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Report of Data Sharing Working Group

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This document is submitted to GEO-IX for information.

Report of Data Sharing Working Group

The GEOSS Data Sharing Working Group (hereafter referenced as “DSWG”) was established by the GEO-VIII Plenary for the purpose of supporting GEO in its goals to put into practice the GEOSS Data Sharing Principles, the Implementation Guidelines for the GEOSS Data Sharing Principles and the GEOSS Data Sharing Action Plan. It also has responsibility for executing the GEO 2012-2015 Work Plan Task ID-01: Advancing the GEOSS Data Sharing Principles.

The DSWG works with GEO collectively, including the Implementation Boards and all other tasks in the Work Plan, to enable effective implementation of the GEOSS Data Sharing Principles by:

- Supporting and expanding the GEOSS Data Collection of Open Resources for Everyone (GEOSS Data-CORE), a distributed pool of documented datasets with full, open and unrestricted access at no more than the cost of reproduction and distribution;
- Ensuring that the framework for full and open access to data is addressed in the implementation of the GEOSS Common Infrastructure and the GEOSS;
- Monitoring the use and impact of resources made available with full and open access;
- Promoting the efficacy of the Data Sharing Principles in delivering societal benefits;
- Evaluating the outcomes of the GEOSS Data Sharing Action Plan and recommending further actions, including promoting comprehensive data documentation and any mechanisms needed to further enhance the ability of the GEOSS architecture to provide access to data, metadata and products;
- Assisting GEO Members in establishing national coordinating mechanisms, with the support of relevant Participating Organizations, to promote and monitor engagement with the implementation of the GEOSS Data Sharing Principles and provide feedback to GEO;
- Supporting GEO Members in developing policy frameworks, with the support of relevant Participating Organizations, to further implement the GEOSS Data Sharing Principles and GEOSS Data Sharing Action Plan;
- Maximising the number of documented datasets made available on the basis of full and open access;
- Promoting to data providers the benefits of full and open access to data, in particular the benefits of the GEOSS Data-CORE.

There is broad representation in the DSWG from more than 30 Members and Participating Organisations. The DSWG also encourages other GEO Members and Participating Organisations to actively engage in the tasks of the DSWG and contributions from developing countries to DSWG activities are particularly welcome.

To facilitate its work, the DSWG has established three initial Sub-Groups (SG): the GEOSS Data-CORE and GCI SG; the Legal Interoperability SG; and the Documentation and Data Quality SG.

1 THE GEOSS DATA-CORE AND GCI SUB-GROUP

The **Action Plan** proposed for the implementation of the GEOSS Data Sharing Principles was accepted by the GEO-VII Plenary in Beijing in 2010. This Action Plan was prepared in response to the

Cape Town Ministerial Declaration that supported the establishment of a process to reach consensus on the implementation of the Data Sharing Principles for GEOSS.

One of the key statements in the Beijing Ministerial Declaration called for the establishment of a "**GEOSS Data Collection of Open Resources for Everyone**" (**GEOSS Data-CORE**): a distributed pool of documented datasets contributed by the GEO community on the basis of full and open exchange (at no more than the cost of reproduction and distribution) and unrestricted access.

Work on developing, populating and implementing the GEOSS Data-CORE has continued in order to provide **full, open and unrestricted access** to a core set of essential environmental observation and information products, in accordance with the GEOSS Data Sharing Principles.

The DSWG has developed a methodology for introducing tags into the **metadata** of resources submitted to the GEOSS Data-CORE. This has been tested with a small number of data providers and based upon the feedback received the methodology has been revised and updated. The current version of the document outlining this methodology is appended to this report as Annex A. This will remain an on-going exercise, with the methodology being revised and updated to take account of feedback from all data providers.

Following work with the initial "testing group", this exercise is now being broadened to encompass all of the GEO Members and Participating Organizations who have pledged data to the Data-CORE.

The tagging of the metadata allows for the efficient **discovery of resources** contributed to the GEOSS Data-CORE. As of 28 September 2012, over 14700 GEOSS Data-CORE resources may now be discovered using the GEO Web Portal and the DSWG now anticipates that this number will begin to rapidly expand.

