



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



Report of the 8th workshop of the International Network of Soil Information Institutions (INSII)

INSII-VIII/22/Report

REPORT OF THE EIGHTH WORKSHOP OF THE INTERNATIONAL NETWORK OF SOIL INFORMATION INSTITUTIONS (INSII)

Teleconference, 2 - 4 November 2022

**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, 2022**

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List of acronyms

AF	Action framework
CREA	Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria
FAO	Food and Agriculture Organization of the United Nations
GBSmap	Global Black Soil Distribution Map
GLOSOLAN	Global Soil Laboratory Network
GloSIS	Global Soil Information System
GSASmap	Global Salt-Affected Soils Map
GSDP	Global Soil Doctor's Programme
GSERmap	Global Soil Erosion Map
GSNmap	Global Soil Nutrient and Nutrient Budget Maps
GSOCmap	Global Soil Organic Carbon Map
GSP	Global Soil Partnership
GSOCseq	Global SOC Sequestration Potential Map
HiH	Hand-in-Hand Initiative
INSII	International Network of Soil Information Institutions
ITPS	Intergovernmental Technical Panel on Soils
KPI	Key performance indicator
OEWG	Open-ended Working Group
PA	Plenary Assembly
SDGs	Sustainable Development Goals
SDI	Spatial Data Infrastructure
SIS	Soil information system
SISLAC	Latin America and the Caribbean's Soil Information System
SSM	Sustainable soil management

INSII-VIII/22/Report

Opening remarks

The eighth meeting of the International Network of Soil Information Institutions (INSII) was held online on November 2-4, 2022.

Mr Luca Montanarella (Chair of INSII, EC-JRC) opened the workshop and welcomed all participants. He announced that the role as chairperson will be taken over by Mr Yusuf Yigini (GSP Secretariat) for the second half of the second day of the 8th INSII meeting.

He reminded the participants that INSII is a network of institutions and not individuals. The participation is voluntary and implies the willingness of these institutions to share their data with the GSP. Furthermore, he encouraged all participants to interact during the meeting and highlighted that it would be desirable to further expand the network and foster inter-institutional cooperation by having more than one INSII per country.

Mr Ronald Vargas (GSP Secretary) welcomed all participants and encouraged the INSII members to support the development of indicators for the [new GSP Action Framework](#) (GSP AF) in close cooperation with the other technical networks and the GSP AF Working Group (GSP AF WG) which is to be established soon. He highlighted the key role of INSII in addressing the pressing issues on the current political agenda, such as generating information for optimising fertiliser use. He thanked the INSII for its work and stated that the inclusive way of collaborating will be continued. Finally, he indicated that the next INSII meeting may take place in a hybrid format.

Adoption of agenda

Mr Luca Montanarella asked the participants if there were any objections regarding the proposed agenda. No comments were made and the proposed agenda (see [Annex I](#)) was adopted unanimously.

1. New GSP Action Framework

Mr Yusuf Yigini reported on the key elements of the new GSP AF that was developed by the Open-Ended Working Group (OEWG). The GSP AF aims at making the performance and progress of the GSP measurable by means of key performance indicators (KPI). SoilSTAT, the GSP platform for countries to report on soil indicators, alongside other KPIs specifically developed for the GSP AF, will play a crucial role in quantifying the GSP achievements. Furthermore, the development of a soil health index (SHI) is envisioned. Mr Yigini underscored the need for funding to implement these activities.

Following a question by Ms Maria Fantappiè (CREA, Italy), Mr Yigini specified that the GSP AF WG, which is to be established soon, will be composed of ITPS, regional soil partnership members and the national focal points. The WG should be composed by technical experts as the development of indicators requires a high level of expertise. Mr Peter Wilson (CSIRO, Australia) expressed his concerns about the level of commitment that is required of INSII institutions to report on country-wide indicators in the framework of SoilSTAT. Here, Mr Yigini answered that the position of INSII within the new GSP AF needs to be discussed and clarified in the dedicated agenda item (see [Item 12](#)).

