:AxisDirection |
| Definition | Up axis direction |

### 13.1.6. Instance: geosrs:west

**Table 336** — geosrs:west

| | |
|---|---|
| URI | https://w3id.org/geosrs/west |
| Type | geosrs:AxisDirection |
| Definition | West axis direction |

## 13.2. SRS Literal Types

| REQUIREMENT 40: SRS LITERAL TYPES | |
|---|---|
| **IDENTIFIER** | `/req/SRS_Literal_Types` |
| **STATEMENT** | Implementations shall allow the RDFS instances geosrs:proj4Literal, geosrs:projJSONLiteral, geosrs:wktLiteral to be used in SPARQL graph patterns. |

### 13.2.1. Instance: geosrs:proj4Literal

**Table 337** — geosrs:proj4Literal

| | |
|---|---|
| URI | https://w3id.org/geosrs/proj4Literal |
| Type | rdf:Datatype[rdf:Datatype] |
| Definition | A literal which stores a proj4 String |
| Example | geosrs:proj4Literal |

### 13.2.2. Instance: geosrs:projJSONLiteral

**Table 338** — geosrs:projJSONLiteral

| | |
|---|---|
| URI | https://w3id.org/geosrs/projJSONLiteral |
| Type | rdf:Dataype[rdf:Dataype] |
| Definition | A literal which stores a projection JSON (ProjJSON) String |
| Example | geosrs:projJSONLiteral |

### 13.2.3. Instance: geosrs:wktLiteral

**Table 339** — geosrs:wktLiteral

| | |
|---|---|
| URI | https://w3id.org/geosrs/wktLiteral |
| Type | rdf:Datatype[rdf:Datatype] |
| Definition | A literal which stores a WKT for CRS String |
| Example | geosrs:wktLiteral |

## 13.3. Spheroids

| REQUIREMENT 41: SPHEROIDS | |
|---|---|
| **IDENTIFIER** | `/req/Spheroids` |
| **STATEMENT** | Implementations shall allow the RDFS instances geosrs:GRS1980, geosrs:GRS67, geosrs:PZ90, geosrs:Airy1830, geosrs:AiryModified1849, geosrs:International1924, geosrs:AustralianNational Spheroid, geosrs:Everest1930, geosrs:Clarke1866, geosrs:Plessis1817, geosrs:Danish1876, geosrs:Struve1860, geosrs:IAG1975, geosrs:Clarke1858, geosrs:Clarke1880, geosrs:Helmert1906, geosrs:CGCS2000, geosrs:GSK-2011, geosrs:Zach1812, geosrs:Clarke1880ARC, geosrs:Clarke1880IGN, geosrs:WGS66, geosrs:WGS72, geosrs:WGS84, geosrs:Krassowsky1940 to be used in SPARQL graph patterns. |

### 13.3.1. Instance: geosrs:GRS1980

**Table 340** — geosrs:GRS1980

| | |
|---|---|
| URI | https://w3id.org/geosrs/GRS1980 |
| Type | geosrs:Ellipsoid |
| Definition | GRS 1980 Ellipsoid |
| Example | geosrs:GRS1980 |

### 13.3.2. Instance: geosrs:GRS67

**Table 341** — geosrs:GRS67

| | |
|---|---|
| URI | https://w3id.org/geosrs/GRS67 |
| Type | geosrs:Ellipsoid |
| Definition | GRS 67 Ellipsoid |
| Example | geosrs:GRS67 |

### 13.3.3. Instance: geosrs:PZ90

**Table 342** — geosrs:PZ90

| | |
|---|---|
| URI | https://w3id.org/geosrs/PZ90 |
| Type | geosrs:Ellipsoid |
| Definition | PZ 90 Ellipsoid |
| Example | geosrs:PZ90 |

## 13.3.4. Instance: geosrs:Airy1830

**Table 343** — geosrs:Airy1830

| | |
|---|---|
| URI | https://w3id.org/geosrs/Airy1830 |
| Type | geosrs:Ellipsoid |
| Definition | Airy 1830 Ellipsoid |
| Example | geosrs:Airy1830 |

## 13.3.5. Instance: geosrs:AiryModified1849

**Table 344** — geosrs:AiryModified1849

| | |
|---|---|
| URI | https://w3id.org/geosrs/AiryModified1849 |
| Type | geosrs:Ellipsoid |
| Definition | Airy 1849 Modified Ellipsoid |
| Example | geosrs:AiryModified1849 |

## 13.3.6. Instance: geosrs:International1924

**Table 345** — geosrs:International1924

| | |
|---|---|
| URI | https://w3id.org/geosrs/International1924 |
| Type | geosrs:Ellipsoid |
| Definition | International 1924 Ellipsoid |
| Example | geosrs:International1924 |

## 13.3.7. Instance: geosrs:AustralianNationalSpheroid

**Table 346** — geosrs:AustralianNationalSpheroid

| | |
|---|---|
| URI | https://w3id.org/geosrs/AustralianNationalSpheroid |
| Type | geosrs:Ellipsoid |
| Definition | Australian National Spheroid |
| Example | geosrs:AustralianNationalSpheroid |

## 13.3.8. Instance: geosrs:Everest1930

**Table 347** — geosrs:Everest1930

| | |
|---|---|
| URI | https://w3id.org/geosrs/Everest1930 |
| Type | geosrs:Ellipsoid |
| Definition | Everest 1930 Spheroid |

## 13.3.9. Instance: geosrs:Clarke1866

**Table 348** — geosrs:Clarke1866

| | |
|---|---|
| URI | https://w3id.org/geosrs/Clarke1866 |
| Type | geosrs:Ellipsoid |
| Definition | Clarke 1866 Spheroid |
| Example | geosrs:Clarke1866 |

## 13.3.10. Instance: geosrs:Plessis1817

**Table 349** — geosrs:Plessis1817

| | |
|---|---|
| URI | https://w3id.org/geosrs/Plessis1817 |
| Type | geosrs:Ellipsoid |
| Definition | Plessis 1817 Spheroid |
| Example | geosrs:Plessis1817 |

## 13.3.11. Instance: geosrs:Danish1876

**Table 350** — geosrs:Danish1876

| | |
|---|---|
| URI | https://w3id.org/geosrs/Danish1876 |
| Type | geosrs:Ellipsoid |
| Definition | Danish 1876 Spheroid |
| Example | geosrs:Danish1876 |

## 13.3.12. Instance: geosrs:Struve1860

**Table 351** — geosrs:Struve1860

| | |
|---|---|
| URI | https://w3id.org/geosrs/Struve1860 |
| Type | geosrs:Ellipsoid |
| Definition | Struve 1860 Spheroid |
| Example | geosrs:Struve1860 |

## 13.3.13. Instance: geosrs:IAG1975

**Table 352** — geosrs:IAG1975

| | |
|---|---|
| URI | https://w3id.org/geosrs/IAG1975 |

| | |
|---|---|
| Type | geosrs:Ellipsoid |
| Definition | IAG 1975 Spheroid |
| Example | geosrs:IAG1975 |

## 13.3.14. Instance: geosrs:Clarke1858

**Table 353** — geosrs:Clarke1858

| | |
|---|---|
| URI | https://w3id.org/geosrs/Clarke1858 |
| Type | geosrs:Ellipsoid |
| Definition | Clarke 1858 Spheroid |
| Example | geosrs:Clarke1858 |

## 13.3.15. Instance: geosrs:Clarke1880

**Table 354** — geosrs:Clarke1880

| | |
|---|---|
| URI | https://w3id.org/geosrs/Clarke1880 |
| Type | geosrs:Ellipsoid |
| Definition | Clarke 1880 Spheroid |
| Example | geosrs:Clarke1880 |

## 13.3.16. Instance: geosrs:Helmert1906

**Table 355** — geosrs:Helmert1906

| | |
|---|---|
| URI | https://w3id.org/geosrs/Helmert1906 |
| Type | geosrs:Ellipsoid |

| | |
|---|---|
| Definition | Helmert 1906 Spheroid |
| Example | geosrs:Helmert1906 |

