



Committee on Earth Observation Satellites
Working Group on Information Systems and Services

Interoperable Catalogue System

Validis

CEOS

*Working Group on Information
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This document has been endorsed by the CINTEX Taskteam of the Committee on Earth Observation Satellites (CEOS) and reflects the consensus of the CINTEX Team technical panel experts from the CEOS member agencies.

The reader should be aware that ICS valids may be subject to frequent extensions. The latest valids list can always be found at <http://wgiss.ceos.org/ics/>.

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Table of Contents

1. INTRODUCTION.....	1
1.1 Purpose and Scope.....	1
1.2 Glossary.....	2
1.2.1 Acronyms.....	2
1.2.2 Definitions.....	2
1.3 References.....	3
2. VALIDS SOURCES	4
2.1 Reused Valids Lists from External Bodies	4
2.1.1 ISO 2-char language codes	4
2.1.2 CEOS International Directory Network (IDN)	4
2.2 External Valids Sources.....	6
2.2.1 CEOS Dossier.....	6
2.2.2 EOSDIS Core System (ECS).....	6
2.2.3 Centre for Earth Observation (CEO) User Guide.....	6
2.2.4 Federal Geographic Data Committee (FGDC).....	7
3. VALIDS SUMMARY.....	8
4. VALIDS MAINTENANCE AND MODIFICATION PROCEDURES.....	10
5. CONTROLLED VALIDS LISTS.....	11
5.1 Static Valids Lists	11
5.1.1 ItemDescriptorLanguage / ItemLanguage	11
5.1.2 Role.....	13
5.1.3 ScienceReviewStatus.....	13
5.1.4 SpatialKeyword.....	14
5.1.5 SpatialResolution	16
5.1.6 TemporalKeyword.....	16
5.1.7 UpdateFrequency.....	16
5.2 Valids Lists with slow rate of modification	17
5.2.1 BrowseCompression.....	17
5.2.2 BrowseFormat	17
5.2.3 CollectionCategory	17
5.2.4 GeospatialForm	18
5.2.5 ItemDeliveryMethod.....	18
5.2.6 MapProjectionName / PolygonProjection	18
5.2.7 ProcessingLevelId.....	19
5.2.8 SpatialKeywordThesaurus.....	19
5.2.9 SubsettingTemporalResolution	20
5.2.10 TemporalKeywordThesaurus	20
5.2.11 TemporalResolution	20
5.2.12 ThemeKeywordThesaurus	21
5.3 Valids Lists with fast rate of modification	22
5.3.1 ProductMedium / StorageMedium.....	22
5.3.2 MissionId.....	23
SensorId.....	25
5.3.3 ThemeKeyword	30

Document Status Sheet

Version	Date	Comments
1.0	9 September 2002	Final issue for endorsement by CINTEX taskteam at WGISS subgroup meeting in Alexandria on 12 th September 2002.
1.1	September 2004	Re-issued after incorporating CIP Clarifications 1-69 and the Order Options Amendment, and updating the ThemeKeyword valids.
1.2	April 2005	Issue updated with CIP Clarifications up to 75.

Document Change Record

Version	Changes from previous version
1.0	First issue.
1.1	Issue 1.1 contains a number of new valids lists due to the integration of the Order Options Amendment into the CIP specification and this document. In addition some valids lists have been added as required by CIP clarifications 1-69. The ThemeKeyword valids have been updated.
1.2	In issue 1.2 the URLs in the document have been updated and CIP clarifications up to 75 have been incorporated, resulting among other things in the deletion of the Scale valids. ThemeKeyword, SpatialKeyword and ItemDescriptorLanguage/ItemLanguage valids have been updated, and valids have been added to MissionId, SensorId, and ProductMedium/StorageMedium.

1. Introduction

1.1 Purpose and Scope

This is the Interoperable Catalogue System (ICS) - Valid document. This document was developed under the auspices of the Committee on Earth Observation Satellites (CEOS) - Working Group on Information Systems and Services (WGISS) - Protocol Task Team (PTT), later merged with the CINTEX taskteam and renamed to the ICS taskteam. A complete list of organisations participating in the ICS taskteam can be found in the ICS taskteam terms of reference [ICS].

This document defines the lists of controlled keywords (valids) that are potentially available for the terms flagged as having valids (column Valid Source) in Table 76 of the CIP specification [CIP-B].

In Section 3 a summary table provides a quick reference to see what controlled lists apply to product descriptor, collection descriptor or both.

The controlled lists, which are defined in Section 5 of this document, are the ones that are currently available for the definition of the valids in product and/or collection descriptors. It is important to note that the valids that are actually available for search within the ICS might be a subset from the ones that are available for definition.

Internationally, several groups exist that are involved in defining valids. The ICS taskteam decided not to “re-invent the wheel” but to profit from these efforts by re-using controlled lists and keywords whenever possible. This also provides the advantage that the ICS Valids will be compatible with these initiatives. In particular, the ICS taskteam decided to re-use entire valids lists from:

- ISO, where possible
- CEOS Dossier
- CEOS IDN taskteam, in particular the valids used for the DIF (Directory interchange format)

Most valids are directly maintained as part of the ICS. In some cases external sources have been used to define the initial ICS valids list, but further extensions will be performed independently, i.e. there is no strategy to keep the valids aligned with the original source.

It can be expected that this document is an evolving document, since over the life time of the ICS the number of controlled lists and the number of keywords belonging to a specific list are likely to increase in order to satisfy arising user needs.

The present version takes into account operational experience after several years of operations of the ICS middleware (INFEO).

1.2 Glossary

1.2.1 Acronyms

CEOS	Committee on Earth Observation Satellites
CINTEX	CEOS INTeroperability EXTensions (CINTEX taskteam was renamed to ICS taskteam)
CIP	Catalogue Interoperability Protocol
DIF	Directory Interchange Format
ECS	EOSDIS Core System
EGD	EOS Data Gateway
EO	Earth Observation
GCMD	Global Change Master Directory
ICS	Interoperable Catalogue System
IDN	International Directory Network
INFEO	INFormation on Earth Observation
ISO	International Standards Organisation
PTT	Protocol Task Team (later merged with CINTEX taskteam and renamed to the ICS taskteam)
WGISS	Working Group on Information Systems and Services

1.2.2 Definitions

Catalogue system	A catalogue system provides services such as inventory, browse, directory, order and guide, which may be supplemented by further services, but should contain at a minimum, inventory. The CIP is the protocol that shall enable the many services (but guide) of many catalogue systems to interoperate. Usually a catalogue system resides at a particular agency or data provider facility.
Collection	A grouping of item descriptors that have commonality. A collection consists of a number of attributes that describe the collective contents of the collection, the values of these attributes can then be searched on to select items of interest to the user. Collections also have members; these are the unique identifiers of the items that are grouped by the collection rather than their collective descriptions. As collection members can be identifiers of other collections, a hierarchy ¹ of collections and product members can be established, therefore permitting a flexible and powerful organisation of data
Interoperability	The ability to provide a data user with the appearance of a single, unified catalogue. In order to provide catalogue interoperability all participating data providers must support at least one common method (i.e., API) for accessing user functions such as authentication, directory, inventory, guide and order. Each data provider may support additional user functional interfaces to support their private data users.
Interoperable catalogue system	A network of catalogue systems which provide users a view on each other. Each catalogue system is free to decide which collections of other catalogue systems are visible to its users, although some guidelines will have to be followed to ensure compatibility between collections and support commonality. Each individual catalogue system acts as an access point to the Interoperable Catalogue System and is generally served by a Retrieval Manager.

¹ Note that the collection hierarchy is actually a 'directed graph'.

Query	<p>There are two types of query:</p> <p>Search query: a search query can be used to search a number of item descriptors as identified by the target of the query. The query acts as a filter on the item descriptors, therefore producing a more limited list of item descriptors. The matches that are made are returned to the user. A search query is not restricted to a single search query language but the unique names of the item descriptors should be supported by the search query language.</p> <p>Status query: a status query is directed towards a Retrieval Manager to check the status of a previous request, such as an on-going order or an on-going search query.</p> <p>There are other services that can act upon queries, such as cancel query, suspend query, etc., these control the flow of information between user and Retrieval Manager.</p>
Valids	<p>Valids are terms that belong to a list of controlled keywords. They play a key role in achieving interoperability, since all catalogues are described and can then be searched by the same terms (standard spelling and meaning).</p> <p>In ICS for example, valids are used to describe sensors. This implies that across all catalogues whenever a particular sensor is mentioned the exact same naming convention must be used.</p>

1.3 References

- [ICS] *ICS Terms of Reference*, <http://wgiss.ceos.org/ics/index.html>
- [CIP-B] *Catalogue Interoperability Protocol (CIP) Specification - Release B*, CEOS/WGISS/ICS/CIP-B, (latest issue), Committee on Earth Observation Satellites, <http://www.op.dlr.de/ceos/ics/>
- [ECS] *ECS Core Metadata Standard Release 2.0*, 420-TP-001-005, December 1994, Hughes Applied Information Systems
- [GCMD] *Global Change Master Directory*, NASA/GSFC, <http://gcmd.nasa.gov/>
- [FGDC] *Contents Standard for Digital Geospatial Metadata*, June 8, 1994, Federal Geographic Data Committee
- [CEO] *CEO Metadata Recommendation – Valids*, CEO/US/1400/270, Issue 1.0, 10 March 1998
- [EDG] *EDG Metadata home page*, http://www-v0ims.gsfc.nasa.gov/v0ims/DOCUMENTATION/GUIDE-VALID/guide_valid_metadata.html
- [ISO-L] *ISO 639 “Code for the representation of names of languages”*

2. Valids Sources

In order to not “re-invent the wheel”, the ICS taskteam decided to re-use existing sources for the definition of the ICS Valids. Using existing standards provides the following advantages:

- interoperability with other systems is facilitated
- the valids are already tested and accepted by users

In the next sub-sections a short description of each of the sources that were used for defining ICS Valids is supplied.

2.1 Reused Valids Lists from External Bodies

2.1.1 ISO 2-char language codes

The ISO standard 639:1988 was reused to code languages in CIP. It was decided that the 2-char language codes are sufficient and that CIP should not use the 3-char codes.

Contact Details:	Registration Authority International Information Centre for Terminology (INFOTERM) Simmeringer Hauptstr. 24 A-1110 Wien Austria Tel. + 43 1 740 40 441 Fax + 43 1 740 40 740
URL:	http://lcweb.loc.gov/standards/iso639-2/englangn.html (refer to 2-char code list)

2.1.2 CEOS International Directory Network (IDN)

The IDN is an on-line data information service that provides free access to metadata directories of multidisciplinary information on scientific data. Its goal is to permit rapid and efficient identification, location, and overview information on Earth science data sets. The in-situ and remotely sensed data sets described are held by agencies, organisations, and educational institutions world-wide.

The IDN Taskteam is responsible for coordinating activities among the nodes to maintain, improve, and expand the functions and use of the IDN. Efforts include updating data set information and identifying new data sets, updating and improving the standard *Directory Interchange Format* (DIF) for metadata, advancing the database programming and structure, and researching and creating a variety of advanced search and retrieval techniques.

There are four coordinating nodes of the CEOS IDN for the Asian, American, European, and African continents. Three of these maintain a complete copy of the **Global Change Master Directory (GCMD)** database. The American coordinating node is operated by NASA's Global Change Data Center (GCDC) at the Goddard Space Flight Center (GSFC). The European coordinating node is

operated by the **European Space Agency (ESA)** at the Earthnet Programme Office (ESA/ESRIN) at ESRIN, in Italy. The Asian coordinating node is operated by the **National Space Development Agency (NASDA)** in Saitama, Japan. The African coordinating node is operated by the **United Nations Environment Programme (UNEP)**.

Each coordinating node has affiliated directories that cooperate with it. These nodes, called **cooperating nodes**, provide a path for researchers within a country or region to participate in the CEOS IDN. Cooperating nodes may support directories specializing in a specific subject, or, although not required, may maintain the complete GCMD database.

Automatic transfer of new or revised entries takes place between the three coordinating nodes every month. This information is then passed to the respective cooperating nodes should they wish to receive it. This procedure assures that data set descriptions and supplementary information obtained from various parts of the world are exchanged with other areas, thus expanding the base of information available to researchers world-wide. The directory contents are shared among the nodes using the *Directory Interchange Format (DIF)*. Among others, this format foresees valid value lists in particular for 'Location' (reused for the CIP SpatialKeyword) and 'Science Keywords' (reused for the CIP ThemeKeyword)

Contact Details:	Lola Olsen NASA (National Aeronautics and Space Administration) Goddard Space Flight Center / Code 902 Greenbelt, MD 20771 USA <i>Telephone:</i> +1-301-614-5361 <i>Fax:</i> +1-301-614-5268 <i>E-mail:</i> olsen@gcmd.nasa.gov For new valids: interop@gcmd.gsfc.nasa.gov
URL:	IDN home page: http://gcmd.gsfc.nasa.gov/Aboutus/ DIF description: http://gcmd.gsfc.nasa.gov/User/difguide/difman.html

2.2 External Valids Sources

For all other valids, initial valids lists have been entirely compiled from scratch or valids lists of selected projects have been used. While compatibility with the original source is recommended, it is not mandated. In other words, the existing lists have been used in the first instance to facilitate the definition of suitable and user acceptable valids, but it is not anticipated to establish co-ordination procedures with the source agencies.

2.2.1 CEOS Dossier

The "CEOS Dossier" is the full database of CEOS agency satellite mission and instrument plans and performance and of CEOS affiliate programme requirements. It is available both on-line and as a PC-based system for local use. The database may be searched to identify which programme plans satisfy requirements for specific parameters at various levels of performance (coverage, resolution etc).

Contact Details:	Donald Hinsman WMO (World Meteorological Organization) 7 bis, avenue de la Paix CH 1211 Geneva 2 Switzerland <i>Telephone:</i> +41 22 734.2326 <i>Fax:</i> +41 22 730. 8285 <i>E-mail:</i> DHinsman@wmo.int
URL:	http://alto-stratus.wmo.ch/sat/stations/SatSystem.html

2.2.2 EOSDIS Core System (ECS)

The Earth Observing System Data and Information System (EOSDIS) is a NASA-sponsored open, distributed information system that manages the data and information from a variety of pre-EOS and EOS-era Earth observation satellites, as well as data from related Earth science field measurement programs and other data essential for the interpretation of these measurements. EOSDIS provides end-to-end services from EOS instrument data collection to science data processing to full access to EOS and other Earth science data holdings. ECS, the infrastructure of EOSDIS, provides scientists and other users a broad range of desktop services from a number of science data centres and through the World Wide Web.

Contact Details:	<i>E-mail:</i> scoot@eos.hitc.com
URL:	http://ecsinfo.gsfc.nasa.gov

2.2.3 Centre for Earth Observation (CEO) User Guide

The Centre for Earth Observation (CEO) of the European Commission started activities on metadata as a response to the strong requirement of European EO users. The users mentioned their confusion about the large number of existing initiatives and expressed their wish that CEO provides recommendations about metadata in harmony with the existing programmes.

The CEO metadata approach consists in identifying several types of basic resources, each one being described by a defined number of elements. An element may be simple or compound (with a structure including sub-elements), mandatory or optional depending on the fact that providing a value is mandatory or not, and repeatable or not. Depending on the element type, the assigned value must be selected within a predefined controlled list of keywords [CEO]. This approach is currently used for the development of the CEO's INFEO system.

2.2.4 Federal Geographic Data Committee (FGDC)

The Federal Geographic Data Committee (FGDC) initiated work on the standard in June, 1992, through a forum on geospatial metadata and finalised it by June 1994.

The FGDC standard [FGDC] specifies the information content of metadata for a set of digital geospatial data. The purpose of the standard is to provide a common set of terminology and definitions for concepts related to these metadata. Metadata are data about the content, quality, condition, and other characteristics of data.

Contact Details:	<i>E-mail:</i> fgdc@www.fgdc.gov
URL:	http://www.fgdc.gov/metadata/metadata.html

3. Valids Summary

The table below summarises all terms for which controlled keywords (valids) are available in the CIP. The character “Y” highlights if the term is searchable in the product descriptor ('P' column) or in the collection descriptor ('C' column).

The 'extensibility' column defines 3 categories of controlled lists, to which also different maintenance procedures will be applied:

- 'static' valids are expected to remain as defined in the present document and actually can be considered as integral part of the CIP specification
- 'slow' growing valids are predicted to remain stable over long time periods and therefore the list in the present document will remain a good approximation
- 'fast' growing valids are expected to require frequent extension to the controlled list; therefore the list in the present document can only be considered as initial (new valids may already be inserted in the web-based valids maintenance sites).

Note that this summary table maps directly to Table 76 of the CIP 2.4 specification. That implies that any changes performed to this table (new or deletion of controlled lists) will require a change to the CIP 2.4 specification.

Table 3-1: Overview of maintained valids lists

Term	Description	C	F	Extensi- -bility	Maintenance Agency
BrowseCompression	Description of the method used for compression of the browse data.			slow	ICS/ESA
BrowseFormat	Format of the Browse			slow	ICS/ESA
CollectionCategory	Category of a collection.	Y		slow	ICS/ESA
GeospatialForm	A characterisation of the type of product, e.g. satellite image or map.	Y		slow	ICS/ESA
ItemDeliveryMethod	The method by which an item is delivered.			slow	ICS/ESA
ItemDescriptorLanguage	The language in which the item descriptor is defined.	Y	Y	static	ISO/INFOTERM
ItemLanguage	The language in which any textual information within the item is defined.		Y		
MapProjectionName	Name of the map projection.			slow	ICS/ESA
PolygonProjection	Name of the polygon projection.				
MissionId	Unique code for the satellite/mission.	Y	Y	fast	ICS/ESA
ProcessingLevelId	This parameter identifies the processing level of the data in the archive.	Y	Y	slow	ICS/ESA
ProductMedium	Medium on which the product is available.	Y	Y	fast	ICS/ESA
StorageMedium	Type of medium on which the product is currently stored.				
Role	The role of a person for the collection..	Y		static	ICS/ESA
ScienceReviewStatus	Type of review which occurred on the Science Review Date.	Y		static	ICS/ESA
SensorId	A mnemonic or otherwise abbreviated version (acronym) for the sensor.	Y	Y	fast	ICS/ESA
SpatialKeyword	Keyword describing a geographical region.	Y		static	IDN/NASA
SpatialKeywordThesaurus	Reference to the thesaurus used for the spatial keywords.			slow	ICS/ESA
SpatialResolution	Minimum distance between two adjacent geographic points.	Y	Y	static	ICS/ESA
SubsettingTemporalResolution	Resolution of the subsetting time period in temporal units.			slow	ICS/ESA

Term	Description	C	F	Extensi -bility	Maintenance Agency
TemporalKeyword	The name of a time period covered by a collection.	Y		static	ICS/ESA
TemporalKeywordThesaurus	Reference to the thesaurus used for the temporal keywords.			slow	ICS/ESA
TemporalResolution	The temporal frequency of data sampled.			slow	ICS/ESA
ThemeKeyword	Controlled keyword list to define the theme (e.g. discipline, topic) covered by a collection.	Y		fast	IDN/NASA
ThemeKeywordThesaurus	Reference to the thesaurus used for the theme keywords.			slow	ICS/ESA
UpdateFrequency	The frequency with which changes and additions are made to the data set after the initial data set is completed.	Y		static	ICS/ESA

4. Valids Maintenance and Modification Procedures

The CEOS ICS taskteam shall nominate an 'ICS Valids Maintenance Agency', which shall maintain the valids controlled list as Web pages, and as FTP-accessible files and also in the present document, of which an updated issue shall be generated at least once a year.

