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Open Geospatial Consortium

OGC DOCUMENT TITLE

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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.

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SECURITY CONSIDERATIONS

No security considerations have been made for this Standard.

V SUBMITTING ORGANIZATIONS

The following organizations submitted this Document to the Open Geospatial Consortium (OGC):

- Open Geospatial Consortium

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VII SOURCE OF THE CONTENT FOR THIS OGC DOCUMENT

VIII VALIDITY OF CONTENT

IX FUTURE WORK

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

X 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.

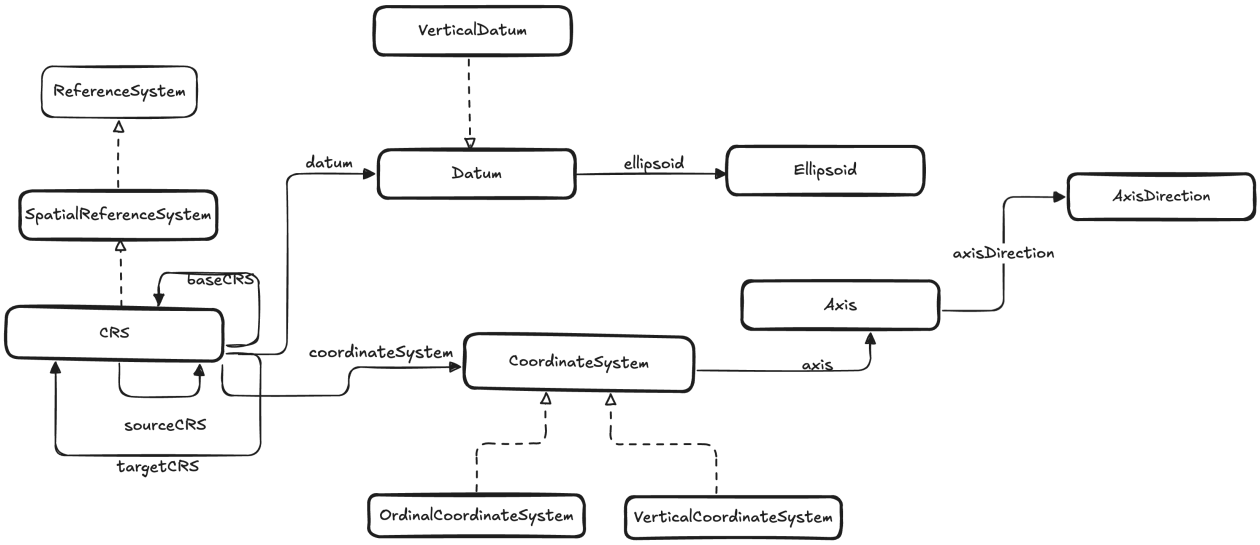

Figure 1

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/core`
TARGET TYPE	Implementation Specification
CONFORMANCE CLASS	Conformance class A.1: `/conf/core`
REQUIREMENT	/req/core/Coordinate_Reference_System_Parameters /req/core/Coordinate_Reference_System_Types /req/core/Coordinate_Reference_System_Properties

6.1. Coordinate Reference System Parameters

REQUIREMENT 1: COORDINATE REFERENCE SYSTEM PARAMETERS	
IDENTIFIER	`/req/core/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/core/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/core/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/co`
TARGET TYPE	Implementation Specification
CONFORMANCE CLASS	Conformance class A.2: `/conf/co`
REQUIREMENT	/req/co/Coordinate_Operation_Methods /req/co/Coordinate_Operation_Parameters /req/co/Coordinate_Operation_Categories /req/co/Coordinate_Operation_Properties

7.1. Coordinate Operation Categories

REQUIREMENT 4: COORDINATE OPERATION CATEGORIES	
IDENTIFIER	`/req/co/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/co/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/co/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/co/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/cs`
TARGET TYPE	Implementation Specification
CONFORMANCE CLASS	Conformance class A.3: `/conf/cs`
REQUIREMENT	/req/cs/Temporal_Coordinate_Systems /req/cs/3D_Coordinate_Systems /req/cs/Coordinate_System_Types /req/cs/Celestial_Coordinate_Systems /req/cs/Coordinate_System_Components /req/cs/Coordinate_System_Properties

