



DRAFT OGC GEOSCIENCE MARKUP LANGUAGE (GEOSCIML) - PART 3: JSON ENCODING

STANDARD
Implementation

DRAFT

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ABSTRACT

GeoSciML (Geoscience Markup Language) is a Standard for representing geological features commonly described and portrayed in geological maps, cross sections, geological reports and databases. The Standard is composed of multiple parts. Part 1 describes a logical model, which was originally developed by the IUGS CGI (Commission for the Management and Application of Geoscience Information). Part 3 (this document) describes encoding rules for the exchange of geological map data, geological time scales, boreholes, and metadata for laboratory analyses. The encoding rules define an application of Features and Geometry JSON, also known as JSON-FG.



KEYWORDS

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

ogcdoc, OGC document, JSON, JSON-FG, schema, GeoSciML, geology, geoscience



PREFACE

The primary goal of this specification is to capture the schema, and encoding syntax of key elements described and portrayed in geological maps and databases, in order to enable information systems to interoperate with such data.



SECURITY CONSIDERATIONS

No security considerations have been made for this Standard.



SUBMITTING ORGANIZATIONS

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

- Organization One
- Organization Two



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1 SCOPE

1

SCOPE

Part 3 of GeoSciML covers the representation in JSON of features from the domain of geology (earth materials, geological units and stratigraphy, geological time, geological structures, geomorphology, geochemistry) and sampling features common to the practice of geoscience, such as boreholes and geological specimens.



2

CONFORMANCE

This standard defines a JSON encoding which conforms to the OGC JSON-FG 1.0 encoding rules.

Requirements for one standardization target type are considered:

- Data instance

The normative artefacts for JSON encoding are the JSON Schema files provided online with this specification. Those documents explicitly provide the requirements that must be met by any JSON instance document claiming compliance to this specification. Any requirements that cannot be expressed in JSON Schema are described in the relevant section of this document. Therefore, compliant JSON instances shall:

1. validate with JSON Schema files,
2. pass compliance tests listed in relevant compliance sections.

Conformance with this standard shall be checked using all the relevant tests specified in Annex A (normative) of this document. The framework, concepts, and methodology for testing, and the criteria to be achieved to claim conformance are specified in the [OGC Compliance Testing Policies and Procedures](#) and the [OGC Compliance Testing web site](#).

All requirements-classes and conformance-classes described in this document are owned by the standard(s) identified.



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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.

ISO: ISO/TS 19103:2005, *Geographic information – Conceptual schema language*. International Organization for Standardization, Geneva (2005). <https://www.iso.org/standard/37800.html>.

ISO: ISO 19107:2003, *Geographic information – Spatial schema*. International Organization for Standardization, Geneva (2003). <https://www.iso.org/standard/26012.html>.

ISO: ISO 19108:2002/Cor 1:2006, *Geographic information – Temporal schema – Technical Corrigendum 1*. International Organization for Standardization, Geneva (2002). <https://www.iso.org/standard/44883.html>.

ISO: ISO 8601, *Data elements and interchange formats – Information interchange – Representation of dates and times*. International Organization for Standardization, Geneva <https://www.iso.org/standard/40874.html>.

ISO: ISO 19156:2011, *Geographic information – Observations and measurements*. International Organization for Standardization, Geneva (2011). <https://www.iso.org/standard/32574.html>.

ISO: ISO 19111:2007, *Geographic information – Spatial referencing by coordinates*. International Organization for Standardization, Geneva (2007). <https://www.iso.org/standard/41126.html>.

ISO: ISO 19115:2003, *Geographic information – Metadata*. International Organization for Standardization, Geneva (2003). <https://www.iso.org/standard/26020.html>.

ISO: ISO 19101:2002, *Geographic information – Reference model*. International Organization for Standardization, Geneva (2002). <https://www.iso.org/standard/26002.html>.

Simon Cox: OGC 10-025r1, *Observations and Measurements – XML Implementation*. Open Geospatial Consortium (2011). <https://docs.ogc.org/is/10-025r1/10-025r1/pdf>.

T. Berners-Lee, R. Fielding, L. Masinter: IETF RFC 3986, *Uniform Resource Identifier (URI): Generic Syntax*. RFC Publisher (2005). <https://www.rfc-editor.org/info/rfc3986>.

OMG: Unified Modeling Language (UML). Version 2.3

INSPIRE Thematic Working Group Geology: *INSPIRE Data Specification for the spatial data theme Geology Version 3.0*. European Commission Joint Research Centre (2013)

Clemens Portele, Panagiotis (Peter) A. Vretanos: OGC 21-045r1, *OGC Features and Geometries JSON – Part 1: Core*. Open Geospatial Consortium (2026). <http://www.opengis.net/doc/IS/json-fg-1/1.0>.

ISO: ISO 19101-1:2014, *Geographic information – Reference model – Part 1: Fundamentals*. International Organization for Standardization, Geneva (2014). <https://www.iso.org/standard/59164.html>.



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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. feature

abstraction of real world phenomena

Note 1 to entry: A feature may occur as a type or an instance. Feature type or feature instance shall be used when only one is meant.

[SOURCE: ISO 19101-1:2014]

4.2. feature collection

set of features from a dataset

[SOURCE: ISO 19168-1:2020]

4.3. JSON document

an information resource (series of octets) described by the “application/json” media type [JSON Schema 2020-12]

Note 1 to entry: The terms “JSON document,” “JSON text,” and “JSON value” are interchangeable.

