



OGC API - DISCRETE GLOBAL GRID SYSTEMS - PART 1: CORE

STANDARD
Implementation

DRAFT

Version: 1.0

Submission Date: 2029-03-30

Approval Date: 2029-03-30

Publication Date: 2029-03-30

Editor: Dr. Matthew Brian John Purss, Editor Two

Notice for Drafts: This document is not an OGC Standard. This document is distributed for review and comment. This document is subject to change without notice and may not be referred to as an OGC Standard.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

License Agreement

Permission is hereby granted by the Open Geospatial Consortium, ("Licensor"), free of charge and subject to the terms set forth below, to any person obtaining a copy of this Intellectual Property and any associated documentation, to deal in the Intellectual Property without restriction (except as set forth below), including without limitation the rights to implement, use, copy, modify, merge, publish, distribute, and/or sublicense copies of the Intellectual Property, and to permit persons to whom the Intellectual Property is furnished to do so, provided that all copyright notices on the intellectual property are retained intact and that each person to whom the Intellectual Property is furnished agrees to the terms of this Agreement.

If you modify the Intellectual Property, all copies of the modified Intellectual Property must include, in addition to the above copyright notice, a notice that the Intellectual Property includes modifications that have not been approved or adopted by LICENSOR.

THIS LICENSE IS A COPYRIGHT LICENSE ONLY, AND DOES NOT CONVEY ANY RIGHTS UNDER ANY PATENTS THAT MAY BE IN FORCE ANYWHERE IN THE WORLD. THE INTELLECTUAL PROPERTY IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE DO NOT WARRANT THAT THE FUNCTIONS CONTAINED IN THE INTELLECTUAL PROPERTY WILL MEET YOUR REQUIREMENTS OR THAT THE OPERATION OF THE INTELLECTUAL PROPERTY WILL BE UNINTERRUPTED OR ERROR FREE. ANY USE OF THE INTELLECTUAL PROPERTY SHALL BE MADE ENTIRELY AT THE USER'S OWN RISK. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR ANY CONTRIBUTOR OF INTELLECTUAL PROPERTY RIGHTS TO THE INTELLECTUAL PROPERTY BE LIABLE FOR ANY CLAIM, OR ANY DIRECT, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM ANY ALLEGED INFRINGEMENT OR ANY LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR UNDER ANY OTHER LEGAL THEORY, ARISING OUT OF OR IN CONNECTION WITH THE IMPLEMENTATION, USE, COMMERCIALIZATION OR PERFORMANCE OF THIS INTELLECTUAL PROPERTY.

This license is effective until terminated. You may terminate it at any time by destroying the Intellectual Property together with all copies in any form. The license will also terminate if you fail to comply with any term or condition of this Agreement. Except as provided in the following sentence, no such termination of this license shall require the termination of any third party end-user sublicense to the Intellectual Property which is in force as of the date of notice of such termination. In addition, should the Intellectual Property, or the operation of the Intellectual Property, infringe, or in LICENSOR's sole opinion be likely to infringe, any patent, copyright, trademark or other right of a third party, you agree that LICENSOR, in its sole discretion, may terminate this license without any compensation or liability to you, your licensees or any other party. You agree upon termination of any kind to destroy or cause to be destroyed the Intellectual Property together with all copies in any form, whether held by you or by any third party.

Except as contained in this notice, the name of LICENSOR or of any other holder of a copyright in all or part of the Intellectual Property shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Intellectual Property without prior written authorization of LICENSOR or such copyright holder. LICENSOR is and shall at all times be the sole entity that may authorize you or any third party to use certification marks, trademarks or other special designations to indicate compliance with any LICENSOR standards or specifications. This Agreement is governed by the laws of the Commonwealth of Massachusetts. The application to this Agreement of the United Nations Convention on Contracts for the International Sale of Goods is hereby expressly excluded. In the event any provision of this Agreement shall be deemed unenforceable, void or invalid, such provision shall be modified so as to make it valid and enforceable, and as so modified the entire Agreement shall remain in full force and effect. No decision, action or inaction by LICENSOR shall be construed to be a waiver of any rights or remedies available to it.