The **5th Architecture Implementation Pilot** (AIP-5) is playing an important role in developing the capability of the GEOSS to share easily accessible data. AIP-5 is addressing a number of key issues, including **single sign-on/user registration**, metrics, access to data and a licensing capability for data contributed to the GEOSS Data-CORE. The DSWG and many of its members are participating in AIP-5.

2 THE LEGAL INTEROPERABILITY SUB-GROUP

The Legal Interoperability Sub-group is continuing the work of compiling a list of **open access licenses and waivers**, as well as restricted licenses, used within GEOSS and their key characteristics. This list will be submitted to the 2013 GEO Plenary, and updated before each subsequent GEO Plenary. The SG is drafting a longer article that helps substantiate in greater detail the summary white paper, as modified and presented in Annex B.

The SG is developing recommendations on user feedback, including determining what is needed and reviewing existing user feedback received related to implementation of open access licenses and waivers and associated digital rights management technologies.

The SG is also leading DSWG efforts to develop recommendations and feedback relevant to science and technology activities (e.g., implementation of open access licenses and waivers and associated **digital rights** management technologies).

3 THE DATA DOCUMENTATION AND QUALITY SUB-GROUP

Work on **data documentation and quality** is gathering momentum, with work being carried out as part of the Infrastructure Tasks (primarily IN-02: Earth datasets), and by a SG recently set up by the Data Sharing Working Group to look into Data Quality and Documentation. The work of this SG complements that being carried out within the Infrastructure Tasks. A draft recommendation is being formulated on guidelines for the documentation of data quality.

The SG is also leading DSWG efforts to develop recommendations on **user feedback**, including determining what is needed and reviewing existing user feedback for improved data documentation on accuracy, stability, precision, and spatial and temporal sampling characteristics.

4 OTHER ACTIVITIES OF THE DSWG

In addition to establishing the GEOSS Data-CORE, the GEOSS Data Sharing Action Plan encouraged GEO Members to take leadership in establishing national coordinating mechanisms for promoting and monitoring engagement with the implementation of the Principles, and advocated for flexible policy frameworks that could ensure the implementation of a more open data environment. GEO Members and Participating Organizations were encouraged to maximize the number of documented datasets made available on the basis of full and open access and promote with data providers within their territories the benefits of full and open access to data.

Hence, while the implementation of the GEOSS Data Sharing Action Plan is making good progress, to date work has primarily focused on a **subset of the 8 Actions** set out in the Plan. The DSWG will now extend its activities to ensure that it addresses all of the actions in the Data Sharing Action Plan.

In the domain of capacity building, the DSWG plans to develop educational and training materials on open access licenses and waivers for data providers and users and other related issues, e.g., best practices for **data citation, tagging and attribution**.

The DSWG also plans to develop documentation to support the establishment of national coordinating mechanisms and policy frameworks by GEO Members.

The DSWG is working on ways to inform nations regarding the benefits of data sharing and ways to improve national capacity through data sharing. DSWG is planning an event at the GEO IX Plenary focusing on positive data sharing experiences.

The DSWG is developing recommendations on **metrics** to assess the impact and progress of data sharing and to enable monitoring of the use and impact of resources made available with full and open access.

The DSWG also plans to assess the **use and impacts of resources** made available with full and open access and associated metrics.

The DSWG will also monitor whether additional challenges emerge in sharing or accessing GEOSS data and identify additional opportunities to further implement the GEOSS Data Sharing Principles.

The Data Sharing Working Group recognizes that **additional resources** are needed to ensure desirable levels of participation by developing country representatives in Working Group activities and desirable levels of outreach to developing country data users and provide

Annex A: “Instructions for GEOSS Data Providers on How to Place Tags in the Metadata for GEOSS Data-CORE”

Annex B: Updated Summary White Paper: “LEGAL OPTIONS FOR THE EXCHANGE OF DATA THROUGH THE GEOSS DATA-CORE”

Annex A

INSTRUCTIONS FOR GEOSS DATA PROVIDERS (HOW TO PLACE TAGS IN THE METADATA FOR GEOSS DATA-CORE)

Point-of-Contact: For assistance with metadata tags for GEOSS Data-CORE, please submit a request for assistance to the Standards and Interoperability Forum (SIF) by filling out a short form at <http://bit.ly/MS8COZ>

The GEOSS Data Collection of Open Resources for Everyone (GEOSS Data-CORE) is a dynamic collection of data that has been pledged by GEO Members and Participating Organizations, and that is made available to the GEOSS community with full, open and unrestricted access.