Any change shall be requested by simple email to the 'ICS Valids Maintenance Agency', who shall maintain for each valid change the organisation which requested the change and the date of the change. The approval procedure depends on the extensibility class of the valid:

- static valid changes shall be considered as a change to the CIP specification and shall be handled as a CIP clarification.
- 'slow' growing valids shall be approved during the following monthly teleconference by the ICS taskteam
- 'fast' growing valids shall immediately be approved and inserted by the 'ICS Valids Maintenance Agency' after verification that
 1. the term for the newly requested valid is not already existing
 2. the newly requested valid is not already present with a different term

Where valids lists are maintained by external bodies, unless this is an agreed policy (e.g. for ISO standards) the external body shall formally agree (by exchange of letters) to the 'ICS Valids Maintenance Agency' to

- not delete or modify any existing valid without agreement of the 'ICS Valids Maintenance Agency'
- formally assess any ICS valids maintenance requests within 2 weeks

In case the external bodies does not respect these obligations, the ICS taskteam may decide to allow extension with respect to the external body's controlled list.

Instead of the valids lists the pointers to Web and FTP sites of these external bodies shall be the ultimate reference, lists included in the present document shall only be considered as 'snapshot'. This way any new valid defined by the external body will directly be inherited by the ICS. Any request for valids modification shall be addressed directly to the external body with copy to the ICS Valids Maintenance Agency.

5. Controlled Valids Lists

This section lists all valids grouped by their extensibility in alphabetical order and provides for each:

- description/purpose of the controlled list (extracted from Appendix B of the CIP [CIP-B]).
- the agency that is responsible for maintaining the controlled list
- all sources that are used as input to create the initial list
- the recommended default valid (if applicable)
- if applicable, rules/naming conventions that need to be considered if new valids are added to this list
- all valids and - if applicable - also their description

5.1 Static Valids Lists

For the attributes in this category, the valids lists are not expected to be modified.

5.1.1 ItemDescriptorLanguage / ItemLanguage

Description	The language in which the item descriptor is defined or in which any textual information within the deliverable item is defined.
Maintenance Agency	ISO/INFOTERM The current list of valids can be found at http://www.loc.gov/standards/iso639-2/ISO-639-2_values_8bits.txt .
Default Valid	<i>en (English)</i>
Rules/Naming Conventions	Compliant with the ISO 639:1988 2-char language code standard

The list below is a snapshot of the ISO 639-1 language codes, with last 2-char language code revision on 2004/10/19.

Valids	Description
aa	Afar
ab	Abkhazian
ae	Avestan
af	Afrikaans
ak	Akan
am	Amharic
an	Aragonese
ar	Arabic
as	Assamese
av	Avaric
ay	Aymara
az	Azerbaijani
ba	Bashkir
be	Belarusian
bg	Bulgarian

Valids	Description
bh	Bihari
bi	Bislama
bm	Bambara
bn	Bengali
bo	Tibetan
br	Breton
bs	Bosnian
ca	Catalan; Valencian
ce	Chechen
ch	Chamorro
co	Corsican
cr	Cree
cs	Czech
cu	Church Slavonic; Old Slavonic; Church Slavonic; Old

Valids	Description
	Bulgarian; Old Church Slavonic
cv	Chuvash
cy	Welsh
da	Danish
de	German
dv	Divehi
dz	Dzongkha
ee	Ewe
el	Greek, Modern (1453-)
en	English
eo	Esperanto
es	Spanish; Castilian
et	Estonian
eu	Basque

Valids	Description
fa	Persian
ff	Fulah
fi	Finnish
fj	Fijian
fo	Faroese
fr	French
fy	Frisian
ga	Irish
gd	Gaelic; Scottish Gaelic
gl	Galleghan
gn	Guarani
gu	Gujarati
gv	Manx
ha	Hausa
he	Hebrew
hi	Hindi
ho	Hiri Motu
hr	Croatian
ht	Haitian; Haitian Creole
hu	Hungarian
hy	Armenian
hz	Herero
ia	Interlingua (International Auxiliary Language Association)
id	Indonesian
ie	Interlingue
ig	Igbo
ii	Sichuan Yi
ik	Inupiaq
io	Ido
is	Icelandic
it	Italian
iu	Inuktitut
ja	Japanese
jv	Javanese
ka	Georgian
kg	Kongo
ki	Kikuyu; Gikuyu
kj	Kuanyama; Kwanyama
kk	Kazakh
kl	Kalaallisut; Greenlandic
km	Khmer
kn	Kannada
ko	Korean
kr	Kanuri
ks	Kashmiri
ku	Kurdish
Komi	
kw	Cornish
ky	Kirghiz
la	Latin
lb	Luxembourgish;

Valids	Description
	Letzeburgesch
lg	Ganda
li	Limburgan; Limburger; Limburgish
ln	Lingala
lo	Lao
lt	Lithuanian
lu	Luba-Katanga
lv	Latvian
mg	Malagasy
mh	Marshallese
mi	Maori
mk	Macedonian
ml	Malayalam
mn	Mongolian
mo	Moldavian
mr	Marathi
ms	Malay
mt	Maltese
my	Burmese
na	Nauru
nb	Norwegian Bokmål
nd	Ndebele, North; North Ndebele
ne	Nepali
ng	Ndonga
nl	Dutch; Flemish
nn	Norwegian Nynorsk
no	Norwegian
nr	Ndebele, South; South Ndebele
nv	Navajo; Navaho
ny	Chichewa; Chewa; Nyanja
oc	Occitan (post 1500); Provençal
oj	Ojibwa
om	Oromo
or	Oriya
os	Ossetian; Ossetic
pa	Panjabi; Punjabi
pi	Pali
pl	Polish
ps	Pushto
pt	Portuguese
qu	Quechua
rm	Raeto-Romance
rn	Rundi
ro	Romanian
ru	Russian
rw	Kinyarwanda
sa	Sanskrit
sc	Sardinian
sd	Sindhi

Valids	Description
se	Northern Sami
sg	Sango
si	Sinhala; Sinhalese
sk	Slovak
sl	Slovenian
sm	Samoan
sn	Shona
so	Somali
sq	Albanian
sr	Serbian
ss	Swati
st	Sotho, Southern
su	Sundanese
sv	Swedish
sw	Swahili
ta	Tamil
te	Telugu
tg	Tajik
th	Thai
ti	Tigrinya
tk	Turkmen
tl	Tagalog
tn	Tswana
to	Tonga (Tonga Islands)
tr	Turkish
ts	Tsonga
tt	Tatar
tw	Twí
ty	Tahitian
ug	Uighur; Uyghur
uk	Ukrainian
ur	Urdu
uz	Uzbek
ve	Venda
vi	Vietnamese
vo	Volapük
wa	Walloon
wo	Wolof
xh	Xhosa
yi	Yiddish
yo	Yoruba
za	Zhuang; Chuang
zh	Chinese
zu	Zulu

5.1.2 Role

Description	The role of a person for the collection
Maintenance Agency	CEOS/ESA (ICS project, contact: eohelp@esa.int)

Validates	Description	Source
Administrator	Contact person in case of system related problems..	ICS
Technical	Contact person in case of technical questions related to a collection, search optimisation.	ICS
Investigator	Contact person in case of scientific questions related to a collection.	ICS

5.1.3 ScienceReviewStatus

Description	Type of review which occurred on the Science Review Date.
Maintenance Agency	CEOS/ESA (ICS project, contact: eohelp@esa.int)

Validates	Description	Source
QA within Software	Within the science team algorithm processing software, initial QA can be built in during the routine processing/generation of the data	ECS
QA at DAACS	In general the DAAC's QA role would be to ensure that the data are generated within the quality specifications defined by the science teams.	ECS
QA at SCF	Portions of the data products would be examined at the SCFs.	ECS
QA by data consumers	As data products are utilized by the users, another level of QA will take place.	ECS
None	None applies to those data which are ingested from external sources and are not known to have been subjected to any form of quality assurance, or have quality ratings for which the definitions are not available.	ECS

5.1.4 SpatialKeyword

Description	The spatial keywords provide the capability of selecting place names to be used as search parameters, usually as an alternative to specifying latitudes and longitudes.
Maintenance Agency	CEOS/NASA (IDN project 'Location' keywords, contact: interop@gcmd.gsfc.nasa.gov) The current list of valids can be found at http://gcmd.gsfc.nasa.gov/Resources/valids/location.html .

The list below is a snapshot of the IDN Location keywords, last revised 2004/12/17 at 15:34:45.

Valids	Valids	Valids	Valids
Global	Algeria	Chad	Gibraltar
Global Land	American Samoa	Channel Islands	Gough Island
Global Ocean	Andorra	Chile	Greece
Polar	Angola	China	Greenland
Antarctica	Anguilla	Christmas Island	Grenada
Arctic	Antigua and Barbuda	Cocos Islands	Guadeloupe
Mid-Latitude	Argentina	Colombia	Guam
Equatorial	Armenia	Comoros	Guatemala
Southern Hemisphere	Aruba	Congo	Guinea
Western Hemisphere	Ascension Island	Cook Islands	Guinea-Bissau
Eastern Hemisphere	Azores	Corsica	Guyana
Northern Hemisphere	Australia	Costa Rica	Haiti
Africa	Austria	Cote d'Ivoire	Hawaiian Islands
Southern Africa	Azerbaijan	Croatia	Honduras
West Africa	Bahamas	Cuba	Hungary
Central Africa	Bahrain	Curacao	Iceland
East Africa	Bangladesh	Cyprus	India
Sahel	Barbados	Czech Republic	Indonesia
North Africa	Belarus	Denmark	Iran
Asia	Belgium	Djibouti	Iraq
Southern Asia	Belize	Dominica	Ireland
Southeast Asia	Benin	Dominican Republic	Israel
Western Asia	Bermuda	Ecuador	Italy
Central Asia	Bhutan	Egypt	Jamaica
Eastern Asia	Bolivia	El Salvador	Japan
Europe	Bonaire	Equatorial Guinea	Jordan
Southern Europe	Bosnia and Herzegovina	Eritrea	Kampuchea
Western Europe	Botswana	Estonia	Kazakhstan
Central Europe	Bouvet Island	Ethiopia	Kenya
Eastern Europe	Brazil	Falkland Islands	Kiribati
Northern Europe	Brunei Darussalam	Faeroe Islands	Korea, DPR
Eurasia	Bulgaria	Fiji	Korea, Republic
Middle East	Burkina Faso	Finland	Kuwait
Oceania	Burundi	France	Kyrgyzstan
Australia	Cameroon	French Guiana	Laos
South America	Canada	French Polynesia	Latvia
Central America	Canary Islands	Gabon	Lebanon
Caribbean	Cape Verde	Gambia	Lesotho
North America	Cayman Islands	Georgia	Liberia
Afghanistan	Central African Republic	Germany	Libya
Albania	Ceuta	Ghana	Liechtenstein

Valids	Valids	Valids	Valids
Lithuania	Puerto Rico	Tonga	Red Sea
Luxembourg	Qatar	Trinidad and Tobago	Sea of Okhotsk
Macao	Reunion	Tristan da Cunha	Sea of Japan
Macedonia, FYR	Romania	Tunisia	South China Sea
Macquarie Island	Russian Federation	Turkey	Yellow Sea
Madagascar	Rwanda	Turkmenistan	Aral Sea
Madeira	Saba	Turks and Caicos Islands	Caspian Sea
Malawi	San Marino	Tuvalu	Great Bear Lake
Malaysia	Sao Tome and Principe	Uganda	Great Slave Lake
Maldives	Sardinia	Ukraine	Great Lakes
Mali	Saudi Arabia	United Arab Emirates	Lake Baykal
Malta	Senegal	United Kingdom	Lake Chad
Marshall Islands	Seychelles	United States of America	Lake Malawi
Martinique	Sicily	Uruguay	Lake Tanganyika
Mauritania	Sierra Leone	Uzbekistan	Lake Victoria
Mauritius	Singapore	Vanuatu	Core
Mexico	Slovakia	Vatican City	Mantle
Micronesia	Slovenia	Venezuela	Crust
Moldova	Solomon Islands	Viet Nam	Sea Floor
Monaco	Somalia	Virgin Islands	Sea Surface
Mongolia	South Africa	Wake Island	Land Surface
Montserrat	South Georgia Island	Wallis and Futuna Islands	Boundary Layer
Morocco	South Orkney Islands	Western Samoa	Troposphere
Mozambique	South Sandwich Islands	Yemen	Stratosphere
Myanmar	South Shetland Islands	Yugoslavia	Mesosphere
Namibia	Spain	Zaire	Thermosphere
Nauru	Sri Lanka	Zambia	Ionosphere
Nepal	St Barthelemy	Zanzibar	Chromosphere
Netherlands	St Eustatius	Zimbabwe	Corona
New Caledonia	St Helena	Atlantic Ocean	High Latitude
New Zealand	St Kitts and Nevis	North Atlantic Ocean	Magnetosphere
Nicaragua	St Lucia	South Atlantic Ocean	Inner Magnetosphere
Niger	St Maarten	Arctic Ocean	Magnetosphere (other)
Nigeria	St Martin	Indian Ocean	Magnetotail
Niue	St Pierre and Miquelon	Pacific Ocean	Photosphere
Norfolk Island	St Vincent and the Grenadines	North Pacific Ocean	Global
Norway	Sudan	South Pacific Ocean	Global Land
Northern Mariana Islands	Suriname	Southern Ocean	Global Ocean
Okinawa	Svalbard	Arabian Sea	Polar
Oman	Swaziland	Baltic Sea	Antarctica
Pakistan	Sweden	Bering Sea	Arctic
Palau	Switzerland	Black Sea	
Panama	Syria	Caribbean Sea	
Papua New Guinea	Taiwan	East China Sea	
Paraguay	Tajikistan	Gulf of Alaska	
Peru	Tanzania	Gulf of Mexico	
Philippines	Thailand	Hudson Bay	
Pitcairn Island	Togo	Mediterranean Sea	
Poland	Tokelau	North Sea	
Portugal		Persian Gulf	

5.1.5 SpatialResolution

Description	The minimum distance between two adjacent geographic points.
Maintenance Agency	CEOS/ESA (ICS project, contact: eohelp@esa.int)

Valids	Description	Source
< 3 meters		CEO
3-10 meters		CEO
10-30 meters		CEO
30-100 meters		CEO
100-1 000 meters		CEO
> 1 000 meters		CEO

5.1.6 TemporalKeyword

Description	The name of a time period covered by a collection.
Maintenance Agency	CEOS/ESA (ICS project, contact: eohelp@esa.int)
Comments	In combination with TemporalKeywordThesaurus None – which is currently the only possibility – the value of TemporalKeyword is free text.

Valids	Description	Source

5.1.7 UpdateFrequency

Description	The frequency with which changes and additions are made to the data set after the initial data set is completed.
Maintenance Agency	CEOS/ESA (ICS project, contact: eohelp@esa.int)

Valids	Description	Source
<i>Continually</i>	<i>The collection is updated more frequently than once a day.</i>	ECS
<i>Daily</i>	<i>The collection is updated once per day, every day.</i>	ECS
<i>Weekly</i>	<i>The collection is updated once per week.</i>	ECS
<i>Monthly</i>	<i>The collection is updated once per calendar month.</i>	ECS
<i>Annually</i>	<i>The collection is updated once per year; the first date of update is usually one year after the first date of receipt of data from this collection's source.</i>	ECS
<i>Unknown</i>		ECS
<i>As Needed</i>	<i>The collection is updated as determined by the Principal Investigator or according to on demand requests from end users</i>	ECS
<i>Irregular</i>	<i>The collection is updated on an unscheduled but periodic basis.</i>	ECS
<i>None Planned</i>	<i>The collection is complete and therefore will not be updated further.</i>	ECS

5.2 Valid Lists with slow rate of modification

For the attributes in this category, the valids lists are expected to remain fairly stable. Any extension will require approval by the ICS taskteam.

5.2.1 BrowseCompression

Description	Description of the method used for compression of the browse data.
Maintenance Agency	CEOS/ESA (ICS project, contact: eohelp@esa.int)

Valid	Description	Source
zip	ZIP compressed data	ICS
x-gzip	GNU zip compressed data	ICS
x-tar	UNIX tape archive	ICS
x-gtar	GNU tape archive	ICS
x-bzip2	bzip2 compressed data	ICS
x-compress	Z compressed data	ICS
x-tar-gz	GNU zip compressed UNIX tape archive	ICS
x-tar-compress	Z compressed UNIX tape archive	ICS

5.2.2 BrowseFormat

Description	Format of the Browse.
Maintenance Agency	CEOS/ESA (ICS project, contact: eohelp@esa.int)

Valid	Description	Source
JPEG		ICS
GIF		ICS
PNG		NASDA
HDF		NASA
HDF-EOS		NASA
TIFF		ICS
GEOTIFF		ICS

5.2.3 CollectionCategory

Description	Category of a collection.
Maintenance Agency	CEOS/ESA (ICS project, contact: eohelp@esa.int)

Valid	Description	Source
product type	collection containing all available products of a single product type	ICS
sensor	collection containing all available products of a single sensor (might be multiple missions)	ICS
mission	collection containing all available products of a single mission or mission series	ICS
provider	collection containing all available products of a single provider	ICS
data centre	collection containing all available products of a single data centre	ICS
project	collection containing all available products of a single project	ICS

Valid	Description	Source
theme	collection containing all available products of any other specific theme (e.g. application area)	ICS

5.2.4 GeospatialForm

Description	A characterisation of the type of product, e.g. satellite image or map
Maintenance Agency	CEOS/ESA (ICS project, contact: eohelp@esa.int)

Valid	Description	Source
atlas		FGDC
diagram		FGDC
globe		FGDC
map		FGDC
model		FGDC
profile		FGDC
remote-sensing image		FGDC
section		FGDC
view		FGDC

5.2.5 ItemDeliveryMethod

Description	The method by which an item is delivered.
Maintenance Agency	CEOS/ESA (ICS project, contact: eohelp@esa.int)

Valid	Description	Source
eMail		ICS
mail		ICS
ftp-push		ICS
ftp-pull		ICS

5.2.6 MapProjectionName / PolygonProjection

Description	Name of the map projection.
Maintenance Agency	CEOS/ESA (ICS project, contact: eohelp@esa.int)

Valid	Description	Source
Albers Conical Equal Area		FGDC
Azimuthal Equidistant		FGDC
Equidistant Conic		FGDC
Equirectangular		FGDC
General Vertical Near-sided Projection		FGDC
Gnomonic		FGDC
Lambert Azimuthal Equal Area		FGDC
Lambert Conformal Conic		FGDC
Mercator		FGDC
Modified Stereographic for Alaska		FGDC

Valids	Description	Source
Miller Cylindrical		FGDC
Oblique Mercator		FGDC
Orthographic		FGDC
Polar Stereographic		FGDC
Polyconic		FGDC
Robinson		FGDC
Sinusoidal		FGDC
Space Oblique Mercator		FGDC
Stereographic		FGDC
Transverse Mercator		FGDC
van der Grinten		FGDC
other projection		FGDC

5.2.7 ProcessingLevelId

Description	This parameter identifies the processing level of the data in the archive
Maintenance Agency	CEOS/ESA (ICS project, contact: eohelp@esa.int)

Valid	Description
0	uncorrected 'raw' data (see sublevels below) (available supplemental information to be used in subsequent processing may be appended)
0A	Raw instrument data in telemetry format as acquired from the satellite
0B	Raw instrument data as in the original telemetry in computer compatible format
0C	'Baseband data' as defined in the by CEOS WGISS. De-multiplexed raw data in computer compatible format, where encoding artefacts such as PN code or CRC have been removed. Data may have been reformatted or transformed reversibly, e.g. time-ordered, time-tagged, de-compressed, scan line reversed. Data are packaged with metadata needed for long-term preservation
1	Corrected Baseband data at full resolution and packaged with ancillary and engineering data (see additional sublevels below) (available supplemental information to be used in subsequent processing may be appended)
1A	Radiometrically Corrected data
1B	Radiometrically and Geometrically corrected data
1C	Geocoded corrected data
1D	Ortho-Corrected data
2	Retrieved geophysical parameter/environment variables (e.g. ocean wave height, soil moisture, ice concentration) at the same location and similar resolution as the Level 1 source data.
2G	Gridded Level 2 data, containing pixel to grid mappings within the product files
3	Data or retrieved geophysical/environmental variables that have been spatially and/or temporarily re-organised from lower-level products. Such re-organising may include spatial/temporal averaging, re-ordering, and compositing.
4	Thematic temporal / spatial summaries (i.e. climatologies, statistics, time series etc.) Model output and/or variables derived from lower level data which are not directly measured by the instruments. For example, new variables based upon a time series of multi-instrument Level 3 data.