8.1. 3D Coordinate Systems

REQUIREMENT 8: 3D COORDINATE SYSTEMS	
IDENTIFIER	`/req/cs/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/cs/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/cs/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/cs/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/cs/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/cs/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/datum`
TARGET TYPE	Implementation Specification
CONFORMANCE CLASS	Conformance class A.4: `/conf/datum`
REQUIREMENT	/req/datum/Datum_Types /req/datum/Datum_Parameters /req/datum/Spheroid_Types /req/datum/Datum_Properties /req/datum/Spheroid_Properties

9.1. Datum Parameters

REQUIREMENT 14: DATUM PARAMETERS	
IDENTIFIER	`/req/datum/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/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/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/datum/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/datum/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/srsapplication`
TARGET TYPE	Implementation Specification
CONFORMANCE CLASS	Conformance class A.5: `/conf/srsapplication`
REQUIREMENT	/req/srsapplication/SRS_Application_Types /req/srsapplication/Map_Types

10.1. Map Types

REQUIREMENT 19: MAP TYPES	
IDENTIFIER	`/req/srsapplication/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/srsapplication/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/projections`
TARGET TYPE	Implementation Specification
CONFORMANCE CLASS	Conformance class A.6: `/conf/projections`
REQUIREMENT	/req/projections/Lenticular_Projections /req/projections/Conformal_Projections /req/projections/Minimum_Error_Projections /req/projections/Pseudo_Azimuthal_Projections /req/projections/Equal_Area_Projections /req/projections/Pseudo_Conical_Projections /req/projections/Globular_Projections /req/projections/Pseudo_Cylindrical_Projections /req/projections/Cylindrical_Projections /req/projections/Compromise_Projections /req/projections/Polyhedral_Projections /req/projections/Equidistant_Projections /req/projections/Conical_Projections /req/projections/Azimuthal_Projections /req/projections/Perspective_Projections /req/projections/Polyconic_Projections

REQUIREMENTS CLASS 6: 11-PROJECTIONS_MODULE.ADOC EXTENSION	
	/req/projections/Stereographic_Projections

11.1. Azimuthal Projections

REQUIREMENT 21: AZIMUTHAL PROJECTIONS	
IDENTIFIER	`/req/projections/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/projections/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:WinkelIIProjection, 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/projections/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/projections/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/projections/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/projections/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/projections/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/projections/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/projections/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/projections/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/projections/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/projections/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/projections/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/projections/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/projections/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/projections/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/projections/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/planet`
TARGET TYPE	Implementation Specification
CONFORMANCE CLASS	Conformance class A.7: `/conf/planet`
REQUIREMENT	/req/planet/Interstellar_Body

12.1. Interstellar Body

REQUIREMENT 38: INTERSTELLAR BODY	
IDENTIFIER	`/req/planet/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/instances`
TARGET TYPE	Implementation Specification
CONFORMANCE CLASS	Conformance class A.8: `/conf/instances`
REQUIREMENT	/req/instances/SRS_Literal_Types /req/instances/Coordinate_System_Axis /req/instances/Spheroids

13.1. Coordinate System Axis

REQUIREMENT 39: COORDINATE SYSTEM AXIS	
IDENTIFIER	`/req/instances/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/instances/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:Datatype[rdf:Datatype]
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/instances/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,

REQUIREMENT 41: SPHEROIDS	
	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: 06-CORE.ADOC	
IDENTIFIER	`/conf/core`
REQUIREMENTS CLASS	Requirements class 1: `/req/core`
CONFORMANCE TESTS	Abstract test A.1: `/conf/core/Coordinate_Reference_System_Parameters` Abstract test A.2: `/conf/core/Coordinate_Reference_System_Types` Abstract test A.3: `/conf/core/Coordinate_Reference_System_Properties`