None of the Intellectual Property or underlying information or technology may be downloaded or otherwise exported or reexported in violation of U.S. export laws and regulations. In addition, you are responsible for complying with any local laws in your jurisdiction which may impact your right to import, export or use the Intellectual Property, and you represent that you have complied with any regulations or registration procedures required by applicable law to make this license enforceable.

Suggested additions, changes and comments on this document are welcome and encouraged. Such suggestions may be submitted using the online change request form on OGC web site: http://portal.opengeospatial.org/public_ogc/change_request.php

Copyright notice

Copyright © 2022 Open Geospatial Consortium

To obtain additional rights of use, visit <http://www.ogc.org/legal/>

Note

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The Open Geospatial Consortium shall not be held responsible for identifying any or all such patent rights.

Recipients of this document are requested to submit, with their comments, notification of any relevant patent claims or other intellectual property rights of which they may be aware that might be infringed by any implementation of the standard set forth in this document, and to provide supporting documentation.

CONTENTS

I. ABSTRACT	v
II. KEYWORDS	v
III. PREFACE	vi
IV. SECURITY CONSIDERATIONS	vii
V. SUBMITTING ORGANIZATIONS	viii
1. SCOPE	2
2. CONFORMANCE	4
3. NORMATIVE REFERENCES	6
4. TERMS AND DEFINITIONS	9
5. CONVENTIONS	11
5.1. Identifiers	11
6. DGGS — CORE CONFORMANCE CLASS	13
6.1. Clauses not containing normative material sub-clause 1	13
6.2. Clauses not containing normative material sub-clause 2	13
7. DGGS — DATA RETRIEVAL CONFORMANCE CLASS	15
7.1. Requirement Class DGGS — Data Retrieval	15
8. DGGS — ZONE QUERY CONFORMANCE CLASS	19
8.1. Requirement Class A or Requirement A Example	19
9. MEDIA TYPES FOR ANY DATA ENCODING(S)	21
ANNEX A (INFORMATIVE) CONFORMANCE CLASS ABSTRACT TEST SUITE (NORMATIVE)	23
A.1. Conformance Class A	23
ANNEX B (INFORMATIVE) TITLE	25
ANNEX C (INFORMATIVE) REVISION HISTORY	27

BIBLIOGRAPHY	29
--------------------	----

LIST OF TABLES

Table 1	19
Table C.1	27

LIST OF RECOMMENDATIONS

REQUIREMENTS CLASS 1	15
REQUIREMENTS CLASS 2	19
REQUIREMENT 1	15
REQUIREMENT 2	16
REQUIREMENT 3	16
REQUIREMENT 4	17
REQUIREMENT A.1	23



ABSTRACT

<Insert Abstract Text here>



KEYWORDS

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

ogcdoc, OGC document, API, openapi, html, ogcapi



PREFACE

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

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The Open Geospatial Consortium shall not be held responsible for identifying any or all such patent rights.

Recipients of this document are requested to submit, with their comments, notification of any relevant patent claims or other intellectual property rights of which they may be aware that might be infringed by any implementation of the standard set forth in this document, and to provide supporting documentation.



SECURITY CONSIDERATIONS

No security considerations have been made for this document.



SUBMITTING ORGANIZATIONS

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

- Pangaea Innovations Pty. Ltd.
- Organization Two
- Organization Three
- Organization Four



1

SCOPE

NOTE: Insert Scope text here. Give the subject of the document and the aspects of that scope covered by the document.



2

CONFORMANCE

This standard defines XXXX.

Requirements for N standardization target types are considered:

- AAAA
- BBBB

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.

In order to conform to this OGC® interface standard, a software implementation shall choose to implement:

- Any one of the conformance levels specified in Annex A (normative).
- Any one of the Distributed Computing Platform profiles specified in Annexes TBD through TBD (normative).