The GEOSS Data-CORE is one of the most important added values of GEOSS to the global community to address the priority Societal Benefit Areas identified by GEO. This note provides practical advice on how to turn the pledges made by your organization into discoverable GEOSS Data-CORE data for the user community. Further guidance will be provided as we learn from operational practice.

The official definition of GEOSS Data-CORE is:

“The GEOSS Data Collection of Open Resources for Everyone (GEOSS Data-CORE) is a distributed pool of documented datasets with full and open unrestricted access at no more than the cost of reproduction and distribution”

where:

- **“full access”** means that all the data in the GEOSS Data-CORE can be accessed, used, and redistributed;
- **“open access”** means that data providers may charge at most the cost of reproduction and distribution of the data, although it is expected that in most cases the data in the GEOSS Data-CORE will be made available at no cost;
- **“unrestricted access”** means that no restrictions are placed on the access to, or use and redistribution of, the data in the GEOSS Data-CORE. It should be noted that the following two conditions may be placed on data registered in the GEOSS Data-CORE by data providers: (i) attribution and (ii) user registration. These are not considered to represent restrictions on the access to, or use and redistribution of, the data.

There are four pieces of information identifying data as part of the GEOSS Data-CORE. Such information has to be expressed as special character strings (tags) and placed in the metadata (metadata tags). In the following sections we describe the tags, their placement in the metadata, how to register data and data catalogs in the GEOSS Data-CORE, and how to discover the data using the GEOSS Common Infrastructure (GCI).

METADATA TAGS

GEOSS Data-CORE metadata tags must be placed in the metadata in order to:

- (i) allow users to discover and identify the GEOSS Data-CORE data, and
- (ii) inform the data users of any conditions attached to the use of the data.

The four metadata tags that describe the data in the GEOSS Data-CORE are:

1. **geossDataCore** – this tag identifies the data that belong to the GEOSS Data-CORE. Thus, data without this tag will not be identified by data users as GEOSS Data-CORE data;
2. **geossNoMonetaryCharge** – this tag identifies the data that are available at no cost, (i.e., the cost for reproduction and distribution has been waived by the data provider, and the data are made available for free access and use);
3. **geossUserRegistration** – this tag identifies the data requiring data user registration and login in order to gain access to the data. At the moment, data providers requiring user registration and login should use their existing mechanisms to accomplish this task. A central user registration and single sign-on solution for the GEOSS is being developed and tested in 2012;
4. **geossAttribution** – this tag identifies the data requiring or recommending attribution. The data user should make sure that attribution is provided whenever the data is used, redistributed, derived from, etc. Data providers requiring attribution should ensure that the information they want to be used for attribution is included in the metadata. A Citation standard is being developed and tested in 2012.

METADATA TAG PLACEMENT

The metadata tags are not case-sensitive. There are a variety of metadata standards used by various data providers and scientific communities. Although placement in any free-text searchable field of the metadata will result in the tags being discovered by the GCI, and made known to the data users, we show specific examples of preferred metadata fields for the following standards (refer to Appendix I for the technical description of placing the GEOSS Data-CORE tags in the metadata):

- ISO 19139 metadata
- Dublin Core metadata
- OpenSearch
- WCS, WFS, WMS, WPS metadata
- GBIF metadata
- THREDDS metadata
- NetCDF metadata
- DIF metadata

COMPONENTS AND SERVICES REGISTRY (CSR) REGISTRATION

The GEOSS Components and Services Registry provides a formal listing and description of Earth observation systems, data sets, models, and other services, tools, and resources that contribute to the GEOSS. The CSR provides a registration process that resource providers to GEOSS can follow to register their resources, including GEOSS Data-CORE data. In particular, the CSR registration process has a step that allows the GEOSS Data-CORE data provider to specify, using checkboxes, which of the four metadata tags discussed earlier should be associated with the data being registered. This step has the title “Resource Sharing Properties.”