[SOURCE: OGC 21-045r1]

4.4. JSON object

an unordered set of name/value pairs mapping the name to a JSON value [JSON Schema 2020-12, modified]

4.5. JSON-FG document

a JSON document that contains a JSON-FG root object

[SOURCE: OGC 21-045r1]

4.6. JSON-FG feature

a JSON object that validates against the JSON-FG feature schema

[SOURCE: OGC 21-045r1]

4.7. JSON-FG feature collection

a JSON object that validates against the JSON-FG feature collection schema

[SOURCE: OGC 21-045r1]

4.8. JSON-FG geometry

a JSON object that validates against the JSON-FG geometry schema

[SOURCE: OGC 21-045r1]

4.9. JSON-FG object

a JSON object that is either a JSON-FG feature, a JSON-FG feature collection, or a JSON-FG geometry

[SOURCE: OGC 21-045r1]

4.10. JSON-FG root object

a JSON-FG object that is not a direct children of another JSON-FG object

[SOURCE: OGC 21-045r1]

4.11. <JSON> key

the name of a member

[SOURCE: OGC 21-045r1]

4.12. <JSON> member

a name/value pair in a JSON object

[SOURCE: OGC 21-045r1]



5

CONVENTIONS

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

5.1. Identifiers ---

The normative provisions in this specification are denoted by a URI constructed using this pattern:

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

All requirements and conformance tests that appear in this document are denoted by a partial URI which is relative to this base. The identifier supports cross-referencing of class membership, dependencies, and links from each conformance test to the requirements tested. In this specification identifiers are expressed as partial URIs or paths, which can be appended to a base URI that identifies the specification as a whole in order to construct a complete URI for identification in an external context.

The URI for each requirements class has the form:

[http://www.opengis.net/spec/geosciml-part2/5.0/req/\[classM\]](http://www.opengis.net/spec/geosciml-part2/5.0/req/[classM])

The URI for each requirement or recommendation has the form:

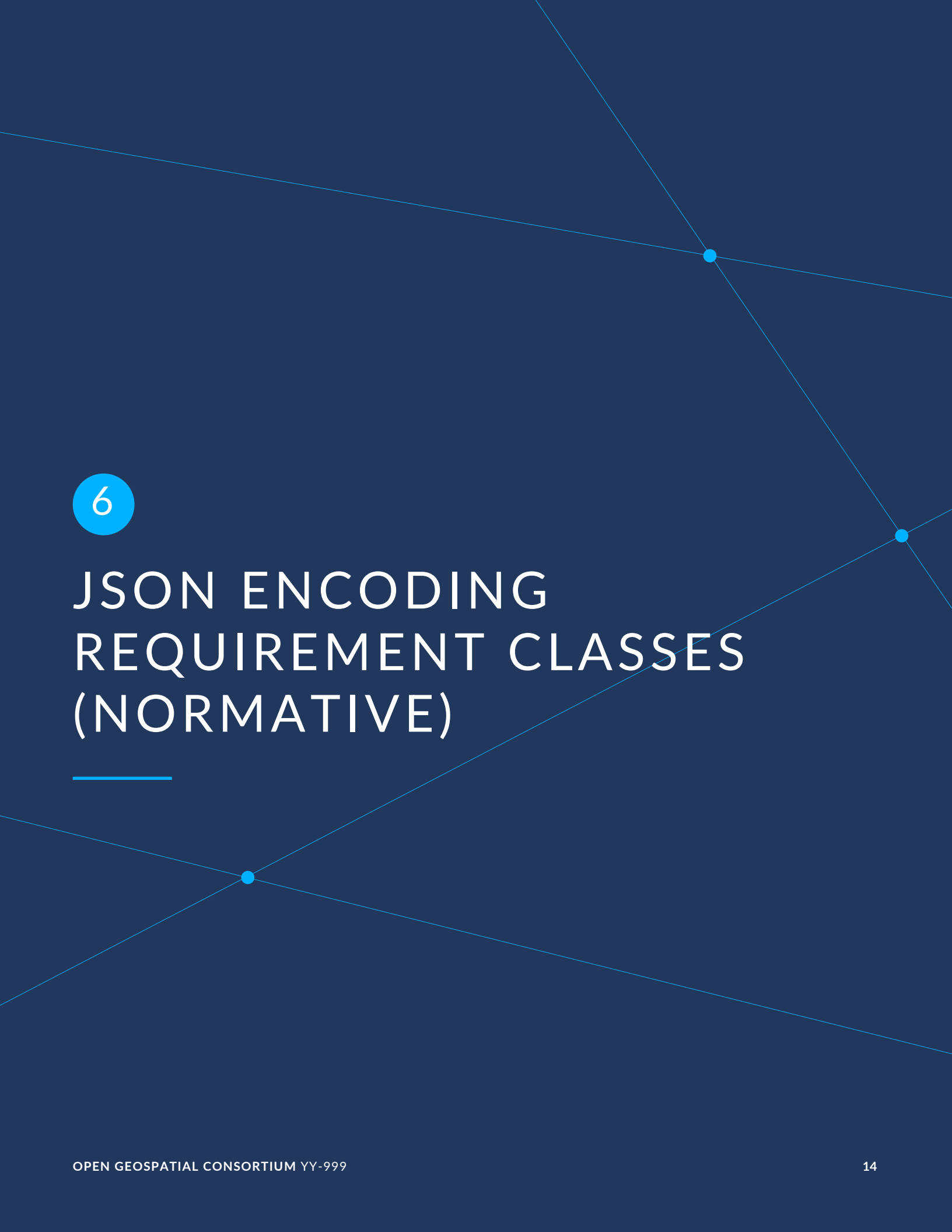
[http://www.opengis.net/spec/geosciml-part2/5.0/req/\[classM\]/\[reqN\]](http://www.opengis.net/spec/geosciml-part2/5.0/req/[classM]/[reqN])