## 13.3.17. Instance: geosrs:CGCS2000

**Table 356** — geosrs:CGCS2000

| | |
|---|---|
| URI | https://w3id.org/geosrs/CGCS2000 |
| Type | geosrs:Ellipsoid |
| Definition | CGCS2000 Spheroid |
| Example | geosrs:CGCS2000 |

## 13.3.18. Instance: geosrs:GSK-2011

**Table 357** — geosrs:GSK-2011

| | |
|---|---|
| URI | https://w3id.org/geosrs/GSK-2011 |
| Type | geosrs:Ellipsoid |
| Definition | GSK-2011 Spheroid |

## 13.3.19. Instance: geosrs:Zach1812

**Table 358** — geosrs:Zach1812

| | |
|---|---|
| URI | https://w3id.org/geosrs/Zach1812 |
| Type | geosrs:Ellipsoid |
| Definition | Zach 1812 Spheroid |
| Example | geosrs:Zach1812 |

## 13.3.20. Instance: geosrs:Clarke1880ARC

**Table 359** — geosrs:Clarke1880ARC

| | |
|---|---|
| URI | https://w3id.org/geosrs/Clarke1880ARC |
| Type | geosrs:Ellipsoid |
| Definition | Clarke 1880 (Arc) Spheroid |
| Example | geosrs:Clarke1880ARC |

## 13.3.21. Instance: geosrs:Clarke1880IGN

**Table 360** — geosrs:Clarke1880IGN

| | |
|---|---|
| URI | https://w3id.org/geosrs/Clarke1880IGN |
| Type | geosrs:Ellipsoid |
| Definition | Clarke 1880 (Ing) Spheroid |
| Example | geosrs:Clarke1880IGN |

## 13.3.22. Instance: geosrs:WGS66

**Table 361** — geosrs:WGS66

| | |
|---|---|
| URI | https://w3id.org/geosrs/WGS66 |
| Type | geosrs:Ellipsoid |
| Definition | WGS 66 Spheroid |

## 13.3.23. Instance: geosrs:WGS72

**Table 362** — geosrs:WGS72

| | |
|---|---|
| URI | https://w3id.org/geosrs/WGS72 |
| Type | geosrs:Ellipsoid |
| Definition | WGS 72 Spheroid |
| Example | geosrs:WGS72 |

## 13.3.24. Instance: geosrs:WGS84

**Table 363** — geosrs:WGS84

| | |
|---|---|
| URI | https://w3id.org/geosrs/WGS84 |
| Type | geosrs:Ellipsoid |
| Definition | WGS 84 Spheroid |
| Example | geosrs:WGS84 |

## 13.3.25. Instance: geosrs:Krassowsky1940

**Table 364** — geosrs:Krassowsky1940

| | |
|---|---|
| URI | https://w3id.org/geosrs/Krassowsky1940 |
| Type | geosrs:Ellipsoid |
| Definition | Krassowsky 1940 Spheroid |
| Example | geosrs:Krassowsky1940 |

A

# ANNEX A (NORMATIVE) ABSTRACT TEST SUITE

A

# ANNEX A (NORMATIVE) ABSTRACT TEST SUITE

A.0. Overview

## A.0. Overview

This Annex lists tests for the Conformance Classes defined in the main body sections of this Specification with links to their Requirements and test purpose method and type. Conformance classes may be used to signify the compatibility of a given implementation to parts of the CRS Ontology standard. They may be stated as part of a SPARQL 1.1 Service Description [SPARQLSERVDESC] .

## A.1. Conformance Class: Core

| CONFORMANCE CLASS A.1: CORE | |
|---|---|
| **IDENTIFIER** | `/conf/core` |
| **REQUIREMENTS CLASS** | /req/core |
| **CONFORMANCE TESTS** | Abstract test A.1-1: `/conf/core/coordinate_reference_system_types`<br>Abstract test A.1-2: `/conf/core/3d_coordinate_systems`<br>Abstract test A.1-3: `/conf/core/celestial_coordinate_systems`<br>Abstract test A.1-4: `/conf/core/temporal_coordinate_systems`<br>Abstract test A.1-5: `/conf/core/coordinate_system_components` |

### A.1.1. SPARQL

| ABSTRACT TEST A.1 | |
|---|---|
| **IDENTIFIER** | `/conf/core/sparql-protocol` |
| **REQUIREMENT** | /req/core/sparql-protocol |
| **TEST PURPOSE** | Check conformance with this requirement |
| **TEST METHOD** | Verify that the implementation accepts SPARQL queries and returns the correct results in the correct format, according to the SPARQL Query Language for RDF, the SPARQL Protocol for RDF and SPARQL Query Results XML Format W3C specifications. |
| **TEST-METHOD-TYPE** | Capabilities |
| **REFERENCE** | [sparql-protocol] ======= Conformance Class: 06-core.adoc |

| | |
|---|---|
| target | /req/06-core.adoc |
| abstract-test | /conf/core/Coordinate_Reference_System_Parameters |
| abstract-test | /conf/core/Coordinate_Reference_System_Types |
| abstract-test | /conf/core/Coordinate_Reference_System_Properties |

**Example 1:** ==== Coordinate Reference System Parameters

| | |
|---|---|
| target | /req/06-core.adoc/Coordinate_Reference_System_Parameters |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:AreaOfUse', 'geosrs:Extent', 'geosrs:GeographicBoundingBox', 'geosrs:AxesList', 'geosrs:SingleCRSList'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:AreaOfUse', 'geosrs:Extent', 'geosrs:GeographicBoundingBox', 'geosrs:AxesList', 'geosrs:SingleCRSList'] |

**Example 2:** ==== Coordinate Reference System Types

| | |
|---|---|
| target | /req/06-core.adoc/Coordinate_Reference_System_Types |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:BoundCRS', 'geosrs:CompoundCRS', 'geosrs:CRS', 'geosrs:EngineeringCRS', 'geosrs: |

| | |
|---|---|
| | GeocentricCRS', 'geosrs:GeodeticCRS', 'geosrs:GeographicCRS', 'geosrs:ParametricCRS', 'geosrs:ProjectedCRS', 'geosrs:SelenographicCRS', 'geosrs:ReferenceSystem', 'geosrs:SingleCRS', 'geosrs:SpatialReferenceSystem', 'geosrs:SpatioParametricCompoundCRS', 'geosrs:SpatioParametricTemporalCompoundCRS', 'geosrs:SpatioTemporalCompoundCRS', 'geosrs:StaticCRS', 'geosrs:TemporalCRS', 'geosrs:VerticalCRS'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:BoundCRS', 'geosrs:CompoundCRS', 'geosrs:CRS', 'geosrs:EngineeringCRS', 'geosrs:GeocentricCRS', 'geosrs:GeodeticCRS', 'geosrs:GeographicCRS', 'geosrs:ParametricCRS', 'geosrs:ProjectedCRS', 'geosrs:SelenographicCRS', 'geosrs:ReferenceSystem', 'geosrs:SingleCRS', 'geosrs:SpatialReferenceSystem', 'geosrs:SpatioParametricCompoundCRS', 'geosrs:SpatioParametricTemporalCompoundCRS', 'geosrs:SpatioTemporalCompoundCRS', 'geosrs:StaticCRS', 'geosrs:TemporalCRS', 'geosrs:VerticalCRS'] |

**Example 3:** ==== Coordinate Reference System Properties

| | |
|---|---|
| target | /req/06-core.adoc/Coordinate_Reference_System_Properties |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:baseCRS', 'geosrs:conversion', 'geosrs:coordinateSystem', 'geosrs:datum', 'geosrs:datumEnsemble', 'geosrs:domainOfValidity', 'geosrs:method', 'geocrs:asProj4', 'geocrs:asProjJSON', 'geocrs:asWKT', 'geosrs:EPSGcode'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:baseCRS', 'geosrs:conversion', 'geosrs:coordinateSystem', 'geosrs:datum', 'geosrs:datumEnsemble', 'geosrs:domainOfValidity', 'geosrs:method', 'geocrs:asProj4', 'geocrs:asProjJSON', 'geocrs:asWKT', 'geosrs:EPSGcode'] |