If the resource being registered at the CSR is a catalog, then it is important that the catalog be homogeneous with respect to the GEOSS Data-CORE tags. This means that all data resources referenced by records in the catalog must share the same GEOSS Data-CORE tags. The concept is discussed in detail below in the *Metadata and Catalog(ue)s* section.

The success of the GEOSS Components and Services Registry will depend on the commitment of GEO Members and Participating Organizations to input and update their registration details on a regular basis. Registration involves completing a standardized form on-line, and it only takes a few minutes.

Please use the link below to register your components, services, data, and other resources:
<http://geossregistries.info/geosspub/>

METADATA AND CATALOG(UE)S

For the purposes of the metadata tags discussed earlier, a homogeneous catalog is a catalog where every metadata record in the catalog is associated with the same metadata tags. For example, if all records in a catalog are meant to reflect the geossDataCore tag and none of the other metadata tags discussed, then the catalog is considered homogeneous, and can be registered as GEOSS Data-CORE. Similarly, if all records in a catalog are meant to reflect both the geossDataCore and geossAttribution tags and no other tags, then the catalog is considered homogeneous, and can be registered as GEOSS Data-CORE with attribution. On the other hand, if all records in a catalog are meant to reflect the geossDataCore tag, but only some of the records are meant to reflect the geossUserRegistration tag, then the catalog cannot be considered homogeneous.

One way to achieve an easy and fast metadata updating for each dataset being contributed to the GEOSS Data-CORE is to use homogeneous catalogs. Indeed, only homogeneous catalogs, with respect to the GEOSS Data-CORE metadata tags, can be registered in the CSR to avoid tagging individual metadata records. This is because the CSR, as part of the resource registration process, allows the choice of which of the four metadata tags should be associated with the entire resource being registered. Thus, for example, if a catalog being registered in the CSR will be associated with the geossDataCore tag, then all records in the catalog will be considered as tagged with the geossDataCore tag.

Of course, not all catalogs will be homogeneous with respect to the GEOSS Data-CORE metadata tags. However, one possible way to allow an easy and fast metadata updating if you have a non-homogeneous catalog, is to split the catalog up into two or more homogeneous catalogs (for the purpose of CSR registration). In this way, each of the homogeneous catalogs can then be registered in the CSR appropriately. This process of splitting requires taking an original catalog and creating one or more additional catalogs so that the metadata records of the original catalog can be placed in the new catalogs in such a way that, in the end, there are catalogs that are homogeneous, as desired.

For example, suppose Catalog A contains 5 records as follows:

CATALOG A

1. Copepoda from the coastal upwelling zone of the Chilean Humboldt Current System [cl_udec_copas_copepoda_01];
2. Deep-water and El Niño-related fishes from the northern Humboldt Current System of Chile-Peru [cl_udec_copas_fishes_01];
3. Phytoplankton of the Eastern South Pacific (OBIS, ESPOBIS) [cl_udec_copas_unap_phytoplankton];
4. Deep-water and El Niño-related fishes from the northern Humboldt Current System of Chile-Peru [COPAS_I_Chile];
5. Zooplankton of the Eastern South Pacific (OBIS, ESPOBIS) [zooplancton_copas_cl].

If only records 1 and 3 are GEOSS Data-CORE, then Catalog A is not homogeneous, and prior to CSR registration, the data provider would need to create Catalog B and move records 2, 4, and 5 into it. The final result follows:

CATALOG A

1. Copepoda from the coastal upwelling zone of the Chilean Humboldt Current System [cl_udec_copas_copepoda_01];
3. Phytoplankton of the Eastern South Pacific (OBIS, ESPOBIS) [cl_udec_copas_unap_phytoplankton].

CATALOG B

2. Deep-water and El Niño-related fishes from the northern Humboldt Current System of Chile-Peru [cl_udec_copas_fishes_01];
4. Deep-water and El Niño-related fishes from the northern Humboldt Current System of Chile-Peru [COPAS_I_Chile];
5. Zooplankton of the Eastern South Pacific (OBIS, ESPOBIS) [zooplancton_copas_cl].

In this case, Catalog A is homogeneous with respect to GEOSS Data-CORE and can be registered as GEOSS Data-CORE. Catalog B can be registered, but will not reflect GEOSS Data-CORE.