The URI for each conformance class has the form:

[http://www.opengis.net/spec/geosciml-part2/5.0/conf/\[classM\]](http://www.opengis.net/spec/geosciml-part2/5.0/conf/[classM])

The URI for each conformance test has the form:

[http://www.opengis.net/spec/geosciml-part2/5.0/req/\[classM\]/\[testN\]](http://www.opengis.net/spec/geosciml-part2/5.0/req/[classM]/[testN])



6

JSON ENCODING REQUIREMENT CLASSES (NORMATIVE)

6

JSON ENCODING REQUIREMENT CLASSES (NORMATIVE)

JSON Schema files were derived from the UML model following the [OGC Best Practice for UML to JSON Encoding Rules \(OGC 24-017r1\)](#).

NOTE: The SWG should replace this with a diagram from Enterprise Architect

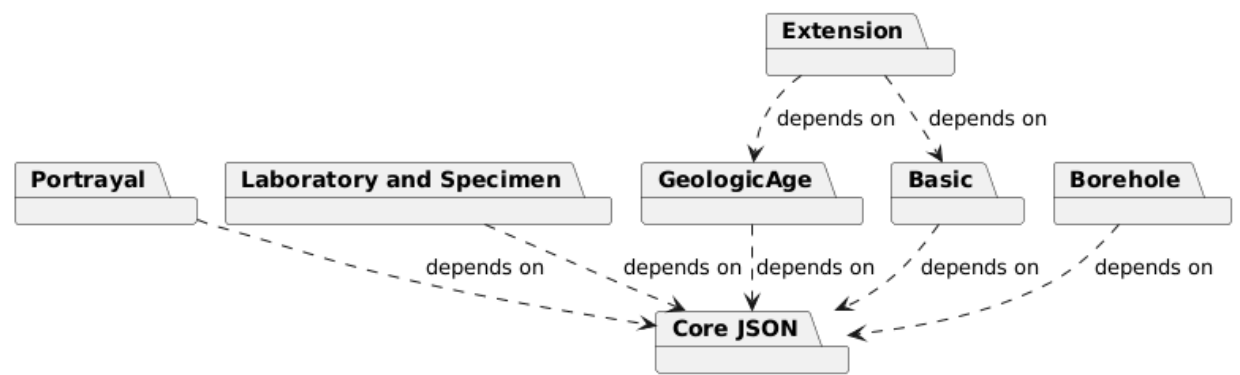


Figure 1 – JSON Encoding requirements classes dependencies (external dependencies not shown)

6.1. GeoSciML Core JSON Abstract Requirements Class (Normative)

REQUIREMENTS CLASS 1: REQUIREMENTS CLASS 'GEOSCIML CORE JSON'	
IDENTIFIER	https://www.opengis.net/spec/geosciml-part3/5.0/req/gsmlljson-core
TARGET TYPE	Data instance
	Web API
	https://www.opengis.net/spec/geosciml-part1/5.0/req/gsmll-core JSON Schema
PREREQUISITES	ISO 19118:2011 Geographic information – Encoding
	OGC Features and Geometries JSON – Part 1: Core v1.0.0
	OGC Abstract Specification Topic 20: Observations, measurements and samples v3.0.0
	OGC SWE Common Data Model Encoding Standard v3.0.0, Clause 9

REQUIREMENTS CLASS 1: REQUIREMENTS CLASS 'GEOSCI ML CORE JSON'

NORMATIVE STATEMENTS

Recommendation 1: /rec/gsmljson-core/identifier-uri
Recommendation 2: /rec/gsmljson-core/iso8601-time
Requirement 1: /req/gsmljson-core/json
Requirement 2: /req/gsmljson-core/codelist
Requirement 3: /req/gsmljson-core/identifier
Requirement 4: /req/gsmljson-core/time-zone

This requirements class is shared by all JSON GeoSciML instances.

6.1.1. JSON document validation

A JSON instance shall validate to JSON encoding rules provided by this specification for each of the JSON requirements classes.

REQUIREMENT 1

IDENTIFIER /req/gsmljson-core/json

INCLUDED IN Requirements class 1: <https://www.opengis.net/spec/geosciml-part3/5.0/req/gsmljson-core>

A An JSON instance document SHALL validate against the JSON Schema files provided in this Standard.

6.1.2. CodeList

Open code lists (see 8.2.7) are encoded simply as an HTTP URI (or HTTPS URI). See the following example that references the 'mudstone' term from a code list.

```
"material": {  
  "type": "Feature",  
  "featureType": "RockMaterial",  
  "id": "hervey-group-mudstone",  
  "geometry": null,  
  "properties": {  
    "lithology": "http://resource.geosciml.org/classifier/cgi/  
simplelithology/mudstone"  
  }  
}
```

The URI should resolve to a resource representation (often a SKOS document in Turtle or JSON-LD). The resource can have multiple representations and it is not guaranteed that a JSON-LD parsable document can be obtained from the vocabulary service.

REQUIREMENT 2

IDENTIFIER	/req/gsmljson-core/codelist
INCLUDED IN	Requirements class 1: https://www.opengis.net/spec/geosciml-part3/5.0/req/gsmljson-core
A	Vocabulary term SHALL be encoded with an HTTP/HTTPS URI that is resolvable to the definition of that term.

6.1.3. Identifiers

To enable consistent handling of identifiers in GeoJSON and JSON-FG applications, the `id` member of a GeoJSON feature is used to encode the identifier of a GeoSciML feature.