A.1.1. Coordinate Reference System Parameters

ABSTRACT TEST A.1	
IDENTIFIER	`/conf/core/Coordinate_Reference_System_Parameters`

ABSTRACT TEST A.1	
REQUIREMENT	Requirement 1: `/req/core/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

A.1.2. Coordinate Reference System Types

ABSTRACT TEST A.2	
IDENTIFIER	`/conf/core/Coordinate_Reference_System_Types`
REQUIREMENT	Requirement 3: `/req/core/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

A.1.3. Coordinate Reference System Properties

ABSTRACT TEST A.3	
IDENTIFIER	`/conf/core/Coordinate_Reference_System_Properties`
REQUIREMENT	Requirement 2: `/req/core/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

A.2. Conformance Class: Co

CONFORMANCE CLASS A.2: 07-CO_MODULE.ADOC	
IDENTIFIER	`/conf/co`
REQUIREMENTS CLASS	Requirements class 2: `/req/co`
CONFORMANCE TESTS	Abstract test A.4: `/conf/co/Coordinate_Operation_Methods` Abstract test A.5: `/conf/co/Coordinate_Operation_Parameters` Abstract test A.6: `/conf/co/Coordinate_Operation_Categories` Abstract test A.7: `/conf/co/Coordinate_Operation_Properties`

A.2.1. Coordinate Operation Methods

ABSTRACT TEST A.4	
IDENTIFIER	`/conf/co/Coordinate_Operation_Methods`
REQUIREMENT	Requirement 5: `/req/co/Coordinate_Operation_Methods`

ABSTRACT TEST A.4	
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

A.2.2. Coordinate Operation Parameters

ABSTRACT TEST A.5	
IDENTIFIER	`/conf/co/Coordinate_Operation_Parameters`
REQUIREMENT	Requirement 6: `/req/co/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

A.2.3. Coordinate Operation Categories

ABSTRACT TEST A.6	
IDENTIFIER	`/conf/co/Coordinate_Operation_Categories`
REQUIREMENT	Requirement 4: `/req/co/Coordinate_Operation_Categories`

ABSTRACT TEST A.6	
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

A.2.4. Coordinate Operation Properties

ABSTRACT TEST A.7	
IDENTIFIER	`/conf/co/Coordinate_Operation_Properties`
REQUIREMENT	Requirement 7: `/req/co/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

A.3. Conformance Class: Cs

CONFORMANCE CLASS A.3: 08-CS_MODULE.ADOC	
IDENTIFIER	`/conf/cs`
REQUIREMENTS CLASS	Requirements class 3: `/req/cs`

CONFORMANCE CLASS A.3: 08-CS_MODULE.ADOC	
CONFORMANCE TESTS	Abstract test A.8: `/conf/cs/Temporal_Coordinate_Systems` Abstract test A.9: `/conf/cs/3D_Coordinate_Systems` Abstract test A.10: `/conf/cs/Coordinate_System_Types` Abstract test A.11: `/conf/cs/Celestial_Coordinate_Systems` Abstract test A.12: `/conf/cs/Coordinate_System_Components` Abstract test A.13: `/conf/cs/Coordinate_System_Properties`

A.3.1. Temporal Coordinate Systems

ABSTRACT TEST A.8	
IDENTIFIER	`/conf/cs/Temporal_Coordinate_Systems`
REQUIREMENT	Requirement 13: `/req/cs/Temporal_Coordinate_Systems`
TEST PURPOSE	Check conformance with this requirement
TEST METHOD	Verify that queries involving geosrs:1DCoordinateSystem geosrs:DateTimeTemporalCoordinate System geosrs:TemporalCountCoordinateSystem geosrs:TemporalCoordinateSystem geosrs: TemporalMeasureCoordinateSystem return the correct result on a test dataset.
TEST-METHOD-TYPE	Capabilities
REFERENCE	geosrs:1DCoordinateSystem geosrs:DateTimeTemporalCoordinateSystem geosrs:Temporal CountCoordinateSystem geosrs:TemporalCoordinateSystem geosrs:TemporalMeasureCoordinate System

A.3.2. 3D Coordinate Systems

ABSTRACT TEST A.9	
IDENTIFIER	`/conf/cs/3D_Coordinate_Systems`
REQUIREMENT	Requirement 8: `/req/cs/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:Spherical CoordinateSystem return the correct result on a test dataset.