**Example 4:** === Conformance Class: 07-co_module.adoc

| | |
|---|---|
| target | /req/07-co_module.adoc |
| abstract-test | /conf/core/Coordinate_Operation_Methods |
| abstract-test | /conf/core/Coordinate_Operation_Parameters |
| abstract-test | /conf/core/Coordinate_Operation_Categories |
| abstract-test | /conf/core/Coordinate_Operation_Properties |

**Example 5:** ==== Coordinate Operation Methods

| | |
|---|---|
| target | /req/07-co_module.adoc/Coordinate_Operation_Methods |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:CoordinateOperation', 'geosrs:PassThroughOperation', 'geosrs:ConcatenatedOperation', 'geosrs:SingleOperation', 'geosrs:Transformation', 'geosrs:Conversion', 'geosrs:PointMotionOperation', 'geosrs:OperationMethod'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:CoordinateOperation', 'geosrs:PassThroughOperation', 'geosrs:ConcatenatedOperation', 'geosrs:SingleOperation', 'geosrs:Transformation', 'geosrs:Conversion', 'geosrs:PointMotionOperation', 'geosrs:OperationMethod'] |

**Example 6:** ==== Coordinate Operation Parameters

| | |
|---|---|
| target | /req/07-co_module.adoc/Coordinate_Operation_Parameters |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:GeneralOperationParameter', 'geosrs:OperationParameterGroup', 'geosrs:OperationParameter', 'geosrs:GeneralParameterValue', 'geosrs:ParameterValueGroup', 'geosrs:OperationParameterValue'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:GeneralOperationParameter', 'geosrs:OperationParameterGroup', 'geosrs:OperationParameter', 'geosrs:GeneralParameterValue', 'geosrs:ParameterValueGroup', 'geosrs:OperationParameterValue'] |

**Example 7:** ==== Coordinate Operation Categories

| | |
|---|---|
| target | /req/07-co_module.adoc/Coordinate_Operation_Categories |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:GeographicObject', 'geosrs:RegisterOperations', 'geosrs:ScaleOperation', 'geosrs:RotationOperation', 'geosrs:IdentityOperation', 'geosrs:ShearOperation', 'geosrs:TranslationOperation', 'geosrs:AffineTransformationOperation', 'geocrs: |

| | |
|---|---|
| | CoordinateTransformationOperation'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:GeographicObject', 'geosrs:RegisterOperations', 'geosrs:ScaleOperation', 'geosrs:RotationOperation', 'geosrs:IdentityOperation', 'geosrs:ShearOperation', 'geosrs:TranslationOperation', 'geosrs:AffineTransformationOperation', 'geocrs:CoordinateTransformationOperation'] |

**Example 8:** ==== Coordinate Operation Properties

| | |
|---|---|
| target | /req/07-co_module.adoc/Coordinate_Operation_Properties |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:derivingConversion', 'geosrs:parameter', 'geosrs:sourceCRS', 'geosrs:targetCRS'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:derivingConversion', 'geosrs:parameter', 'geosrs:sourceCRS', 'geosrs:targetCRS'] |

**Example 9:** === Conformance Class: 08-cs_module.adoc

| | |
|---|---|
| target | /req/08-cs_module.adoc |
| abstract-test | /conf/core/Temporal_Coordinate_Systems |
| abstract-test | /conf/core/3D_Coordinate_Systems |
| abstract-test | /conf/core/Coordinate_System_Types |
| abstract-test | /conf/core/Celestial_Coordinate_Systems |
| abstract-test | /conf/core/Coordinate_System_Components |
| abstract-test | /conf/core/Coordinate_System_Properties |

**Example 10:** ==== Temporal Coordinate Systems

| | |
|---|---|
| target | /req/08-cs_module.adoc/Temporal_Coordinate_Systems |
| test-purpose | Check conformance with this requirement |

| | |
|---|---|
| test-method | Verify that queries involving ['geosrs:1DCoordinateSystem', 'geosrs:DateTimeTemporalCoordinateSystem', 'geosrs:TemporalCountCoordinateSystem', 'geosrs:TemporalCoordinateSystem', 'geosrs:TemporalMeasureCoordinateSystem'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:1DCoordinateSystem', 'geosrs:DateTimeTemporalCoordinateSystem', 'geosrs:TemporalCountCoordinateSystem', 'geosrs:TemporalCoordinateSystem', 'geosrs:TemporalMeasureCoordinateSystem'] |

**Example 11:** ==== 3D Coordinate Systems

| | |
|---|---|
| target | /req/08-cs_module.adoc/3D_Coordinate_Systems |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:3DCoordinateSystem', 'geosrs:ConicalCoordinateSystem', 'geosrs:CylindricalCoordinateSystem', 'geosrs:EllipsoidalCoordinateSystem', 'geosrs:SphericalCoordinateSystem'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:3DCoordinateSystem', 'geosrs:ConicalCoordinateSystem', 'geosrs:CylindricalCoordinateSystem', 'geosrs:EllipsoidalCoordinateSystem', 'geosrs:SphericalCoordinateSystem'] |

**Example 12:** ==== Coordinate System Types

| | |
|---|---|
| target | /req/08-cs_module.adoc/Coordinate_System_Types |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:CoordinateSystem', 'geosrs:AffineCoordinateSystem', 'geosrs:BarycentricCoordinateSystem', 'geosrs:CartesianCoordinateSystem', 'geosrs:CurvilinearCoordinateSystem', 'geosrs:EngineeringCoordinateSystem', 'geosrs:GeodeticCoordinateSystem', 'geosrs:GeographicalCoordinateSystem', 'geosrs:GridCoordinateSystem', 'geosrs:HexagonalCoordinateSystem', 'geosrs:LocalCoordinateSystem', 'geosrs:ObliqueCoordinateSystem', 'geosrs:OrdinalCoordinateSystem', 'geosrs:OrthogonalCoordinateSystem', 'geosrs:ParametricCoordinateSystem', 'geosrs:PlanarCoordinateSystem', 'geosrs:PolarCoordinateSystem', 'geosrs:VerticalCoordinateSystem'] return the correct result on a test dataset. |

| | |
|---|---|
| test-method-type | Capabilities |
| reference | ['geosrs:CoordinateSystem', 'geosrs:AffineCoordinateSystem', 'geosrs:BarycentricCoordinateSystem', 'geosrs:CartesianCoordinateSystem', 'geosrs:CurvilinearCoordinateSystem', 'geosrs:EngineeringCoordinateSystem', 'geosrs:GeodeticCoordinateSystem', 'geosrs:GeographicalCoordinateSystem', 'geosrs:GridCoordinateSystem', 'geosrs:HexagonalCoordinateSystem', 'geosrs:LocalCoordinateSystem', 'geosrs:ObliqueCoordinateSystem', 'geosrs:OrdinalCoordinateSystem', 'geosrs:OrthogonalCoordinateSystem', 'geosrs:ParametricCoordinateSystem', 'geosrs:PlanarCoordinateSystem', 'geosrs:PolarCoordinateSystem', 'geosrs:VerticalCoordinateSystem'] |

**Example 13:** ==== Celestial Coordinate Systems

| | |
|---|---|
| target | /req/08-cs_module.adoc/Celestial_Coordinate_Systems |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:CelestialCoordinateSystem', 'geosrs:EclipticCoordinateSystem', 'geosrs:EquatorialCoordinateSystem', 'geosrs:GalacticCoordinateSystem', 'geosrs:HorizontalCoordinateSystem', 'geosrs:PerifocalCoordinateSystem', 'geosrs:SuperGalacticCS'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:CelestialCoordinateSystem', 'geosrs:EclipticCoordinateSystem', 'geosrs:EquatorialCoordinateSystem', 'geosrs:GalacticCoordinateSystem', 'geosrs:HorizontalCoordinateSystem', 'geosrs:PerifocalCoordinateSystem', 'geosrs:SuperGalacticCS'] |

