



**Food and Agriculture  
Organization of the  
United Nations**



# GSP Soil Data Policy

*June 2017*

*Amended by the 7th GSP Plenary Assembly - 7 June 2019*

# GSP Soil Data Policy

## 1. General provisions

### 1.1 Purpose

This Data Policy has been developed by the Global Soil Partnership secretariat in order to promote soil data sharing for data products identified through Pillar 4, and considering harmonization and interoperability requirements according to Pillar 5. Following the Pillar 4 Implementation plan<sup>1</sup>, “the emphasis is on interoperable systems and web-based delivery of information services”. Besides these data exchange principles, the Pillar 4 implementation plan contains details about the data to be exchanged.

This GSP data policy aims to ensure that:

- a. every existing ownership right to shared soil data are respected;
- b. the specific level of access and the conditions for data sharing are clearly specified;
- c. the ownership of each dataset and web service is properly acknowledged and well-referenced;
- d. the data owners are protected from any liability arising from the use of their original and/or derived data.

### 1.2 Applicability

This Global Soil Partnership Data Policy is applicable to:

- a. all members of the GSP and FAO that share soil data through the Global Soil Information System and SoilSTAT
- b. users, developers, and contributors to the Soil Information System, SoilSTAT, and Soil Spatial Data Infrastructure.
- c. creators of Derived Data developed in any form using the Original Data shared through the Global Soil Information System and SoilSTAT
- d. any authorized user, institution, or Nation that has access to the Global Soil Information System and SoilSTAT, regardless of the conditions on which such access is given.

### 1.3 Definitions

- a. Soil spatial data infrastructure (soil SDI): technical basis for sharing spatial soil data via view, download and discovery services: it can include a physical infrastructure, transformations services and invoking services if needed and available.
- b. Global Soil Information System: all shared national soil data products, developed using common GSP protocols (“specifications”, see Pillar 4 Implementation plan), and distributed via web services, facilitated by national and a global soil spatial data infrastructure.
- c. SoilSTAT: Component of the Global Soil Information System, which involves indicators, assessed according to agreed updating intervals.
- d. SDI host institutions: The SDI for the Global Soil Information System will consist of a network of national SDIs, or components of such, and global-level SDI components (viewer, download service etc.); the latter may be provided and supported by several institutions. For SoilSTAT, FAO will build a basic SDI using free and open source software (portal with view service,

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<sup>1</sup> <http://www.fao.org/documents/card/en/c/6ae46a44-281c-4381-b399-4ff47c4c4585/> “This implementation plan will provide the guidance to build the global soil information system. It will be based on soil data sets provided by national and other institutional soil information institutions (...). Data will be provided according to own national and institutional terms, (...)”

discovery and download services). An important provider of additional SDI components may also be the GSP Soil Data Facility (SDF).

- e. Original data: any final national data product according to Pillar 4 specifications, including but not limited to: soil maps, soil profiles comprehending measurements, soil grids with soil properties and indicators. Original data may not involve raw data, and may not consist of all data available in a national soil data base; rather, it refers to the soil data according to Pillar 4 product specifications, selected, provided and shared by the data owner.
- f. Derived data: original data transformed by an institution other than the owner of the original data, for example, in the case of adjustments necessary to adapt original data according to global-level product specifications (e.g. global polygon map), or evaluation of indicators if not done so at national level. For example, such transformations are likely to be done by the SDI host.
- g. Original data owner: original data remain in the ownership of the data provider (usually an INSII member, or any other provider of soil data according to Pillar 4 product specifications).
- h. Derived data owner: Depending on the extent and intensity of the processing and evaluation of original data, either co-ownership or new ownership of the derived data product shall be considered. During Pillar 4 implementation, institutions (such as the SDF) could become mandated through individual INSII members to conduct country-level evaluations, or by the Pillar 4 Working Group for global level evaluations, thus to process original data, following Pillar 4 product specifications. In any case, the evaluating institution must specify the origin of the input data (data sources), and correctly cite it including reference to national data policies).
- i. Web services: for original or derived data shared through web services, data will be provided and exchanged according to international standards (e.g. ISO 19115/19119/19139 & OGC WMS, WFS, WCS) and divulged on a continuous basis – preferably by the partners themselves, through either own web interfaces, or the web interface of the central soil SDI.
- j. Intellectual Property: the rights including, but not limited to, patents, copyrights, related rights, trademarks, design rights, database rights, software rights, and know-how rights, that are either registered or unregistered and may prevail anywhere in the world.

#### **1.4 Repository for information exchange between FAO and member countries**

According to its constitution<sup>2</sup>, FAO “*shall collect, analyse, interpret and disseminate information relating to nutrition, food and agriculture*” (Art I.1). “*Through FAO, its Member Nations and Associate Members will report to one another on the measures taken and the progress achieved in the fields of action*”<sup>3</sup> (...).”