5.2.8 SpatialKeywordThesaurus

Description	Reference to the thesaurus used for the spatial keywords.
Maintenance Agency	CEOS/ESA (ICS project, contact: eohelp@esa.int)

Valids	Description	Source
IDN	CEOS International Directory Network	ICS

5.2.9 SubsettingTemporalResolution

Description	Resolution of the subsetting time period in temporal units.
Maintenance Agency	CEOS/ESA (ICS project, contact: eohelp@esa.int)

Valids	Description	Source
s	Single second	ICS
h	Single hour	ICS
d	Single day	ICS
w	One-week interval	ICS
m	One-month interval	ICS
y	One-year interval	ICS
W	One calendar week (Monday to Sunday)	ICS
M	One calendar month	ICS
Y	One calendar year (January to December)	ICS

5.2.10 TemporalKeywordThesaurus

Description	Reference to the thesaurus used for the temporal keywords.
Maintenance Agency	CEOS/ESA (ICS project, contact: eohelp@esa.int)

Valids	Description	Source
None	When TemporalKeywordThesaurus is None, the value of TemporalKeyword is free text.	ICS

5.2.11 TemporalResolution

Description	The temporal frequency of data sampled.
Maintenance Agency	CEOS/ESA (ICS project, contact: eohelp@esa.int)

Valids	Description	Source
< 1 second		IDN
1 second - < 1 minute		IDN
1 minute - < 1 hour		IDN
Hourly - < Daily		IDN
Daily - < Weekly		IDN
Weekly - < Monthly		IDN
Monthly - < Annual		IDN
Hourly Climatology		IDN
Daily Climatology		IDN
Pentad Climatology		IDN
Weekly Climatology		IDN
Monthly Climatology		IDN
Annual		IDN
Annual Climatology		IDN
Decadal		IDN
Climate Normal (30-year climatology)		IDN

5.2.12 ThemeKeywordThesaurus

Description	Reference to the thesaurus used for the theme keywords.
Maintenance Agency	CEOS/ESA (ICS project, contact: eohelp@esa.int)

Valid	Description	Source
<i>IDN</i>	<i>CEOS International Directory Network</i>	<i>ICS</i>

5.3 Valid Lists with fast rate of modification

For the attributes in this category, the valids lists are expected to grow rapidly.

5.3.1 ProductMedium / StorageMedium

Description	Medium on which the product is available or on which it is currently stored. Some media may be used for storage only.
Maintenance Agency	CEOS/ESA (ICS project, contact: eohelp@esa.int)

Valid	Description	Source
<i>CD-ROM</i>		<i>FGDC</i>
<i>3-1/2 inch floppy disk</i>		<i>FGDC</i>
<i>5-1/4 inch floppy disk</i>		<i>FGDC</i>
<i>9-track tape</i>		<i>FGDC</i>
<i>4 mm cartridge tape</i>		<i>FGDC</i>
<i>8 mm cartridge tape</i>		<i>FGDC</i>
<i>1/4-inch cartridge tape</i>		<i>FGDC</i>
<i>Exabyte</i>		<i>ICS</i>
<i>DVD</i>		<i>DLR</i>

5.3.2 MissionId

Description	Unique code for the satellite/mission.
Maintenance Agency	CEOS/ESA (ICS project, contact: eohelp@esa.int) The Dossier can be found at http://alto-stratus.wmo.ch/sat/stations/SatSystem.html .
Comments	Valids shall be composed as <Platform>[-<satellite number>] For satellite series there is only one entry in the table below, with multiple entries for the 'satellite no.'(No.) part, each one instantiating a separate valid. Valids shall be inherited from CEOS Dossier and changed only for the following reasons: <ul style="list-style-type: none"> • valid not existing • valid not respecting commonly used name for the mission • valid not respecting above syntactical rule

Valids Platform	No.	Agency	Country	Comments	Source
ACRIMSAT		NASA	USA		Dossier
ADEOS-	1-2	NASDA	Japan	Advanced Earth Observation Satellite	Dossier
ADM		ESA		ADM-Aeolus	ESA
AEM-2		NASA	USA	SAGE/AEM-2	Dossier/ CS
ALMAZ-1B		RSA	Russia		Dossier
ALOS		NASDA	Japan		Dossier
AQUA		NASA	USA	EOS PM - Afternoon Equatorial Crossing Time Satellite	EDG
AURA		NASA	USA	EOS Chemistry	EDG
BIRD		DLR	Germany	Bi-spectral Infrared Detection (BIRD) satellite	DLR
CBERS	1-2	INPE	Brazil		Dossier
CHAMP		DARA	Germany		Dossier
CloudSat		NASA	USA	ESSP CloudSat	ICS
Cryosat		ESA			ESA
DMSP-	F1-F4 F7-F15	NOAA	USA	Defense Meteorological Satellite Programme	EDG
Envisat		ESA			Dossier
EO-1		NASA	USA	NMP EO-1, New Millenium Programme/Earth Orbiter 1	ICS
EP-TOMS		NASA	USA	TOMS Earth Probe	EDG
ERBS		NASA	USA		Dossier
EROS-	A-B	ImageSat	Israel		ICS
ERM		ESA			ESA
ERS-	1-2	ESA			Dossier
ESSA-	1-9	NOAA	USA		ICS
FedSat-1		CSIRO	Australia		Dossier
FY-	1A-1D, 2A-2B	NSMC NRSCC	China		Dossier
GCOM-A1		NASDA	Japan		Dossier
GMS-	1-5	NASDA	Japan		Dossier
GOCE		ESA			ESA
GOES-	1-12	NOAA	USA		Dossier
GOMS-	N1-N2	RSA	Russia	Electro-GOMS N1	ICS

Valid Platform	No.	Agency	Country	Comments	Source
GRACE		NASA	USA	ESSP-GRACE Gravity Recovery and Climate Experiment	ICS
ICESat		NASA	USA		Dossier
INSAT-	2A-2E	ISRO	India		Dossier
IRS-	1A-1D P2-P7	ISRO	India	P4= OCEANSAT-1 P5= CARTOSAT-1 P6= RESOURCESAT-1 P7= OCEANSAT/CIMASAT	Dossier
ISS		NASA	USA		Dossier
Jason-1		CNES	France		Dossier
JERS-1		NASDA	Japan		Dossier
KOMPSAT-	1-2	KARI	Korea		ICS
LAGEOS-	1-3	NASA	USA		Dossier
Landsat-	1-5,7	NASA	USA		Dossier
METEOR2-	01-21	RSA	Russia		Dossier
METEOR3-	04-06	RSA	Russia		Dossier
METEOR3M		RSA	Russia		Dossier
Meteosat-	1-7	Eumetsat			EDG
MSG-	1-3	Eumetsat			Dossier
METOP-	1-3	Eumetsat			Dossier
MOS-1B		NASDA	Japan		Dossier
MTSAT-1		JMA	Japan		Dossier
Nimbus-	1,3-7	NASA	USA		EDG
NOAA-	1-18	NOAA	USA		Dossier
NPOESS-	1-4	NOAA	USA		Dossier
Ocean-01		RSA	Russia		Dossier
ODIN		SSC	Sweden		ICS
OKEAN-O		NSAU	Ukraine		Dossier
CALIPSO		NASA	USA	Picasso-Cena/ESSP-3	ICS
PRIRODA		RSA	Russia		Dossier
Proba		ESA			ESA
QuickScat		NASA	USA		EDG
QuickTOMS		NASA	USA		Dossier
Radarsat	1-3	CSA	Canada	RADARSAT	EDG
RESURS01	N2-N4	RSA	Russia		ICS
RESURS2		RSA	Russia		ICS
SAC-	A, C	CONAE	Argentina		Dossier
SAVE		NASA	USA		Dossier
SCD-	1-3	INPE	Brazil	MECB SCD-1	ICS
SeaStar		NASA	USA	Orbview-2	Dossier
SICH-	1,1M,2	NSAU	Ukraine		Dossier
SORCE		NASA	USA	Solar Radiation and Climate Experiment	Dossier
SPOT-	1-5	CNES	France		Dossier
SRTM		NASA, NGA DLR ASI	USA Germany Italy	Shuttle Radar Topography Mission	DLR
SSR-	1-2	INPE	Brazil	MECB SSR-1, MECB SSR-2	ICS
STELLA		CNES	France		Dossier
STS-	1-999[A-Z]	NASA	USA	Space Shuttle Missions	EDG
TERRA		NASA	USA	EOS AM-1	Dossier
TIROS-	1-10, N	NOAA	USA		ICS
Topex-Poseidon		NASA	USA		Dossier
Triana		NASA	USA		Dossier
TSX		BMBF, DLR, Astrium	Germany	TerraSAR-X	DLR
TRMM		NASA	USA		Dossier
UARS		NASA	USA		Dossier
VCL		NASA	USA	ESSP-VCL	ICS

SensorId

Description	A mnemonic or otherwise abbreviated version (acronym) for the sensor.
Maintenance Agency	CEOS/ESA (ICS project, contact: eohelp@esa.int) The Dossier can be found at http://alto-stratus.wmo.ch/sat/stations/SatSystem.html .

Valid	Description	Mission	Source
AATSR	Advanced Along Track Scanning Radiometer	Envisat	Dossier
ABS	A-band Spectrometer	CALIPSO	Dossier
ACP	Advanced Communications Payload	ACRIMSAT	Dossier
ACRIM III	Active Cavity Radiometer Irradiance Monitor	ACRIMSAT	Dossier
AIRS	Atmospheric Infra-red Sounder	AQUA	EDG
ALADIN	Atmospheric Laser Doppler Instrument	ADM-Aeolus	Dossier
ALI	Advanced Land Imager	EO-1	Dossier
ALISSA	Backscatter lidar	PRIRODA	Dossier
AMI/SAR/Image	Active Microwave Instrumentation. Image Mode	ERS	Dossier
AMI/SAR/wave	Active Microwave Instrumentation. Wave mode	ERS	Dossier
AMI/scatterometer	Active Microwave Instrumentation. Wind mode	ERS	Dossier
AMSR	Advanced Microwave Scanning Radiometer	ADEOS-2	Dossier
AMSR-E	Advanced Microwave Scanning Radiometer-EOS	AQUA	Dossier
AMSU-A	Advanced Microwave Sounding Unit-A	NOAA,METOP,NPOESS, AQUA	Dossier
AMSU-B	Advanced Microwave Sounding Unit-B	NOAA	Dossier
ARGOS	ARGOS	NOAA,METOP,NPOESS	Dossier
ASAR	Advanced Syntetic Aperture Radar	Envisat	Dossier
ASAR/AP	Advanced Syntetic Aperture Radar (Alternating Polarisation mode)	Envisat	ESA
ASAR/IM	Advanced Syntetic Aperture Radar (Image mode)	Envisat	Dossier/ ESA
ASAR/GM	Advanced Syntetic Aperture Radar (Global Monitoring mode)	Envisat	ESA
ASAR/WS	Advanced Syntetic Aperture Radar (Wide Swath mode)	Envisat	ESA
ASAR/WV	Advanced Syntetic Aperture Radar (Wave mode)	Envisat	Dossier
ASCAT	Avanced Scatterometer	METOP	Dossier
ASTER	Advanced Spaceborne Thermal Emission And Reflection Radiometer	TERRA	Dossier
ATMS	Microwave/NPOESS	NPOESS	Dossier
ATOV	(HIRS/3 + AMSU + AVHRR/3)	NOAA	Dossier
ATSR	Along track scanning radiometer	ERS	Dossier
ATSR-2	Along Track Scanning Radiometer -2	ERS	Dossier
AVHRR	Advanced Very High Resolution Radiometer	NOAA,METOP,NPOESS	EDG
AVNIR	Advanced Visible And Near Infrared Radiometer	ADEOS	Dossier
AVNIR-2	Advanced Visible And Near Infra-red Radiometer type 2	ALOS	Dossier
AwIFS	Advanced Wide Field Sensor	IRS	Dossier
Balkan-2 lidar	Balkan-2 lidar	ALMAZ-1B	Dossier
BRK	BRK	GOMS	Dossier
BTVK	Scanning television radiometer	GOMS	Dossier
BUFS-2	Backscatter spectrometer/2	METEOR3	Dossier
BUFS-4	Backscatter spectrometer/4	METEOR3	Dossier
BUV	Backscatter Ultraviolet instrument	Nimbus	Dossier
CCD	High Resolution CCD Camera	CBERS	Dossier
CERES	Cloud and the Earth's Radiant Energy System	TRMM, TERRA, AQUA	ICS
Chaika	Scanning IR radiometer	METEOR	Dossier
CHAMP OG	CHAMP gravity package	CHAMP	Dossier
CHAMP FGM	CHAMP magnetometry package/Fluxgate Magnetometer	CHAMP	Dossier
CHAMP OVM	CHAMP magnetometry package/Overhauser Magnetometer	CHAMP	Dossier

Valids	Description	Mission	Source
CHRIS	Compact High Resolution Imaging Spectrometer	Proba	ESA
CLAES	Cryogenic Limb Array Etalon Spectrometer instrument	UARS	Dossier
CPR	Cloud Profiling Radar	Cloudsat	Dossier
CrIS	Infra-red Sounder/NPOESS	NPOESS	Dossier
CZCS	Coastal-Zone Color Scanner	Nimbus-7	ICS
DCP	Data Collection Platform Transponder	CBERS	Dossier
DELTA-2	Multispectral microwave scanner	OKEAN-0	Dossier
DOPI	Double Pendulum Interferometer	PRIRODA	Dossier
DORIS	Doppler Orbitography and Radio Positioning Integrated by Satellite	SPOT Envisat	Dossier
DORIS-NG	Doppler Orbitography and Radio Positioning Integrated by Satellite-NG	Cryosat	Dossier
EOC	Electro-Optical Camera	KOMPSAT-1	ICS
EPIC	Earth PolyChromatic Imaging Camera	Triana	Dossier
ERBE	Earth's Radiation Budget Experiment	NOAA	Dossier
ETM	Enhanced Thematic Mapper	Landsat-6	Dossier
ETM+	Enhanced Thematic Mapper+	Landsat-7	Dossier
FedSat Fluxgate magnetometer	Fluxgate magnetometer	FedSat	Dossier/ ICS
GERB	Geostationary Earth Radiation Budget	MSG	Dossier
GIFTS	Geostationary Interferometer Fourier Transform Sounder	EO-3	Dossier
GLAS	Geoscience Laser Altimeter System	ICESat	Dossier
GLI	Global Imager	ADEOS-2	Dossier
GOES Imager	GOES Imager	GOES	ICS
GOES Sounder	GOES Sounder	GOES	ICS
GOME	Global Ozone Monitoring Experiment	ERS	Dossier
GOME-2	Global Ozone Monitoring Experiment – 2	METOP	Dossier
GOMOS	Global Ozone Monitoring by Occultation of Stars	Envisat	Dossier
GPS receiver	GPS receiver	various	Dossier
GRAS	GNSS Receiver for Atmospheric Sounding	GOCE, METOP	Dossier
Greben	Radar altimeter	PRIRODA	Dossier
HAIRS	HAIRS	GRACE	Dossier
HALOE	Halogen Occultation Experiment	UARS	Dossier
HIRDLS	High Resolution Dynamics Limb Sounder	AURA	Dossier
HIRS/2	High Resolution Infra-red Sounder/2	NOAA	Dossier
HIRS/3	High Resolution Infra-red Sounder/3	NOAA, METOP, NPOESS	Dossier
HR-PAN	High Resolution Panchromatic Camera	SPOT	Dossier
HRC	High Resolution Camera	Proba	ESA
HRDI	High Resolution Doppler Imager	UARS	Dossier
HRG	High Resolution Geometry	SPOT	Dossier
HRV	High Resolution Visible	SPOT	Dossier
HRVIR	High Resolution Visible and Infra-red	SPOT	Dossier
HSB	Humidity Sounder/Brazil	AQUA	Dossier
Hyperion	Hyperion	EO-1	Dossier
IASI	Infra-red Atmospheric Sounding Interferometer	METOP	Dossier
IIR	Imaging Infrared Radiometer	CALIPSO	Dossier
IKAR-D	Multispectral microwave scanner	PRIRODA	Dossier
IKAR-N	Multispectral microwave scanner	PRIRODA	Dossier
IKAR-P	Multispectral microwave scanner	PRIRODA	Dossier
ILAS	Improved Limb Atmospheric Spectrometer	ADEOS	Dossier
ILAS-II	Improved Limb Atmospheric Spectrometer II	ADEOS-2	Dossier
IMAGER/MTSAT	Imager/MTSAT	MTSAT	Dossier
IMG	Inferometric Monitor of Greenhouse gases	ADEOS	Dossier
IRIS	Infrared Interferometer Spectrometer Instrument	Nimbus	Dossier
IRMSS	Infra Red Multi Spectral Scanner	CBERS	Dossier
ISAMS	Improved Stratospheric and Mesospheric Sounder Instrument	UARS	Dossier
ISP	ISP	METEOR3, RESURS	Dossier
ISTOK-1	Infra-red Spectrometer	PRIRODA	Dossier
JERS SAR	Synthetic Aperture Radar (JERS)	JERS-1	Dossier/ ICS
JMR	JASON-1 Microwave Radiometer	Jason-1	Dossier