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



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)

The Physiology of the Grid: an Open Grid Services Architecture for Distributed Systems Integration. Foster, I., Kesselman, C., Nick, J., Tuecke, S. Technical report, Global Grid Forum (2002)

National Center for Biotechnology Information, <http://www.ncbi.nlm.nih.gov>

ISO: ISO 19101-1:2014, *Geographic information – Reference model – Part 1: Fundamentals*. ISO (2014).

ISO: ISO 19115-1:2014, *Geographic information – Metadata – Part 1: Fundamentals*. ISO (2014).

ISO: ISO 19157:2013, *Geographic information – Data quality*. ISO (2013).

ISO: ISO 19139:2007, *Geographic information – Metadata – XML schema implementation*. ISO (2007).

ISO: ISO 19115-3, *Geographic information – Metadata – Part 3: XML schemas* (2016). ISO

OGC Geospatial User Feedback Standard: Conceptual Model (2016)

Gerhard Gröger, Thomas H. Kolbe, Claus Nagel, Karl-Heinz Häfele: OGC 12-019, *OGC City Geography Markup Language (CityGML) Encoding Standard*. Open Geospatial Consortium (2012). https://portal.ogc.org/files/?artifact_id=47842.

Jiyeong Lee, Ki-Joune Li, Sisi Zlatanova, Thomas H. Kolbe, Claus Nagel, Thomas Becker: OGC 14-005r3, *OGC® IndoorGML*. Open Geospatial Consortium (2014). <https://docs.ogc.org/is/14-005r3/14-005r3.html>.

Arliss Whiteside Jim Greenwood: OGC 06-121r9, *OGC Web Service Common Implementation Specification*. Open Geospatial Consortium (2010). <https://portal.ogc.org/files/?artifact id=38867>.



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.

This document uses the terms defined in Sub-clause 5.3 of [OGC06-121r9], 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 standard.

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: ISO 19101-1:2014]



5

CONVENTIONS

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.



6

DGGS — CORE CONFORMANCE CLASS

Paragraph

6.1. Clauses not containing normative material sub-clause 1

Paragraph

6.2. Clauses not containing normative material sub-clause 2



7

DGGS — DATA RETRIEVAL CONFORMANCE CLASS

DGGS – DATA RETRIEVAL CONFORMANCE CLASS

7.1. Requirement Class DGGS – Data Retrieval

The Data Retrieval conformance class allows to retrieve data from a specific Discrete Global Grid System (DGGS) in a particular indexing scheme from either an individual zone, or a list of zones referenced by ID. It describes an HTTP GET operation, as well as its response. The selected DGGS is listed as available and described in the Core conformance class, and conforms to OGC Topic 21. The conformance makes use of URI templates for a variable representing the Zone ID. The data retrieved from a Web API using this conformance class can either be for a particular collection of geospatial data, for a dataset as a whole, or in connection with *OGC API – Processes – Part 3: Workflows & Chaining*, the output of a processing workflow.

REQUIREMENTS CLASS 1

TARGET TYPE DGGS Data Retrieval

PREREQUISITE <http://www.opengis.net/spec/ogcapi-common-1/1.0/req/core>

LABEL <http://www.opengis.net/spec/ogcapi-dggs/0.0/req/data-retrieval>

7.1.1. Retrieve data from single zone

The following requirements describe how a client can retrieve data from a single DGGS zone at the resource path `.../dggs/{dggsId}/zones/{zoneId}/data`.

7.1.1.1. Operation

REQUIREMENT 1

LABEL `/req/data-retrieval/single-zone-data-op`

STATEMENT For retrieving data for a single DGGS zone:

REQUIREMENT 1

- A** The Implementation SHALL support an HTTP GET operation at a resource path ending with .../dggs/{dggsId}/zones/{zoneId}/data.
- B** The Implementation SHALL provide a templated link to this resource path using the link relation type <http://www.opengis.net/def/rel/ogc/1.0/dggs-zone-data>.