2. The year behind (Q4 2021-Q4 2022)

Mr Yusuf Yigini (GSP Secretariat) reported the progress made by the GSP Secretariat in the year since the [last working session of INSII](#) (November 2021). Within this period three global data products (GSOCseq v1.1, GSASmap v1.0, and the GBSmap v1.0) were launched. Along with these products, key publications were published such as the GSOCseq Technical Report or the GBSmap Brochure.

The capacity development programme of the GSP Secretariat took a step towards a new normality that includes in-person as well as online modalities for product-oriented as well as generic digital soil mapping (DSM) workshops. These were carried out on national to regional levels. The imminent release of the EduSOILS platform, which provides accessible and free video online tutorials on DSM, represents another major achievement of the past year.

GloSIS has been improved by the collaboration with FAO's IT department (CSI) in developing a user-friendly interface and appropriate data management systems.

With the new GSP AF, the development of indicators became a priority and the SoilSTAT WG will work on populating the indicator fact sheet templates developed by the GSP Secretariat.

Questions were asked how the infrastructure of GloSIS will look like and when and how the data served on GloSIS will be made available to the public. Mr Yigini answered that the infrastructure of GloSIS is going to be made available soon (within a few weeks) and the GSP Secretariat aims to serve the data products on as many platforms as possible, incl. Google Earth Engine (GEE) and the Hand-in-Hand platform (HiH) using CC-BY 3.0 and 4.0 IGO licences. A suggestion was made to also serve the data on Microsoft's "Planetary Computer" platform. Mr Alie Kamara (Njala University Quality Control Laboratory, Sierra Leone) stated Sierra Leone's interest in getting support from the GSP Secretariat in developing a National Soil Information System (NSIS). The GSP Secretariat will follow-up bilaterally.

3. Bridging the digital divide in DSM: Capacity Development

Ms Isabel Luotto (GSP Secretariat) showcased important achievements of the GSP's capacity development including three in-person trainings held in Uganda, Vietnam, and Rwanda. The advantages of more in-person trainings were emphasised as interaction between participants and organisers led to the establishment of INSII representatives in Uganda and Rwanda. Furthermore, the future interface of the EduSOILS platform was briefly presented. Ms Funmi Ande (Institute of Agricultural Research, Nigeria) commented that more in-person trainings would be desirable and increase the impact of the trainings.

World Soil Day and Awareness Raising (guest talk)

Ms Isabelle Verbeke (GSP Secretariat) revisited the trajectory of World Soil Day (WSD) celebrations since 2015. She elaborated on strategies of awareness raising that engage with a specific priority group, for instance, the Youth (e.g. through children poster contests). The GSP has continuously increased the outreach over the years. The most recent WSD in 2021 thus reached wide media coverage (> 600 articles, 1.15 bn users) and was a trending hashtag on twitter (in total 330 million users on social media).

The WSD 2022 on soils for nutrition counts, again, on a map showing all the WSD events taking place across the globe, contests for the Youth, and many campaign materials available in more than 100 languages on the GSP website (<https://www.fao.org/world-soil-day/campaign-materials/en/>). Ms Verbeke asked the INSII members to contribute by organising local events and [pin them on the map](#), by providing pictures of the event, and spreading the word.

During the Q&A session, Ms Verbeke stated that the highest outreach on social media platforms is generated on Facebook and the most relevant platform for policymakers is Twitter.

4. Country Driven Global Datasets (Overview)

Mr Yusuf Yigini provided an overview of the country-driven global datasets that were developed or are currently under development by the GSP. The mentioned products were the Global Soil Organic Carbon Map (GSOCmap, 2017), Global Soil Organic Carbon Sequestration Potential Map (GSOCseq, 2021), the Global Black Soils Distribution Map (GBSmap, 2022), and the Global Salt-Affected Soils Map (GSASmap, 2021). Here, he briefly announced that a gap-filled version of the GSASmap is to be launched in the first weeks of 2023 along with the GSASmap Technical Report. Further, the Global Soil Nutrient and Nutrient Budget Maps (GSNmap) and the Global Soil Erosion Map (GSERmap) that are currently under development and INSII members were encouraged to nominate experts for both initiatives (see [Annex IV](#)).