Valids	Description	Mission	Source
KFA-1000	Photographic camera	RESURS	Dossier
KFA-200	Photographic camera	RESURS	Dossier
KFA-3000	Photographic camera	RESURS	Dossier
KGI-4	KGI-4	METEOR3	Dossier
Klimat	Scanning IR radiometer	METEOR3	Dossier
Klimat-2	Scanning IR radiometer	METEOR3	Dossier
KONDOR-2	Data collection and transmission system	OCEAN-01, OKEAN-O, SICH	Dossier
Landsat RBV	Landsat Return Beam Vidicon	Landsat-1,2,3	ICS
LIMS	Limb Infrared Monitor of the Stratosphere	NIMBUS	Dossier
LIS	Lightning Imaging Sensor	TRMM	Dossier
LISS-I	Linear imaging Self Scanner I	IRS	Dossier
LISS-II	Linear Imaging Self Scanner II	IRS	Dossier
LISS-III	Linear Imaging Self Scanner III	IRS	Dossier
LISS-IV	Linear Imaging Self Scanner IV	IRS	Dossier
LRA	Laser Retroreflector Array	LAGEOS	Dossier
LRIR	Limb Radiance Inversion Radiometer instrument	Nimbus	Dossier
MAXIE	Magnetospheric Atmospheric X-ray Imaging Experiment	TIROS	Dossier
MERIS	Medium Resolution Imaging Spectrometer	Envisat	Dossier
MESSR	Multispectral Electronic Self Scanning Radiometer	MOS-1B	Dossier
MHS	Microwave Humidity Sounder	METOP, NPOESS	Dossier
MICROWAVE/NP	Microwave/NPOESS	NPOESS	Dossier
MIMR	Multi-frequency Imaging Microwave Radiometer	AQUA	Dossier
MIPAS	Michelson Interferometric Passive Atmosphere Sounder	Envisat	Dossier
MISR	Multi-angle Imaging SpectroRadiometer	TERRA	Dossier
MIVZA	3 channel microwave scanning radiometer	METEOR3, RESURS	Dossier
MIVZA-M	Microwave scanning radiometer	METEOR3, RESURS	Dossier
MK-4	MK-4	RESURS	Dossier
MK-4M	MK-4M	RESURS	Dossier
MLS	Microwave Limb Sounder	UARS, AURA	EDG
MODIS	MODerate-Resolution Imaging Spectroradiometer	AQUA, TERRA	Dossier
MOMS-2P	Modular Optoelectronic Multispectral Scanner	MIR-PRIRODA	Dossier
MOPITT	Measurements Of Pollution In The Troposphere	TERRA	Dossier
MOS	Modular Opto-electronic Scanner	PRIRODA, IRS	Dossier
MR-900	Scanning telephotometer	METEOR2	Dossier
MR-900B	Scanning visual band telephotometer	METEOR3, RESURS	Dossier
MR-2000	MR-2000	METEOR2	Dossier
MR-2000M	MR-2000M	METEOR3	Dossier
MSC	Multi-Spectral Camera	KOMPSAT-2	ICS
MSMR	Multifrequency Scanning Microwave Radiometer	IRS	Dossier
MSR	Microwave Scanning Radiometer	MOS	Dossier
MSS	Multispectral Scanning System	LANDSAT-1,2,3,4,5	Dossier
MSU	Microwave Sounding Unit	NOAA	Dossier
MSU-E	Multispectral high resolution electronic scanner	RESURS	Dossier
MSU-E1	Multispectral high resolution electronic scanner	RESURS	Dossier
MSU-E2	Multispectral high resolution electronic scanner	PRIRODA, ALMAZ-1B	Dossier
MSU-EU	Multi-Spectral Radiometer with High Resolution	SICH	Dossier
MSU-M	Multi-Spectral Low Resolution Scanning System	OCEAN-01, OKEAN-O, SICH	Dossier
MSU-S	Multispectral Medium resolution scanner	OCEAN-01 OKEAN-O, SICH	Dossier
MSU-SK	Multispectral Medium resolution conical scanner	RESURS, OKEAN-O ALMAZ-1B, PRIRODA	Dossier
MSU-UM	Visible Multi-Spectral Radiometer	SICH	Dossier
MSU-V	Multispectral high resolution conical scanner	OKEAN-O	Dossier
MTZA	Scanning Microwave radiometer	METEOR3	Dossier
MVIRI	METEOSAT Visible and Infra-Red Imager	METEOSAT	Dossier
MVIRSR (10 channel)		FY	Dossier
MVIRSR (3 channel)		FY	Dossier
MVIRSR (5 channel)		FY	Dossier

Validis	Description	Mission	Source
MWR	Microwave Radiometer	ERS, Envisat	Dossier
MZOAS	Scanning microwave radiometer	METEOR3	Dossier
NISTAR	NIST Advanced Radiometer	Triana	Dossier
NSCAT	NASA Scatterometer	ADEOS	Dossier
OBA	Observador Brasileiro da Amaznia	SSR	Dossier
OCM	Ocean Colour Monitor	IRS	Dossier
OCTS	Ocean Color and Temperature Scanner	ADEOS	Dossier
ODUS	Ozone Dynamics Ultraviolet Spectrometer	GCOM-A1	Dossier
OLS	Operational Linescan System	DMSP	Dossier
OMI	Ozone Measuring Instrument	AURA	Dossier
OPS	Optical Sensor/Visible and Near Infrared Radiometer	JERS-1	Dossier
OSIRIS	Optical Spectrograph and Infra-Red Imaging System	ODIN	Dossier
OSMI	Ocean Scanning Multispectral Imager	KOMPSAT-1	ICS
Ozon-M	Ozone Monitor	PRIRODA	Dossier
PABSI	Profiling Oxygen A-Band Spectrometer and Visible Imager	CloudSat	Dossier
PALSAR	Phased Array type L-band Synthetic Aperture Radar	ALOS	Dossier
PAN	Panchromatic Sensor	IRS	Dossier
PEM	Particle Environment Monitor	UARS	Dossier
PIC	Panchromatic Imaging Camera	EROS	ICS
Plasma-Mag	Plasma-Mag	Triana	Dossier
POLDER	POLarization and Directionality of the Earth's Reflectances	ADEOS-2	Dossier
POSEIDON	Positionning Ocean Solid Earth Ice Dynamics Orbiting Navigator	Topex-Poseidon	Dossier
PR	Precipitation Radar	TRMM	Dossier
Priroda-5	Priroda-5	PRIRODA	Dossier
PRISM	Panchromatic Remote-Sensing Instrument Stereo Mapping	ALOS	Dossier
R-225	Single channel microwave radiometer	OKEAN-O	Dossier
R-400	R-400	PRIRODA	Dossier
R-600	Single channel microwave Radiometer	OKEAN-O	Dossier
RA-2/MWR	Radar Altimeter 2 with MicroWave Sounder Corrections	Envisat	Dossier
RA/LRR	Radar Altimeter with Laser RetroReflector (Orbit Determination)	ERS	ESA
RA/MWR	Radar Altimeter with MicroWave Sounder Corrections	ERS	Dossier
Radarsat SAR	Synthetic Aperture Radar (CSA) C band	Radarsat	Dossier/ ICS
RIS	Retroreflector in Space	ADEOS	Dossier
RLSBO	Side looking microwave Radar	OKEAN-O, SICH	Dossier
RLSBO with scatterometer	Side looking microwave Radar	SICH	Dossier
RM-08	Imaging Microwave Radiometer	OCEAN-01, SICH	Dossier
RMK-2	Radiation Measurement Complex	METEOR	Dossier
RMS	Radiation measurement system	GOMS	Dossier
SAGE I	Stratospheric Aerosol and Gas Experiment I instrument	AEM-2	Dossier
SAGE II	Stratospheric Aerosol and Gas Experiment-II	ERBS	Dossier
SAGE III	Stratospheric Aerosol and Gas Experiment-III	METEOR3, ISS	Dossier
SAM II	Stratospheric Aerosol Measurement II instrument	Nimbus	Dossier
SAMS	Stratospheric and Mesospheric Sounder instrument	Nimbus	Dossier
SAR-10	Syntetic Aperture Radar	ALMAZ-1B	Dossier
SAR-3	Syntetic Aperture Radar	ALMAZ-1B	Dossier
SAR-70	Syntetic Aperture Radar	ALMAZ-1B	Dossier
SBUV/1	Solar Backscatter Ultraviolet 2 instrument	Nimbus	Dossier
SBUV/2	Solar Backscattter Ultra-Violet Instrument/2	NOAA	Dossier
SBUV/3	Solar Backscattter Ultra-Violet Instrument/3	NPOESS	Dossier
ScaRaB/MV2	Scanner for Earth's Radiation Budget	METEOR3, RESURS	Dossier
SCIAMACHY	Scanning Imaging Absorption Spectrometer for Atmospheric Cartography	Envisat	Dossier
SeaWiFS	Sea-Viewing Wide Field-of-View Sensor	SeaStar	Dossier
SeaWinds	ADEOS II – NASA Scatterometer and QuickSCAT	ADEOS-2, QuickScat	Dossier
SEM	Space Environment Monitor (NASDA)	GMS	ICS
SEM-1	Space Environment Monitor (GOES)	NOAA, GOES	EDG
SEM-2	Space Environment Monitor (POES)	NOAA, METOP, NPOESS	EDG

Valid	Description	Mission	Source
SEVIRI	Spinning Enhanced Visible and Infra-Red Imager	MSG	Dossier
SFM-2	Spectrometer to measure direct solar radiation	METEOR2	Dossier
SICH SAR	Synthetic Aperture Radar (NSAU)	SICH	Dossier/ ICS
SILVA	SILVA	ALMAZ-1B	Dossier
SIM	Spectral Irradiance Monitor	SORCE	Dossier
SIR-C	SIR-C/X-SAR Spaceborne Imaging Radar-C/X-band Synthetic Aperture Radar	STS-59	EDG
SIRAL	SAR/Interferometric Radar Altimeter	Cryosat	ESA
SIRAL/LR	SIRAL Low Resolution mode	Cryosat	ESA
SIRAL/SAR	SIRAL SAR mode	Cryosat	ESA
SIRAL/SARI	SIRAL SAR Interferometric mode	Cryosat	ESA
SLR-3	Side looking Radar	ALMAZ-1B	Dossier
SOLSTICE	SOLar STellar Irradiance Comparison Experiment	UARS, SORCE	Dossier
SROSMO	Spectroradiometer for ocean monitoring	ALMAZ-1B	Dossier
SSALT	Single frequency solid state radar altimeter	Topex-Poseidon	Dossier
SSB/X-2	Special Sensor Gamma Ray Particle Detector	DMSP	Dossier
SSBUV	Shuttle Solar Backscatter Ultraviolet instrument	STS	Dossier
SSIES-2	Special Sensor Ionospheric Plasma Drift/Scintillation Meter	DMSP	Dossier
SSJ/4	Special Sensor Precipitating Plasma Monitor	DMSP	Dossier
SSM	Special Sensor Magnetometer	DMSP	Dossier
SSMI	Mission Sensor Microwave Imager	DMSP	Dossier
SSMT-1	Mission Sensor Microwave Temperature Sounder	DMSP	Dossier
SSMT-2	Mission Sensor Microwave Water Vapor Sounder	DMSP	Dossier
SSMIS	Mission Sensor Microwave Imager Sounder	DMSP	Dossier
SSU	Stratospheric Sounding Unit	NOAA	Dossier
SSZ	monitoring electromagnetic radiation	DMSP	Dossier
SU-UMS	Stereo Radiometer with High Resolution	SICH	Dossier
SU-VR	Visible Radiometer with High Resolution	SICH	Dossier
SUSIM	Solar Ultraviolet Irradiance Monitor	UARS	EDG
SXI	Solar X-ray Imager	GOES	Dossier
TES	Tropospheric Emission Spectrometer	AURA	Dossier
TIM	Total Irradiance Monitor	SORCE	Dossier
TM	Thematic Mapper	LANDSAT-4,5	Dossier
TMI	TRMM Microwave Imager	TRMM	Dossier
TOMS	Total Ozone Mapping Spectrometer	METEOR3, Nimbus, ADEOS, QuickTOMS	Dossier
TOVS	TIROS Operational Vertical Sounder (HIRS/2 + MSU + SSU)	NOAA	Dossier
TRASSER	Polarization spectroradiometer	OKEAN-O	Dossier
TRSR-2	GPS Sounder/GPS TurboRogue Space Receiver (TRSR)	CHAMP	Dossier
VAS	VISSR Atmospheric Sounder	GOES	Dossier
VEGETATION	VEGETATION	SPOT	Dossier
VHRR	Very High Resolution Radiometer	INSAT	Dossier
VIRS	Visible Infra-red Scanner	TRMM, NPOESS	Dossier
VISSR	Visible and Infra-red Spin Scan Radiometer	GMS, GOES, INSAT, NIMBUS, METEOSAT	ICS
VTIR	Visible and Thermal Infra-red Radiometer	MOS	Dossier
WFC	Wide Field Camera	CALIPSO	Dossier
WFI	Wide Field Imager	CBERS	Dossier
WiFS	Wide Field Sensor	IRS	Dossier
WINDII	Wind Imaging Interferometer	UARS	Dossier
XPS	XUV Photometer System	SORCE	Dossier
XSAR	X-band Synthetic Aperture Radar	STS-59, STS-68	DLR

5.3.3 ThemeKeyword

The controlled lists of ThemeKeywords depends on the selected thesaurus. CIP supports classification with different thesauri, but is recommending the thesaurus used for the CEOS International Directory Network (IDN). Different Classification thesauri are identified by the 'ThemeKeywordThesaurus' value.

ThemeKeywordThesaurus 'IDN'

Description	Controlled keyword list to define the theme (e.g. discipline, topic) covered by a collection.
Maintenance Agency	CEOS/NASA (IDN project 'Science Keywords', contact: interop@gcmd.gsfc.nasa.gov) The current list of valids can be found at http://gcmd.gsfc.nasa.gov/Resources/valids/gcmd_parameters.html
Rules/Naming Conventions	The valids list is decomposed into 3 levels: TOPIC “ “ > “ “ TERM “ “ > “ “ VARIABLE. IDN CATEGORY is not used, as it is always set to ‘EARTH SCIENCE’.

The list below is a snapshot of the IDN Science Keywords, last revised 2005/04/17.

Valids
Agriculture > Agricultural Aquatic Sciences > Aquaculture
Agriculture > Agricultural Aquatic Sciences > Fisheries
Agriculture > Agricultural Chemicals > Fertilizers
Agriculture > Agricultural Chemicals > Pesticides
Agriculture > Agricultural Engineering > Agricultural Equipment
Agriculture > Agricultural Engineering > Farm Structures
Agriculture > Agricultural Plant Science > Crop/Plant Yields
Agriculture > Agricultural Plant Science > Cropping Systems
Agriculture > Agricultural Plant Science > Irrigation
Agriculture > Agricultural Plant Science > Plant Breeding and Genetics
Agriculture > Agricultural Plant Science > Plant Diseases/Disorders/Pests
Agriculture > Agricultural Plant Science > Reclamation/Revegetation/Restoration
Agriculture > Agricultural Plant Science > Weeds, Noxious Plants Or Invasive Plants
Agriculture > Animal Commodities > Dairy Products
Agriculture > Animal Commodities > Livestock Products
Agriculture > Animal Commodities > Poultry Products
Agriculture > Animal Science > Animal Breeding and Genetics
Agriculture > Animal Science > Animal Diseases/Disorders/Pests
Agriculture > Animal Science > Animal Ecology and Behavior
Agriculture > Animal Science > Animal Management Systems
Agriculture > Animal Science > Animal Manure and Waste
Agriculture > Animal Science > Animal Nutrition
Agriculture > Animal Science > Animal Physiology and Biochemistry
Agriculture > Animal Science > Animal Yields
Agriculture > Animal Science > Apiculture
Agriculture > Animal Science > Sericulture
Agriculture > Feed Products > Feed Composition
Agriculture > Feed Products > Feed Contamination and Toxicology
Agriculture > Feed Products > Feed Processing
Agriculture > Feed Products > Feed Storage

Valids
<i>Agriculture > Food Science > Food Additives</i>
<i>Agriculture > Food Science > Food Contamination and Toxicology</i>
<i>Agriculture > Food Science > Food Packaging</i>
<i>Agriculture > Food Science > Food Processing</i>
<i>Agriculture > Food Science > Food Quality</i>
<i>Agriculture > Food Science > Food Storage</i>
<i>Agriculture > Forest Science > Afforestation/Reforestation</i>
<i>Agriculture > Forest Science > Defoliant</i>
<i>Agriculture > Forest Science > Forest Conservation</i>
<i>Agriculture > Forest Science > Forest Fire Science</i>
<i>Agriculture > Forest Science > Forest Harvesting and Engineering</i>
<i>Agriculture > Forest Science > Forest Management</i>
<i>Agriculture > Forest Science > Forest Mensuration</i>
<i>Agriculture > Forest Science > Forest Products/Commodities</i>
<i>Agriculture > Forest Science > Forest Protection</i>
<i>Agriculture > Forest Science > Forest Yields</i>
<i>Agriculture > Forest Science > Reforestation</i>
<i>Agriculture > Plant Commodities > Field Crops Products</i>
<i>Agriculture > Plant Commodities > Fruit Products</i>
<i>Agriculture > Plant Commodities > Horticultural Products</i>
<i>Agriculture > Plant Commodities > Vegetable Products</i>
<i>Agriculture > Soils > Calcium</i>
<i>Agriculture > Soils > Carbon</i>
<i>Agriculture > Soils > Cation Exchange Capacity</i>
<i>Agriculture > Soils > Denitrification Rate</i>
<i>Agriculture > Soils > Electrical Conductivity</i>
<i>Agriculture > Soils > Heavy Metals</i>
<i>Agriculture > Soils > Hydraulic Conductivity</i>
<i>Agriculture > Soils > Macrofauna</i>
<i>Agriculture > Soils > Magnesium</i>
<i>Agriculture > Soils > Microfauna</i>
<i>Agriculture > Soils > Microflora</i>
<i>Agriculture > Soils > Micronutrients/Trace Elements</i>
<i>Agriculture > Soils > Nitrogen</i>
<i>Agriculture > Soils > Organic Matter</i>
<i>Agriculture > Soils > Permafrost</i>
<i>Agriculture > Soils > Phosphorus</i>
<i>Agriculture > Soils > Potassium</i>
<i>Agriculture > Soils > Reclamation/Revegetation/Restoration</i>
<i>Agriculture > Soils > Soil Absorption</i>
<i>Agriculture > Soils > Soil Bulk Density</i>
<i>Agriculture > Soils > Soil Chemistry</i>
<i>Agriculture > Soils > Soil Classification</i>
<i>Agriculture > Soils > Soil Color</i>
<i>Agriculture > Soils > Soil Compaction</i>
<i>Agriculture > Soils > Soil Consistence</i>
<i>Agriculture > Soils > Soil Depth</i>
<i>Agriculture > Soils > Soil Erosion</i>
<i>Agriculture > Soils > Soil Fertility</i>
<i>Agriculture > Soils > Soil Gas/Air</i>
<i>Agriculture > Soils > Soil Heat Budget</i>
<i>Agriculture > Soils > Soil Horizons/Profile</i>
<i>Agriculture > Soils > Soil Impedance</i>
<i>Agriculture > Soils > Soil Infiltration</i>
<i>Agriculture > Soils > Soil Mechanics</i>
<i>Agriculture > Soils > Soil Moisture/Water Content</i>
<i>Agriculture > Soils > Soil pH</i>
<i>Agriculture > Soils > Soil Plasticity</i>
<i>Agriculture > Soils > Soil Porosity</i>
<i>Agriculture > Soils > Soil Productivity</i>
<i>Agriculture > Soils > Soil Respiration</i>