REQUIREMENT 3

IDENTIFIER	/req/gsmljson-core/identifier
INCLUDED IN	Requirements class 1: https://www.opengis.net/spec/geosciml-part3/5.0/req/gsmljson-core
A	The <code>id</code> member of a GeoJSON feature shall be used to encode the identifier of a GeoSciML feature.

RECOMMENDATION 1

IDENTIFIER	/rec/gsmljson-core/identifier-uri
INCLUDED IN	Requirements class 1: https://www.opengis.net/spec/geosciml-part3/5.0/req/gsmljson-core
A	Feature identifiers (unique name) provided in the 'id' property of a feature SHOULD be URI of resource using Linked Open Data principles.

```
{
  "type": "Feature",
  "id": "http://example.org/feature/asc/geologicunit/stratno/25947",
  "featureType": "GeologicUnit",
  "geometry": null,
  ...
}
```

6.1.4. Date encoding

The date-time values shall conform to ISO 8601 standards. Although this is already supported by JSON-FG, this format should also be used in any string that should contain a date, or date and time.

RECOMMENDATION 2

IDENTIFIER /rec/gsmljson-core/iso8601-time

INCLUDED IN Requirements class 1: <https://www.opengis.net/spec/geosciml-part3/5.0/req/gsmljson-core>

A All date-time occurrences SHOULD be encoded using ISO8601 extended time format.

Note that this precludes the use of time-coordinate systems such as UNIX time. This is specified in order to be maximally consistent with TimeSeriesML requirements.

The time zone shall be included in the time element.

REQUIREMENT 4

IDENTIFIER /req/gsmljson-core/time-zone

INCLUDED IN Requirements class 1: <https://www.opengis.net/spec/geosciml-part3/5.0/req/gsmljson-core>

A The value of each time element SHALL include a time zone definition using a signed 4 digit character or a 'Z' to represent Zulu or Greenwich Mean Time (GMT). This is defined by the following regular expression:
(Z|[+‑]HH:MM).

Greenwich Mean Time (GMT or Zulu)

```
"properties": {  
  "time": [ "2025-07-10T08:00:00Z", "2025-07-10T18:00:00Z" ],  
}
```

Time Zone (example is Newfoundland time zone -3:30)

```
"properties": {  
  "time": [ "2026-07-10T08:00:00-03:30", "2026-07-10T18:00:00-03:30" ],  
}
```

6.2. GeoSciML Basic JSON Requirements Class (Normative)

REQUIREMENTS CLASS 2: REQUIREMENTS CLASS 'GEOSCIML BASIC JSON'

IDENTIFIER	https://www.opengis.net/spec/geosciml-part3/5.0/req/gsmljson-basic
TARGET TYPE	Data instance
PREREQUISITES	https://www.opengis.net/spec/geosciml-part1/5.0/req/gsml-basic/req/gsmljson-core
NORMATIVE STATEMENT	Requirement 5: /req/gsmljson-basic/json

All the elements from the basic package must be schema valid according to the JSON schema provided at <https://raw.githubusercontent.com/engeospatial/geosciml-json-code-sprint/refs/heads/main/schemas/json/4.1/geoscimlBasic.json>

REQUIREMENT 5

IDENTIFIER	/req/gsmljson-basic/json
INCLUDED IN	Requirements class 2: https://www.opengis.net/spec/geosciml-part3/5.0/req/gsmljson-basic
A	A JSON instance document SHALL validate with schema located at https://raw.githubusercontent.com/engeospatial/geosciml-json-code-sprint/refs/heads/main/schemas/json/4.1/geoscimlBasic.json

6.2.1. relatedFeature

In GeoSciML Basic, relatedFeature is byReference only. AbstractFeatureRelation subtypes are materialized in the Extension package.

6.3. GeoSciML Extension JSON Requirements Class (Normative)

REQUIREMENTS CLASS 3: REQUIREMENTS CLASS 'GEOSCI ML EXTENSION JSON'

IDENTIFIER	https://www.opengis.net/spec/geosciml-part3/5.0/req/gsmljson-extension
TARGET TYPE	Data instance
PREREQUISITES	https://www.opengis.net/spec/geosciml-part1/5.0/req/gsml-extension/req/gsmljson-basic /req/gsmljson-geologictime
NORMATIVE STATEMENT	Requirement 6: /req/gsmljson-extension/json

All the elements from the GeoSciML Extension package must be schema valid according to the JSON schema provided at <https://raw.githubusercontent.com/opengeospatial/geosciml-json-code-sprint/refs/heads/main/schemas/json/4.1/geoscimlExtension.json>

REQUIREMENT 6

IDENTIFIER	/req/gsmljson-extension/json
INCLUDED IN	Requirements class 3: https://www.opengis.net/spec/geosciml-part3/5.0/req/gsmljson-extension
A	A JSON instance document SHALL validate with schema located at https://raw.githubusercontent.com/opengeospatial/geosciml-json-code-sprint/refs/heads/main/schemas/json/4.1/geoscimlExtension.json

6.4. GeoSciML GeologicTime JSON Requirements Class (Normative)

REQUIREMENTS CLASS 4: REQUIREMENTS CLASS 'GEOSCI ML GEOLOGICTIME JSON'

IDENTIFIER	https://www.opengis.net/spec/geosciml-part3/5.0/req/gsmljson-geologictime
TARGET TYPE	Data instance
PREREQUISITES	https://www.opengis.net/spec/geosciml-part1/5.0/req/gsml-geologictime/req/gsmljson-core
NORMATIVE STATEMENT	Requirement 7: /req/gsmljson-geologictime/json