ABSTRACT TEST A.9	
TEST-METHOD-TYPE	Capabilities
REFERENCE	geosrs:3DCoordinateSystem geosrs:ConicalCoordinateSystem geosrs:CylindricalCoordinate System geosrs:EllipsoidalCoordinateSystem geosrs:SphericalCoordinateSystem

A.3.3. Coordinate System Types

ABSTRACT TEST A.10	
IDENTIFIER	`/conf/cs/Coordinate_System_Types`
REQUIREMENT	Requirement 12: `/req/cs/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:CurvilinearCoordinate System geosrs:EngineeringCoordinateSystem geosrs:GeodeticCoordinateSystem geosrs: GeographicalCoordinateSystem geosrs:GridCoordinateSystem geosrs:HexagonalCoordinate System geosrs:LocalCoordinateSystem geosrs:ObliqueCoordinateSystem geosrs:Ordinal CoordinateSystem 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:Engineering CoordinateSystem geosrs:GeodeticCoordinateSystem geosrs:GeographicalCoordinateSystem geosrs:GridCoordinateSystem geosrs:HexagonalCoordinateSystem geosrs:LocalCoordinate System geosrs:ObliqueCoordinateSystem geosrs:OrdinalCoordinateSystem geosrs:Orthogonal CoordinateSystem geosrs:ParametricCoordinateSystem geosrs:PlanarCoordinateSystem geosrs: PolarCoordinateSystem geosrs:VerticalCoordinateSystem

A.3.4. Celestial Coordinate Systems

ABSTRACT TEST A.11	
IDENTIFIER	`/conf/cs/Celestial_Coordinate_Systems`

ABSTRACT TEST A.11	
REQUIREMENT	Requirement 9: `/req/cs/Celestial_Coordinate_Systems`
TEST PURPOSE	Check conformance with this requirement
TEST METHOD	Verify that queries involving geosrs:CelestialCoordinateSystem geosrs:EclipticCoordinate System geosrs:EquatorialCoordinateSystem geosrs:GalacticCoordinateSystem geosrs:Horizontal CoordinateSystem geosrs:PerifocalCoordinateSystem geosrs:SuperGalacticCS return the correct result on a test dataset.
TEST-METHOD-TYPE	Capabilities
REFERENCE	geosrs:CelestialCoordinateSystem geosrs:EclipticCoordinateSystem geosrs:EquatorialCoordinate System geosrs:GalacticCoordinateSystem geosrs:HorizontalCoordinateSystem geosrs:Perifocal CoordinateSystem geosrs:SuperGalacticCS

A.3.5. Coordinate System Components

ABSTRACT TEST A.12	
IDENTIFIER	`/conf/cs/Coordinate_System_Components`
REQUIREMENT	Requirement 10: `/req/cs/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

A.3.6. Coordinate System Properties

ABSTRACT TEST A.13	
IDENTIFIER	`/conf/cs/Coordinate_System_Properties`
REQUIREMENT	Requirement 11: `/req/cs/Coordinate_System_Properties`

ABSTRACT TEST A.13	
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

A.4. Conformance Class: Datum

CONFORMANCE CLASS A.4: 09-DATUM_MODULE.ADOC	
IDENTIFIER	`/conf/datum`
REQUIREMENTS CLASS	Requirements class 4: `/req/datum`
CONFORMANCE TESTS	Abstract test A.14: `/conf/datum/Datum_Types` Abstract test A.15: `/conf/datum/Datum_Parameters` Abstract test A.16: `/conf/datum/Spheroid_Types` Abstract test A.17: `/conf/datum/Datum_Properties` Abstract test A.18: `/conf/datum/Spheroid_Properties`

A.4.1. Datum Types

ABSTRACT TEST A.14	
IDENTIFIER	`/conf/datum/Datum_Types`
REQUIREMENT	Requirement 16: `/req/datum/Datum_Types`
TEST PURPOSE	Check conformance with this requirement
TEST METHOD	Verify that queries involving geosrs:Datum geosrs:GeodeticDatum geosrs:DynamicGeodetic ReferenceFrame geosrs:VerticalDatum geosrs:DynamicVerticalDatum geosrs:ParametricDatum geosrs:EngineeringDatum geosrs:TemporalDatum geosrs:DatumEnsemble return the correct result on a test dataset.