5. Global Soil Nutrient and Nutrient Budget Maps (GSNmap)

Mr Marcos Angelini (GSP Secretariat) introduced the GSNmap initiative. The GSNmap products will be developed following a two-phase approach:

- Phase I: development of soil nutrient and associated soil property maps;
- Phase II: quantification, analysis, projections of nutrient budgets for agricultural land use systems at national, regional and global scale.

The methodological approach includes a traditional DSM approach based on the machine learning algorithm, as well as a novel attempt to utilise data without point coordinates but area-based reference polygons.

The capacity development started with a regional training in Latin America and is supported by a [zero draft of the Technical Manual](#) available on GitHub.

More information was requested on the potential use of pedotransfer functions (PTF) throughout the mapping procedure. Mr Angelini clarified that PTF will be used if needed at country level. Harmonisation among different PTFs will be addressed in close collaboration with GLOSOLAN.

6. Global Soil Erosion Map (GSERmap)

Mr Christian Omuto (GSP Secretariat) presented the progress on the GSERmap initiative which consists of two phases:

- Phase I: development of national databases on erosion factors;
- Phase II: modelling and mapping of water, wind, and tillage erosion.

The initiative will soon publish the Country Guidelines and Technical Specifications document and counts on an active working group composed of 55 experts from 29 countries. The WG is currently developing the Technical Manual. The two phases are expected to be finalised until the end of 2023.

Mr Abdelmagid Elmobarak (LWRC-ARC, Sudan) asked whether flexibility would be given to countries in modelling only erosion types that are actually occurring in the country. This was confirmed by Mr Omuto who referred to the GSERmap Country Guidelines.

7. Global Black Soil Distribution Map (GBSmap)

Mr Marcos Angelini presented the GBSmap products which were developed by the International Network of Black Soils (INBS) and the ITPS. INBS coined a definition for black soils which was endorsed by ITPS in its 11th Working Session (21/11/2019, FAO HQ). Mr Angelini explained that two different products were generated based on the target countries encompassed by the GBSmap:

- Global extent: GBSmap generated through national submissions as well as through a top-down gap filling exercise
- INBS countries: GBSmap generated through national submissions as well as through a top-down gap filling exercise only for countries part of the INBS

He outlined the methodology used for the member countries of the INBS. He opened a discussion on whether INSII would endorse the current version of the map with global extent with the possibility for countries to be left blank (requested by Netherlands, France, and Belgium). Following this proposal, currently gap-filled maps would be gradually replaced by national maps.

The discussion also touched on the overall concept of data requests by the GSP that recommended clear permission structures and standard operating procedures that can be followed by countries to track the data sharing. This will be further discussed within the GSP and INSII. The plenum endorsed that countries which are likely to have a high share of black soils may produce a national black soils distribution map guided by the GSP Secretariat. Thus, the coverage of the GBSmap currently showing results exclusively for INBS countries will be

gradually extended. It was recommended to use the global extent map to identify countries with large areas of black soils that have not yet joined the INBS. Further communication between GSP Secretariat and INSII members will follow in this regard (see [Annex IV](#)).

8. Global Soil Organic Carbon Sequestration Potential Map (GSOCseq)

Ms Isabel Luotto reported on the progress made for the GSOCseq initiative. After a brief introduction to the methodology that combines C modelling (RothC) and DSM techniques, she showcased results derived from the current version of the GSOCseq. A new version 1.2 will be published soon, as several new countries submitted or are producing national SOCseq maps (completed: Slovenia, Sudan, China, Iran, Syria, Yemen, Jordan; in progress: Australia, Lebanon, Tunisia). Along with the updated map there will be published an updated Technical Report.

More fundamental changes were discussed in the GSOCseq WG that includes aspects such as the improvement of C input scenarios. These improvements will finally result in a GSOCseq v2.0. A publication on the GSOCseq initiative (process and results) is going to be submitted to a high-impact journal until the end of 2022.