To meet this obligation, FAO has built FAOSTAT as a global repository for statistics on agriculture. The responsible national partners are mostly the agricultural ministries, contacted through the permanent representations to FAO. Depending on the type of indicator collected, these national contact points involve or request information from other relevant national institutions (e.g. national statistical offices). For SoilSTAT, these institutions may be the National Soil Information Institutions (INSII), mandated by the respective GSP national focal point (which is either the agricultural ministry or an institution mandated by it).

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<sup>2</sup> [www.fao.org/3/a-mp046e.pdf](http://www.fao.org/3/a-mp046e.pdf)

<sup>3</sup> among others, this list of actions includes “the conservation of natural resources and the adoption of improved methods of agricultural production”

Through the above-mentioned intergovernmental network between FAO and its members, a general framework for data exchange between FAO and its members thus already exists. This may then also apply for the new SoilSTAT system.

### **1.5 Data exchanged through the Global Soil Information System and SoilSTAT**

Each INSII institution has the task to develop and share the following national data according to the Pillar 4 Plan of Action and Implementation plan, following specifications still to be developed and agreed by INSII and the Pillar 4 Working Group:

- a. national soil polygons (soil types)
- b. soil profiles (Tier 1 and Tier 2)
- c. soil properties as soil grids (1 km and 100 m), e.g. soil carbon
- d. soil indicators and soil monitoring (SoilSTAT)

### **1.6 National data policies**

Ideally, soil data is shared by data owners through web services following national and already existing data policies (primary data flow, see Ch. 2). For original data sets collected by FAO or any other institution serving elements of the Spatial Data Infrastructure (centralized component: see also sections 1.7 and 2), and for data derived by it, national data owners may require an additional bilateral data sharing agreement to ensure the full data protection according to national rules.

As much as possible, soil Information and data shall be open and accessible to all potential users. If the sharing of data as Open Data<sup>4</sup> is not possible due to national data policies, it is recommended that data is made available with minimal additional restrictions on use. In any event, national data policies shall always overrule the general recommendations and frame conditions presented here.

### **1.7 Data sharing principles**

It is recommended that data owners comply with the following open data principles:

- a. Accessibility: the data shall be divulged through the Internet (web services).
- b. Availability: means the presentation of the data in a convenient, platform-independent and standards-conformant format (e.g. web feature service – WFS).
- c. License: the formal concession of the usage and access rights over the data shared.
- d. Cost: data shall be shared free of cost, or at no more than a reasonable reproduction cost, preferably by downloading over the Internet.
- e. Re-use and Redistribution: data must be provided and licensed under terms that permit its re-use and redistribution, including intermixing with other datasets.
- f. Global benefit: any user must be able to access, use and redistribute data of the Global Soil Information System. However, inherited restrictions by national data policies shall be accepted.
- g. Metadata: data describing the products of the Global Soil Information System will by default be open for access.

Exceptions from free and open data access might be imposed depending on national data policies, which overrule the GSP data policy in accordance with the above clause 1.6.

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<sup>4</sup> Open data is data that can be freely used, re-used and redistributed by anyone - subject only, at most, to the requirement to attribute and share alike (<http://opendatahandbook.org/guide/en/what-is-open-data/>)

## 1.8 Conformance

Any sharing of data under this policy must conform to all applicable regulations; additionally, this data policy also harmonizes with the below mentioned relevant, generic data sharing principles:

- a. World Data System (WDS) data sharing principles: it supports the open sharing of quality-assured data, data services, products and information. Despite the open accessibility, data can be labelled 'sensitive' or 'restricted' depending on the data provider.
- b. GEOSS Data Sharing Principles Post-2015: The Group on Earth Observation (GEO) promotes fundamental principles for data sharing, expanding the trend towards open data worldwide<sup>5</sup>.

As for any information presented through the FAO website, the FAO Terms and Condition<sup>6</sup> are valid. These specify the re-use of information presented through the FAO web site. It also specifies the use and storage of contact data (privacy policy). FAO pursues an open access data policy.

## 1.9 Implication of soil data resolution

Disclosure of spatially explicit soil data has the potential to intersect with the interests of a third party such as a landowner. This holds especially true for soil profile data which may contain spatial coordinates at high resolution; data sharing under this policy will attempt to make reasonable efforts in order to prevent risks that the data use might have over third party individuals.

For most published web data services, the data owner has already clarified the details of further data use and sharing, through metadata, IPR statements and/or through licensing. In some cases, data owners are required by their own stakeholders to maintain anonymity of local data, for example, by reducing the accuracy of the spatial coordinates of soil profile locations. These access restrictions are the responsibility of the data owner and will be fully respected by the SDI host and data users.