ABSTRACT TEST A.14	
TEST-METHOD-TYPE	Capabilities
REFERENCE	geosrs:Datum geosrs:GeodeticDatum geosrs:DynamicGeodeticReferenceFrame geosrs:VerticalDatum geosrs:DynamicVerticalDatum geosrs:ParametricDatum geosrs:EngineeringDatum geosrs:TemporalDatum geosrs:DatumEnsemble

A.4.2. Datum Parameters

ABSTRACT TEST A.15	
IDENTIFIER	`/conf/datum/Datum_Parameters`
REQUIREMENT	Requirement 14: `/req/datum/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

A.4.3. Spheroid Types

ABSTRACT TEST A.16	
IDENTIFIER	`/conf/datum/Spheroid_Types`
REQUIREMENT	Requirement 18: `/req/datum/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

A.4.4. Datum Properties

ABSTRACT TEST A.17	
IDENTIFIER	`/conf/datum/Datum_Properties`
REQUIREMENT	Requirement 15: `/req/datum/Datum_Properties`
TEST PURPOSE	Check conformance with this requirement
TEST METHOD	Verify that queries involving geosrs:datumDefiningParameter geosrs:ellipsoid geosrs:prime Meridian return the correct result on a test dataset.
TEST-METHOD-TYPE	Capabilities
REFERENCE	geosrs:datumDefiningParameter geosrs:ellipsoid geosrs:primeMeridian

A.4.5. Spheroid Properties

ABSTRACT TEST A.18	
IDENTIFIER	`/conf/datum/Spheroid_Properties`
REQUIREMENT	Requirement 17: `/req/datum/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:semi MinorAxis

A.5. Conformance Class: Srsapplication

CONFORMANCE CLASS A.5: 10-SRSAPPLICATION_MODULE.ADOC	
IDENTIFIER	`/conf/srsapplication`
REQUIREMENTS CLASS	Requirements class 5: `/req/srsapplication`
CONFORMANCE TESTS	Abstract test A.19: `/conf/srsapplication/SRS_Application_Types` Abstract test A.20: `/conf/srsapplication/Map_Types`

A.5.1. SRS Application Types

ABSTRACT TEST A.19	
IDENTIFIER	`/conf/srsapplication/SRS_Application_Types`
REQUIREMENT	Requirement 20: `/req/srsapplication/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

A.5.2. Map Types

ABSTRACT TEST A.20	
IDENTIFIER	`/conf/srsapplication/Map_Types`
REQUIREMENT	Requirement 19: `/req/srsapplication/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.

ABSTRACT TEST A.20	
TEST-METHOD-TYPE	Capabilities
REFERENCE	geosrs:CadastreMap geosrs:NauticalChart geosrs:ThematicMap geosrs:TopographicMap geosrs:WeatherMap