All the elements from the GeoSciML Geologic Time package must be schema valid according to the JSON schema provided at <https://raw.githubusercontent.com/opengeospatial/geosciml-json-code-sprint/refs/heads/main/schemas/json/4.1/geologicTime.json>

REQUIREMENT 7

IDENTIFIER /req/gsmljson-geologictime/json

INCLUDED IN Requirements class 4: <https://www.opengis.net/spec/geosciml-part3/5.0/req/gsmljson-geologictime>

A A JSON instance document SHALL validate with schema located at <https://raw.githubusercontent.com/opengeospatial/geosciml-json-code-sprint/refs/heads/main/schemas/json/4.1/geologicTime.json>

6.5. GeoSciML Borehole JSON Requirements Class (Normative)

REQUIREMENTS CLASS 5: REQUIREMENTS CLASS 'GEOSCIML BOREHOLE JSON'

IDENTIFIER <https://www.opengis.net/spec/geosciml-part3/5.0/req/gsmljson-borehole>

TARGET TYPE Data instance

PREREQUISITES <https://www.opengis.net/spec/geosciml-part1/5.0/req/gsml-borehole/req/gsmljson-core>

NORMATIVE STATEMENT Requirement 8: /req/gsmljson-borehole/json

All the elements from the Borehole package must be schema valid according to the JSON schema provided at <https://raw.githubusercontent.com/opengeospatial/geosciml-json-code-sprint/refs/heads/main/schemas/json/4.1/borehole.json>

REQUIREMENT 8

IDENTIFIER /req/gsmljson-borehole/json

INCLUDED IN Requirements class 5: <https://www.opengis.net/spec/geosciml-part3/5.0/req/gsmljson-borehole>

REQUIREMENT 8

A

A JSON instance document shall validate with schema located at <https://raw.githubusercontent.com/opengeospatial/geosciml-json-code-sprint/refs/heads/main/schemas/json/4.1/borehole.json>

6.6. GeoSciML LaboratoryAnalysis-Specimen JSON Requirements Class (Normative)

REQUIREMENTS CLASS 6: REQUIREMENTS CLASS 'GEOSCI ML LABORATORYANALYSIS-SPECIMEN JSON'

IDENTIFIER	https://www.opengis.net/spec/geosciml-part3/5.0/req/gsmljson-lab
TARGET TYPE	Data instance
PREREQUISITES	/req/gsml-lab /req/gsmljson-core
NORMATIVE STATEMENT	Requirement 9: /req/gsmljson-lab/json

All the elements from the GeoSciML Laboratory Analysis & Specimen package must be schema valid according to the JSON schema provided at <https://raw.githubusercontent.com/opengeospatial/geosciml-json-code-sprint/refs/heads/main/schemas/json/4.1/laboratoryAnalysisSpecimen.json>

REQUIREMENT 9

IDENTIFIER /req/gsmljson-lab/json

INCLUDED IN Requirements class 6: <https://www.opengis.net/spec/geosciml-part3/5.0/req/gsmljson-lab>

A

A JSON instance document SHALL validate with schema located at <https://raw.githubusercontent.com/opengeospatial/geosciml-json-code-sprint/refs/heads/main/schemas/json/4.1/laboratoryAnalysisSpecimen.json>

6.7. Abstract GeoSciML Lite JSON Requirements Class (Normative)

REQUIREMENTS CLASS 7: REQUIREMENTS CLASS 'ABSTRACT GEOSCIML LITE JSON'	
IDENTIFIER	https://www.opengis.net/spec/geosciml-part3/5.0/req/gsmljson-lite
TARGET TYPE	Data instance
PREREQUISITES	https://www.opengis.net/spec/geosciml-part1/5.0/req/gsml-lite/req/gsmljson-core
NORMATIVE STATEMENT	Requirement 10: /req/gsmljson-lite/json

The abstract GeoSciML Lite encoding sets general encoding rules for JSON targets, regardless of version of JSON-FG.

6.7.1. Simple Feature

GeoSciML Lite schemas are meant to deliver simple content, consistent with simple scenarios described in GML Simple Feature Level 0 (OGC 10-100r3). User defined properties must respect the same constraints as defined in SF-0 specification.

The GML Simple Features profile defines 3 compliance levels summarized in Table 1.

Table 1 — Reproduction of Table 1 of 10-100r3 (Clause 2.1)

	LEVEL SF-0	LEVEL SF-1	LEVEL SF-2
restricted set of built-in nonspatial property types	Yes ¹	Yes ¹	No
Restricted set of property-types	Yes ²	Yes ²	Yes ²
user-defined property types	No	Yes	Yes
use of nillable and xsi:nil	No	Yes	Yes
cardinality of properties	0..1	0..unbounded	0..unbounded
non-spatial property values references	Yes ³	Yes ³	Yes

	LEVEL SF-0	LEVEL SF-1	LEVEL SF-2
spatial property values references	Yes ³	Yes ³	Yes

Notes:

1. string, integer, measurement, date, real, binary, boolean, URI
2. Point, Curve (LineString), Surface (Polygon), Geometry, MultiPoint, MultiCurve (MultiLineString), MultiSurface (MultiPolygon), MultiGeometry (GeometryCollection)
3. By reference encoding uses link objects through support for the “rel-as-link” profile from OGC API – Features – Part 5 / OGC API – Common – Part 3: Schemas.