Valids
Agriculture > Soils > Soil Rooting Depth
Agriculture > Soils > Soil Salinity/Soil Sodcity
Agriculture > Soils > Soil Structure
Agriculture > Soils > Soil Temperature
Agriculture > Soils > Soil Texture
Agriculture > Soils > Soil Water Holding Capacity
Agriculture > Soils > Sulfur
Agriculture > Soils > Thermal Conductivity
Atmosphere > Aerosols > Aerosol Backscatter
Atmosphere > Aerosols > Aerosol Extinction
Atmosphere > Aerosols > Aerosol Optical Depth/Thickness
Atmosphere > Aerosols > Aerosol Particle Properties
Atmosphere > Aerosols > Aerosol Radiance
Atmosphere > Aerosols > Carbonaceous Aerosols
Atmosphere > Aerosols > Cloud Condensation Nuclei
Atmosphere > Aerosols > Dust/Ash
Atmosphere > Aerosols > Nitrate Particles
Atmosphere > Aerosols > Organic Particles
Atmosphere > Aerosols > Particulate Matter
Atmosphere > Aerosols > Sulfate Particles
Atmosphere > Air Quality > Carbon Monoxide
Atmosphere > Air Quality > Emissions
Atmosphere > Air Quality > Lead
Atmosphere > Air Quality > Nitrogen Oxides
Atmosphere > Air Quality > Particulates
Atmosphere > Air Quality > Smog
Atmosphere > Air Quality > Sulfur Oxides
Atmosphere > Air Quality > Tropospheric Ozone
Atmosphere > Air Quality > Turbidity
Atmosphere > Air Quality > Visibility
Atmosphere > Air Quality > Volatile Organic Compounds
Atmosphere > Altitude > Barometric Altitude
Atmosphere > Altitude > Geopotential Height
Atmosphere > Altitude > Mesopause
Atmosphere > Altitude > Planetary Boundary Layer Height
Atmosphere > Altitude > Station Height
Atmosphere > Altitude > Stratopause
Atmosphere > Altitude > Tropopause
Atmosphere > Atmospheric Chemistry > Photolysis Rates
Atmosphere > Atmospheric Chemistry > Trace Elements/Trace Metals
Atmosphere > Atmospheric Chemistry > Trace Gases/Trace Species
Atmosphere > Atmospheric Chemistry/Carbon and Hydrocarbon Compounds > Carbon Dioxide
Atmosphere > Atmospheric Chemistry/Carbon and Hydrocarbon Compounds > Carbon Monoxide
Atmosphere > Atmospheric Chemistry/Carbon and Hydrocarbon Compounds > Chlorinated Hydrocarbons
Atmosphere > Atmospheric Chemistry/Carbon and Hydrocarbon Compounds > Formaldehyde
Atmosphere > Atmospheric Chemistry/Carbon and Hydrocarbon Compounds > Hydrogen Cyanide
Atmosphere > Atmospheric Chemistry/Carbon and Hydrocarbon Compounds > Hypochlorous Monoxide
Atmosphere > Atmospheric Chemistry/Carbon and Hydrocarbon Compounds > Methane
Atmosphere > Atmospheric Chemistry/Carbon and Hydrocarbon Compounds > Methyl Cyanide
Atmosphere > Atmospheric Chemistry/Carbon and Hydrocarbon Compounds > Non-methane Hydrocarbons
Atmosphere > Atmospheric Chemistry/Carbon and Hydrocarbon Compounds > Volatile Organic Compounds
Atmosphere > Atmospheric Chemistry/Halons and Halogens > Bromine Monoxide
Atmosphere > Atmospheric Chemistry/Halons and Halogens > Chlorine Dioxide
Atmosphere > Atmospheric Chemistry/Halons and Halogens > Chlorine Monoxide
Atmosphere > Atmospheric Chemistry/Halons and Halogens > Chlorine Nitrate
Atmosphere > Atmospheric Chemistry/Halons and Halogens > Chlorofluorocarbons
Atmosphere > Atmospheric Chemistry/Halons and Halogens > Halocarbons
Atmosphere > Atmospheric Chemistry/Halons and Halogens > Hydrochlorofluorocarbons
Atmosphere > Atmospheric Chemistry/Halons and Halogens > Hydrofluorocarbons
Atmosphere > Atmospheric Chemistry/Halons and Halogens > Hydrogen Chloride
Atmosphere > Atmospheric Chemistry/Halons and Halogens > Hydrogen Fluoride

Valids
Atmosphere > Atmospheric Chemistry/Halons and Halogens > Hypochlorous Acid
Atmosphere > Atmospheric Chemistry/Hydrogen Compounds > Hydroperoxy
Atmosphere > Atmospheric Chemistry/Hydrogen Compounds > Hydroxyl
Atmosphere > Atmospheric Chemistry/Nitrogen Compounds > Ammonia
Atmosphere > Atmospheric Chemistry/Nitrogen Compounds > Dinitrogen Pentoxide
Atmosphere > Atmospheric Chemistry/Nitrogen Compounds > Nitric Acid
Atmosphere > Atmospheric Chemistry/Nitrogen Compounds > Nitric Oxide
Atmosphere > Atmospheric Chemistry/Nitrogen Compounds > Nitrogen
Atmosphere > Atmospheric Chemistry/Nitrogen Compounds > Nitrogen Dioxide
Atmosphere > Atmospheric Chemistry/Nitrogen Compounds > Nitrogen Oxides
Atmosphere > Atmospheric Chemistry/Nitrogen Compounds > Nitrous Oxide
Atmosphere > Atmospheric Chemistry/Oxygen Compounds > Oxygen
Atmosphere > Atmospheric Chemistry/Oxygen Compounds > Ozone
Atmosphere > Atmospheric Chemistry/Sulfur Compounds > Carbonyl Sulfide
Atmosphere > Atmospheric Chemistry/Sulfur Compounds > Dimethyl Sulfide
Atmosphere > Atmospheric Chemistry/Sulfur Compounds > Sulfur Dioxide
Atmosphere > Atmospheric Chemistry/Sulfur Compounds > Sulfur Oxides
Atmosphere > Atmospheric Electricity > Atmospheric Conductivity
Atmosphere > Atmospheric Electricity > Electric Field
Atmosphere > Atmospheric Electricity > Lightning
Atmosphere > Atmospheric Electricity > Total Electron Content
Atmosphere > Atmospheric Phenomena > Cyclones
Atmosphere > Atmospheric Phenomena > Drought
Atmosphere > Atmospheric Phenomena > Fog
Atmosphere > Atmospheric Phenomena > Freeze
Atmosphere > Atmospheric Phenomena > Frost
Atmosphere > Atmospheric Phenomena > Hurricanes
Atmosphere > Atmospheric Phenomena > Lightning
Atmosphere > Atmospheric Phenomena > Monsoons
Atmosphere > Atmospheric Phenomena > Storms
Atmosphere > Atmospheric Phenomena > Tornados
Atmosphere > Atmospheric Phenomena > Typhoons
Atmosphere > Atmospheric Pressure > Anticyclones/Cyclones
Atmosphere > Atmospheric Pressure > Atmospheric Pressure Measurements
Atmosphere > Atmospheric Pressure > Differential Pressure
Atmosphere > Atmospheric Pressure > Gravity Wave
Atmosphere > Atmospheric Pressure > Hydrostatic Pressure
Atmosphere > Atmospheric Pressure > Oscillations
Atmosphere > Atmospheric Pressure > Planetary Boundary Layer Height
Atmosphere > Atmospheric Pressure > Planetary/Rossby Waves
Atmosphere > Atmospheric Pressure > Pressure Anomalies
Atmosphere > Atmospheric Pressure > Pressure Tendency
Atmosphere > Atmospheric Pressure > Pressure Thickness
Atmosphere > Atmospheric Pressure > Sea Level Pressure
Atmosphere > Atmospheric Pressure > Static Pressure
Atmosphere > Atmospheric Pressure > Surface Pressure
Atmosphere > Atmospheric Pressure > Topographic Waves
Atmosphere > Atmospheric Radiation > Absorption
Atmosphere > Atmospheric Radiation > Airglow
Atmosphere > Atmospheric Radiation > Albedo
Atmosphere > Atmospheric Radiation > Anisotropy
Atmosphere > Atmospheric Radiation > Atmospheric Emitted Radiation
Atmosphere > Atmospheric Radiation > Atmospheric Heating
Atmosphere > Atmospheric Radiation > Emissivity
Atmosphere > Atmospheric Radiation > Heat Flux
Atmosphere > Atmospheric Radiation > Incoming Solar Radiation
Atmosphere > Atmospheric Radiation > Longwave Radiation
Atmosphere > Atmospheric Radiation > Net Radiation
Atmosphere > Atmospheric Radiation > Optical Depth/Thickness
Atmosphere > Atmospheric Radiation > Outgoing Longwave Radiation
Atmosphere > Atmospheric Radiation > Radiative Flux

Valids
Atmosphere > Atmospheric Radiation > Radiative Forcing
Atmosphere > Atmospheric Radiation > Reflectance
Atmosphere > Atmospheric Radiation > Scattering
Atmosphere > Atmospheric Radiation > Shortwave Radiation
Atmosphere > Atmospheric Radiation > Solar Irradiance
Atmosphere > Atmospheric Radiation > Solar Radiation
Atmosphere > Atmospheric Radiation > Sunshine
Atmosphere > Atmospheric Radiation > Transmittance
Atmosphere > Atmospheric Radiation > Ultraviolet Radiation
Atmosphere > Atmospheric Temperature > Air Temperature
Atmosphere > Atmospheric Temperature > Atmospheric Stability
Atmosphere > Atmospheric Temperature > Boundary Layer Temperature
Atmosphere > Atmospheric Temperature > Degree Days
Atmosphere > Atmospheric Temperature > Deiced Temperature
Atmosphere > Atmospheric Temperature > Dew Point Temperature
Atmosphere > Atmospheric Temperature > Inversion Height
Atmosphere > Atmospheric Temperature > Maximum/Minimum Temperature
Atmosphere > Atmospheric Temperature > Potential Temperature
Atmosphere > Atmospheric Temperature > Skin Temperature
Atmosphere > Atmospheric Temperature > Static Temperature
Atmosphere > Atmospheric Temperature > Surface Air Temperature
Atmosphere > Atmospheric Temperature > Temperature Anomalies
Atmosphere > Atmospheric Temperature > Temperature Profiles
Atmosphere > Atmospheric Temperature > Temperature Tendency
Atmosphere > Atmospheric Temperature > Virtual Temperature
Atmosphere > Atmospheric Water Vapor > Condensation
Atmosphere > Atmospheric Water Vapor > Dew Point Temperature
Atmosphere > Atmospheric Water Vapor > Evaporation
Atmosphere > Atmospheric Water Vapor > Evapotranspiration
Atmosphere > Atmospheric Water Vapor > Humidity
Atmosphere > Atmospheric Water Vapor > Precipitable Water
Atmosphere > Atmospheric Water Vapor > Sublimation
Atmosphere > Atmospheric Water Vapor > Water Vapor
Atmosphere > Atmospheric Water Vapor > Water Vapor Profiles
Atmosphere > Atmospheric Water Vapor > Water Vapor Tendency
Atmosphere > Atmospheric Winds > Boundary Layer Winds
Atmosphere > Atmospheric Winds > Convection
Atmosphere > Atmospheric Winds > Convergence/Divergence
Atmosphere > Atmospheric Winds > Flight Level Winds
Atmosphere > Atmospheric Winds > Streamfunctions
Atmosphere > Atmospheric Winds > Surface Winds
Atmosphere > Atmospheric Winds > Turbulence
Atmosphere > Atmospheric Winds > Upper Level Winds
Atmosphere > Atmospheric Winds > Vertical Wind Motion
Atmosphere > Atmospheric Winds > Vorticity
Atmosphere > Atmospheric Winds > Wind Chill
Atmosphere > Atmospheric Winds > Wind Profiles
Atmosphere > Atmospheric Winds > Wind Shear
Atmosphere > Atmospheric Winds > Wind Stress
Atmosphere > Atmospheric Winds > Wind Tendency
Atmosphere > Clouds > Cloud Amount/Frequency
Atmosphere > Clouds > Cloud Asymmetry
Atmosphere > Clouds > Cloud Base
Atmosphere > Clouds > Cloud Base Temperature
Atmosphere > Clouds > Cloud Ceiling
Atmosphere > Clouds > Cloud Condensation Nuclei
Atmosphere > Clouds > Cloud Emissivity
Atmosphere > Clouds > Cloud Forcing
Atmosphere > Clouds > Cloud Height
Atmosphere > Clouds > Cloud Liquid Water/Ice
Atmosphere > Clouds > Cloud Mass Flux

Valids
<i>Atmosphere > Clouds > Cloud Optical Depth/Thickness</i>
<i>Atmosphere > Clouds > Cloud Precipitable Water</i>
<i>Atmosphere > Clouds > Cloud Reflectance</i>
<i>Atmosphere > Clouds > Cloud Top Pressure</i>
<i>Atmosphere > Clouds > Cloud Top Temperature</i>
<i>Atmosphere > Clouds > Cloud Types</i>
<i>Atmosphere > Clouds > Cloud Vertical Distribution</i>
<i>Atmosphere > Clouds > Droplet Concentration/Size</i>
<i>Atmosphere > Precipitation > Acid Rain</i>
<i>Atmosphere > Precipitation > Droplet Size</i>
<i>Atmosphere > Precipitation > Freezing Rain</i>
<i>Atmosphere > Precipitation > Hail</i>
<i>Atmosphere > Precipitation > Hydrometeors</i>
<i>Atmosphere > Precipitation > Liquid Water Equivalent</i>
<i>Atmosphere > Precipitation > Precipitation Amount</i>
<i>Atmosphere > Precipitation > Precipitation Anomalies</i>
<i>Atmosphere > Precipitation > Precipitation Rate</i>
<i>Atmosphere > Precipitation > Rain</i>
<i>Atmosphere > Precipitation > Sleet</i>
<i>Atmosphere > Precipitation > Snow</i>
<i>Biosphere > Animal Taxonomy > Amphibians</i>
<i>Biosphere > Animal Taxonomy > Anemones</i>
<i>Biosphere > Animal Taxonomy > Arachnids</i>
<i>Biosphere > Animal Taxonomy > Arthropods</i>
<i>Biosphere > Animal Taxonomy > Birds</i>
<i>Biosphere > Animal Taxonomy > Centipedes</i>
<i>Biosphere > Animal Taxonomy > Corals</i>
<i>Biosphere > Animal Taxonomy > Crustaceans</i>
<i>Biosphere > Animal Taxonomy > Echinoderms</i>
<i>Biosphere > Animal Taxonomy > Fish</i>
<i>Biosphere > Animal Taxonomy > Flatworms</i>
<i>Biosphere > Animal Taxonomy > Insects</i>
<i>Biosphere > Animal Taxonomy > Jellyfish</i>
<i>Biosphere > Animal Taxonomy > Mammals</i>
<i>Biosphere > Animal Taxonomy > Millipedes</i>
<i>Biosphere > Animal Taxonomy > Mollusks</i>
<i>Biosphere > Animal Taxonomy > Reptiles</i>
<i>Biosphere > Animal Taxonomy > Roundworms</i>
<i>Biosphere > Animal Taxonomy > Segmented Worms</i>
<i>Biosphere > Animal Taxonomy > Sponges</i>
<i>Biosphere > Animal Taxonomy > Vertebrates</i>
<i>Biosphere > Animal Taxonomy > Zooplankton</i>
<i>Biosphere > Aquatic Habitat > Benthic Habitat</i>
<i>Biosphere > Aquatic Habitat > Coastal Habitat</i>
<i>Biosphere > Aquatic Habitat > Demersal Habitat</i>
<i>Biosphere > Aquatic Habitat > Estuarine Habitat</i>
<i>Biosphere > Aquatic Habitat > Lakes</i>
<i>Biosphere > Aquatic Habitat > Pelagic Habitat</i>
<i>Biosphere > Aquatic Habitat > Reef Habitat</i>
<i>Biosphere > Aquatic Habitat > Rivers/Stream Habitat</i>
<i>Biosphere > Aquatic Habitat > Saline Lakes</i>
<i>Biosphere > Ecological Dynamics > Adaptation</i>
<i>Biosphere > Ecological Dynamics > Bioaccumulation</i>
<i>Biosphere > Ecological Dynamics > Bioavailability</i>
<i>Biosphere > Ecological Dynamics > Biodiversity</i>
<i>Biosphere > Ecological Dynamics > Biogeochemical Cycles</i>
<i>Biosphere > Ecological Dynamics > Bioluminescence</i>
<i>Biosphere > Ecological Dynamics > Biomass</i>
<i>Biosphere > Ecological Dynamics > Chemosynthesis</i>
<i>Biosphere > Ecological Dynamics > Community Structure</i>
<i>Biosphere > Ecological Dynamics > Competition</i>

Valids
<i>Biosphere > Ecological Dynamics > Consumption</i>
<i>Biosphere > Ecological Dynamics > Decomposition</i>
<i>Biosphere > Ecological Dynamics > Diurnal Movements</i>
<i>Biosphere > Ecological Dynamics > Dominance</i>
<i>Biosphere > Ecological Dynamics > Endangered Species</i>
<i>Biosphere > Ecological Dynamics > Excretion</i>
<i>Biosphere > Ecological Dynamics > Extinction</i>
<i>Biosphere > Ecological Dynamics > Feeding Habitat</i>
<i>Biosphere > Ecological Dynamics > Fire Characteristics</i>
<i>Biosphere > Ecological Dynamics > Fire Occurrence</i>
<i>Biosphere > Ecological Dynamics > Food-web Dynamics</i>
<i>Biosphere > Ecological Dynamics > Herbivory</i>
<i>Biosphere > Ecological Dynamics > Indicator Species</i>
<i>Biosphere > Ecological Dynamics > Invasive Species</i>
<i>Biosphere > Ecological Dynamics > Life History</i>
<i>Biosphere > Ecological Dynamics > Migratory Rates/Routes</i>
<i>Biosphere > Ecological Dynamics > Mutation</i>
<i>Biosphere > Ecological Dynamics > Mutualism</i>
<i>Biosphere > Ecological Dynamics > Nutrient Cycling</i>
<i>Biosphere > Ecological Dynamics > Oxygen Demand</i>
<i>Biosphere > Ecological Dynamics > Parasitism</i>
<i>Biosphere > Ecological Dynamics > Photosynthesis</i>
<i>Biosphere > Ecological Dynamics > Pollinator Species</i>
<i>Biosphere > Ecological Dynamics > Population Dynamics</i>
<i>Biosphere > Ecological Dynamics > Post-breeding</i>
<i>Biosphere > Ecological Dynamics > Predation</i>
<i>Biosphere > Ecological Dynamics > Primary Production</i>
<i>Biosphere > Ecological Dynamics > Range Changes</i>
<i>Biosphere > Ecological Dynamics > Respiration</i>
<i>Biosphere > Ecological Dynamics > Scavenging</i>
<i>Biosphere > Ecological Dynamics > Secondary Production</i>
<i>Biosphere > Ecological Dynamics > Selection</i>
<i>Biosphere > Ecological Dynamics > Species Recruitment</i>
<i>Biosphere > Ecological Dynamics > Succession</i>
<i>Biosphere > Ecological Dynamics > Survival</i>
<i>Biosphere > Ecological Dynamics > Symbiosis</i>
<i>Biosphere > Ecological Dynamics > Toxicity</i>
<i>Biosphere > Ecological Dynamics > Trophic Dynamics</i>
<i>Biosphere > Fungi > Biomass</i>
<i>Biosphere > Fungi Taxonomy > Molds</i>
<i>Biosphere > Fungi Taxonomy > Mushrooms</i>
<i>Biosphere > Fungi Taxonomy > Slime Molds</i>
<i>Biosphere > Fungi Taxonomy > Sporozoans</i>
<i>Biosphere > Fungi Taxonomy > Yeast</i>
<i>Biosphere > Microbiota > Biomass</i>
<i>Biosphere > Microbiota > Chlorophyll</i>
<i>Biosphere > Microbiota > Pigments</i>
<i>Biosphere > Microbiota Taxonomy > Amoebae</i>
<i>Biosphere > Microbiota Taxonomy > Bacteria</i>
<i>Biosphere > Microbiota Taxonomy > Blue-green Algae</i>
<i>Biosphere > Microbiota Taxonomy > Ciliates</i>
<i>Biosphere > Microbiota Taxonomy > Coccolithophores</i>
<i>Biosphere > Microbiota Taxonomy > Diatoms</i>
<i>Biosphere > Microbiota Taxonomy > Flagellates</i>
<i>Biosphere > Microbiota Taxonomy > Foraminifers</i>
<i>Biosphere > Microbiota Taxonomy > Microalgae</i>
<i>Biosphere > Microbiota Taxonomy > Phytoplankton</i>
<i>Biosphere > Microbiota Taxonomy > Plankton</i>
<i>Biosphere > Microbiota Taxonomy > Protists</i>
<i>Biosphere > Microbiota Taxonomy > Radiolarians</i>
<i>Biosphere > Microbiota Taxonomy > Zooplankton</i>