## 2. Data flows under the GSP Global Soil Information and SoilSTAT

Ultimately, soil data are exchanged via web services. This includes original as well as derived data, following the Pillar 4 product specifications, and the Pillar 5 specifications for web based data.

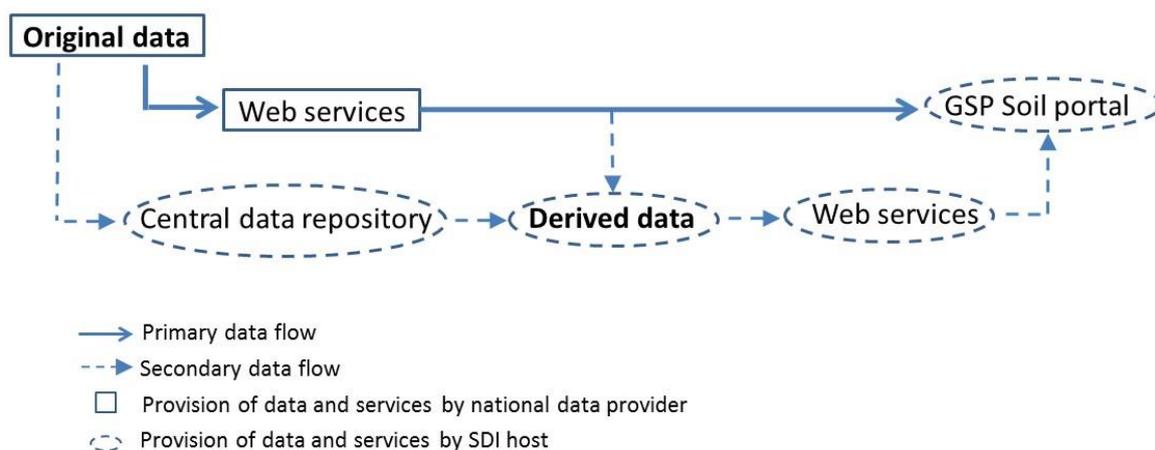
Soil data will be accessible to users via a GSP soil portal as the front end of the soil SDI. Users are able to open the web portal and request an area of interest. Further links to the data owner will be made available by the SDI host if more information is required.

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<sup>5</sup> <http://www.earthobservations.org/dswg.php>; see also White Paper "Mechanisms to Share Data as Part of GEOSS Data-CORE" as approved by the GEO Plenary in November 2014

<sup>6</sup> <http://www.fao.org/contact-us/terms/en/>

The following figure presents the schematic data flow under GSP Pillar 4:



Ideally, web data services are provided by the national data owners through their own infrastructures (primary data flow). However, for various reasons, the SDI host may download or receive original data, in order to process them further according to the Pillar 4 Implementation Plan (secondary data flow). In this case, the original ownership has to be properly reflected and cited (see also Ch. 3).

Only if national capacities do not allow for the development of own web services, data may be shared directly with SDI host into a central repository. A bilateral data sharing agreement may be developed in this case, fully considering national data exchange rules.

All data sets will be accompanied by metadata (see also Pillar 5). The metadata shall include information on how to access the data or at least identify the person to be contacted to access the datasets. Detailed metadata specifications will be developed by the Pillar 4 Working Group.

### 3. Ownership, data rights and citation

In the case of original data, the rightful data owner keeps full ownership of it. All IPR<sup>7</sup> and copyrights<sup>8</sup> pertaining to the data owner remain intact and are respected by the SDI host. All data providers must communicate to the SDI host their IPR and data use policies. Thus, the ownership of all data made available through the GSP soil portal can be clearly specified. This is an important prerequisite to permit this data to be accessible through the soil SDI.

In the case of derived data, the deriving institution becomes the owner (see Ch. 1.3, Derived data owner). However, all original data must be accredited and correctly cited. According to the Pillar 4 Implementation Plan, each global-level derived GSP data product will be quality-assured by the P4WG. This includes agreement about the correct citation.

The data owner shall ensure that the data shared can be used and interpreted by the authorized users in general; this includes providing the proper citations, as well as providing information over the ownership of such data for acknowledgement purposes.

Users shall acknowledge the source of data provided through the Global Soil Information System.

<sup>7</sup> Intellectual property rights (IPR) clarify the ownership of data and how others may use it. These rights guarantee that all legal, ethical, and professional obligations that data users may have to the provider of the data are met. See also <http://data.research.cornell.edu/content/intellectual-property>

<sup>8</sup> Copyright is a legal right created by the law of a country that grants the creator of an original work exclusive rights for its use and distribution (<https://en.wikipedia.org/wiki/Copyright>). It governs the use of databases and data content. Generally, it includes the right to reproduce, distribute, display, and make adaptations.