All the elements from the GeoSciML Lite package must be schema valid according to the JSON schema provided at <https://raw.githubusercontent.com/opengeospatial/geosciml-json-code-sprint/refs/heads/main/schemas/json/4.1/geoscimlLite.json>

REQUIREMENT 10

IDENTIFIER /req/gsmljson-lite/json

INCLUDED IN Requirements class 7: <https://www.opengis.net/spec/geosciml-part3/5.0/req/gsmljson-lite>

A A JSON instance document shall validate with schema located at <https://raw.githubusercontent.com/opengeospatial/geosciml-json-code-sprint/refs/heads/main/schemas/json/4.1/geoscimlLite.json>



7

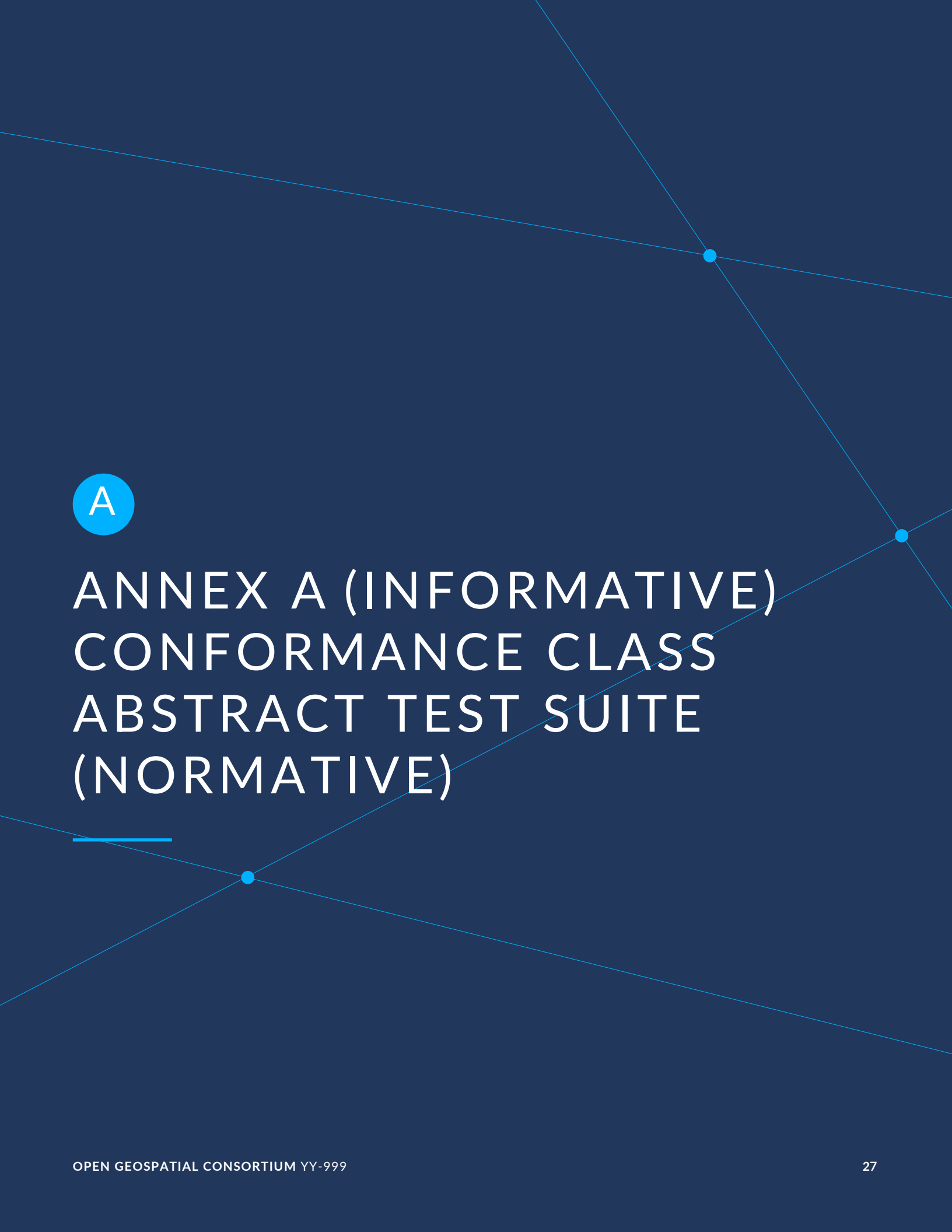
MEDIA TYPES FOR ANY DATA ENCODING(S)

7

MEDIA TYPES FOR ANY DATA ENCODING(S)

GeoSciML 5.0 data conforming to the logical model defined in Part 1 of GeoSciML can be encoded in documents conforming to JSON-FG. The standard MIME-type and sub-type for JSON-FG data should be used to indicate the encoding in internet exchange, as specified in OGC 21-045r1, namely

`application/geo+json`



A

ANNEX A (INFORMATIVE) CONFORMANCE CLASS ABSTRACT TEST SUITE (NORMATIVE)



ANNEX A

(INFORMATIVE)

CONFORMANCE CLASS ABSTRACT TEST SUITE (NORMATIVE)

A.1. GeoSciML JSON Encoding Abstract Core

CONFORMANCE CLASS A.1: GEOSCIML JSON ENCODING ABSTRACT CORE	
IDENTIFIER	/conf/gsmljson-core
REQUIREMENTS CLASS	/req/gsmljson-core
CONFORMANCE TESTS	Abstract test A.1: /conf/gsmljson-core/json Abstract test A.2: /conf/gsmljson-core/codelist Abstract test A.4: /conf/gsmljson-core/time-zone Abstract test A.3: /conf/gsmljson-core/identifier

ABSTRACT TEST A.1	
IDENTIFIER	/conf/gsmljson-core/json
REQUIREMENT	Requirement 1: /req/gsmljson-core/json
TEST PURPOSE	Ensure that GeoSciML JSON documents are valid
TEST METHOD	Perform a JSON validation on a JSON instance document, using the JSON Schema files provided in this Standard. Test succeeds if the validation does not report any error.

