

World Soil Day

NBV/ISRIC Theme Day 'Soil Data'

4 December 2015

# Developments in Global Soil Information



World Soil Information

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2015  
International  
Year of Soils



# ISRIC – World Soil Information

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- Foundation based in Wageningen; strategic association with Wageningen University and Research Centre
- Accredited as the World Data Centre for Soils by the International Council for Science (1989)
- Mission: “to serve the international community with information about the world’s soil resources to help addressing major global issues”



World Soil Information



# Objectives

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- As World Data Centre for Soils, to serve the (scientific) community as custodian of world soil information by collecting, analysing and disseminating data, and making these freely available.
- To undertake applied research on land and water resources and their management.
- To inform and educate - through the World Soil Museum, public information, courses, discussion and publication.



# World Soil Reference Collection

- Soil monolith collection (1,000)
- Reference soil samples (10,000)
- Micromorphology collections
- 16,000 slides and photographs
- Display through the world soil museum (tour later today)



# Library

- Online catalogue
  - Books and reports (16,122)
  - Paper maps (9,110)
- Downloadable documents:
  - Full-text reports (30%)
  - Scanned maps (80%)
- Metadata service (Geonetwork)



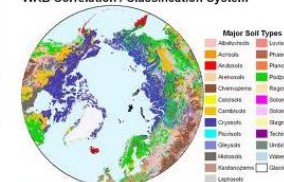
ISRIC - World Soil Information Database

[wageningen ur \(home\)](#) > [digital library](#) > [isric](#)



ISRIC - World Soil Information Database

## WRB Correlation / Classification System



© European Communities, 1995-2007

Since its beginning in 1966, [ISRIC - World Soil Information](#) has built up a collection of more than 20 000 articles, country reports, books and maps with emphasis on the developing countries. The subject emphasis is on soils, but related geographic information on climate, geology, geomorphology, vegetation, land use, and land suitability is also important. The map collection contains over 6000, mainly small-scale (1:250 000 or smaller) maps. [show more info](#).



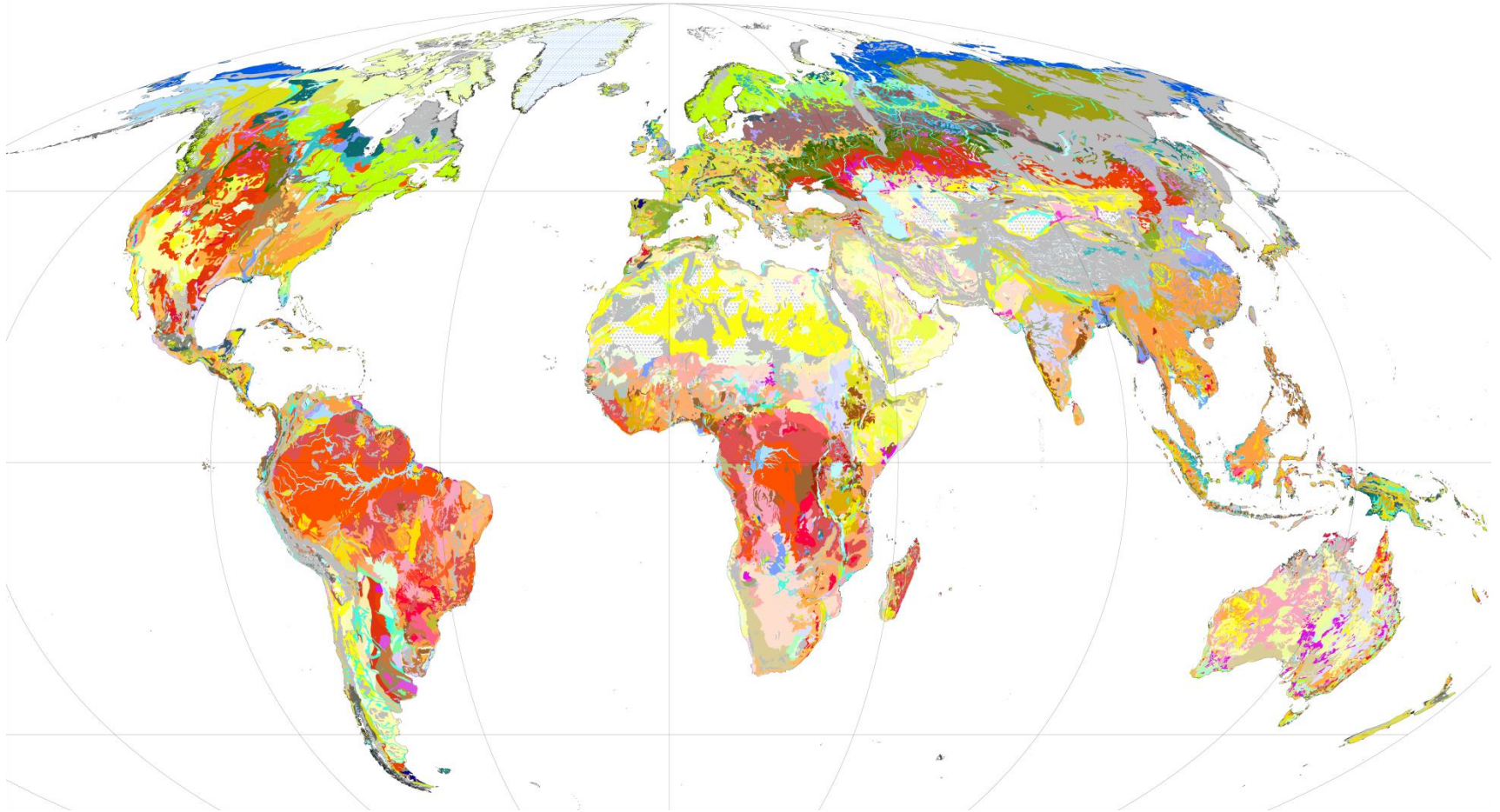
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[www.library.isric.org](http://www.library.isric.org)