Validis
<i>Biosphere > Plant Taxonomy > Algae</i>
<i>Biosphere > Plant Taxonomy > Conifers</i>
<i>Biosphere > Plant Taxonomy > Ferns</i>
<i>Biosphere > Plant Taxonomy > Flowering Plants</i>
<i>Biosphere > Plant Taxonomy > Lichens</i>
<i>Biosphere > Plant Taxonomy > Macroalgae</i>
<i>Biosphere > Plant Taxonomy > Microphytes</i>
<i>Biosphere > Plant Taxonomy > Mosses and Liverworts</i>
<i>Biosphere > Plant Taxonomy > Phytoplankton</i>
<i>Biosphere > Terrestrial Ecosystems > Agricultural Lands</i>
<i>Biosphere > Terrestrial Ecosystems > Alpine/Tundra</i>
<i>Biosphere > Terrestrial Ecosystems > Beaches</i>
<i>Biosphere > Terrestrial Ecosystems > Deserts</i>
<i>Biosphere > Terrestrial Ecosystems > Dunes</i>
<i>Biosphere > Terrestrial Ecosystems > Forests</i>
<i>Biosphere > Terrestrial Ecosystems > Grasslands</i>
<i>Biosphere > Terrestrial Ecosystems > Islands</i>
<i>Biosphere > Terrestrial Ecosystems > Karst Landscape</i>
<i>Biosphere > Terrestrial Ecosystems > Montane Habitats</i>
<i>Biosphere > Terrestrial Ecosystems > Savannas</i>
<i>Biosphere > Terrestrial Ecosystems > Shrubland/Scrub</i>
<i>Biosphere > Terrestrial Ecosystems > Urban Lands</i>
<i>Biosphere > Terrestrial Ecosystems > Wetlands</i>
<i>Biosphere > Vegetation > Afforestation/Reforestation</i>
<i>Biosphere > Vegetation > Biomass</i>
<i>Biosphere > Vegetation > Canopy Characteristics</i>
<i>Biosphere > Vegetation > Carbon</i>
<i>Biosphere > Vegetation > Chlorophyll</i>
<i>Biosphere > Vegetation > Crown</i>
<i>Biosphere > Vegetation > Deciduous Vegetation</i>
<i>Biosphere > Vegetation > Dominant Species</i>
<i>Biosphere > Vegetation > Evergreen Vegetation</i>
<i>Biosphere > Vegetation > Exotic Vegetation</i>
<i>Biosphere > Vegetation > Forest Composition/Vegetation Structure</i>
<i>Biosphere > Vegetation > Herbivory</i>
<i>Biosphere > Vegetation > Importance Value</i>
<i>Biosphere > Vegetation > Indigenous Vegetation</i>
<i>Biosphere > Vegetation > Leaf Characteristics</i>
<i>Biosphere > Vegetation > Litter Characteristics</i>
<i>Biosphere > Vegetation > Macrophytes</i>
<i>Biosphere > Vegetation > Nitrogen</i>
<i>Biosphere > Vegetation > Nutrients</i>
<i>Biosphere > Vegetation > Phosphorus</i>
<i>Biosphere > Vegetation > Photosynthetically Active Radiation</i>
<i>Biosphere > Vegetation > Pigments</i>
<i>Biosphere > Vegetation > Plant Characteristics</i>
<i>Biosphere > Vegetation > Plant Phenology</i>
<i>Biosphere > Vegetation > Pollen</i>
<i>Biosphere > Vegetation > Reclamation/Revegetation/Restoration</i>
<i>Biosphere > Vegetation > Reforestation</i>
<i>Biosphere > Vegetation > Tree Rings</i>
<i>Biosphere > Vegetation > Vegetation Cover</i>
<i>Biosphere > Vegetation > Vegetation Index</i>
<i>Biosphere > Vegetation > Vegetation Species</i>
<i>Biosphere > Wetlands > Estuarine Wetlands</i>
<i>Biosphere > Wetlands > Lacustrine Wetlands</i>
<i>Biosphere > Wetlands > Marine</i>
<i>Biosphere > Wetlands > Marshes</i>
<i>Biosphere > Wetlands > Palustrine Wetlands</i>
<i>Biosphere > Wetlands > Peatlands</i>
<i>Biosphere > Wetlands > Riparian Wetlands</i>

Valid
<i>Biosphere > Wetlands > Swamps</i>
<i>Biosphere > Zoology > Biomass</i>
<i>Biosphere > Zoology > Exotic Species</i>
<i>Biosphere > Zoology > Indigenous Species</i>
<i>Biosphere > Zoology > Invertebrates</i>
<i>Climate Indicators > Air Temperature Indices > Common Sense Climate Index</i>
<i>Climate Indicators > Drought Indices > Palmer Drought Crop Moisture Index</i>
<i>Climate Indicators > Drought Indices > Palmer Drought Severity Index</i>
<i>Climate Indicators > Fire Weather Indices > Fire Weather Index</i>
<i>Climate Indicators > Fire Weather Indices > Forest Fire Danger Index</i>
<i>Climate Indicators > Humidity Indices > Humidity Index</i>
<i>Climate Indicators > Hydrologic/Ocean Indices > Crop Moisture Index</i>
<i>Climate Indicators > Hydrologic/Ocean Indices > Kaplan SST Index</i>
<i>Climate Indicators > Hydrologic/Ocean Indices > Satellite Soil Moisture Index</i>
<i>Climate Indicators > Hydrologic/Ocean Indices > Surface Moisture Index</i>
<i>Climate Indicators > Precipitation Indices > Standardized Precipitation Index</i>
<i>Climate Indicators > Teleconnections > Antarctic Oscillation</i>
<i>Climate Indicators > Teleconnections > Arctic Oscillation</i>
<i>Climate Indicators > Teleconnections > Blocking Index</i>
<i>Climate Indicators > Teleconnections > El Nino Southern Oscillation</i>
<i>Climate Indicators > Teleconnections > Madden-Julian Oscillation</i>
<i>Climate Indicators > Teleconnections > North Atlantic Oscillation</i>
<i>Climate Indicators > Teleconnections > North Pacific Oscillation</i>
<i>Climate Indicators > Teleconnections > Pacific Decadal Oscillation</i>
<i>Climate Indicators > Teleconnections > Pacific/North American (PNA) Pattern</i>
<i>Climate Indicators > Teleconnections > Quasi-biennial Oscillation</i>
<i>Climate Indicators > Teleconnections > Wind and Circulation Indices</i>
<i>Cryosphere > Frozen Ground > Active Layer</i>
<i>Cryosphere > Frozen Ground > Cryosols</i>
<i>Cryosphere > Frozen Ground > Ground Ice</i>
<i>Cryosphere > Frozen Ground > Periglacial Processes</i>
<i>Cryosphere > Frozen Ground > Permafrost</i>
<i>Cryosphere > Frozen Ground > Rock Glaciers</i>
<i>Cryosphere > Frozen Ground > Seasonally Frozen Ground</i>
<i>Cryosphere > Frozen Ground > Soil Temperature</i>
<i>Cryosphere > Frozen Ground > Talik</i>
<i>Cryosphere > Glaciers/Ice Sheets > Ablation Zones/Accumulation Zones</i>
<i>Cryosphere > Glaciers/Ice Sheets > Firn</i>
<i>Cryosphere > Glaciers/Ice Sheets > Glacier Elevation/Ice Sheet Elevation</i>
<i>Cryosphere > Glaciers/Ice Sheets > Glacier Facies</i>
<i>Cryosphere > Glaciers/Ice Sheets > Glacier Mass Balance/Ice Sheet Mass Balance</i>
<i>Cryosphere > Glaciers/Ice Sheets > Glacier Motion/Ice Sheet Motion</i>
<i>Cryosphere > Glaciers/Ice Sheets > Glacier Thickness/Ice Sheet Thickness</i>
<i>Cryosphere > Glaciers/Ice Sheets > Glacier Topography/Ice Sheet Topography</i>
<i>Cryosphere > Glaciers/Ice Sheets > Glaciers</i>
<i>Cryosphere > Glaciers/Ice Sheets > Ice Sheets</i>
<i>Cryosphere > Glaciers/Ice Sheets > Icebergs</i>
<i>Cryosphere > Sea Ice > Heat Flux</i>
<i>Cryosphere > Sea Ice > Ice Deformation</i>
<i>Cryosphere > Sea Ice > Ice Depth/Thickness</i>
<i>Cryosphere > Sea Ice > Ice Edges</i>
<i>Cryosphere > Sea Ice > Ice Extent</i>
<i>Cryosphere > Sea Ice > Ice Floes</i>
<i>Cryosphere > Sea Ice > Ice Growth/Melt</i>
<i>Cryosphere > Sea Ice > Ice Roughness</i>
<i>Cryosphere > Sea Ice > Ice Temperature</i>
<i>Cryosphere > Sea Ice > Ice Types</i>
<i>Cryosphere > Sea Ice > Icebergs</i>
<i>Cryosphere > Sea Ice > Isotopes</i>
<i>Cryosphere > Sea Ice > Leads</i>
<i>Cryosphere > Sea Ice > Pack Ice</i>

Validis
<i>Cryosphere > Sea Ice > Polynyas</i>
<i>Cryosphere > Sea Ice > Reflectance</i>
<i>Cryosphere > Sea Ice > Salinity</i>
<i>Cryosphere > Sea Ice > Sea Ice Age</i>
<i>Cryosphere > Sea Ice > Sea Ice Concentration</i>
<i>Cryosphere > Sea Ice > Sea Ice Elevation</i>
<i>Cryosphere > Sea Ice > Sea Ice Motion</i>
<i>Cryosphere > Sea Ice > Snow Depth</i>
<i>Cryosphere > Sea Ice > Snow Melt</i>
<i>Cryosphere > Snow/Ice > Albedo</i>
<i>Cryosphere > Snow/Ice > Avalanche</i>
<i>Cryosphere > Snow/Ice > Depth Hoar</i>
<i>Cryosphere > Snow/Ice > Freeze/Thaw</i>
<i>Cryosphere > Snow/Ice > Frost</i>
<i>Cryosphere > Snow/Ice > Ice Depth/Thickness</i>
<i>Cryosphere > Snow/Ice > Ice Extent</i>
<i>Cryosphere > Snow/Ice > Ice Growth/Melt</i>
<i>Cryosphere > Snow/Ice > Ice Motion</i>
<i>Cryosphere > Snow/Ice > Ice Velocity</i>
<i>Cryosphere > Snow/Ice > Lake Ice</i>
<i>Cryosphere > Snow/Ice > Permafrost</i>
<i>Cryosphere > Snow/Ice > River Ice</i>
<i>Cryosphere > Snow/Ice > Snow Cover</i>
<i>Cryosphere > Snow/Ice > Snow Density</i>
<i>Cryosphere > Snow/Ice > Snow Depth</i>
<i>Cryosphere > Snow/Ice > Snow Energy Balance</i>
<i>Cryosphere > Snow/Ice > Snow Facies</i>
<i>Cryosphere > Snow/Ice > Snow Melt</i>
<i>Cryosphere > Snow/Ice > Snow Stratigraphy</i>
<i>Cryosphere > Snow/Ice > Snow Water Equivalent</i>
<i>Cryosphere > Snow/Ice > Snow/Ice Chemistry</i>
<i>Cryosphere > Snow/Ice > Snow/Ice Temperature</i>
<i>Cryosphere > Snow/Ice > Whiteout</i>
<i>Human Dimensions > Attitudes,preferences,behavior > Consumer Behavior</i>
<i>Human Dimensions > Attitudes,preferences,behavior > Recreation</i>
<i>Human Dimensions > Attitudes,preferences,behavior > Social Behavior</i>
<i>Human Dimensions > Boundaries > Administrative Divisions</i>
<i>Human Dimensions > Boundaries > Boundary Surveys</i>
<i>Human Dimensions > Boundaries > Political Divisions</i>
<i>Human Dimensions > Economic Resources > Agricultural Economics</i>
<i>Human Dimensions > Economic Resources > Oil/Gas Production</i>
<i>Human Dimensions > Environmental Impacts > Acid Deposition</i>
<i>Human Dimensions > Environmental Impacts > Agricultural Expansion</i>
<i>Human Dimensions > Environmental Impacts > Biochemical Release</i>
<i>Human Dimensions > Environmental Impacts > Biomass Burning</i>
<i>Human Dimensions > Environmental Impacts > Chemical Spills</i>
<i>Human Dimensions > Environmental Impacts > Civil Disturbance</i>
<i>Human Dimensions > Environmental Impacts > Conservation</i>
<i>Human Dimensions > Environmental Impacts > Contaminants</i>
<i>Human Dimensions > Environmental Impacts > Environmental Assessments</i>
<i>Human Dimensions > Environmental Impacts > Fossil Fuel Burning</i>
<i>Human Dimensions > Environmental Impacts > Gas Explosions/Leaks</i>
<i>Human Dimensions > Environmental Impacts > Gas Flaring</i>
<i>Human Dimensions > Environmental Impacts > Heavy Metals</i>
<i>Human Dimensions > Environmental Impacts > Industrial Emissions</i>
<i>Human Dimensions > Environmental Impacts > Industrialization</i>
<i>Human Dimensions > Environmental Impacts > Mine Drainage</i>
<i>Human Dimensions > Environmental Impacts > Nuclear Radiation</i>
<i>Human Dimensions > Environmental Impacts > Oil Spill</i>
<i>Human Dimensions > Environmental Impacts > Sewage</i>
<i>Human Dimensions > Environmental Impacts > Urbanization</i>

Valid
<i>Human Dimensions > Environmental Impacts > Water Management</i>
<i>Human Dimensions > Habitat Conversion/Fragmentation > Deforestation</i>
<i>Human Dimensions > Habitat Conversion/Fragmentation > Desertification</i>
<i>Human Dimensions > Habitat Conversion/Fragmentation > Eutrophication</i>
<i>Human Dimensions > Habitat Conversion/Fragmentation > Irrigation</i>
<i>Human Dimensions > Habitat Conversion/Fragmentation > Reclamation/Revegetation/Restoration</i>
<i>Human Dimensions > Habitat Conversion/Fragmentation > Reforestation</i>
<i>Human Dimensions > Human Health > Anatomical Parameters</i>
<i>Human Dimensions > Human Health > Diseases/Epidemics</i>
<i>Human Dimensions > Human Health > Physiological Parameters</i>
<i>Human Dimensions > Human Health > Psychological Parameters</i>
<i>Human Dimensions > Human Health > Public Health</i>
<i>Human Dimensions > Human Health > Radiation Exposure</i>
<i>Human Dimensions > Human Health > Vital Statistics</i>
<i>Human Dimensions > Infrastructure > Buildings</i>
<i>Human Dimensions > Infrastructure > Communications</i>
<i>Human Dimensions > Infrastructure > Cultural Features</i>
<i>Human Dimensions > Infrastructure > Electricity</i>
<i>Human Dimensions > Infrastructure > Pipelines</i>
<i>Human Dimensions > Infrastructure > Transportation</i>
<i>Human Dimensions > Land Use/Land Cover > Land Management</i>
<i>Human Dimensions > Land Use/Land Cover > Land Tenure</i>
<i>Human Dimensions > Land Use/Land Cover > Land Use Classes</i>
<i>Human Dimensions > Natural Hazards > Biological Hazards</i>
<i>Human Dimensions > Natural Hazards > Fires</i>
<i>Human Dimensions > Natural Hazards > Geological Hazards</i>
<i>Human Dimensions > Natural Hazards > Hydrological Hazards</i>
<i>Human Dimensions > Natural Hazards > Meteorological Hazards</i>
<i>Human Dimensions > Population > Population Distribution</i>
<i>Human Dimensions > Population > Population Size</i>
<i>Hydrosphere > Glaciers/Ice Sheets > Ablation Zones/Accumulation Zones</i>
<i>Hydrosphere > Glaciers/Ice Sheets > Firn</i>
<i>Hydrosphere > Glaciers/Ice Sheets > Glacier Elevation/Ice Sheet Elevation</i>
<i>Hydrosphere > Glaciers/Ice Sheets > Glacier Facies</i>
<i>Hydrosphere > Glaciers/Ice Sheets > Glacier Mass Balance/Ice Sheet Mass Balance</i>
<i>Hydrosphere > Glaciers/Ice Sheets > Glacier Motion/Ice Sheet Motion</i>
<i>Hydrosphere > Glaciers/Ice Sheets > Glacier Thickness/Ice Sheet Thickness</i>
<i>Hydrosphere > Glaciers/Ice Sheets > Glacier Topography/Ice Sheet Topography</i>
<i>Hydrosphere > Glaciers/Ice Sheets > Glaciers</i>
<i>Hydrosphere > Glaciers/Ice Sheets > Ice Sheets</i>
<i>Hydrosphere > Glaciers/Ice Sheets > Icebergs</i>
<i>Hydrosphere > Ground Water > Aquifers</i>
<i>Hydrosphere > Ground Water > Dispersion</i>
<i>Hydrosphere > Ground Water > Drainage</i>
<i>Hydrosphere > Ground Water > Ground Water Discharge/Flow</i>
<i>Hydrosphere > Ground Water > Groundwater Chemistry</i>
<i>Hydrosphere > Ground Water > Infiltration</i>
<i>Hydrosphere > Ground Water > Land Subsidence</i>
<i>Hydrosphere > Ground Water > Percolation</i>
<i>Hydrosphere > Ground Water > Saltwater Intrusion</i>
<i>Hydrosphere > Ground Water > Springs</i>
<i>Hydrosphere > Ground Water > Water Table</i>
<i>Hydrosphere > Snow/Ice > Albedo</i>
<i>Hydrosphere > Snow/Ice > Avalanche</i>
<i>Hydrosphere > Snow/Ice > Depth Hoar</i>
<i>Hydrosphere > Snow/Ice > Freeze/Thaw</i>
<i>Hydrosphere > Snow/Ice > Frost</i>
<i>Hydrosphere > Snow/Ice > Ice Depth/Thickness</i>
<i>Hydrosphere > Snow/Ice > Ice Extent</i>
<i>Hydrosphere > Snow/Ice > Ice Growth/Melt</i>
<i>Hydrosphere > Snow/Ice > Ice Motion</i>