**Example 14:** ==== Coordinate System Components

| | |
|---|---|
| target | /req/08-cs_module.adoc/Coordinate_System_Components |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:CoordinateSystemAxis'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:CoordinateSystemAxis'] |

**Example 15:** ==== Coordinate System Properties

| | |
|---|---|
| target | /req/08-cs_module.adoc/Coordinate_System_Properties |

| | |
|---|---|
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:axis', 'geosrs:axisDirection'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:axis', 'geosrs:axisDirection'] |

**Example 16:** === Conformance Class: 09-datum_module.adoc

| | |
|---|---|
| target | /req/09-datum_module.adoc |
| abstract-test | /conf/core/Datum_Types |
| abstract-test | /conf/core/Datum_Parameters |
| abstract-test | /conf/core/Spheroid_Types |
| abstract-test | /conf/core/Datum_Properties |
| abstract-test | /conf/core/Spheroid_Properties |

**Example 17:** ==== Datum Types

| | |
|---|---|
| target | /req/09-datum_module.adoc/Datum_Types |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:Datum', 'geosrs:GeodeticDatum', 'geosrs:DynamicGeodeticReferenceFrame', 'geosrs:VerticalDatum', 'geosrs:DynamicVerticalDatum', 'geosrs:ParametricDatum', 'geosrs:EngineeringDatum', 'geosrs:TemporalDatum', 'geosrs:DatumEnsemble'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:Datum', 'geosrs:GeodeticDatum', 'geosrs:DynamicGeodeticReferenceFrame', 'geosrs:VerticalDatum', 'geosrs:DynamicVerticalDatum', 'geosrs:ParametricDatum', 'geosrs:EngineeringDatum', 'geosrs:TemporalDatum', 'geosrs:DatumEnsemble'] |

**Example 18:** ==== Datum Parameters

| | |
|---|---|
| target | /req/09-datum_module.adoc/Datum_Parameters |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:PrimeMeridian', 'geosrs:DefiningParameter'] return the correct result on a test dataset. |

| | |
|---|---|
| test-method-type | Capabilities |
| reference | ['geosrs:PrimeMeridian', 'geosrs:DefiningParameter'] |

**Example 19:** ==== Spheroid Types

| | |
|---|---|
| target | /req/09-datum_module.adoc/Spheroid_Types |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:Ellipsoid', 'geosrs:TriaxialEllipsoid'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:Ellipsoid', 'geosrs:TriaxialEllipsoid'] |

**Example 20:** ==== Datum Properties

| | |
|---|---|
| target | /req/09-datum_module.adoc/Datum_Properties |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:datumDefiningParameter', 'geosrs:ellipsoid', 'geosrs:primeMeridian'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:datumDefiningParameter', 'geosrs:ellipsoid', 'geosrs:primeMeridian'] |

**Example 21:** ==== Spheroid Properties

| | |
|---|---|
| target | /req/09-datum_module.adoc/Spheroid_Properties |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:eccentricity', 'geosrs:inverseFlattening', 'geosrs:isSphere', 'geosrs:semiMajorAxis', 'geosrs:semiMinorAxis'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:eccentricity', 'geosrs:inverseFlattening', 'geosrs:isSphere', 'geosrs:semiMajorAxis', 'geosrs:semiMinorAxis'] |

**Example 22:** === Conformance Class: 10-srsapplication_module.adoc

| | |
|---|---|
| target | /req/10-srsapplication_module.adoc |
| abstract-test | /conf/core/SRS_Application_Types |
| abstract-test | /conf/core/Map_Types |

**Example 23:** ==== SRS Application Types

| | |
|---|---|
| target | /req/10-srsapplication_module.adoc/SRS_Application_Types |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:SRSApplication', 'geosrs:SpatialReferencing', 'geosrs:EngineeringSurvey', 'geosrs:SatelliteSurvey', 'geosrs:SatelliteNavigation', 'geosrs:CoastalHydrography', 'geosrs:OffshoreEngineering', 'geosrs:Hydrography', 'geosrs:Drilling', 'geosrs:OilAndGasExploration'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:SRSApplication', 'geosrs:SpatialReferencing', 'geosrs:EngineeringSurvey', 'geosrs:SatelliteSurvey', 'geosrs:SatelliteNavigation', 'geosrs:CoastalHydrography', 'geosrs:OffshoreEngineering', 'geosrs:Hydrography', 'geosrs:Drilling', 'geosrs:OilAndGasExploration'] |

**Example 24:** ==== Map Types

| | |
|---|---|
| target | /req/10-srsapplication_module.adoc/Map_Types |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:CadastreMap', 'geosrs:NauticalChart', 'geosrs:ThematicMap', 'geosrs:TopographicMap', 'geosrs:WeatherMap'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:CadastreMap', 'geosrs:NauticalChart', 'geosrs:ThematicMap', 'geosrs:TopographicMap', 'geosrs:WeatherMap'] |

**Example 25:** === Conformance Class: 11-projections_module.adoc

| | |
|---|---|
| target | /req/11-projections_module.adoc |
| abstract-test | /conf/core/Lenticular_Projections |

| | |
|---|---|
| abstract-test | /conf/core/Conformal_Projections |
| abstract-test | /conf/core/Minimum_Error_Projections |
| abstract-test | /conf/core/Pseudo_Azimuthal_Projections |
| abstract-test | /conf/core/Equal_Area_Projections |
| abstract-test | /conf/core/Pseudo_Conical_Projections |
| abstract-test | /conf/core/Globular_Projections |
| abstract-test | /conf/core/Pseudo_Cylindrical_Projections |
| abstract-test | /conf/core/Cylindrical_Projections |
| abstract-test | /conf/core/Compromise_Projections |
| abstract-test | /conf/core/Polyhedral_Projections |
| abstract-test | /conf/core/Equidistant_Projections |
| abstract-test | /conf/core/Conical_Projections |
| abstract-test | /conf/core/Azimuthal_Projections |
| abstract-test | /conf/core/Perspective_Projections |
| abstract-test | /conf/core/Polyconic_Projections |
| abstract-test | /conf/core/Stereographic_Projections |

**Example 26:** ==== Lenticular Projections

| | |
|---|---|
| target | /req/11-projections_module.adoc/Lenticular_Projections |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:A4Projection', 'geosrs:BriesemeisterProjection', 'geosrs:CiricIProjection', 'geosrs:CupolaProjection', 'geosrs:DedistortProjection', 'geosrs:DietrichKitadaProjection', 'geosrs:FranculaIIIProjection', 'geosrs:FranculaIVProjection', 'geosrs:FranculaIXProjection', 'geosrs:FranculaVIIIProjection', 'geosrs:FranculaVProjection', 'geosrs:FranculaXIIIProjection', 'geosrs:FranculaXIIProjection', 'geosrs:FranculaXIVProjection', 'geosrs:HamusoidalProjection', 'geosrs:KissProjection'] return the correct result on a test dataset. |
| test-method-type | Capabilities |

| | |
|---|---|
| reference | ['geosrs:A4Projection', 'geosrs:BriesemeisterProjection', 'geosrs:CiricIProjection', 'geosrs:CupolaProjection', 'geosrs:DedistortProjection', 'geosrs:DietrichKitadaProjection', 'geosrs:FranculaIIIProjection', 'geosrs:FranculaIVProjection', 'geosrs:FranculaIXProjection', 'geosrs:FranculaVIIIProjection', 'geosrs:FranculaVProjection', 'geosrs:FranculaXIIIProjection', 'geosrs:FranculaXIIProjection', 'geosrs:FranculaXIVProjection', 'geosrs:HamusoidalProjection', 'geosrs:KissProjection'] |