ABSTRACT TEST A.2	
IDENTIFIER	/conf/gsmljson-core/codelist

ABSTRACT TEST A.2

REQUIREMENT Requirement 2: /req/gsmljson-core/codelist

TEST PURPOSE Ensure that vocabulary reference contain an absolute http URI and this URL resolves to relevant content

TEST METHOD Test the URI on the web. If the URI does not resolve or return a 4xx error, the test fails.

ABSTRACT TEST A.3

IDENTIFIER /conf/gsmljson-core/identifier

REQUIREMENT Requirement 3: /req/gsmljson-core/identifier

TEST PURPOSE Ensure that the id member of a GeoJSON feature is used to encode the identifier of a GeoSciML feature.

TEST METHOD Check that the target implementation assigns a value to the id member of a GeoJSON feature to encode the identifier of a GeoSciML feature.

ABSTRACT TEST A.4

IDENTIFIER /conf/gsmljson-core/time-zone

REQUIREMENT Requirement 4: /req/gsmljson-core/time-zone

TEST PURPOSE Ensure that time zones are expressed explicitly

TEST METHOD Visually inspect instance to validate the presence of time zone indicators.

A.2. GeoSciML Basic JSON Encoding

CONFORMANCE CLASS A.2: GEOSCI ML BASIC JSON ENCODING

IDENTIFIER /conf/gsmljson-basic

REQUIREMENTS CLASS /req/gsmljson-basic

CONFORMANCE CLASS A.2: GEOSCI ML BASIC JSON ENCODING

PREREQUISITE	Conformance class A.1: /conf/gsmljson-core
CONFORMANCE TEST	Abstract test A.5: /conf/gsmljson-basic/json

ABSTRACT TEST A.5

IDENTIFIER	/conf/gsmljson-basic/json
REQUIREMENT	Requirement 5: /req/gsmljson-basic/json
TEST PURPOSE	Ensure that GeoSciML Basic JSON documents are valid
TEST METHOD	Perform a JSON validation on a JSON instance document, using the JSON Schema files provided in this Standard. Test succeeds if the validation does not report any error.

A.3. GeoSciML Extension JSON Encoding

CONFORMANCE CLASS A.3: GEOSCI ML EXTENSION JSON ENCODING

IDENTIFIER	/conf/gsmljson-extension
REQUIREMENTS CLASS	/req/gsmljson-extension
PREREQUISITE	/conf/gsmljson-core/basic
CONFORMANCE TEST	Abstract test A.6: /conf/gsmljson-extension/json

ABSTRACT TEST A.6

IDENTIFIER	/conf/gsmljson-extension/json
REQUIREMENT	Requirement 6: /req/gsmljson-extension/json
TEST PURPOSE	Ensure that GeoSciML Extension JSON documents are valid

ABSTRACT TEST A.6

TEST METHOD Perform a JSON validation on a JSON instance document, using the JSON Schema files provided in this Standard. Test succeeds if the validation does not report any error.

A.4. GeoSciML GeologicTime JSON Encoding

CONFORMANCE CLASS A.4: GEOSCIML GEOLOGICTIME JSON ENCODING

IDENTIFIER	/conf/gsmljson-geologictime
REQUIREMENTS CLASS	/req/gsmljson-geologictime
PREREQUISITE	Conformance class A.1: /conf/gsmljson-core
CONFORMANCE TEST	Abstract test A.7: /conf/gsmljson-geologictime/json

ABSTRACT TEST A.7

IDENTIFIER	/conf/gsmljson-geologictime/json
REQUIREMENT	Requirement 7: /req/gsmljson-geologictime/json
TEST PURPOSE	Ensure that GeoSciML Geologic Time JSON documents are valid
TEST METHOD	Perform a JSON validation on a JSON instance document, using the JSON Schema files provided in this Standard. Test succeeds if the validation does not report any error.

A.5. GeoSciML Borehole JSON Encoding

CONFORMANCE CLASS A.5: GEOSCIML BOREHOLE JSON ENCODING

IDENTIFIER	/conf/gsmljson-borehole
REQUIREMENTS CLASS	/req/gsmljson-borehole

CONFORMANCE CLASS A.5: GEOSCI ML BOREHOLE JSON ENCODING

PREREQUISITE	Conformance class A.1: /conf/gsmljson-core
CONFORMANCE TEST	Abstract test A.8: /conf/gsmljson-borehole/json

ABSTRACT TEST A.8

IDENTIFIER	/conf/gsmljson-borehole/json
REQUIREMENT	Requirement 8: /req/gsmljson-borehole/json
TEST PURPOSE	Ensure that GeoSciML Borehole JSON documents are valid
TEST METHOD	Perform a JSON validation on a JSON instance document, using the JSON Schema files provided in this Standard. Test succeeds if the validation does not report any error.

A.6. GeoSciML LaboratoryAnalysis-Specimen JSON Encoding

CONFORMANCE CLASS A.6: GEOSCI ML LABORATORYANALYSIS-SPECIMEN JSON ENCODING

IDENTIFIER	/conf/gsmljson-lab
REQUIREMENTS CLASS	/req/gsmljson-lab
PREREQUISITES	Conformance class A.1: /conf/gsmljson-core OGC 10-025r1 OMXML
CONFORMANCE TEST	Abstract test A.9: /conf/gsmljson-lab/json

ABSTRACT TEST A.9

IDENTIFIER	/conf/gsmljson-lab/json
REQUIREMENT	Requirement 9: /req/gsmljson-lab/json

ABSTRACT TEST A.9

TEST PURPOSE Ensure that GeoSciML Laboratory and Analysis JSON documents are valid

TEST METHOD Perform a JSON validation on a JSON instance document, using the JSON Schema files provided in this Standard. Test succeeds if the validation does not report any error.