<http://meta2.isric.org/geonetwork/srv/en/main.home>



# FAO Soil Map of the World (1961-1981)



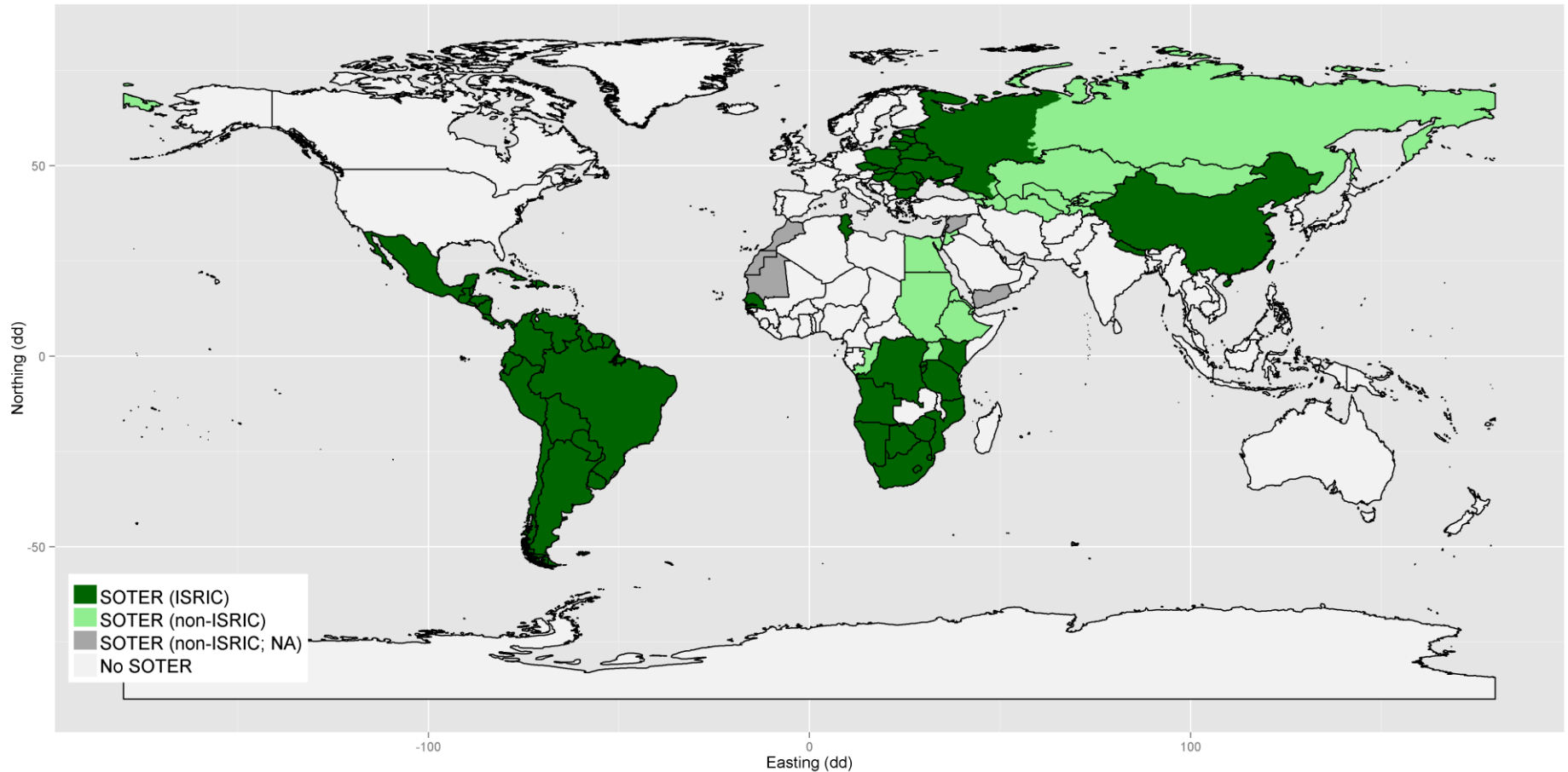
# SOTER (1986)