Several INSII members recommended collaboration and alignment with the CarboSEQ project of the European Joint Programme (EJP). Also, a jointly organised webinar as well as a potential invited talk at the next INSII meeting were discussed.

9. Global Soil Pollution Map (INSOP & INSII)

Mr Sergejus Ustinov (GSP Secretariat) introduced to INSII the work of the International Network on Soil Pollution (INSOP). In particular, he highlighted the need for collaboration between INSOP and INSII as one of the areas of work of INSOP is to map soil pollution. For that, a close collaboration with INSII is desirable in order to develop a mapping methodology. Main challenges are related to data availability and mappability. Further discussion on what and how can be mapped are needed. Ms Fenny van Egmond (ISRIC, Netherlands) remarked that a collaboration with the European Soil Observatory on soil pollution could be beneficial.

Invited Talk - Global Soil Doctors Programme

In conclusion of the second day of the workshop, Ms Carolina Olivera Sánchez (GSP Secretariat) presented on the Global Soil Doctors Programme (GSDP) of the GSP which is a farmer-to-farmer training programme to improve sustainable soil management (SSM) and soil health. It trains promoters in countries that in turn train soil doctors that approach farmers (pyramidal scheme). Thus, the GSDP has reached a large number of farmers. It is complemented by a broad array of training material and also provides soil testing kits for basic soil analysis (texture, soil pH) that are used to make recommendations for SSM practices.

10. GloSIS Development

Mr Yusuf Yigini presented recent developments of the GloSIS platform. He outlined the national soil information systems (NSIS) that were already or are currently launched. The GloSIS discovery hub has moved under FAO domain and is technically supported by the IT division of FAO (CSI) and the GeoSpatial Unit. The system is based on CKAN (data/metadata management) and a combination of TerriaJS and GeoServer as the map service. A template node that may serve as default NSIS to countries is to be developed within the scope of the SOILCARE project that implements a regional SIS (RSIS) called CarSIS in the seven countries of the Caribbean (Antigua and Barbuda, Belize, Grenada, Guyana, Haiti, Jamaica, Saint Lucia).

Following a question on the metadata standard, Mr Yigini clarified that the metadata will follow the ISO metadata standard. CKAN also offers a harvesting extension to collect point data. However, this functionality still needs to be explored further by the GSP Secretariat. The collaboration of the CSI and GeoSpatial unit is a long-term commitment following FAO's objective to collect data in one place.

Invited talk - Soil Information System of Latin America and the Caribbean; current status and perspectives

Mr Mario Guevara (UNAM, Mexico) gave a brief overview of current issues and challenges of the Soil Information System of Latin America and the Caribbean (SISLAC) which are going to be addressed within the scope of an update of the platform. SISLAC serves soil data on a multilingual platform that aims at researchers and policymakers. Currently almost 50,000 soil profiles are included in the database which complies with the GSP data policy and was revised and submitted in this [publication](#). The SISLAC database thus is useful for countries to report on soil resources. The update of SISLAC comprises a revision of the database structure to be aligned with GloSIS, a automated QA/QC protocol, an update of front- and backend user interface and functions, compliance with OGC standards to allow the use of GIS softwares, an update of the metadata, and the development of a technical manual.

Mr Marcos Angelini pointed out that SISLAC needs to be accessible by data providing countries in order to enable countries to regularly update/upload (new) soil data as most soil profiles originate from past national soil surveys.

11. SoilSTAT

Mr Moritz Mainka (GSP Secretariat) presented the current status of SoilSTAT which plays a central role in the implementation of the new GSP AF. The SoilSTAT platform consists of two reporting lines, that are on one hand indicators on soil threats and functions (that are reported by INSII), and on the other the key performance indicators (KPI) that monitor progress and performance in the implementation of the GSP AF (reported by the GSP).