**Example 27:** ==== Conformal Projections

| | |
|---|---|
| target | /req/11-projections_module.adoc/Conformal_Projections |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:AdamsProjection', 'geosrs:AdamsWorldInASquareIIProjection', 'geosrs:AdamsWorldInASquareIProjection', 'geosrs:AugustEpicycloidalProjection', 'geosrs:CoxConformalProjection', 'geosrs:EisenlohrProjection', 'geosrs:GS50Projection', 'geosrs:PeirceQuincuncialProjection', 'geosrs:StereographicProjection'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:AdamsProjection', 'geosrs:AdamsWorldInASquareIIProjection', 'geosrs:AdamsWorldInASquareIProjection', 'geosrs:AugustEpicycloidalProjection', 'geosrs:CoxConformalProjection', 'geosrs:EisenlohrProjection', 'geosrs:GS50Projection', 'geosrs:PeirceQuincuncialProjection', 'geosrs:StereographicProjection'] |

**Example 28:** ==== Minimum Error Projections

| | |
|---|---|
| target | /req/11-projections_module.adoc/Minimum_Error_Projections |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:AiryProjection'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:AiryProjection'] |

**Example 29:** ==== Pseudo Azimuthal Projections

| | |
|---|---|
| target | /req/11-projections_module.adoc/Pseudo_Azimuthal_Projections |
| test-purpose | Check conformance with this requirement |

| | |
|---|---|
| test-method | Verify that queries involving ['geosrs:AitoffObliqueProjection', 'geosrs:AitoffProjection', 'geosrs:HammerProjection', 'geosrs:Strebe1995Projection', 'geosrs:WinkelTripelProjection'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:AitoffObliqueProjection', 'geosrs:AitoffProjection', 'geosrs:HammerProjection', 'geosrs:Strebe1995Projection', 'geosrs:WinkelTripelProjection'] |

**Example 30:** ==== Equal Area Projections

| | |
|---|---|
| target | /req/11-projections_module.adoc/Equal_Area_Projections |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:AlbersEqualAreaProjection', 'geosrs:AzimuthalEqualAreaProjection', 'geosrs:CylindricalEqualArea', 'geosrs:GallPetersProjection', 'geosrs:HoboDyerProjection', 'geosrs:LambertAzimuthalEqualArea', 'geosrs:TrystanEdwardsProjection', 'geosrs:WiechelProjection'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:AlbersEqualAreaProjection', 'geosrs:AzimuthalEqualAreaProjection', 'geosrs:CylindricalEqualArea', 'geosrs:GallPetersProjection', 'geosrs:HoboDyerProjection', 'geosrs:LambertAzimuthalEqualArea', 'geosrs:TrystanEdwardsProjection', 'geosrs:WiechelProjection'] |

**Example 31:** ==== Pseudo Conical Projections

| | |
|---|---|
| target | /req/11-projections_module.adoc/Pseudo_Conical_Projections |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:AmericanPolyconicProjection', 'geosrs:BonneProjection', 'geosrs:BottomleyProjection', 'geosrs:NicolosiGlobularProjection', 'geosrs:PtolemyIIProjection', 'geosrs:WernerProjection'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:AmericanPolyconicProjection', 'geosrs:BonneProjection', 'geosrs:BottomleyProjection', 'geosrs:NicolosiGlobularProjection', 'geosrs:PtolemyIIProjection', 'geosrs:WernerProjection'] |

**Example 32:** ==== Globular Projections

| | |
|---|---|
| target | /req/11-projections_module.adoc/Globular_Projections |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:ApianGlobularIProjection', 'geosrs:BaconGlobularProjection', 'geosrs:FournierGlobularIProjection'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:ApianGlobularIProjection', 'geosrs:BaconGlobularProjection', 'geosrs:FournierGlobularIProjection'] |

**Example 33:** ==== Pseudo Cylindrical Projections

| | |
|---|---|
| target | /req/11-projections_module.adoc/Pseudo_Cylindrical_Projections |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:ApianIIProjection', 'geosrs:AtlantisProjection', 'geosrs:BaranyiIIIProjection', 'geosrs:BaranyiIIProjection', 'geosrs:BaranyiIProjection', 'geosrs:BaranyiIVProjection', 'geosrs:BoggsEumorphicProjection', 'geosrs:BromleyProjection', 'geosrs:CabotProjection', 'geosrs:CollignonProjection', 'geosrs:CrasterParabolicProjection', 'geosrs:DeakinMinimumErrorProjection', 'geosrs:Eckert1Projection', 'geosrs:Eckert2Projection', 'geosrs:Eckert3Projection', 'geosrs:Eckert4Projection', 'geosrs:Eckert5Projection', 'geosrs:Eckert6Projection', 'geosrs:EqualEarthProjection', 'geosrs:FaheyProjection', 'geosrs:FoucautProjection', 'geosrs:FoucautSinusoidalProjection', 'geosrs:FournierIIProjection', 'geosrs:GinzburgVIIIProjection', 'geosrs:GoodeHomolosineProjection', 'geosrs:HEALPixProjection', 'geosrs:HufnagelProjection', 'geosrs:Kavrayskiy7Projection', 'geosrs:LoximuthalProjection', 'geosrs:MayrProjection', 'geosrs:McBrydeThomasFlatPolarParabolicProjection', 'geosrs:McBrydeThomasFlatPolarQuarticProjection', 'geosrs:McBrydeThomasFlatPolarSinusoidalProjection', 'geosrs:McBrydeThomasIIProjection', 'geosrs:McBrydeThomasIProjection', 'geosrs:NaturalEarth2Projection', 'geosrs:NaturalEarthProjection', 'geosrs:NellHammerProjection', 'geosrs:NellProjection', 'geosrs:OrteliusOvalProjection', 'geosrs:PutninsP1Projection', 'geosrs:PutninsP2Projection', 'geosrs:PutninsP3Projection', 'geosrs:PutninsP5Projection', 'geosrs:PutninsP6Projection', 'geosrs:QuarticAuthalicProjection', 'geosrs:RobinsonProjection', 'geosrs:SinusoidalProjection', 'geosrs:TheTimesProjection', 'geosrs:ToblerG1Projection', 'geosrs:ToblerHyperellipticalProjection', 'geosrs: |

| | |
|---|---|
| | WagnerIIIProjection', 'geosrs:WagnerIIProjection', 'geosrs:WagnerIProjection', 'geosrs:WagnerIVProjection', 'geosrs:WagnerVIProjection', 'geosrs:WagnerVProjection', 'geosrs:WerenskioldIProjection', "geosrs:PutninsP3'Projection", "geosrs:PutninsP4'Projection", "geosrs:PutninsP5'Projection", "geosrs:PutninsP6'Projection"] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:ApianIIProjection', 'geosrs:AtlantisProjection', 'geosrs:BaranyiIIIProjection', 'geosrs:BaranyiIIProjection', 'geosrs:BaranyiIProjection', 'geosrs:BaranyiIVProjection', 'geosrs:BoggsEumorphicProjection', 'geosrs:BromleyProjection', 'geosrs:CabotProjection', 'geosrs:CollignonProjection', 'geosrs:CrasterParabolicProjection', 'geosrs:DeakinMinimumErrorProjection', 'geosrs:Eckert1Projection', 'geosrs:Eckert2Projection', 'geosrs:Eckert3Projection', 'geosrs:Eckert4Projection', 'geosrs:Eckert5Projection', 'geosrs:Eckert6Projection', 'geosrs:EqualEarthProjection', 'geosrs:FaheyProjection', 'geosrs:FoucautProjection', 'geosrs:FoucautSinusoidalProjection', 'geosrs:FournierIIProjection', 'geosrs:GinzburgVIIIProjection', 'geosrs:GoodeHomolosineProjection', 'geosrs:HEALPixProjection', 'geosrs:HufnagelProjection', 'geosrs:Kavrayskiy7Projection', 'geosrs:LoximuthalProjection', 'geosrs:MayrProjection', 'geosrs:McBrydeThomasFlatPolarParabolicProjection', 'geosrs:McBrydeThomasFlatPolarQuarticProjection', 'geosrs:McBrydeThomasFlatPolarSinusoidalProjection', 'geosrs:McBrydeThomasIIProjection', 'geosrs:McBrydeThomasIProjection', 'geosrs:NaturalEarth2Projection', 'geosrs:NaturalEarthProjection', 'geosrs:NellHammerProjection', 'geosrs:NellProjection', 'geosrs:OrteliusOvalProjection', 'geosrs:PutninsP1Projection', 'geosrs:PutninsP2Projection', 'geosrs:PutninsP3Projection', 'geosrs:PutninsP5Projection', 'geosrs:PutninsP6Projection', 'geosrs:QuarticAuthalicProjection', 'geosrs:RobinsonProjection', 'geosrs:SinusoidalProjection', 'geosrs:TheTimesProjection', 'geosrs:ToblerG1Projection', 'geosrs:ToblerHyperellipticalProjection', 'geosrs:WagnerIIIProjection', 'geosrs:WagnerIIProjection', 'geosrs:WagnerIProjection', 'geosrs:WagnerIVProjection', 'geosrs:WagnerVIProjection', 'geosrs:WagnerVProjection', 'geosrs:WerenskioldIProjection', "geosrs:PutninsP3'Projection", "geosrs:PutninsP4'Projection", "geosrs:PutninsP5'Projection", "geosrs:PutninsP6'Projection"] |