A.6. Conformance Class: Projections

CONFORMANCE CLASS A.6: 11-PROJECTIONS_MODULE.ADOC	
IDENTIFIER	`/conf/projections`
REQUIREMENTS CLASS	Requirements class 6: `/req/projections`
CONFORMANCE TESTS	Abstract test A.21: `/conf/projections/Lenticular_Projections` Abstract test A.22: `/conf/projections/Conformal_Projections` Abstract test A.23: `/conf/projections/Minimum_Error_Projections` Abstract test A.24: `/conf/projections/Pseudo_Azimuthal_Projections` Abstract test A.25: `/conf/projections/Equal_Area_Projections` Abstract test A.26: `/conf/projections/Pseudo_Conical_Projections` Abstract test A.27: `/conf/projections/Globular_Projections` Abstract test A.28: `/conf/projections/Pseudo_Cylindrical_Projections` Abstract test A.29: `/conf/projections/Cylindrical_Projections` Abstract test A.30: `/conf/projections/Compromise_Projections` Abstract test A.31: `/conf/projections/Polyhedral_Projections` Abstract test A.32: `/conf/projections/Equidistant_Projections` Abstract test A.33: `/conf/projections/Conical_Projections` Abstract test A.34: `/conf/projections/Azimuthal_Projections` Abstract test A.35: `/conf/projections/Perspective_Projections` Abstract test A.36: `/conf/projections/Polyconic_Projections` Abstract test A.37: `/conf/projections/Stereographic_Projections`

A.6.1. Lenticular Projections

ABSTRACT TEST A.21	
IDENTIFIER	`/conf/projections/Lenticular_Projections`

ABSTRACT TEST A.21	
REQUIREMENT	Requirement 29: `/req/projections/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

A.6.2. Conformal Projections

ABSTRACT TEST A.22	
IDENTIFIER	`/conf/projections/Conformal_Projections`
REQUIREMENT	Requirement 23: `/req/projections/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

A.6.3. Minimum Error Projections

ABSTRACT TEST A.23	
IDENTIFIER	`/conf/projections/Minimum_Error_Projections`
REQUIREMENT	Requirement 30: `/req/projections/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

A.6.4. Pseudo Azimuthal Projections

ABSTRACT TEST A.24	
IDENTIFIER	`/conf/projections/Pseudo_Azimuthal_Projections`
REQUIREMENT	Requirement 34: `/req/projections/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

A.6.5. Equal Area Projections

ABSTRACT TEST A.25	
IDENTIFIER	`/conf/projections/Equal_Area_Projections`
REQUIREMENT	Requirement 26: `/req/projections/Equal_Area_Projections`
TEST PURPOSE	Check conformance with this requirement
TEST METHOD	Verify that queries involving geosrs:AlbersEqualAreaProjection geosrs:AzimuthalEqualArea Projection 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:CylindricalEqual Area geosrs:GallPetersProjection geosrs:HoboDyerProjection geosrs:LambertAzimuthalEqualArea geosrs:TrystanEdwardsProjection geosrs:WiechelProjection

A.6.6. Pseudo Conical Projections

ABSTRACT TEST A.26	
IDENTIFIER	`/conf/projections/Pseudo_Conical_Projections`
REQUIREMENT	Requirement 35: `/req/projections/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

A.6.7. Globular Projections

ABSTRACT TEST A.27	
IDENTIFIER	`/conf/projections/Globular_Projections`
REQUIREMENT	Requirement 28: `/req/projections/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

A.6.8. Pseudo Cylindrical Projections

ABSTRACT TEST A.28	
IDENTIFIER	`/conf/projections/Pseudo_Cylindrical_Projections`
REQUIREMENT	Requirement 36: `/req/projections/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:

ABSTRACT TEST A.28	
	PutninsP3'Projection geosrs:PutninsP4'Projection geosrs:PutninsP5'Projection geosrs:Putnins P6'Projection return the correct result on a test dataset.
TEST-METHOD-TYPE	Capabilities
REFERENCE	geosrs:ApianIIProjection geosrs:AtlantisProjection geosrs:BaranyiIIIProjection geosrs:Baranyi IIProjection geosrs:BaranyiIProjection geosrs:BaranyiIVProjection geosrs:BoggsEumorphic Projection 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:Mayr Projection geosrs:McBrydeThomasFlatPolarParabolicProjection geosrs:McBrydeThomasFlat PolarQuarticProjection geosrs:McBrydeThomasFlatPolarSinusoidalProjection geosrs:McBryde ThomasIIProjection geosrs:McBrydeThomasIProjection geosrs:NaturalEarth2Projection geosrs: NaturalEarthProjection geosrs:NellHammerProjection geosrs:NellProjection geosrs:OrteliusOval Projection geosrs:PutninsP1Projection geosrs:PutninsP2Projection geosrs:PutninsP3Projection geosrs:PutninsP5Projection geosrs:PutninsP6Projection geosrs:QuarticAuthalicProjection geosrs:RobinsonProjection geosrs:SinusoidalProjection geosrs:TheTimesProjection geosrs:Tobler G1Projection geosrs:ToblerHyperellipticalProjection geosrs:WagnerIIIProjection geosrs:Wagner IIProjection geosrs:WagnerIProjection geosrs:WagnerIVProjection geosrs:WagnerVIProjection geosrs:WagnerVProjection geosrs:WerenskioldIProjection geosrs:PutninsP3'Projection geosrs: PutninsP4'Projection geosrs:PutninsP5'Projection geosrs:PutninsP6'Projection