Validis
Hydrosphere > Snow/Ice > Ice Velocity
Hydrosphere > Snow/Ice > Lake Ice
Hydrosphere > Snow/Ice > Permafrost
Hydrosphere > Snow/Ice > River Ice
Hydrosphere > Snow/Ice > Snow Cover
Hydrosphere > Snow/Ice > Snow Density
Hydrosphere > Snow/Ice > Snow Depth
Hydrosphere > Snow/Ice > Snow Energy Balance
Hydrosphere > Snow/Ice > Snow Facies
Hydrosphere > Snow/Ice > Snow Melt
Hydrosphere > Snow/Ice > Snow Stratigraphy
Hydrosphere > Snow/Ice > Snow Water Equivalent
Hydrosphere > Snow/Ice > Snow/Ice Chemistry
Hydrosphere > Snow/Ice > Snow/Ice Temperature
Hydrosphere > Snow/Ice > Whiteout
Hydrosphere > Surface Water > Aquifer Recharge
Hydrosphere > Surface Water > Discharge/Flow
Hydrosphere > Surface Water > Drainage
Hydrosphere > Surface Water > Floods
Hydrosphere > Surface Water > Hydropattern
Hydrosphere > Surface Water > Hydroperiod
Hydrosphere > Surface Water > Inundation
Hydrosphere > Surface Water > Lakes
Hydrosphere > Surface Water > Rivers/Streams
Hydrosphere > Surface Water > Runoff
Hydrosphere > Surface Water > Stage Height
Hydrosphere > Surface Water > Surface Water Chemistry
Hydrosphere > Surface Water > Total Surface Water
Hydrosphere > Surface Water > Water Channels
Hydrosphere > Surface Water > Water Depth
Hydrosphere > Surface Water > Water Pressure
Hydrosphere > Surface Water > Water Yield
Hydrosphere > Surface Water > Watershed Characteristics
Hydrosphere > Surface Water > Wetlands
Hydrosphere > Water Quality/Water Chemistry > Acid Deposition
Hydrosphere > Water Quality/Water Chemistry > Alkalinity
Hydrosphere > Water Quality/Water Chemistry > Benthic Index
Hydrosphere > Water Quality/Water Chemistry > Carbon Dioxide
Hydrosphere > Water Quality/Water Chemistry > Carcinogens
Hydrosphere > Water Quality/Water Chemistry > Chlorophyll
Hydrosphere > Water Quality/Water Chemistry > Conductivity
Hydrosphere > Water Quality/Water Chemistry > Contaminants
Hydrosphere > Water Quality/Water Chemistry > Dissolved Gases
Hydrosphere > Water Quality/Water Chemistry > Dissolved Solids
Hydrosphere > Water Quality/Water Chemistry > Hydrocarbons
Hydrosphere > Water Quality/Water Chemistry > Inorganic Matter
Hydrosphere > Water Quality/Water Chemistry > Light Transmission
Hydrosphere > Water Quality/Water Chemistry > Nitrogen Compounds
Hydrosphere > Water Quality/Water Chemistry > Nutrients
Hydrosphere > Water Quality/Water Chemistry > Organic Matter
Hydrosphere > Water Quality/Water Chemistry > Oxygen
Hydrosphere > Water Quality/Water Chemistry > pH
Hydrosphere > Water Quality/Water Chemistry > Phosphorous Compounds
Hydrosphere > Water Quality/Water Chemistry > Radioisotopes
Hydrosphere > Water Quality/Water Chemistry > Stable Isotopes
Hydrosphere > Water Quality/Water Chemistry > Suspended Solids
Hydrosphere > Water Quality/Water Chemistry > Toxic Chemicals
Hydrosphere > Water Quality/Water Chemistry > Trace Metals
Hydrosphere > Water Quality/Water Chemistry > Turbidity
Hydrosphere > Water Quality/Water Chemistry > Water Ion Concentration
Hydrosphere > Water Quality/Water Chemistry > Water Potability

Validis
<i>Hydrosphere > Water Quality/Water Chemistry > Water Temperature</i>
<i>Hydrosphere > Water Quality/Water Chemistry > Water Trace Elements</i>
<i>Land Surface > Erosion/Sedimentation > Degradation</i>
<i>Land Surface > Erosion/Sedimentation > Entrainment</i>
<i>Land Surface > Erosion/Sedimentation > Erosion</i>
<i>Land Surface > Erosion/Sedimentation > Landslides</i>
<i>Land Surface > Erosion/Sedimentation > Sediment Chemistry</i>
<i>Land Surface > Erosion/Sedimentation > Sediment Composition</i>
<i>Land Surface > Erosion/Sedimentation > Sediment Transport</i>
<i>Land Surface > Erosion/Sedimentation > Sedimentation</i>
<i>Land Surface > Erosion/Sedimentation > Sediments</i>
<i>Land Surface > Erosion/Sedimentation > Stratigraphic Sequence</i>
<i>Land Surface > Erosion/Sedimentation > Suspended Solids</i>
<i>Land Surface > Erosion/Sedimentation > Weathering</i>
<i>Land Surface > Frozen Ground > Active Layer</i>
<i>Land Surface > Frozen Ground > Cryosols</i>
<i>Land Surface > Frozen Ground > Ground Ice</i>
<i>Land Surface > Frozen Ground > Periglacial Processes</i>
<i>Land Surface > Frozen Ground > Permafrost</i>
<i>Land Surface > Frozen Ground > Rock Glaciers</i>
<i>Land Surface > Frozen Ground > Seasonally Frozen Ground</i>
<i>Land Surface > Frozen Ground > Soil Temperature</i>
<i>Land Surface > Frozen Ground > Talik</i>
<i>Land Surface > Geomorphology > Coastal Landforms/Processes</i>
<i>Land Surface > Geomorphology > Eolian Landforms/Processes</i>
<i>Land Surface > Geomorphology > Fluvial Landforms/Processes</i>
<i>Land Surface > Geomorphology > Glacial Landforms/Processes</i>
<i>Land Surface > Geomorphology > Karst Landforms/Processes</i>
<i>Land Surface > Geomorphology > Tectonic Landforms/Processes</i>
<i>Land Surface > Land Temperature > Land Heat Capacity</i>
<i>Land Surface > Land Temperature > Land Surface Temperature</i>
<i>Land Surface > Land Temperature > Skin Temperature</i>
<i>Land Surface > Land Use/Land Cover > Land Cover</i>
<i>Land Surface > Land Use/Land Cover > Land Productivity</i>
<i>Land Surface > Land Use/Land Cover > Land Resources</i>
<i>Land Surface > Land Use/Land Cover > Land Use Classes</i>
<i>Land Surface > Landscape > Landscape Ecology</i>
<i>Land Surface > Landscape > Landscape Management</i>
<i>Land Surface > Landscape > Landscape Pattern</i>
<i>Land Surface > Landscape > Reclamation/Revegetation/Restoration</i>
<i>Land Surface > Landscape > Reforestation</i>
<i>Land Surface > Soils > Calcium</i>
<i>Land Surface > Soils > Carbon</i>
<i>Land Surface > Soils > Cation Exchange Capacity</i>
<i>Land Surface > Soils > Denitrification Rate</i>
<i>Land Surface > Soils > Electrical Conductivity</i>
<i>Land Surface > Soils > Heavy Metals</i>
<i>Land Surface > Soils > Hydraulic Conductivity</i>
<i>Land Surface > Soils > Macrofauna</i>
<i>Land Surface > Soils > Magnesium</i>
<i>Land Surface > Soils > Microfauna</i>
<i>Land Surface > Soils > Microflora</i>
<i>Land Surface > Soils > Micronutrients/Trace Elements</i>
<i>Land Surface > Soils > Nitrogen</i>
<i>Land Surface > Soils > Organic Matter</i>
<i>Land Surface > Soils > Permafrost</i>
<i>Land Surface > Soils > Phosphorus</i>
<i>Land Surface > Soils > Potassium</i>
<i>Land Surface > Soils > Reclamation/Revegetation/Restoration</i>
<i>Land Surface > Soils > Soil Absorption</i>
<i>Land Surface > Soils > Soil Bulk Density</i>

Valids
<i>Land Surface > Soils > Soil Chemistry</i>
<i>Land Surface > Soils > Soil Classification</i>
<i>Land Surface > Soils > Soil Color</i>
<i>Land Surface > Soils > Soil Compaction</i>
<i>Land Surface > Soils > Soil Consistence</i>
<i>Land Surface > Soils > Soil Depth</i>
<i>Land Surface > Soils > Soil Erosion</i>
<i>Land Surface > Soils > Soil Fertility</i>
<i>Land Surface > Soils > Soil Gas/Air</i>
<i>Land Surface > Soils > Soil Heat Budget</i>
<i>Land Surface > Soils > Soil Horizons/Profile</i>
<i>Land Surface > Soils > Soil Impedance</i>
<i>Land Surface > Soils > Soil Infiltration</i>
<i>Land Surface > Soils > Soil Mechanics</i>
<i>Land Surface > Soils > Soil Moisture/Water Content</i>
<i>Land Surface > Soils > Soil pH</i>
<i>Land Surface > Soils > Soil Plasticity</i>
<i>Land Surface > Soils > Soil Porosity</i>
<i>Land Surface > Soils > Soil Productivity</i>
<i>Land Surface > Soils > Soil Respiration</i>
<i>Land Surface > Soils > Soil Rooting Depth</i>
<i>Land Surface > Soils > Soil Salinity/Soil Sodicity</i>
<i>Land Surface > Soils > Soil Structure</i>
<i>Land Surface > Soils > Soil Temperature</i>
<i>Land Surface > Soils > Soil Texture</i>
<i>Land Surface > Soils > Soil Water Holding Capacity</i>
<i>Land Surface > Soils > Sulfur</i>
<i>Land Surface > Soils > Thermal Conductivity</i>
<i>Land Surface > Surface Radiative Properties > Albedo</i>
<i>Land Surface > Surface Radiative Properties > Anisotropy</i>
<i>Land Surface > Surface Radiative Properties > Emissivity</i>
<i>Land Surface > Surface Radiative Properties > Reflectance</i>
<i>Land Surface > Surface Radiative Properties > Thermal Properties</i>
<i>Land Surface > Topography > Contours</i>
<i>Land Surface > Topography > Landforms</i>
<i>Land Surface > Topography > Surface Roughness</i>
<i>Land Surface > Topography > Terrain Elevation</i>
<i>Land Surface > Topography > Topographic Effects</i>
<i>Land Surface > Topography > Topographical Relief</i>
<i>Oceans > Aquatic Sciences > Aquaculture</i>
<i>Oceans > Aquatic Sciences > Fisheries</i>
<i>Oceans > Bathymetry/Seafloor Topography > Abyssal Hills/Plains</i>
<i>Oceans > Bathymetry/Seafloor Topography > Bathymetry</i>
<i>Oceans > Bathymetry/Seafloor Topography > Continental Margins</i>
<i>Oceans > Bathymetry/Seafloor Topography > Fracture Zones</i>
<i>Oceans > Bathymetry/Seafloor Topography > Ocean Plateaus/Ridges</i>
<i>Oceans > Bathymetry/Seafloor Topography > Seafloor Topography</i>
<i>Oceans > Bathymetry/Seafloor Topography > Seamounts</i>
<i>Oceans > Bathymetry/Seafloor Topography > Submarine Canyons</i>
<i>Oceans > Bathymetry/Seafloor Topography > Trenches</i>
<i>Oceans > Bathymetry/Seafloor Topography > Water Depth</i>
<i>Oceans > Coastal Processes > Barrier Islands</i>
<i>Oceans > Coastal Processes > Beaches</i>
<i>Oceans > Coastal Processes > Coastal Elevation</i>
<i>Oceans > Coastal Processes > Coral Reefs</i>
<i>Oceans > Coastal Processes > Deltas</i>
<i>Oceans > Coastal Processes > Dunes</i>
<i>Oceans > Coastal Processes > Erosion</i>
<i>Oceans > Coastal Processes > Estuaries</i>
<i>Oceans > Coastal Processes > Fjords</i>
<i>Oceans > Coastal Processes > Inlets</i>

Validis
Oceans > Coastal Processes > Intertidal Zone
Oceans > Coastal Processes > Lagoons
Oceans > Coastal Processes > Local Subsidence Trends
Oceans > Coastal Processes > Longshore Currents
Oceans > Coastal Processes > Mangroves
Oceans > Coastal Processes > Marshes
Oceans > Coastal Processes > Rocky Coasts
Oceans > Coastal Processes > Saltwater Intrusion
Oceans > Coastal Processes > Sea Level Rise
Oceans > Coastal Processes > Sea Surface Height
Oceans > Coastal Processes > Sediment Transport
Oceans > Coastal Processes > Sedimentation
Oceans > Coastal Processes > Shoals
Oceans > Coastal Processes > Shoreline Displacement
Oceans > Coastal Processes > Shorelines
Oceans > Coastal Processes > Storm Surge
Oceans > Coastal Processes > Tidal Height
Oceans > Marine Biology > Fish
Oceans > Marine Biology > Marine Birds
Oceans > Marine Biology > Marine Habitat
Oceans > Marine Biology > Marine Invertebrates
Oceans > Marine Biology > Marine Mammals
Oceans > Marine Biology > Marine Microbiota
Oceans > Marine Biology > Marine Plants
Oceans > Marine Biology > Marine Reptiles
Oceans > Marine Environment Monitoring > Marine Obstructions
Oceans > Marine Geophysics > Magnetic Anomalies
Oceans > Marine Geophysics > Marine Gravity Field
Oceans > Marine Geophysics > Marine Magnetism
Oceans > Marine Geophysics > Plate Tectonics
Oceans > Marine Sediments > Biogenic Sediments
Oceans > Marine Sediments > Bioturbation
Oceans > Marine Sediments > Diagenesis
Oceans > Marine Sediments > Geotechnical Properties
Oceans > Marine Sediments > Hydrogenous Sediments
Oceans > Marine Sediments > Particle Flux
Oceans > Marine Sediments > Sediment Chemistry
Oceans > Marine Sediments > Sediment Composition
Oceans > Marine Sediments > Sediment Transport
Oceans > Marine Sediments > Sedimentary Structures
Oceans > Marine Sediments > Sedimentary Textures
Oceans > Marine Sediments > Sedimentation
Oceans > Marine Sediments > Stratigraphic Sequence
Oceans > Marine Sediments > Suspended Solids
Oceans > Marine Sediments > Terrigenous Sediments
Oceans > Marine Sediments > Turbidity
Oceans > Marine Volcanism > Benthic Heat Flow
Oceans > Marine Volcanism > Hydrothermal Vents
Oceans > Marine Volcanism > Island Arcs
Oceans > Marine Volcanism > Mid-ocean Ridges
Oceans > Marine Volcanism > Rift Valleys
Oceans > Ocean Acoustics > Acoustic Attenuation/Transmission
Oceans > Ocean Acoustics > Acoustic Frequency
Oceans > Ocean Acoustics > Acoustic Reflectivity
Oceans > Ocean Acoustics > Acoustic Scattering
Oceans > Ocean Acoustics > Acoustic Tomography
Oceans > Ocean Acoustics > Acoustic Velocity
Oceans > Ocean Acoustics > Ambient Noise
Oceans > Ocean Chemistry > Alkalinity
Oceans > Ocean Chemistry > Ammonia
Oceans > Ocean Chemistry > Biogeochemical Cycles

Valids
<i>Oceans > Ocean Chemistry > Biomedical Chemicals</i>
<i>Oceans > Ocean Chemistry > Carbon</i>
<i>Oceans > Ocean Chemistry > Carbon Dioxide</i>
<i>Oceans > Ocean Chemistry > Carbonate</i>
<i>Oceans > Ocean Chemistry > Chlorophyll</i>
<i>Oceans > Ocean Chemistry > Dissolved Gases</i>
<i>Oceans > Ocean Chemistry > Dissolved Solids</i>
<i>Oceans > Ocean Chemistry > Hydrocarbons</i>
<i>Oceans > Ocean Chemistry > Inorganic Carbon</i>
<i>Oceans > Ocean Chemistry > Inorganic Matter</i>
<i>Oceans > Ocean Chemistry > Marine Geochemistry</i>
<i>Oceans > Ocean Chemistry > Nitrate</i>
<i>Oceans > Ocean Chemistry > Nitric Acid</i>
<i>Oceans > Ocean Chemistry > Nitrite</i>
<i>Oceans > Ocean Chemistry > Nitrogen</i>
<i>Oceans > Ocean Chemistry > Nitrogen Dioxide</i>
<i>Oceans > Ocean Chemistry > Nitrous Oxide</i>
<i>Oceans > Ocean Chemistry > Nutrients</i>
<i>Oceans > Ocean Chemistry > Ocean Tracers</i>
<i>Oceans > Ocean Chemistry > Organic Carbon</i>
<i>Oceans > Ocean Chemistry > Organic Matter</i>
<i>Oceans > Ocean Chemistry > Oxygen</i>
<i>Oceans > Ocean Chemistry > pH</i>
<i>Oceans > Ocean Chemistry > Phosphate</i>
<i>Oceans > Ocean Chemistry > Pigments</i>
<i>Oceans > Ocean Chemistry > Radiocarbon</i>
<i>Oceans > Ocean Chemistry > Radionuclides</i>
<i>Oceans > Ocean Chemistry > Silicate</i>
<i>Oceans > Ocean Chemistry > Stable Isotopes</i>
<i>Oceans > Ocean Chemistry > Suspended Solids</i>
<i>Oceans > Ocean Chemistry > Trace Elements</i>
<i>Oceans > Ocean Circulation > Advection</i>
<i>Oceans > Ocean Circulation > Buoy Position</i>
<i>Oceans > Ocean Circulation > Convection</i>
<i>Oceans > Ocean Circulation > Diffusion</i>
<i>Oceans > Ocean Circulation > Eddies</i>
<i>Oceans > Ocean Circulation > Fresh Water Flux</i>
<i>Oceans > Ocean Circulation > Fronts</i>
<i>Oceans > Ocean Circulation > Gyres</i>
<i>Oceans > Ocean Circulation > Ocean Currents</i>
<i>Oceans > Ocean Circulation > Ocean Mixed Layer</i>
<i>Oceans > Ocean Circulation > Thermohaline Circulation</i>
<i>Oceans > Ocean Circulation > Turbulence</i>
<i>Oceans > Ocean Circulation > Upwelling/Downwelling</i>
<i>Oceans > Ocean Circulation > Vorticity</i>
<i>Oceans > Ocean Circulation > Water Masses</i>
<i>Oceans > Ocean Circulation > Wind-driven Circulation</i>
<i>Oceans > Ocean Heat Budget > Advection</i>
<i>Oceans > Ocean Heat Budget > Bowen Ratio</i>
<i>Oceans > Ocean Heat Budget > Condensation</i>
<i>Oceans > Ocean Heat Budget > Conduction</i>
<i>Oceans > Ocean Heat Budget > Convection</i>
<i>Oceans > Ocean Heat Budget > Diffusion</i>
<i>Oceans > Ocean Heat Budget > Evaporation</i>
<i>Oceans > Ocean Heat Budget > Heat Flux</i>
<i>Oceans > Ocean Heat Budget > Heating Rate</i>
<i>Oceans > Ocean Heat Budget > Longwave Radiation</i>
<i>Oceans > Ocean Heat Budget > Reflectance</i>
<i>Oceans > Ocean Heat Budget > Shortwave Radiation</i>
<i>Oceans > Ocean Optics > Absorption</i>
<i>Oceans > Ocean Optics > Aphotic/Photic Zone</i>