**Example 34:** ==== Cylindrical Projections

| | |
|---|---|
| target | /req/11-projections_module.adoc/Cylindrical_Projections |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:ArdenCloseProjection', 'geosrs:BraunPerspectiveProjection', 'geosrs:CompactMillerProjection', 'geosrs: |

| | |
|---|---|
| | CylindricalStereographicProjection', 'geosrs:KarchenkoShabanovaProjection', 'geosrs:LabordeProjection', 'geosrs:MercatorProjection', 'geosrs:MillerProjection', 'geosrs:PattersonCylindricalProjection', 'geosrs:PavlovProjection', 'geosrs:ToblerCylindricalIIIProjection', 'geosrs:ToblerCylindricalIIProjection', 'geosrs:UrmayevIIIProjection', 'geosrs:WebMercatorProjection'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:ArdenCloseProjection', 'geosrs:BraunPerspectiveProjection', 'geosrs:CompactMillerProjection', 'geosrs:CylindricalStereographicProjection', 'geosrs:KarchenkoShabanovaProjection', 'geosrs:LabordeProjection', 'geosrs:MercatorProjection', 'geosrs:MillerProjection', 'geosrs:PattersonCylindricalProjection', 'geosrs:PavlovProjection', 'geosrs:ToblerCylindricalIIIProjection', 'geosrs:ToblerCylindricalIIProjection', 'geosrs:UrmayevIIIProjection', 'geosrs:WebMercatorProjection'] |

**Example 35:** ==== Compromise Projections

| | |
|---|---|
| target | /req/11-projections_module.adoc/Compromise_Projections |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:ArmadilloProjection', 'geosrs:BakerDinomicProjection', 'geosrs:BertinProjection', 'geosrs:ChamberlinTrimetricProjection', 'geosrs:DenoyerSemiEllipticalProjection', 'geosrs:FairgrieveProjection', 'geosrs:LarriveeProjection', 'geosrs:PetermannStarProjection', 'geosrs:SpilhausOceanicProjection', 'geosrs:VanDerGrintenIIIProjection', 'geosrs:WinkelIIProjection', 'geosrs:WinkelIProjection', 'geosrs:WinkelSnyderProjection'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:ArmadilloProjection', 'geosrs:BakerDinomicProjection', 'geosrs:BertinProjection', 'geosrs:ChamberlinTrimetricProjection', 'geosrs:DenoyerSemiEllipticalProjection', 'geosrs:FairgrieveProjection', 'geosrs:LarriveeProjection', 'geosrs:PetermannStarProjection', 'geosrs:SpilhausOceanicProjection', 'geosrs:VanDerGrintenIIIProjection', 'geosrs:WinkelIIProjection', 'geosrs:WinkelIProjection', 'geosrs:WinkelSnyderProjection'] |

**Example 36:** ==== Polyhedral Projections

| | |
|---|---|
| target | /req/11-projections_module.adoc/Polyhedral_Projections |
| test-purpose | Check conformance with this requirement |

| | |
|---|---|
| test-method | Verify that queries involving ['geosrs:AuthaGraphProjection', 'geosrs:CahillKeyesProjection', 'geosrs:CollignonButterflyProjection', 'geosrs:DodecahedralProjection', 'geosrs:DymaxionProjection', 'geosrs:GnomonicButterflyProjection', 'geosrs:GnomonicCubedSphereProjection', 'geosrs:GnomonicIcosahedronProjection', 'geosrs:GuyouProjection', 'geosrs:IcosahedralProjection', 'geosrs:LeeProjection', 'geosrs:MyrahedalProjection', 'geosrs:OctantProjection', 'geosrs:QuadrilateralizedSphericalCubeProjection', 'geosrs:WatermanButterflyProjection'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:AuthaGraphProjection', 'geosrs:CahillKeyesProjection', 'geosrs:CollignonButterflyProjection', 'geosrs:DodecahedralProjection', 'geosrs:DymaxionProjection', 'geosrs:GnomonicButterflyProjection', 'geosrs:GnomonicCubedSphereProjection', 'geosrs:GnomonicIcosahedronProjection', 'geosrs:GuyouProjection', 'geosrs:IcosahedralProjection', 'geosrs:LeeProjection', 'geosrs:MyrahedalProjection', 'geosrs:OctantProjection', 'geosrs:QuadrilateralizedSphericalCubeProjection', 'geosrs:WatermanButterflyProjection'] |

**Example 37:** ==== Equidistant Projections

| | |
|---|---|
| target | /req/11-projections_module.adoc/Equidistant_Projections |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:AzimuthalEquidistantProjection', 'geosrs:BerghausStarProjection', 'geosrs:CassiniProjection', 'geosrs:EquidistantConicProjection', 'geosrs:EquidistantCylindricalProjection', 'geosrs:EquirectangularProjection', 'geosrs:ObliquePlateCarreeProjection', 'geosrs:PlateCarreeProjection', 'geosrs:TwoPointEquidistantProjection'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:AzimuthalEquidistantProjection', 'geosrs:BerghausStarProjection', 'geosrs:CassiniProjection', 'geosrs:EquidistantConicProjection', 'geosrs:EquidistantCylindricalProjection', 'geosrs:EquirectangularProjection', 'geosrs:ObliquePlateCarreeProjection', 'geosrs:PlateCarreeProjection', 'geosrs:TwoPointEquidistantProjection'] |

**Example 38:** ==== Conical Projections

| | |
|---|---|
| target | /req/11-projections_module.adoc/Conical_Projections |
| test-purpose | Check conformance with this requirement |

| | |
|---|---|
| test-method | Verify that queries involving ['geosrs:BipolarObliqueConicConformalProjection', 'geosrs:CentralConicProjection', 'geosrs:HerschelConformalConicProjection', 'geosrs:Krovak', 'geosrs:LambertConformalConicProjection', 'geosrs:MurdochIIIProjection', 'geosrs:MurdochIIProjection', 'geosrs:MurdochIProjection', 'geosrs:SchjerningIProjection', 'geosrs:VitkovskyIProjection'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:BipolarObliqueConicConformalProjection', 'geosrs:CentralConicProjection', 'geosrs:HerschelConformalConicProjection', 'geosrs:Krovak', 'geosrs:LambertConformalConicProjection', 'geosrs:MurdochIIIProjection', 'geosrs:MurdochIIProjection', 'geosrs:MurdochIProjection', 'geosrs:SchjerningIProjection', 'geosrs:VitkovskyIProjection'] |

**Example 39:** ==== Azimuthal Projections

| | |
|---|---|
| target | /req/11-projections_module.adoc/Azimuthal_Projections |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:BreusingGeometricProjection', 'geosrs:BreusingHarmonicProjection', 'geosrs:GinzburgIIProjection', 'geosrs:GinzburgIProjection', 'geosrs:GnomonicProjection', 'geosrs:JamesAzimuthalProjection'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:BreusingGeometricProjection', 'geosrs:BreusingHarmonicProjection', 'geosrs:GinzburgIIProjection', 'geosrs:GinzburgIProjection', 'geosrs:GnomonicProjection', 'geosrs:JamesAzimuthalProjection'] |