Technical expertise is needed to develop and define suitable indicators for soil threats and functions. Therefore, a call was opened for INSII members to join the SoilSTAT WG (see [Annex IV](#)), which was tasked with populating the *Indicator Factsheets*. These provide information on the statistical indicator(s), units, reporting unit(s), and reporting frequency. Mr David Lobb (ITPS, Canada) questioned to what extent external factors such as soil management (tillage practices, etc.) need to be included in these indicators as substantial part of changes in soil status can be attributed to soil management.

Invited talk - The role of soil laboratories in digital soil mapping | GLOSOLAN - INSII collaboration

Mr Filippo Benedetti (GSP Secretariat) introduced the Global Soil Laboratory Network (GLOSOLAN) initiative that strives at ensuring reproducible measurements of soil properties following standard operating procedures that comply with minimum laboratory standards. The connections between the work of GLOSOLAN and INSII was underscored. Further collaboration should be explored and facilitated to connect laboratory and mapping experts. Ms Maria Fantappiè pointed out that the work of the EJP Soil project is in line with the activities of GLOSOLAN.

12. The new INSII & new GSP Action Framework

Mr Yusuf Yigini presented the implications for INSII that come with the adoption of the new GSP AF by the 10th GSP PA in May 2022. It requires a shift in goals and governance within INSII. INSII continues to be in charge of mapping activities requested by the PA. The former P4WG is replaced by thematic working groups that provide technical support to implement the activities outlined in the AF. The main advantage is the higher responsiveness and specific expertise available in the thematic working groups. The new biennial work plan focuses on the development of new global data products (GSNmap and GSERmap), the development of SoilSTAT and GloSIS, as well as the continued update of existing global data products. All activities are based on the GSP's capacity development programme and the publication of technical and scientific documents.

Mr Luca Montanarella requested that an overview of the thematic WGs and its members would be provided by the GSP Secretariat (see [Annex V](#)). A notification by the GSP Secretariat once the call for the GloSIS WG is published was requested. Technical comments on the nature of the Spatial Data Infrastructure of GloSIS and how it can be aligned with existing NSIS were posed by Mr Stephen Roecker (USDA-NCSR, USA). In particular, how to reach harmonised soil database models that are implemented on national levels. Here, Mr Yigini highlighted that GloSIS goes beyond serving soil data in raster format. The complexity of data formats and differences in national data policies limit the harmonisation efforts. Ms Fenny van Egmond (ISRIC, Netherlands) added that a publication on developing a domain model following a

similar approach as GloSIS was developed in the Soils4Africa project and will be available in the next months. Mr Luca Montanarella concluded that further collaboration between actors is recommendable.

13. INSII Biennial Work Plan

This item was merged with Item 12 on the new INSII & the new GSP AF. For further information see also [Annex III](#).

Open Discussion and Closing

After a timeslot allocated to open discussion, Mr Luca Montanarella closed the 8th INSII meeting. He announced that the next meeting may take place in hybrid or in-person modality. Mr Yusuf Yigini thanked all INSII members for their participation and contributions. The key meeting documents will be shared soon. The GSP Secretariat will also thoroughly update the INSII and the thematic soil data and information webpages. Mr Luca Montaneralla thanked the GSP Secretariat for the preparation of the meeting and making available the materials. He reiterated that INSII has a key role as data provider to the GSP and should continue to contribute to the work of the GSP - despite existing challenges.

Annex I Meeting Agenda

8th INSII Meeting

Global Soil Partnership - International Network of Soil Information Institutions

2-3-4 November 2022 - Virtual ([11am-2pm UTC & GMT+0](#))

Chairperson Mr Luca Montanarella (European Commission - EU)

Moderator Mr Yusuf Yigini (GSP Secretariat)

Rapporteur: Ms Isabel Luotto (GSP Secretariat)

Minutes: Mr Moritz Mainka (GSP Secretariat)

Meeting Recordings and Presentations

DAY I ([Video](#)) **DAY II** ([Video](#)) **DAY III** ([Video](#))

Photos

The screenshot displays a Zoom meeting interface. The top portion shows a grid of video thumbnails for participants. The bottom portion features a shared presentation slide with the following content:

Food and Agriculture Organization of the United Nations

8th Meeting of the International Network of Soil Information Institutions (INSII)

2-3-4 November 2022
Online meeting

AGENDA – DAY 3

- GloSIS Development
- SoilSTAT
- The New INSII & INSII Biennial Work Plan
- Open Discussion

Invited Talk - Mr Mario Guevara
Soil Information System of Latin America and the Caribbean: current status and perspectives

Invited Talk - Mr Filippo Benedetti
The role of soil laboratories in digital soil mapping | GLOSOLAN - INSII collaboration

Logos for INSII and GLOSOLAN are visible at the bottom right of the slide.