5 DATA DISCOVERY AND ACCESS

Data registered in the GEOSS can be discovered via the GEO Web Portal:

http://www.geoportal.org/web/guest/geo_home

or via another client of the GEOSS Discovery and Access Broker such as : <http://www.eurogeoss-broker.eu/>

(Please note that you will need to run the client using Mozilla Firefox.)

Being able to discover data resources in the GEOSS Data-CORE is an essential first step, and ranking mechanisms are being developed in the GCI to ensure GEOSS Data-CORE resources receive priority in the return of a search. While discovery is necessary, accessing and using the data is the ultimate goal. Data access capabilities are currently under development and will be made available as soon as possible in a separate instruction document.

Appendix I

Metadata standards, or the organization utilizing the metadata standard, should be consulted as to whether multiple tags should use multiple instances of metadata fields, or whether they can all appear in one metadata field separated by commas, spaces, or some other delimiter. The GCI's ability to recognize the GEOSS Data-CORE tags will succeed in any situation where the tags are placed in a text-searchable metadata field. In the following metadata examples, any expression of a particular tag, such as geossDataCore, can be interchanged by any of the other tags discussed in this document, except where specifically indicated otherwise.

- ISO 19139 metadata:
 - This standard is also used by CSW/ISO, OAI-PMH/ISO, GeoNetwork, Deegree, ESRI Geoportal, and SeaDataNet CDI
 - gmd:identificationInfo[1]*/gmd:resourceConstraints*/gmd:useLimitation/gco:CharacterString is used
 - `<gco:CharacterString>geossDataCore</gco:CharacterString>`
- Dublin Core metadata:
 - This standard is also used by CSW/core and OAI-PMH/Dublin Core
 - “Rights” element is used
 - Rights = “geossDataCore”
- OpenSearch:
 - RSS response is used with “copyright” element of “channel”
 - `<channel><copyright>geossDataCore</copyright></channel>`
 - RSS response is used with Dublin Core namespace and “channel”
 - `<channel><dc:rights>geossDataCore</dc:rights></channel>`
 - Atom response is used with “rights” contained in “entry” or “feed”
 - `<feed><rights>geossDataCore</rights></feed>`
 - `<entry><rights>geossDataCore</rights></entry>`
- WCS, WFS, WMS, WPS metadata:
 - Service level “accessConstraints” element in GetCapabilities document is used
 - `<accessConstraints>geossDataCore</accessConstraints>`
 - Dataset level uses the ISO 19139 metadata standard as with CSW/ISO
- GBIF metadata:
 - Rights element is used
 - `<rights>geossDataCore</rights>`
- THREDDS metadata:
 - Documentation element, “rights” type is used
 - `<documentation type=”rights”>geossDataCore</documentation>`

- NetCDF metadata:
 - Includes CF and ACDD conventions
 - “license” attribute is used
 - CDL notation as a global attribute
 - license = “geossDataCore”
- DIF metadata:
 - Uses “Access_Constraints” for user registration and monetary charge
 - <Access_Constraints>geossUserRegistration</Access_Constraints>
 - Uses “Use_Constraints” for attribution and GEOSS Data-CORE
 - <Use_Constraints>geossDataCore</Use_Constraints>

Annex B

LEGAL OPTIONS FOR THE EXCHANGE OF DATA THROUGH THE GEOSS DATA-CORE

SUMMARY WHITE PAPER

DATA SHARING WORKING GROUP¹

(October 2012)

1 PURPOSE

1.1 This summary document² addresses the legal options for the exchange of data, metadata, and data products [referred to as “datasets”³ below] through the GEOSS Data Collection of Open Resources for Everyone (Data-CORE). The GEOSS Data-CORE is a distributed pool of documented data contributed by the Group on Earth Observations (GEO) community under the following principles, as set forth in the 2010 GEOSS Action Plan:

- a) The data are free of restrictions on reuse;
- b) User registration or login to access or use the data is permitted;
- c) Attribution of the data provider is permitted as a condition of use; and
- d) Marginal cost recovery charges (i.e., not greater than the cost of reproduction and distribution) are permitted.

1.2 It is important to note that user registration, attribution of provider, and marginal cost recovery charges⁴ for access to the data **are permitted, but not required**, and are **not considered restrictions** by GEO in the context of the GEOSS Data-CORE.