A.6.9. Cylindrical Projections

ABSTRACT TEST A.29	
IDENTIFIER	`/conf/projections/Cylindrical_Projections`
REQUIREMENT	Requirement 25: `/req/projections/Cylindrical_Projections`
TEST PURPOSE	Check conformance with this requirement
TEST METHOD	Verify that queries involving geosrs:ArdenCloseProjection geosrs:BraunPerspectiveProjection geosrs:CompactMillerProjection geosrs:CylindricalStereographicProjection geosrs:Karchenko ShabanovaProjection geosrs:LabordeProjection geosrs:MercatorProjection geosrs:MillerProjection geosrs:PattersonCylindricalProjection geosrs:PavlovProjection geosrs:ToblerCylindricalIIProjection geosrs:ToblerCylindricalIProjection geosrs:UrmayevIIIProjection geosrs:WebMercatorProjection return the correct result on a test dataset.

ABSTRACT TEST A.29	
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:ToblerCylindricalIProjection geosrs:UrmayevIIIProjection geosrs:WebMercatorProjection

A.6.10. Compromise Projections

ABSTRACT TEST A.30	
IDENTIFIER	`/conf/projections/Compromise_Projections`
REQUIREMENT	Requirement 22: `/req/projections/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:WinkelIIIProjection 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:WinkelIIIProjection geosrs:WinkelIProjection geosrs:WinkelSnyderProjection

A.6.11. Polyhedral Projections

ABSTRACT TEST A.31	
IDENTIFIER	`/conf/projections/Polyhedral_Projections`
REQUIREMENT	Requirement 33: `/req/projections/Polyhedral_Projections`

ABSTRACT TEST A.31	
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

A.6.12. Equidistant Projections

ABSTRACT TEST A.32	
IDENTIFIER	`/conf/projections/Equidistant_Projections`
REQUIREMENT	Requirement 27: `/req/projections/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

A.6.13. Conical Projections

ABSTRACT TEST A.33	
IDENTIFIER	`/conf/projections/Conical_Projections`
REQUIREMENT	Requirement 24: `/req/projections/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

A.6.14. Azimuthal Projections

ABSTRACT TEST A.34	
IDENTIFIER	`/conf/projections/Azimuthal_Projections`
REQUIREMENT	Requirement 21: `/req/projections/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

A.6.15. Perspective Projections

ABSTRACT TEST A.35	
IDENTIFIER	`/conf/projections/Perspective_Projections`
REQUIREMENT	Requirement 31: `/req/projections/Perspective_Projections`
TEST PURPOSE	Check conformance with this requirement
TEST METHOD	Verify that queries involving geosrs:CentralCylindricalProjection geosrs:GeneralVertical PerspectiveProjection geosrs:GilbertTwoWorldPerspectiveProjection geosrs:LaHireProjection geosrs:LorgnaProjection geosrs:LowryProjection geosrs:OrthographicProjection geosrs: PerspectiveConicProjection geosrs:TiltedPerspectiveProjection geosrs:VerticalPerspective Projection return the correct result on a test dataset.
TEST-METHOD-TYPE	Capabilities
REFERENCE	geosrs:CentralCylindricalProjection geosrs:GeneralVerticalPerspectiveProjection geosrs:Gilbert TwoWorldPerspectiveProjection geosrs:LaHireProjection geosrs:LorgnaProjection geosrs:Lowry Projection geosrs:OrthographicProjection geosrs:PerspectiveConicProjection geosrs:Tilted PerspectiveProjection geosrs:VerticalPerspectiveProjection