7.1.1.2. Response

REQUIREMENT 2

LABEL /req/data-retrieval/single-zone-data-response

STATEMENT For the response to a query retrieving data for a single DGGs zone:

- A** The response of the HTTP GET operation SHALL have a status code of 200.
- B** The content of the response SHALL be a data packet corresponding precisely to the area covered by the DGGs zone, at the resolution / scale corresponding to that zone.
- C** The selection of an encoding for the response SHALL be consistent with HTTP content negotiation.

7.1.2. Retrieve data from multiple zones

The following requirements describe how a client can retrieve data from a single DGGs zone at the resource path .../dggs/{dggsId}/data?zones={zoneId}, ...,

7.1.2.1. Operation

REQUIREMENT 3

LABEL /req/data-retrieval/multi-zone-data-op

STATEMENT For retrieving data for multiple DGGs zones:

- A** The Implementation SHALL support an HTTP GET operation at a resource path ending with .../dggs/{dggsId}/zones/data.
- B** The Implementation SHALL support a zones query parameter, consisting of a list of zone IDs in a format consistent with the indexing scheme for the selected DGGs ID.

REQUIREMENT 3

- C** The Implementation SHALL provide a link to this resource path using the link relation type <http://www.opengis.net/def/rel/ogc/1.0/dggs-zone-data> and the variable {zoneID} in the template URL.

7.1.2.2. Response

REQUIREMENT 4

LABEL /req/data-retrieval/multi-zone-data-response

STATEMENT For the response to a query retrieving data for multiple DGGS zones:

- A** The response of the HTTP GET operation SHALL have a status code of 200.
- B** The content of the response SHALL package data packets corresponding precisely to the area covered by each of the DGGS zones being requested, at the resolution / scale corresponding to these zones.
- C** The selection of an encoding for the response SHALL be consistent with HTTP content negotiation.



8

DGGS — ZONE QUERY CONFORMANCE CLASS

Paragraph

8.1. Requirement Class A or Requirement A Example

Paragraph – intro text for the requirement class.

Use the following table for Requirements Classes.

REQUIREMENTS CLASS 2	
TARGET TYPE	Implementation Specification
PREREQUISITES	http://www.example.org/req/blah/req/data-retrieval
LABEL	http://www.opengis.net/spec/ABCD/m.n/req/zone-query

8.1.1. Requirement 1

Paragraph – intro text for the requirement.

Use the following table for Requirements, number sequentially.

Unresolved directive in sections/clause_8_dggs_zone_query.adoc – include::.../requirements/REQ_zone-query-req-name-1.adoc[]

Dictionary tables for requirements can be added as necessary. Modify the following example as needed.

Table 1

NAMES	DEFINITION	DATA TYPES AND VALUES	MULTIPLICITY AND USE
name 1	definition of name 1	float	One or more (mandatory)
name 2	definition of name 2	character string type, not empty	Zero or one (optional)
name 3	definition of name 3	GML:: Point PropertyType	One (mandatory)



9

MEDIA TYPES FOR ANY DATA ENCODING(S)

A section describing the MIME-types to be used is mandatory for any standard involving data encodings. If no suitable MIME type exists in <http://www.iana.org/assignments/media-types/index.html> then this section may be used to define a new MIME type for registration with IANA.



A

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





ANNEX A

(INFORMATIVE)

CONFORMANCE CLASS ABSTRACT TEST SUITE (NORMATIVE)

NOTE: Ensure that there is a conformance class for each requirements class and a test for each requirement (identified by requirement name and number)

A.1. Conformance Class A

A.1.1. Requirement 1

REQUIREMENT A.1	
TEST PURPOSE	Verify that...
TEST METHOD	Inspect...

A.1.2. Requirement 2



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
2021-05-17	0.1	Matthew Purss	all	initial version



BIBLIOGRAPHY





BIBLIOGRAPHY

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

– Actual References:

[n] Journal: Author Surname, A.: Title. Publication Title. Volume number, Issue number, Pages Used (Year Published)

[n] Web: Author Surname, A.: Title, <http://Website-Url>

1. OGC: *OGC Testbed 12 Annex B: Architecture* (2015).