**Example 40:** ==== Perspective Projections

| | |
|---|---|
| target | /req/11-projections_module.adoc/Perspective_Projections |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:CentralCylindricalProjection', 'geosrs:GeneralVerticalPerspectiveProjection', 'geosrs:GilbertTwoWorldPerspectiveProjection', 'geosrs:LaHireProjection', 'geosrs:LorgnaProjection', 'geosrs:LowryProjection', 'geosrs:OrthographicProjection', 'geosrs:PerspectiveConicProjection', 'geosrs:TiltedPerspectiveProjection', |

| | |
|---|---|
| | 'geosrs:VerticalPerspectiveProjection'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:CentralCylindricalProjection', 'geosrs:GeneralVerticalPerspectiveProjection', 'geosrs:GilbertTwoWorldPerspectiveProjection', 'geosrs:LaHireProjection', 'geosrs:LorgnaProjection', 'geosrs:LowryProjection', 'geosrs:OrthographicProjection', 'geosrs:PerspectiveConicProjection', 'geosrs:TiltedPerspectiveProjection', 'geosrs:VerticalPerspectiveProjection'] |

**Example 41:** ==== Polyconic Projections

| | |
|---|---|
| target | /req/11-projections_module.adoc/Polyconic_Projections |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:GinzburgIVProjection', 'geosrs:GinzburgIXProjection', 'geosrs:GinzburgVIProjection', 'geosrs:GinzburgVProjection', 'geosrs:GottWagnerProjection', 'geosrs:HillEucyclicProjection', 'geosrs:LagrangeProjection', 'geosrs:LaskowskiProjection', 'geosrs:RectangularPolyconicProjection', 'geosrs:StabiusWernerIIIProjection', 'geosrs:StabiusWernerIProjection', 'geosrs:VanDerGrintenIIProjection', 'geosrs:VanDerGrintenIProjection', 'geosrs:VanDerGrintenIVProjection', 'geosrs:WagnerIXProjection', 'geosrs:WagnerVIIIProjection', 'geosrs:WagnerVIIProjection'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:GinzburgIVProjection', 'geosrs:GinzburgIXProjection', 'geosrs:GinzburgVIProjection', 'geosrs:GinzburgVProjection', 'geosrs:GottWagnerProjection', 'geosrs:HillEucyclicProjection', 'geosrs:LagrangeProjection', 'geosrs:LaskowskiProjection', 'geosrs:RectangularPolyconicProjection', 'geosrs:StabiusWernerIIIProjection', 'geosrs:StabiusWernerIProjection', 'geosrs:VanDerGrintenIIProjection', 'geosrs:VanDerGrintenIProjection', 'geosrs:VanDerGrintenIVProjection', 'geosrs:WagnerIXProjection', 'geosrs:WagnerVIIIProjection', 'geosrs:WagnerVIIProjection'] |

**Example 42:** ==== Stereographic Projections

| | |
|---|---|
| target | /req/11-projections_module.adoc/Stereographic_Projections |
| test-purpose | Check conformance with this requirement |

| | |
|---|---|
| test-method | Verify that queries involving ['geosrs:MillerOblatedStereographicProjection', 'geosrs:RoussilheProjection'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:MillerOblatedStereographicProjection', 'geosrs:RoussilheProjection'] |

**Example 43:** === Conformance Class: 12-planet_module.adoc

| | |
|---|---|
| target | /req/12-planet_module.adoc |
| abstract-test | /conf/core/Interstellar_Body |

**Example 44:** ==== Interstellar Body

| | |
|---|---|
| target | /req/12-planet_module.adoc/Interstellar_Body |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:ArtificialSatellite', 'geosrs:Asteroid', 'geosrs:Comet', 'geosrs:DwarfPlanet', 'geosrs:InterstellarBody', 'geosrs:Moon', 'geosrs:NaturalSatellite', 'geosrs:Planet', 'geosrs:PlanetStatus', 'geosrs:Plutoid', 'geosrs:Star'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:ArtificialSatellite', 'geosrs:Asteroid', 'geosrs:Comet', 'geosrs:DwarfPlanet', 'geosrs:InterstellarBody', 'geosrs:Moon', 'geosrs:NaturalSatellite', 'geosrs:Planet', 'geosrs:PlanetStatus', 'geosrs:Plutoid', 'geosrs:Star'] |

**Example 45:** === Conformance Class: 13-instances.adoc

| | |
|---|---|
| target | /req/13-instances.adoc |
| abstract-test | /conf/core/SRS_Literal_Types |
| abstract-test | /conf/core/Coordinate_System_Axis |
| abstract-test | /conf/core/Spheroids |

**Example 46:** ==== SRS Literal Types

| | |
|---|---|
| target | /req/13-instances.adoc/SRS_Literal_Types |
| test-purpose | Check conformance with this requirement |

| | |
|---|---|
| test-method | Verify that queries involving ['geosrs:proj4Literal', 'geosrs:projJSONLiteral', 'geosrs:wktLiteral'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:proj4Literal', 'geosrs:projJSONLiteral', 'geosrs:wktLiteral'] |

**Example 47:** ==== Coordinate System Axis

| | |
|---|---|
| target | /req/13-instances.adoc/Coordinate_System_Axis |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:down', 'geosrs:east', 'geosrs:north', 'geosrs:south', 'geosrs:up', 'geosrs:west'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:down', 'geosrs:east', 'geosrs:north', 'geosrs:south', 'geosrs:up', 'geosrs:west'] |

**Example 48:** ==== Spheroids

| | |
|---|---|
| target | /req/13-instances.adoc/Spheroids |
| test-purpose | Check conformance with this requirement |
| test-method | Verify that queries involving ['geosrs:GRS1980', 'geosrs:GRS67', 'geosrs:PZ90', 'geosrs:Airy1830', 'geosrs:AiryModified1849', 'geosrs:International1924', 'geosrs:AustralianNationalSpheroid', 'geosrs:Everest1930', 'geosrs:Clarke1866', 'geosrs:Plessis1817', 'geosrs:Danish1876', 'geosrs:Struve1860', 'geosrs:IAG1975', 'geosrs:Clarke1858', 'geosrs:Clarke1880', 'geosrs:Helmert1906', 'geosrs:CGCS2000', 'geosrs:GSK-2011', 'geosrs:Zach1812', 'geosrs:Clarke1880ARC', 'geosrs:Clarke1880IGN', 'geosrs:WGS66', 'geosrs:WGS72', 'geosrs:WGS84', 'geosrs:Krassowsky1940'] return the correct result on a test dataset. |
| test-method-type | Capabilities |
| reference | ['geosrs:GRS1980', 'geosrs:GRS67', 'geosrs:PZ90', 'geosrs:Airy1830', 'geosrs:AiryModified1849', 'geosrs:International1924', 'geosrs:AustralianNationalSpheroid', 'geosrs:Everest1930', 'geosrs:Clarke1866', 'geosrs:Plessis1817', 'geosrs:Danish1876', 'geosrs:Struve1860', 'geosrs:IAG1975', 'geosrs:Clarke1858', 'geosrs:Clarke1880', 'geosrs:Helmert1906', 'geosrs:CGCS2000', 'geosrs:GSK-2011', 'geosrs:Zach1812', 'geosrs: |

Clarke1880ARC', 'geosrs:Clarke1880IGN', 'geosrs:WGS66', 'geosrs:WGS72', 'geosrs:WGS84', 'geosrs:Krassowsky1940']

**Example 49**
== Alignments

# Overview

The prefixes used for the ontologies mapped to in all following sections are given in the following table.

| | |
|---|---|
| ign: | http://data.ign.fr/def/ignf# |
| iso19111: | http://def.isotc211.org/iso19112/2019/SpatialReferencingByGeographicIdentifier# |
| geosrs: | http://www.opengis.net/ont/geosparql# |
| ifc: | https://standards.buildingsmart.org/IFC/DEV/IFC4/ADD2_TC1/OWL/ |
| owl: | http://www.w3.org/2002/07/owl# |
| prov: | http://www.w3.org/ns/prov# |
| rdf: | http://www.w3.org/1999/02/22-rdf-syntax-ns# |
| rdfs: | http://www.w3.org/2000/01/rdf-schema# |