Valids
<i>Oceans > Ocean Optics > Attenuation/Transmission</i>
<i>Oceans > Ocean Optics > Bioluminescence</i>
<i>Oceans > Ocean Optics > Extinction Coefficients</i>
<i>Oceans > Ocean Optics > Fluorescence</i>
<i>Oceans > Ocean Optics > Gelbstoff</i>
<i>Oceans > Ocean Optics > Irradiance</i>
<i>Oceans > Ocean Optics > Ocean Color</i>
<i>Oceans > Ocean Optics > Optical Depth</i>
<i>Oceans > Ocean Optics > Photosynthetically Active Radiation</i>
<i>Oceans > Ocean Optics > Radiance</i>
<i>Oceans > Ocean Optics > Reflectance</i>
<i>Oceans > Ocean Optics > Scattering</i>
<i>Oceans > Ocean Optics > Secchi Depth</i>
<i>Oceans > Ocean Optics > Turbidity</i>
<i>Oceans > Ocean Optics > Water-leaving Radiance</i>
<i>Oceans > Ocean Pressure > Sea Level Pressure</i>
<i>Oceans > Ocean Pressure > Water Pressure</i>
<i>Oceans > Ocean Temperature > Ocean Mixed Layer</i>
<i>Oceans > Ocean Temperature > Potential Temperature</i>
<i>Oceans > Ocean Temperature > Sea Surface Temperature</i>
<i>Oceans > Ocean Temperature > Thermocline</i>
<i>Oceans > Ocean Temperature > Water Temperature</i>
<i>Oceans > Ocean Waves > Gravity Waves</i>
<i>Oceans > Ocean Waves > Rossby/Planetary Waves</i>
<i>Oceans > Ocean Waves > Sea State</i>
<i>Oceans > Ocean Waves > Seiches</i>
<i>Oceans > Ocean Waves > Significant Wave Height</i>
<i>Oceans > Ocean Waves > Storm Surge</i>
<i>Oceans > Ocean Waves > Surf Beat</i>
<i>Oceans > Ocean Waves > Swells</i>
<i>Oceans > Ocean Waves > Topographic Waves</i>
<i>Oceans > Ocean Waves > Tsunamis</i>
<i>Oceans > Ocean Waves > Wave Fetch</i>
<i>Oceans > Ocean Waves > Wave Frequency</i>
<i>Oceans > Ocean Waves > Wave Height</i>
<i>Oceans > Ocean Waves > Wave Length</i>
<i>Oceans > Ocean Waves > Wave Period</i>
<i>Oceans > Ocean Waves > Wave Spectra</i>
<i>Oceans > Ocean Waves > Wave Speed/Direction</i>
<i>Oceans > Ocean Waves > Wave Types</i>
<i>Oceans > Ocean Waves > Wind Waves</i>
<i>Oceans > Ocean Winds > Convergence/Divergence</i>
<i>Oceans > Ocean Winds > Surface Winds</i>
<i>Oceans > Ocean Winds > Turbulence</i>
<i>Oceans > Ocean Winds > Vertical Wind Motion</i>
<i>Oceans > Ocean Winds > Vorticity</i>
<i>Oceans > Ocean Winds > Wind Chill</i>
<i>Oceans > Ocean Winds > Wind Shear</i>
<i>Oceans > Ocean Winds > Wind Stress</i>
<i>Oceans > Salinity/Density > Conductivity</i>
<i>Oceans > Salinity/Density > Density</i>
<i>Oceans > Salinity/Density > Desalinization</i>
<i>Oceans > Salinity/Density > Halocline</i>
<i>Oceans > Salinity/Density > Potential Density</i>
<i>Oceans > Salinity/Density > Pycnocline</i>
<i>Oceans > Salinity/Density > Salinity</i>
<i>Oceans > Salinity/Density > Salt Transport</i>
<i>Oceans > Sea Ice > Heat Flux</i>
<i>Oceans > Sea Ice > Ice Deformation</i>
<i>Oceans > Sea Ice > Ice Depth/Thickness</i>
<i>Oceans > Sea Ice > Ice Edges</i>

Valids
Oceans > Sea Ice > Ice Extent
Oceans > Sea Ice > Ice Floes
Oceans > Sea Ice > Ice Growth/Melt
Oceans > Sea Ice > Ice Roughness
Oceans > Sea Ice > Ice Temperature
Oceans > Sea Ice > Ice Types
Oceans > Sea Ice > Icebergs
Oceans > Sea Ice > Isotopes
Oceans > Sea Ice > Leads
Oceans > Sea Ice > Pack Ice
Oceans > Sea Ice > Polynyas
Oceans > Sea Ice > Reflectance
Oceans > Sea Ice > Salinity
Oceans > Sea Ice > Sea Ice Age
Oceans > Sea Ice > Sea Ice Concentration
Oceans > Sea Ice > Sea Ice Elevation
Oceans > Sea Ice > Sea Ice Motion
Oceans > Sea Ice > Snow Depth
Oceans > Sea Ice > Snow Melt
Oceans > Sea Surface Topography > Sea Surface Height
Oceans > Sea Surface Topography > Sea Surface Slope
Oceans > Tides > Storm Surge
Oceans > Tides > Tidal Components
Oceans > Tides > Tidal Currents
Oceans > Tides > Tidal Height
Oceans > Tides > Tidal Range
Oceans > Water Quality > Ocean Contaminants
Paleoclimate > Ice Core Records > Carbon Dioxide
Paleoclimate > Ice Core Records > Electrical Properties
Paleoclimate > Ice Core Records > Ice Core Air Bubbles
Paleoclimate > Ice Core Records > Ions
Paleoclimate > Ice Core Records > Isotopes
Paleoclimate > Ice Core Records > Methane
Paleoclimate > Ice Core Records > Nitrous Oxide
Paleoclimate > Ice Core Records > Particulate Matter
Paleoclimate > Ice Core Records > Volcanic Deposits
Paleoclimate > Land Records > Cave Deposits
Paleoclimate > Land Records > Glaciation
Paleoclimate > Land Records > Isotopes
Paleoclimate > Land Records > Loess
Paleoclimate > Land Records > Macrofossils
Paleoclimate > Land Records > Microfossils
Paleoclimate > Land Records > Paleomagnetic Data
Paleoclimate > Land Records > Paleosols
Paleoclimate > Land Records > Paleovegetation
Paleoclimate > Land Records > Pollen
Paleoclimate > Land Records > Radiocarbon
Paleoclimate > Land Records > Sediments
Paleoclimate > Land Records > Stratigraphic Sequence
Paleoclimate > Land Records > Tree Rings
Paleoclimate > Land Records > Volcanic Deposits
Paleoclimate > Ocean/Lake Records > Coral Deposits
Paleoclimate > Ocean/Lake Records > Isotopes
Paleoclimate > Ocean/Lake Records > Lake Levels
Paleoclimate > Ocean/Lake Records > Macrofossils
Paleoclimate > Ocean/Lake Records > Microfossils
Paleoclimate > Ocean/Lake Records > Oxygen Isotopes
Paleoclimate > Ocean/Lake Records > Paleomagnetic Data
Paleoclimate > Ocean/Lake Records > Radiocarbon
Paleoclimate > Ocean/Lake Records > Sediments
Paleoclimate > Ocean/Lake Records > Stratigraphic Sequence

Validis
<i>Paleoclimate > Ocean/Lake Records > Varve Deposits</i>
<i>Paleoclimate > Paleoclimate Reconstructions > Air Temperature Reconstruction</i>
<i>Paleoclimate > Paleoclimate Reconstructions > Atmospheric Circulation Reconstruction</i>
<i>Paleoclimate > Paleoclimate Reconstructions > Drought/Precipitation Reconstruction</i>
<i>Paleoclimate > Paleoclimate Reconstructions > Ground Water Reconstruction</i>
<i>Paleoclimate > Paleoclimate Reconstructions > Lake Level Reconstruction</i>
<i>Paleoclimate > Paleoclimate Reconstructions > Ocean Salinity Reconstruction</i>
<i>Paleoclimate > Paleoclimate Reconstructions > Sea Level Reconstruction</i>
<i>Paleoclimate > Paleoclimate Reconstructions > Sea Surface Temperature Reconstruction</i>
<i>Paleoclimate > Paleoclimate Reconstructions > Solar Forcing/Insolation Reconstruction</i>
<i>Paleoclimate > Paleoclimate Reconstructions > Streamflow Reconstruction</i>
<i>Paleoclimate > Paleoclimate Reconstructions > Vegetation Reconstruction</i>
<i>Solid Earth > Geochemistry > Biogeochemistry</i>
<i>Solid Earth > Geochemistry > Chemical Fixation</i>
<i>Solid Earth > Geochemistry > Chemical Weathering</i>
<i>Solid Earth > Geochemistry > Hydration</i>
<i>Solid Earth > Geochemistry > Ion Exchange</i>
<i>Solid Earth > Geochemistry > Isotopes</i>
<i>Solid Earth > Geochemistry > Major Elements</i>
<i>Solid Earth > Geochemistry > Marine Geochemistry</i>
<i>Solid Earth > Geochemistry > Minor Elements</i>
<i>Solid Earth > Geochemistry > Oxidation/Reduction</i>
<i>Solid Earth > Geochemistry > Trace Elements</i>
<i>Solid Earth > Geodetics/Gravity > Control Surveys</i>
<i>Solid Earth > Geodetics/Gravity > Crustal Motion</i>
<i>Solid Earth > Geodetics/Gravity > Geoid Properties</i>
<i>Solid Earth > Geodetics/Gravity > Gravitational Field</i>
<i>Solid Earth > Geodetics/Gravity > Gravity</i>
<i>Solid Earth > Geodetics/Gravity > Ocean Crust Deformation</i>
<i>Solid Earth > Geodetics/Gravity > Polar Motion</i>
<i>Solid Earth > Geodetics/Gravity > Reference Systems</i>
<i>Solid Earth > Geodetics/Gravity > Rotational Variations</i>
<i>Solid Earth > Geodetics/Gravity > Satellite Orbits</i>
<i>Solid Earth > Geomagnetism > Electrical Field</i>
<i>Solid Earth > Geomagnetism > Geomagnetic Forecasts</i>
<i>Solid Earth > Geomagnetism > Geomagnetic Indices</i>
<i>Solid Earth > Geomagnetism > Geomagnetic Induction</i>
<i>Solid Earth > Geomagnetism > Magnetic Anomalies</i>
<i>Solid Earth > Geomagnetism > Magnetic Declination</i>
<i>Solid Earth > Geomagnetism > Magnetic Field</i>
<i>Solid Earth > Geomagnetism > Magnetic Inclination</i>
<i>Solid Earth > Geomagnetism > Magnetic Intensity</i>
<i>Solid Earth > Geomagnetism > Paleomagnetism</i>
<i>Solid Earth > Geomagnetism > Reference Fields</i>
<i>Solid Earth > Geomorphology > Coastal Landforms/Processes</i>
<i>Solid Earth > Geomorphology > Eolian Landforms/Processes</i>
<i>Solid Earth > Geomorphology > Fluvial Landforms/Processes</i>
<i>Solid Earth > Geomorphology > Glacial Landforms/Processes</i>
<i>Solid Earth > Geomorphology > Karst Landforms/Processes</i>
<i>Solid Earth > Geomorphology > Tectonic Landforms/Processes</i>
<i>Solid Earth > Geothermal > Geothermal Energy</i>
<i>Solid Earth > Geothermal > Geothermal Temperature</i>
<i>Solid Earth > Natural Resources > Coal</i>
<i>Solid Earth > Natural Resources > Gas Hydrates</i>
<i>Solid Earth > Natural Resources > Metals</i>
<i>Solid Earth > Natural Resources > Natural Gas</i>
<i>Solid Earth > Natural Resources > Non-metallic Minerals</i>
<i>Solid Earth > Natural Resources > Petroleum</i>
<i>Solid Earth > Natural Resources > Radioactive Elements</i>
<i>Solid Earth > Natural Resources > Reclamation/Revegetation/Restoration</i>
<i>Solid Earth > Rocks/Minerals > Age Determinations</i>

Validis
<i>Solid Earth > Rocks/Minerals > Bedrock Lithology</i>
<i>Solid Earth > Rocks/Minerals > Igneous Rocks</i>
<i>Solid Earth > Rocks/Minerals > Metamorphic Rocks</i>
<i>Solid Earth > Rocks/Minerals > Meteorites</i>
<i>Solid Earth > Rocks/Minerals > Mineraloids</i>
<i>Solid Earth > Rocks/Minerals > Minerals/Crystals</i>
<i>Solid Earth > Rocks/Minerals > Sedimentary Rocks</i>
<i>Solid Earth > Rocks/Minerals > Sediments</i>
<i>Solid Earth > Seismology > Earthquake Dynamics</i>
<i>Solid Earth > Seismology > Earthquake Occurrences</i>
<i>Solid Earth > Seismology > Earthquake Predictions</i>
<i>Solid Earth > Seismology > Seismic Body Waves</i>
<i>Solid Earth > Seismology > Seismic Profile</i>
<i>Solid Earth > Seismology > Seismic Surface Waves</i>
<i>Solid Earth > Tectonics > Core Processes</i>
<i>Solid Earth > Tectonics > Faults</i>
<i>Solid Earth > Tectonics > Folds</i>
<i>Solid Earth > Tectonics > Isostatic Rebound</i>
<i>Solid Earth > Tectonics > Lithospheric Plate Motion</i>
<i>Solid Earth > Tectonics > Neotectonics</i>
<i>Solid Earth > Tectonics > Plate Boundaries</i>
<i>Solid Earth > Tectonics > Plate Tectonics</i>
<i>Solid Earth > Tectonics > Strain</i>
<i>Solid Earth > Tectonics > Stratigraphic Sequence</i>
<i>Solid Earth > Tectonics > Stress</i>
<i>Solid Earth > Volcanoes > Eruption Dynamics</i>
<i>Solid Earth > Volcanoes > Lava</i>
<i>Solid Earth > Volcanoes > Magma</i>
<i>Solid Earth > Volcanoes > Pyroclastics</i>
<i>Solid Earth > Volcanoes > Volcanic Ash/Dust</i>
<i>Solid Earth > Volcanoes > Volcanic Gases</i>
<i>Spectral/Engineering > Gamma Ray > Gamma Ray Flux</i>
<i>Spectral/Engineering > Infrared Wavelengths > Brightness Temperature</i>
<i>Spectral/Engineering > Infrared Wavelengths > Infrared Flux</i>
<i>Spectral/Engineering > Infrared Wavelengths > Infrared Imagery</i>
<i>Spectral/Engineering > Infrared Wavelengths > Infrared Radiance</i>
<i>Spectral/Engineering > Infrared Wavelengths > Reflected Infrared</i>
<i>Spectral/Engineering > Infrared Wavelengths > Sensor Counts</i>
<i>Spectral/Engineering > Infrared Wavelengths > Thermal Infrared</i>
<i>Spectral/Engineering > Microwave > Antenna Temperature</i>
<i>Spectral/Engineering > Microwave > Brightness Temperature</i>
<i>Spectral/Engineering > Microwave > Microwave Imagery</i>
<i>Spectral/Engineering > Microwave > Microwave Radiance</i>
<i>Spectral/Engineering > Microwave > Sensor Counts</i>
<i>Spectral/Engineering > Platform Characteristics > Airspeed/Ground Speed</i>
<i>Spectral/Engineering > Platform Characteristics > Attitude Characteristics</i>
<i>Spectral/Engineering > Platform Characteristics > Data Synchronization Time</i>
<i>Spectral/Engineering > Platform Characteristics > Flight Data Logs</i>
<i>Spectral/Engineering > Platform Characteristics > Line Of Sight Velocity</i>
<i>Spectral/Engineering > Platform Characteristics > Orbital Characteristics</i>
<i>Spectral/Engineering > Platform Characteristics > Viewing Geometry</i>
<i>Spectral/Engineering > Radar > Doppler Velocity</i>
<i>Spectral/Engineering > Radar > Radar Backscatter</i>
<i>Spectral/Engineering > Radar > Radar Cross-section</i>
<i>Spectral/Engineering > Radar > Radar Imagery</i>
<i>Spectral/Engineering > Radar > Radar Reflectivity</i>
<i>Spectral/Engineering > Radar > Return Power</i>
<i>Spectral/Engineering > Radar > Sensor Counts</i>
<i>Spectral/Engineering > Radar > Sigma Naught</i>
<i>Spectral/Engineering > Radio Wave > Radio Wave Flux</i>
<i>Spectral/Engineering > Sensor Characteristics > Dome Temperature</i>

Valids
<i>Spectral/Engineering > Sensor Characteristics > Electrical Properties</i>
<i>Spectral/Engineering > Sensor Characteristics > Phase and Amplitude</i>
<i>Spectral/Engineering > Sensor Characteristics > Sink Temperature</i>
<i>Spectral/Engineering > Sensor Characteristics > Thermal Properties</i>
<i>Spectral/Engineering > Sensor Characteristics > Total Pressure</i>
<i>Spectral/Engineering > Sensor Characteristics > Total Temperature</i>
<i>Spectral/Engineering > Sensor Characteristics > Ultraviolet Sensor Temperature</i>
<i>Spectral/Engineering > Sensor Characteristics > Viewing Geometry</i>
<i>Spectral/Engineering > Ultraviolet Wavelengths > Sensor Counts</i>
<i>Spectral/Engineering > Ultraviolet Wavelengths > Ultraviolet Flux</i>
<i>Spectral/Engineering > Ultraviolet Wavelengths > Ultraviolet Radiance</i>
<i>Spectral/Engineering > Visible Wavelengths > Sensor Counts</i>
<i>Spectral/Engineering > Visible Wavelengths > Visible Flux</i>
<i>Spectral/Engineering > Visible Wavelengths > Visible Imagery</i>
<i>Spectral/Engineering > Visible Wavelengths > Visible Radiance</i>
<i>Spectral/Engineering > X-ray > X-ray Flux</i>
<i>Sun-earth Interactions > Ionosphere/Magnetosphere Particles > Alpha Particles</i>
<i>Sun-earth Interactions > Ionosphere/Magnetosphere Particles > Aurorae</i>
<i>Sun-earth Interactions > Ionosphere/Magnetosphere Particles > Differential Flux</i>
<i>Sun-earth Interactions > Ionosphere/Magnetosphere Particles > Electron Flux</i>
<i>Sun-earth Interactions > Ionosphere/Magnetosphere Particles > Energetic Particles</i>
<i>Sun-earth Interactions > Ionosphere/Magnetosphere Particles > Energy Deposition</i>
<i>Sun-earth Interactions > Ionosphere/Magnetosphere Particles > Heavy Ions</i>
<i>Sun-earth Interactions > Ionosphere/Magnetosphere Particles > Particle Composition</i>
<i>Sun-earth Interactions > Ionosphere/Magnetosphere Particles > Particle Density</i>
<i>Sun-earth Interactions > Ionosphere/Magnetosphere Particles > Particle Distribution Functions</i>
<i>Sun-earth Interactions > Ionosphere/Magnetosphere Particles > Particle Flux</i>
<i>Sun-earth Interactions > Ionosphere/Magnetosphere Particles > Particle Speed</i>
<i>Sun-earth Interactions > Ionosphere/Magnetosphere Particles > Particle Temperature</i>
<i>Sun-earth Interactions > Ionosphere/Magnetosphere Particles > Proton Flux</i>
<i>Sun-earth Interactions > Ionosphere/Magnetosphere Particles > Total Electron Content</i>
<i>Sun-earth Interactions > Solar Activity > Corona Holes</i>
<i>Sun-earth Interactions > Solar Activity > Coronal Properties</i>
<i>Sun-earth Interactions > Solar Activity > Cosmic Rays</i>
<i>Sun-earth Interactions > Solar Activity > Solar Active Regions</i>
<i>Sun-earth Interactions > Solar Activity > Solar Events</i>
<i>Sun-earth Interactions > Solar Activity > Solar Filaments</i>
<i>Sun-earth Interactions > Solar Activity > Solar Flares</i>
<i>Sun-earth Interactions > Solar Activity > Solar Imagery</i>
<i>Sun-earth Interactions > Solar Activity > Solar Irradiance</i>
<i>Sun-earth Interactions > Solar Activity > Solar Oscillations</i>
<i>Sun-earth Interactions > Solar Activity > Solar Prominences</i>
<i>Sun-earth Interactions > Solar Activity > Solar Radio Waves</i>
<i>Sun-earth Interactions > Solar Activity > Solar Ultraviolet</i>
<i>Sun-earth Interactions > Solar Activity > Solar X-rays</i>
<i>Sun-earth Interactions > Solar Activity > Sunspots</i>
<i>Sun-earth Interactions > Solar Activity > Synoptic Maps</i>
<i>Sun-earth Interactions > Solar Activity > Velocity Fields</i>