8th Meeting of the International Network of Soil Information Institutions (INSII) | 2-3-4 November 2022



Wiedergabe (K)

Participant list (from top to bottom):


- SM: Senke Mademoglu
- SR: Serita Rousseau
- MC: Mahen CHOONE
- HY: Hakan YILDIZ
- AM: Pook, Sheila (NLD)
- AM: Aleksandar Muntjan
- SW: Will, Daye - IBC...
- RF: Ferguson, Rich ...
- SR: Radoček, Stephen...
- FK: FF, Sidiq, Naha...
- MB: Martha Marina B...
- MB: Marcela Biddozzi
- JM: Jorge F. C. S. Man...
- AC: Anabela Collett
- YS: Yiyi Saeman (In...
- MS: Rodica Sirbu, Mol...
- LG: +27


Agenda

DAY 1 - 2 November 2022 | 12pm-3pm CET



Theme: INSII within GSP		
Time (CET)	Topic & Speaker	Agenda Paper
12:00 - 12:05	Opening & Adoption of the Agenda <i>Mr Luca Montanarella</i>	
12:05 - 12.15	Opening Remarks <i>Mr Ronald Vargas (GSP Secretary)</i>	
12:15 - 12:45	The new GSP Action Framework	2022-I
12:45 - 13.15	The Year Behind (Q4 2021-Q4 2022) <i>Mr Yusuf Yigini</i>	2022-II
13:15 - 13:30		
13:30 - 14:00	Bridging the digital divide in DSM: Capacity Development <i>Ms Isabel Luotto</i>	2022-III
14:00 - 14:30	 Invited Talk - Ms Isabelle Verbeke World Soil Day and Awareness Raising	
14:30	Closing <i>Mr Luca Montanarella</i>	


DAY 2 - 3 November 2022 | 12pm-3pm CET

Theme: Country Driven Global Data Products		
Time (CET)	Topic & Speaker	Agenda Paper
12:00 - 12:05	Opening <i>Mr Luca Montanarella</i>	
12:05 - 12:15	Country Driven Global Datasets (Overview) <i>Mr Yusuf Yigini</i>	2022-IV - 2022 IX
12:15 - 12:45	The Global Soil Nutrient and Nutrient Budget Maps (GSNmap) <i>Mr Marcos Angelini</i>	2022-V
12:45 - 13:15	The Global Soil Erosion Map (GSERmap) <i>Mr Christian Omuto</i>	2022-VI
13:15 - 13:30		
13:30 - 13:50	The Global Black Soils Distribution Map (GBSmap) <i>Mr Marcos Angelini</i>	2022-VII
13:50 - 14:15	Global Soil Organic Carbon Sequestration Potential Map <i>Ms Isabel Luotto</i>	2022-VIII
14:15 - 14:30	Global Soil Pollution Map - INSOP & INSII <i>Mr Sergejus Ustinov</i>	2022-IX

14:30 - 14:50	 Invited Talk - Ms Carolina Olivera Sanchez Global Soil Doctors Programme	
14:50 - 15:00	Closing <i>Mr Luca Montanarella</i>	

DAY 3 - 4 November 2022 | 12pm-3pm CET

Theme: GloSIS, SoilSTAT and the year ahead for INSII		
Time (CET)	Topic & Speaker	Agenda Paper
12:00 - 12:05	Opening <i>Mr Luca Montanarella</i>	
12:05 - 12.30	GloSIS Development <i>Mr Yusuf Yigini</i>	2022-X
12:30 - 12-50	Invited Talk - Mr Mario Guevara Soil Information System of Latin America and the Caribbean; current status and perspectives	
12:50 - 13.15	SoilSTAT <i>Mr Moritz Mainka</i>	2022-XI
13:15 - 13:30		