A.6.16. Polyconic Projections

ABSTRACT TEST A.36	
IDENTIFIER	`/conf/projections/Polyconic_Projections`
REQUIREMENT	Requirement 32: `/req/projections/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:Hill EucyclicProjection geosrs:LagrangeProjection geosrs:LaskowskiProjection geosrs:Rectangular PolyconicProjection 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

ABSTRACT TEST A.36	
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

A.6.17. Stereographic Projections

ABSTRACT TEST A.37	
IDENTIFIER	`/conf/projections/Stereographic_Projections`
REQUIREMENT	Requirement 37: `/req/projections/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

A.7. Conformance Class: Planet

CONFORMANCE CLASS A.7: 12-PLANET_MODULE.ADOC	
IDENTIFIER	`/conf/planet`
REQUIREMENTS CLASS	Requirements class 7: `/req/planet`
CONFORMANCE TEST	Abstract test A.38: `/conf/planet/Interstellar_Body`

A.7.1. Interstellar Body

ABSTRACT TEST A.38	
IDENTIFIER	`/conf/planet/Interstellar_Body`
REQUIREMENT	Requirement 38: `/req/planet/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

A.8. Conformance Class: Instances

CONFORMANCE CLASS A.8: 13-INSTANCES.ADOC	
IDENTIFIER	`/conf/instances`
REQUIREMENTS CLASS	Requirements class 8: `/req/instances`
CONFORMANCE TESTS	Abstract test A.39: `/conf/instances/SRS_Literal_Types` Abstract test A.40: `/conf/instances/Coordinate_System_Axis` Abstract test A.41: `/conf/instances/Spheroids`

A.8.1. SRS Literal Types

ABSTRACT TEST A.39	
IDENTIFIER	`/conf/instances/SRS_Literal_Types`

ABSTRACT TEST A.39	
REQUIREMENT	Requirement 40: `/req/instances/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

A.8.2. Coordinate System Axis

ABSTRACT TEST A.40	
IDENTIFIER	`/conf/instances/Coordinate_System_Axis`
REQUIREMENT	Requirement 39: `/req/instances/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

A.8.3. Spheroids

ABSTRACT TEST A.41	
IDENTIFIER	`/conf/instances/Spheroids`
REQUIREMENT	Requirement 41: `/req/instances/Spheroids`
TEST PURPOSE	Check conformance with this requirement

ABSTRACT TEST A.41	
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

B

ANNEX B (INFORMATIVE) ALIGNMENTS

B

ANNEX B (INFORMATIVE) ALIGNMENTS

Overview

Overview

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

Table B.1 — Alignment: Namespaces

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#

B.1. IGN Ontology

Table B.2 — Alignment: 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	-
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	-

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

B.2. ISO19111 Ontology

Table B.3 — Alignment: 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	-

FROM ELEMENT	MAPPING RELATION	TO ELEMENT	NOTES
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	-

B.3. IFC Ontology

Table B.4 — Alignment: 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	-

C

ANNEX C (INFORMATIVE) SHACL SHAPES

ANNEX C (INFORMATIVE) SHACL SHAPES

Overview

Overview

D

ANNEX D (INFORMATIVE) APPLICATION EXAMPLES

ANNEX D (INFORMATIVE) APPLICATION EXAMPLES

Overview

Overview

D.1. Minimum Example

D.2. Elaborate Example

E

ANNEX E (INFORMATIVE) JSON-LD CONTEXT

E

ANNEX E (INFORMATIVE) JSON-LD CONTEXT

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

Overview

Overview

E.1. 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",
    ...
}
```

Listing E.1

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

E.2. 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.

F

ANNEX F (INFORMATIVE) REVISION HISTORY

ANNEX F (INFORMATIVE) REVISION HISTORY

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

BIBLIOGRAPHY

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NOTE: 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)

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