A.7. GeoSciML Lite JSON Encoding

CONFORMANCE CLASS A.7: GEOSCIML LITE JSON ABSTRACT ENCODING

IDENTIFIER	/conf/gsmljson-lite
REQUIREMENTS CLASS	/req/gsmljson-lite
PREREQUISITE	OGC 21-045r1: Annex A
CONFORMANCE TEST	Abstract test A.10: /conf/gsmljson-lite/json

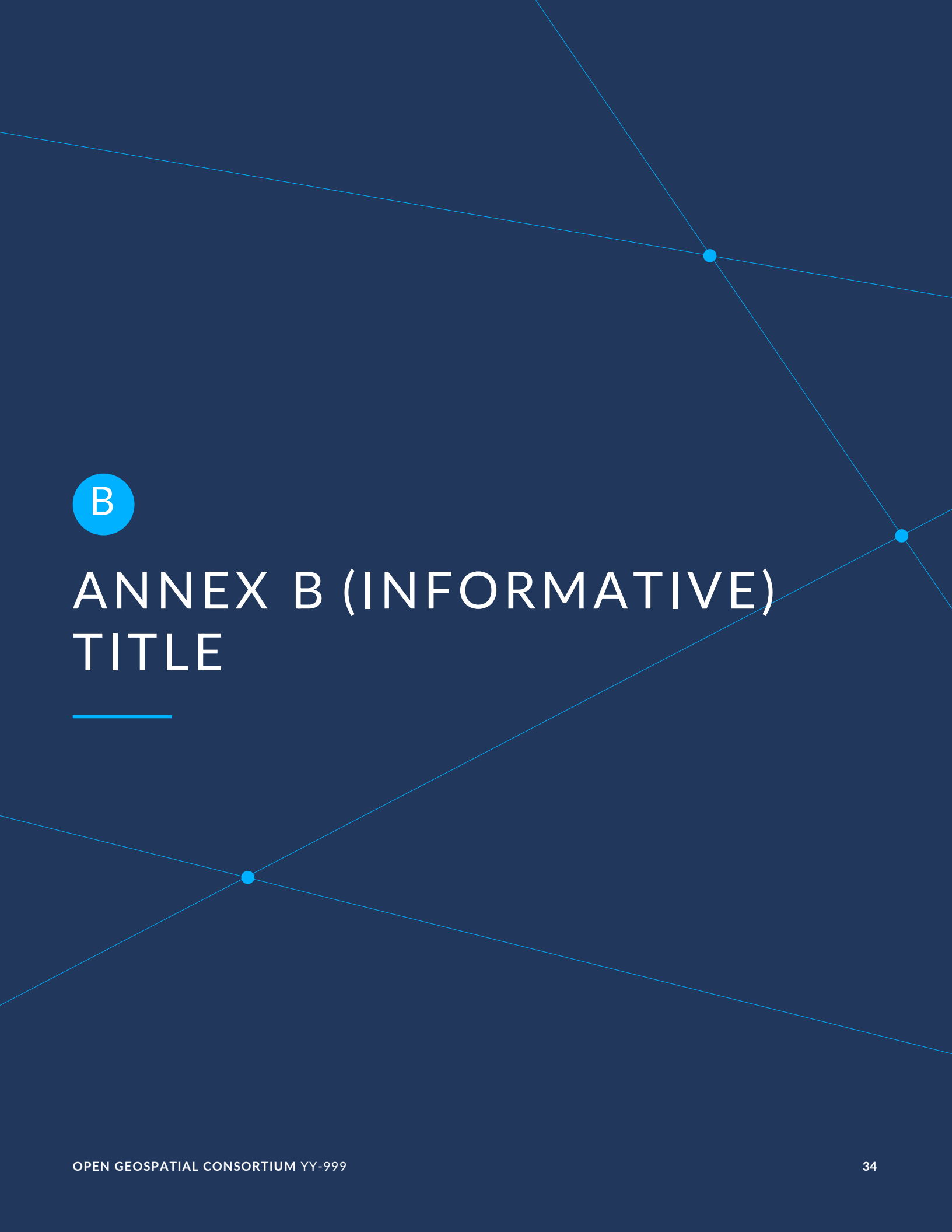
ABSTRACT TEST A.10

IDENTIFIER /conf/gsmljson-lite/json

REQUIREMENT Requirement 10: /req/gsmljson-lite/json

TEST PURPOSE Ensure that GeoSciML Lite JSON documents are valid

TEST METHOD Perform a JSON validation on a JSON instance document, using the JSON Schema files provided in this Standard. Test succeeds if the validation does not report any error.



B

ANNEX B (INFORMATIVE)

TITLE



ANNEX B (INFORMATIVE) TITLE

NOTE: Place other Annex material in sequential annexes beginning with “B” and leave final two annexes for the Revision History and Bibliography



ANNEX C (INFORMATIVE) REVISION HISTORY



ANNEX C (INFORMATIVE) REVISION HISTORY

Table C.1

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



BIBLIOGRAPHY





BIBLIOGRAPHY

- [1] ISO: ISO 19168-1:2020, *Geographic information – Geospatial API for features – Part 1: Core*. International Organization for Standardization, Geneva (2020). <https://www.iso.org/standard/32586.html>.