#### 4. Data licensing

All providers of original data ('data owners') are responsible to define and clarify the IPR and licensing if decided so<sup>9</sup>. Any user of this data, such as the SDI host, has to respect the national data policies and/or licensing involved with the retrieval of the respective web services.

In the case of data provided to the central repository, a bilateral agreement/license may be required (between the national data owner and SDI host), depending on and in conformity with national rules.

In the case of derived data, a Creative Commons<sup>10</sup> licensing will be implemented. The license selection will consider the CC pre-license recommendations. This is also recommended for data owners to be applied to original data. Detailed recommendations about product licensing will be provided by the P4WG.

An example of the above mentioned is that the most commonly used license for the exchange of data through web services is CC-BY (<https://creativecommons.org/licenses/>): This license allows users to share (copy and distribute) and adapt (remix, transform, and build upon) data, even commercially, as long as they credit the original source.

#### 5. Liability

The SDI host must not be placed in a position of responsibility for the original data provided to the SDI, and which are portrayed and disseminated through the GSP soil portal. For original data, the soil SDI only acts as a hub to allow users to find data which are released by national data owners.

Any data and content presented through the spatial data infrastructure (SDI) of the Global Soil Information System can be retrieved and reproduced by any user based on the access restrictions/licensing which accompanies each data set. Users must consider that the accuracy and applicability for a particular purpose is in their own responsibility.

Data owners and users shall hold the GSP and the SDI host harmless from any claim of Intellectual Property Rights infringement over data they shared or actions they incurred in while using the Global Soil Information System and SoilSTAT. If such an infringement claim occurs, the data owner or user shall give prompt notice of it to the GSP and the SDI host.

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<sup>9</sup> The specific national IPR statement/data policy accompanies the original and derived data provided as web services. The access constraints of each data provider is contained by the respective OGC service GetCapabilities response. It can contain licensing or charging details. For example, if charges are involved, the data is not portrayed in the GSP soil portal until the charging transaction has been conducted.

<sup>10</sup> Creative Commons (CC) is a global non-profit organization that enables sharing and re-use of creativity and knowledge through the provision of free legal tools (<https://creativecommons.org/>). CC licenses are copyright licenses, and depend on the existence of copyright, e.g. to data. CC licenses are legal tools that data rights holders such as data owners can use to offer certain usage rights to users, while reserving other rights. If data owners intend to reserve all of their rights under copyright law, the use of CC licenses is not recommended.

## **6. Code of conduct**

This code outlines the proper practices and responsibilities for all parties sharing soil data according to this data policy.

### **6.1 Documentation**

The data are documented according to metadata standards (ISO EN 19115 and ISO 19139). These standards contain the metadata profiles for geographic data sets to support interoperability between different metadata and/or GIS platforms. It will be good practice to extend the ISO metadata profile by sharing additional information relevant to harmonize the shared soil data (see GSP Pillar 5 Implementation plan, currently under development).

### **6.2 Best knowledge**

The data shared shall contain the relevant soil information representative for the area portrayed. This can be one or several point locations as well as polygons or raster maps. The shared data sets contain the best available information for a given area and topic, however, subject to potential restrictions based on the institutions' or countries' data policy.

### **6.3 Reliable information**

The data shared are quality controlled which means that the data have passed a technical routine to ensure data integrity, correctness, and completeness; errors and omissions are identified and, if possible, addressed<sup>11</sup>.

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<sup>11</sup> See also IPCC (2006) for quality control and quality assurance.

## AMENDMENTS

**Amendment 1** (*Approved by the 7th GSP Plenary Assembly, 7 June 2019*):

**Protection of data collected and exchanged in the context of soil laboratory harmonization activities (GLOSOLAN/RESOLAN)**

*1.1 Anonymity of soil laboratories*

A general non-public laboratory code will be developed and maintained by the GSP Secretariat and by other few selected actors involved in GLOSOLAN and proficiency testing activities.

Individual laboratory performances are communicated individually. Such laboratory-specific reports are non-public.

*1.2 Data storage and evaluation of ring tests*

Methods and criteria for evaluation of rings tests are public.

Analytical data are stored by the above-mentioned secretariats, and are non-public.

The use of data from rings tests by the secretariats or other third parties require the consent of the ring test participants.

*1.3 Results and publication*

Results and reports have to be coordinated with the ring test participants. This includes the sharing of drafts and the option to review.

Results of rings tests are public, the codes (see 1.1) are applied.

Authorships and acknowledgements follow the GSP Soil Data Policy, section 3 (Ownership, data rights and citation).