¹ The information contained in this document does not constitute legal representation by the GEO Data Sharing Working Group (DSWG). Before using any information in this publication, it is recommended that an attorney licensed in the jurisdiction of interest be consulted for specific legal advice. The DSTF is grateful to its Legal Interoperability Sub-Group members for providing the draft of this summary and the background white paper. The Sub-Group members are: Paul F. Uhlir and Catherine Doldirina, Sub-Group co-chairs, and (in alphabetical order) Steven F. Browdy, Miles Gabriel, Joanne Irene Gabrynowicz, Jeff Heninger, Michelle Hertzfeld, Chiyoshi Kawamoto, Puneet Kishor, Harlan Onsrud, Kevin Pomfret, Daniel Quintart, and Glenn E. Tallia. We also wish to express our gratitude to Sarah Pearson, Senior Counsel at Creative Commons, for her comments on drafts of this paper. The views expressed here are those of the authors and not necessarily those of their employing institutions.

² A draft of the full background white paper is available upon request.

³ In this paper we define “dataset” as “The largest collection of data, metadata, and data products with a homogenous legal status.”

⁴ For a definition and discussion of marginal cost pricing, see the Implementation Guidelines for the GEOSS Data Sharing Principles (2009).

2 FINDINGS AND CONCLUSIONS

- 2.1** The effective sharing of data in GEOSS is a priority of the GEO Members.
- 2.2** When data are combined from two or more data sources, the resulting dataset will incorporate the greatest restrictions from any of the sources used and the accumulated restrictions imposed by each source. Conversely, “legal interoperability” for data means that the data from two or more databases may be combined or otherwise reused by any user without compromising the legal rights of any of the data sources used.
- 2.3** Rights under copyright or database protection laws arise automatically; they do not have to be claimed by a copyright filing or statement. Hence, either express legislative or regulatory action, or a waiver of all rights through a private law alternative is needed to make the reuse and re-dissemination of data unrestricted.
- 2.4** Public domain status is the best legal option for promoting the various social benefits and goals intended by GEO through the GEOSS Data-CORE by enabling the unrestricted reuse, re-dissemination, and legal interoperability of data. By public domain, we mean datasets that are:
- a) not subject to copyright or related rights (including database protection rights);
 - b) expressly provided by the government for use by the public; or
 - c) not subject to conditions on reuse imposed by other means.⁵
- 2.5** Public domain status may be created formally by means of public law or private law. In public law, public domain status can be conferred through national legislation or regulation that expressly excludes certain categories of data and information or subject matter from copyright or from other exclusive property protection. Public domain status may be attained as well when the protection of the dataset has exceeded the statutory term of protection, which is unlikely for almost all data made available through GEOSS.
- 2.6** Most datasets, however, do not have public domain status conferred by public law and therefore are protected in whole or in part under statutory intellectual property laws. Private law waivers or common-use licenses can be used in those cases. A legally valid waiver of rights can achieve public domain status, or a common-use license can incorporate the attribution conditions allowed by the GEOSS Data-CORE.
- 2.7** The endorsement by the GEO Plenary of either standard waivers or common-use (permissive) licenses that meet all of the GEOSS Data-CORE conditions of access and unrestricted reuse of data would help ensure legal certainty and legal interoperability of the data, and thus support the GEO societal benefit goals. Common-use licenses and waivers also would help promote the accessibility of datasets through the GEOSS Data-CORE because most jurisdictions do not have public domain status created by statute for the data compilations relevant to GEOSS.
- 2.8** Ideally, a dataset already having public domain status should include a notice in its metadata and on the database owner's server informing potential users of its public domain status. Such a notice could help to overcome the incorrect assumption by some potential users that the data are

⁵Private communication from Sarah Pearson to Paul Uhler, 1 September 2011. “Other means” refers to contractual or technical constraints on reuse.

subject to protection and have attendant restrictions on reuse, thereby promoting the further use of the data and legal interoperability through the GEOSS Data-CORE.