13:30 - 13:45	 <p>Invited Talk - Mr Filippo Benedetti The role of soil laboratories in digital soil mapping GLOSOLAN - INSII collaboration</p>
13:45 - 14:30	<p>The New INSII & New GSP Action Framework & INSII Biennial Work Plan 2022-XII <i>Mr Yusuf Yigini</i> 2022-XIII</p>
14:30 - 14:55	<p>Open Discussion</p>
14:55	<p>Closing <i>Mr Luca Montanarella</i></p>

Annex II List of attendance

Last Name	First Name	Institution	Country
Ágústsdóttir	Anna María	Soil Conservation Service of Iceland	Iceland
Angelini	Marcos	Food and Agriculture Organization (FAO) - Global Soil Partnership (GSP)	Argentina
Arachchige	Matheesha Liyana	Cranfield University	United Kingdom
Attia	Rafla	Ministry of Agriculture	Tunisia
Bautista Montealegre	Luis Gabriel	Agrosavia	Colombia
Bazarradnaa	Enkhtuya	Institute of Plant and Agricultural Sciences	Mongolia
Benedetti	Filippo	Food and Agriculture Organization (FAO) - Global Soil Partnership (GSP)	Italy
Biddoccu	Marcella	Italian National Research Council (CNR)	Italy
Bispo	Antonio	INRAE	France
Bolaños Benavides	Martha Marina	Agrosavia	Colombia
Bosma	Andries	ISRIC World Soil Information	Netherlands
Choneea	Mahen	National Parks and Conservation Service	Mauritius
Collett	Anneliza	Dep. of Agriculture, Land Reform, and Rural Development (DALRRD)	South Africa
de Souza	Gabrielle	Ministry of Agriculture, Land and Fisheries	Trinidad and Tobago
Egmond	Fenny van	ISRIC World Soil Information	Netherlands
Egueh	Mohamed	Centre d'Etude et de Recherche de Djibouti	Djibouti
Elmobarak	Abdelmagid Ali	Land and Water Resource Centre (LWRC) - Agricultural Research Corporation (ARC)	Sudan
Emiliano	Maria	Food and Agriculture Organization (FAO) - Global Soil Partnership (GSP)	Italy
Fantappié	Maria	Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria (CREA)	Italy
Ferguson	Rich	U.S. Department of Agriculture (USDA)- Natural Resources Conservation Service (NRCS)	USA

Ferro Vazquez	Maria	Food and Agriculture Organization (FAO) - Global Soil Partnership (GSP)	Spain
Flores	Andrew	Bureau of Soils and Water Management	Philippines
Gatere	Lydia	Food and Agriculture Organization (FAO) - Global Soil Partnership (GSP)	Uganda
Golozubov	Oleg	Lomonosov Moscow State University	Russia
Guevara	Mario	Centro de Geociencias - Universidad Nacional Autónoma de México Campus Juriquilla	Mexico
Guste	Dace	Ministry of Agriculture	Latvia
Hladkikh	Yevheniia	National Scientific Center "Institute for Soil Science and Agrochemistry Research named after O.N. Sokolovsky"	Ukraine
Huber	Sigbert	Environment Agency	Austria
Ibelles Navarro	Alejandro Roberto	INEGI	Mexico
Kamara	Alie	Njala University Quality Control Laboratory	Sierra Leone
Khamis	Nuha	Land and Water Resource Centre (LWRC) - Agricultural Research Corporation (ARC)	Sudan
Koparan	Muhammed Halil	Ministry of Agriculture and Forestry, General Directorate of Agricultural Research and Policies (TAGEM)	Türkiye
Kozák	Josef	Czech University of Life Sciences	Czech Republic
Lebed	Vitalii	National Scientific Center (NSC) "Institute for Soil Science and Agrochemistry Research Named After O.N. Sokolovsky" (ISSAR)	Ukraine
Leenaars	Johan	ISRIC World Soil Information	Netherlands
Lindbo	David	U.S. Department of Agriculture (USDA)- Natural Resources Conservation Service (NRCS)	USA
Lobb	David	ITPS - University of Manitoba	Canada
Luotto	Isabel	Food and Agriculture Organization (FAO) - Global Soil Partnership (GSP)	Germany
Luts	Dries	Department of the Environment and Spatial Development	Belgium
Montanarella	Luca	European Commission (EC) - Joint Research Centre (JRC)	Europe