=== IGN Ontology

| FROM ELEMENT | MAPPING RELATION | TO ELEMENT | NOTES |
|---|---|---|---|
| geosrs:CoordinateSystem | owl:equivalentClass | ign:CoordinateSystem | - |
| geosrs:Datum | owl:equivalentClass | ign:Datum | - |
| geosrs:Ellipsoid | owl:equivalentClass | ign:Ellipsoid | - |
| geosrs:Conversion | owl:equivalentClass | ign:Conversion | - |
| geosrs:CoordinateOperation | owl:equivalentClass | ign:CoordinateOperation | - |

| FROM ELEMENT | MAPPING RELATION | TO ELEMENT | NOTES |
|---|---|---|---|
| geosrs:OperationMethod | owl:equivalentClass | ign:OperationMethod | - |
| geosrs:OperationParameter | owl:equivalentClass | ign:OperationParameter | - |
| geosrs:OperationParameterValue | owl:equivalentClass | ign:OperationParameterValue | - |
| geosrs:SingleOperation | owl:equivalentClass | ign:SingleOperation | - |
| geosrs:Transformation | owl:equivalentClass | ign:Transformation | - |
| geosrs:CartesianCoordinateSystem | owl:equivalentClass | ign:CartesianCS | - |
| geosrs:CoordinateSystem | owl:equivalentClass | ign:CoordinateSystem | - |
| geosrs:CoordinateSystemAxis | owl:equivalentClass | ign:CoordinateSystemAxis | - |
| geosrs:EllipsoidalCoordinateSystem | owl:equivalentClass | ign:EllipsoidalCS | - |
| geosrs:VerticalCoordinateSystem | owl:equivalentClass | ign:VerticalCS | - |
| geosrs:Datum | owl:equivalentClass | ign:Datum | - |
| geosrs:Ellipsoid | owl:equivalentClass | ign:Ellipsoid | - |
| geosrs:GeodeticDatum | owl:equivalentClass | ign:GeodeticDatum | - |
| geosrs:PrimeMeridian | owl:equivalentClass | ign:PrimeMeridian | - |
| geosrs:VerticalDatum | owl:equivalentClass | ign:VerticalDatum | - |
| geosrs:AxesList | owl:equivalentClass | ign:AxesList | - |
| geosrs:CRS | owl:equivalentClass | ign:CRS | - |
| geosrs:CompoundCRS | owl:equivalentClass | ign:CompoundCRS | - |
| geosrs:Extent | owl:equivalentClass | ign:Extent | - |
| geosrs:GeodeticCRS | owl:equivalentClass | ign:GeodeticCRS | - |
| geosrs:GeographicBoundingBox | owl:equivalentClass | ign:GeographicBoundingBox | - |

| FROM ELEMENT | MAPPING RELATION | TO ELEMENT | NOTES |
|---|---|---|---|
| geosrs:ProjectedCRS | owl:equivalentClass | ign:ProjectedCRS | - |
| geosrs:SingleCRS | owl:equivalentClass | ign:SingleCRS | - |
| geosrs:SingleCRSList | owl:equivalentClass | ign:SingleCRSList | - |
| geosrs:VerticalCRS | owl:equivalentClass | ign:VerticalCRS | - |

=== ISO19111 Ontology

| FROM ELEMENT | MAPPING RELATION | TO ELEMENT | NOTES |
|---|---|---|---|
| geosrs:CoordinateSystem | owl:equivalentClass | iso19111:CoordinateSystem | - |
| geosrs:Datum | owl:equivalentClass | iso19111:Datum | - |
| geosrs:Ellipsoid | owl:equivalentClass | iso19111:Ellipsoid | - |
| geosrs:CRS | owl:equivalentClass | iso19111:CRS | - |
| geosrs:CompoundCRS | owl:equivalentClass | iso19111:CompoundCRS | - |
| geosrs:EngineeringCRS | owl:equivalentClass | iso19111:EngineeringCRS | - |
| geosrs:GeodeticCRS | owl:equivalentClass | iso19111:GeodeticCRS | - |
| geosrs:GeographicCRS | owl:equivalentClass | iso19111:GeographicCRS | - |
| geosrs:ParametricCRS | owl:equivalentClass | iso19111:ParametricCRS | - |
| geosrs:ProjectedCRS | owl:equivalentClass | iso19111:ProjectedCRS | - |
| geosrs:SingleCRS | owl:equivalentClass | iso19111:SingleCRS | - |
| geosrs:TemporalCRS | owl:equivalentClass | iso19111:TemporalCRS | - |
| geosrs:VerticalCRS | owl:equivalentClass | iso19111:VerticalCRS | - |

=== IFC Ontology

| FROM ELEMENT | MAPPING RELATION | TO ELEMENT | NOTES |
|---|---|---|---|
| geosrs:AxisDirection | owl:equivalentClass | ifc:IfcDirection | - |
| geosrs:CRS | owl:equivalentClass | ifc:IfcCoordinateReferenceSystem | - |
| geosrs:CoordinateOperation | owl:equivalentClass | ifc:IfcCoordinateOperation | - |
| geosrs:ProjectedCRS | owl:equivalentClass | ifc:IfcProjectedCRS | - |
| geosrs:axis | owl:equivalentProperty | ifc:axis_IfcAxis1Placement | - |
| geosrs:sourceCRS | owl:equivalentProperty | ifc:sourceCRS | - |
| geosrs:targetCRS | owl:equivalentProperty | ifc:targetCRS | - |

== SHACL Shapes

# Overview

== Application Examples

# Overview

=== Minimum Example

=== Elaborate Example

== JSON-LD Context

We provide JSON-LD contexts to be compatible with other JSON-based formats which provide coordinate reference system data.

# Overview

=== Compatibility to PROJJSON

PROJSON is an established format to share geospatial data which has emerge from the PROJ library and encodes the WKT encoding of coordiante references systems. By adding a JSON-LD context to the PROJJSON standard we achieve an immediate compatibility with an established standard simply by extending it by one simple statement.

```
{
    "@context": "https://opengeospatial.github.io/ontology-crs/context/geosrs-
context.json",
    "$schema": "https://proj.org/schemas/v0.7/projjson.schema.json",
    ...
}
```

We provide examples of application of this JSON-LD context with the distribution of this standard.

=== Compatibility to OGCJSON

The OGC CRS working group is aiming towards the creation of their own JSON format for CRS. The JSON-LD context we provide aims to be compatible with both PROJJSON and OGCJSON.

== Revision History

| DATE | RELEASE | AUTHOR | PRIMARY CLAUSES MODIFIED | DESCRIPTION |
|---|---|---|---|---|
| 2016-04-28 | 0.1 | G. Editor | all | initial version |

== Bibliography

The TC has approved Springer LNCS as the official document citation type. Springer LNCS is widely used in technical and computer science journals and other publications For citations in the text please use square brackets and consecutive numbers: [1], [2], [3] Actual References: [n] Journal: Author Surname, A.: Title. Publication Title. Volume number, Issue number, Pages Used (Year Published)

**Example 50:**

- [], Ben-Kiki, O., Evans, C., Ingy döt Net: **YAML Ain't Markup Language,** https://yaml.org/
- [], Berners-Lee, T., Fielding, R., Masinter, L.: **IETF RFC 3986 — Uniform Resource Identifier (URI): Generic Syntax,** http://tools.ietf.org/rfc/rfc3986.txt
- [], IANA: **Link Relation Types,** https://www.iana.org/assignments/link-relations/link-relations.xml
- [], ISO: **ISO 19142:2010 — Geographic information — Web Feature Service** https://www.iso.org/standard/42136.html
- [], OGC: **Web Feature Service 2.0,** http://docs.opengeospatial.org/is/09-025r2/09-025r2.html

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