- 2.9** It is important to note that the attribution term may not be legally enforceable for all data used in all jurisdictions. In those cases that it is not, attribution may be seen as a standard community practice or norm, or a moral or ethical imperative, which is not exactly the same as the legally enforceable attribution condition.
- 2.10** Data policies that promote full and open data exchange, but that are not formally codified through public laws, or through licenses and agreements, do not have the force of law.
- 2.11** Desirable characteristics of a public domain designation, a waiver of rights, or a common-use license include the following:
- a) clear and simple to the data provider and user;
 - b) easy to recognize and find;
 - c) embeddable in the data as machine readable metadata;
 - d) available in different languages, at a minimum in the language(s) of the country making the data available, as well as in English;
 - e) may have other terms and conditions, such as a disclaimer of warranty and liability, consistent with the scope of the GEOSS Data-CORE; and
 - f) finally, and perhaps most important, the data and the applicable license that are made available through the GEOSS data portal must be kept under the physical and legal control of the data providers, and not under the physical and legal control of GEO or GEOSS, consistent with the consensus of the GEO Members.

3 DECISIONS OF THE PLENARY

- 3.1** Datasets designated as GEOSS Data-CORE must be free of restrictions on reuse. However, the following are expressly permissible:
- user registration or login to access or use the data;
 - attribution of the data provider as a condition of use; and
 - marginal cost recovery charges (i.e., not greater than the cost of reproduction and distribution).
- 3.2** The GEOSS Data-CORE's terms and conditions can best be achieved through any of the following mechanisms: public domain status, a waiver of rights, or common-use licenses.
- 3.3** If the dataset is in the public domain, the GEO data providers or another entity with verifiable knowledge that the dataset is in the public domain may wish to mark its status.

One example of such a mark is the *Creative Commons (CC) Public Domain Mark*, which is used to identify datasets already in the public domain in a standard and simple way, making them easily discoverable and available to others. For a full description, see <http://creativecommons.org/choose/mark/>.

- 3.4** If the dataset is not in the public domain, the GEO Member or Affiliated Organization may voluntarily waive all rights to it. Examples include:

Creative Commons CC0 waiver.

To the extent possible under law across the world, the right holder who applies CC0 to the work waives all copyright and related or neighboring rights to this work. For the text of this waiver, see: <http://creativecommons.org/choose/zero/>.

Open Data Commons Public Domain Dedication and License (PDDL).

The right holder applying the PDDL allows the database user to “copy, distribute and use the database”; “produce works from the database”; and “modify, transfer and build upon the database.” See: <http://www.opendatacommons.org/licenses/pddl/1-0/> for the full text of the license and waiver.

- 3.5** If the dataset is not already in the public domain or does not have an express waiver of rights, the GEO Members and Affiliated Organizations may also consider adopting a common-use data license, consistent with the GEOSS Data-CORE. Examples include:

Creative Commons Attribution License (CC BY).

The CC BY license allows the database user “to Share – to copy, distribute and transmit the work”, and “to Remix – to adapt the work”, as long as the user “attribute[s] the work in the manner specified by the author or licensor” (plus some other conditions described in the license). See: <http://creativecommons.org/licenses/by/3.0/legalcode> for the full text. The CC BY license allows the database user “to Share – to copy, distribute and transmit the work”, and “to Remix – to adapt the work”, as long as the user “attribute[s] the work in the manner specified by the author or licensor” (plus some other conditions described in the license). See: <http://creativecommons.org/licenses/by/3.0/legalcode> for the full text.

Open Data Commons Attribution License (ODC BY).

The ODC BY license allows the database user “To Share: To copy, distribute and use the work”, “To Create: To produce works from the database”; and “To Adapt: To modify, transform and build upon the database,” as long as the user “attribute[s] any public use of the database, or works.” Based on these characteristics, the GEO Members and Participating Organizations should consider adopting one of the following existing private-law waivers or standard common-use licenses, which are presented below from pure public domain to the adoption of the legal attribution condition by license⁶.

- 3.6** Custom licenses that are consistent with the GEOSS Data-CORE definition may also be used.

⁶ Examples of standard, common-use licenses that meet the GEOSS Data-CORE terms and conditions, but that are geographically limited or constrained to a particular type of data and information (e.g., information generated by a government agency) include: the U.K. Open Government Licence for Public Sector Information (OGL), available at <http://www.nationalarchives.gov.uk/doc/open-government-licence/>, and the Norwegian Open Data License for Public Sector Information (NLOD), available at <http://data.norge.no/nlod>.