Madenoglu	Sevinc	Ministry of Agriculture and Forestry, General Directorate of Agricultural Research and Policies (TAGEM)	Türkiye
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Ramos Ramos	Humberto	INEGI	Mexico
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Van Liedekerke	Marc	JRC-ISPRA	Europe
Vargas Garcia	Cesar Augusto	Agrosavia	Colombia
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Yigini	Yusuf	Food and Agriculture Organization (FAO) - Global Soil Partnership (GSP)	Türkiye
Yildiz	Hakan	Republic of Türkiye Ministry of Agriculture and Forestry - Soil, Fertilizer and Water Resources Central Research Institute	Türkiye
Zehavi	Maya	Ministry of Agriculture and Rural Development	Israel

Annex III Biennial Work Plan

Product	Activity/Milestone	Time frame
GSNmaps (Global Soil Nutrient Maps)	Phase 1 Phase 2	Q3 2023 TBD
GSERmap (Global Soil Erosion Map)	Phase 1 Phase 2	Q2 2023 Q4 2023
SoilSTAT		2023 - cont.
GloSIS		2022 - cont.
Capacity development programme		2022 - cont.
<i>Envisioned Updates of Global Data Products</i>		
GSOCmap 2.0	Updated Guidelines and Cookbook	2022 - cont.
GSOCseq v1.x	V1.2, v2.0	2022 - cont.
GSASmap v1.x	v1.1	2022 - cont.
GBSmap	v1.1	2022 - cont.

Annex IV Action Items and Links

Action Item	Attachments
<p>Contact INSII members to join INBS The GSP Secretariat will contact countries that likely have large shares of black soils to join INBS and contribute a national map following the established methodology.</p>	<p>relevant material to be shared in the coming weeks</p>
<p>Overview of Thematic Working Group members</p>	<p>see Annex V</p>
<p>Expert nomination: GSNmap This form is addressed to the national INSII institutions and/or Focal Point and shall be used to nominate an expert who will be technically leading the production of the national GSNmap datasets.</p>	<p>Form: https://forms.gle/WnRuEx6eVcAMKfWc8</p>
<p>Expert nomination: GSERmap This form is addressed to the national INSII institutions and/or Focal Point and shall be used to nominate an expert who will be technically leading the production of the national GSERmap datasets.</p>	<p>Form: https://forms.gle/qeJevBgv3emEMXUK6</p>
<p>Working Group: GSNmap A thematic working group with the objective of supporting the identification of a suitable methodology to map soil nutrient budgets at the national scale, contributing to the publication of supporting training material, and contributing to the publication of key documents</p>	<p>Form: https://forms.gle/j14AAf3fJpau8jvZ7</p>
<p>Working Group: GSOCseq A working group with the objective of defining and discussing a way forward for the new versions of the GSOCseq. Members of the working group should</p>	<p>Form: https://forms.gle/F5f7NGsggv94KTV E9</p>

<p>provide comments of the GSOCseq Way Forward concept note by 15/02/2022 directly on the online document.</p>	<p>GSOCseq Way Forward Concept note: Concept Note GSOCseq Wayforward.docx</p>
<p>Working Group: GSERmap The working group will support the delineation of relevant documents (concept note, technical specifications, and country guidelines) of the GSERmap. The activities related to the GSERmap will be kick-started in January 2022.</p>	<p>Form: https://forms.gle/eXdAtxQGL1bWaNhXA</p>

Annex V Overview of thematic working groups and its members

[Click here to access the overview](#)