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- SOTER program established in 1986; implemented by the FAO, ISRIC, UNEP. Procedures Manual: 1988
- Aim: develop a World Soil and Terrain (SOTER) database, scale 1:1M (later this became 1:5M)
- Using the emerging information technology.
- Serve as an international land resource information system to support the soil scientist in storage, retrieval, analysis and dissemination of soils data.
- Not yet finished

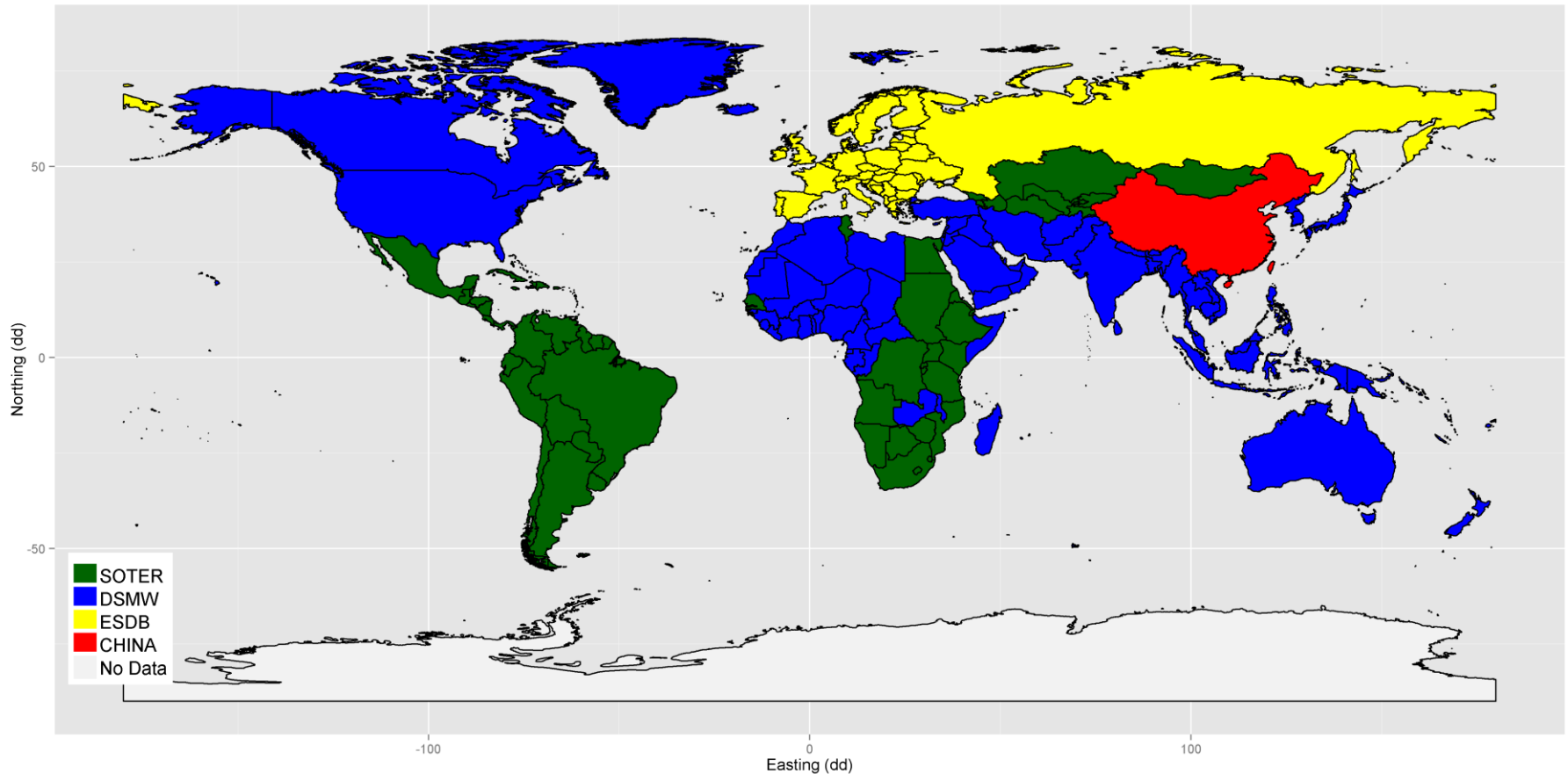


# Soil and Terrain Databases (SOTER)



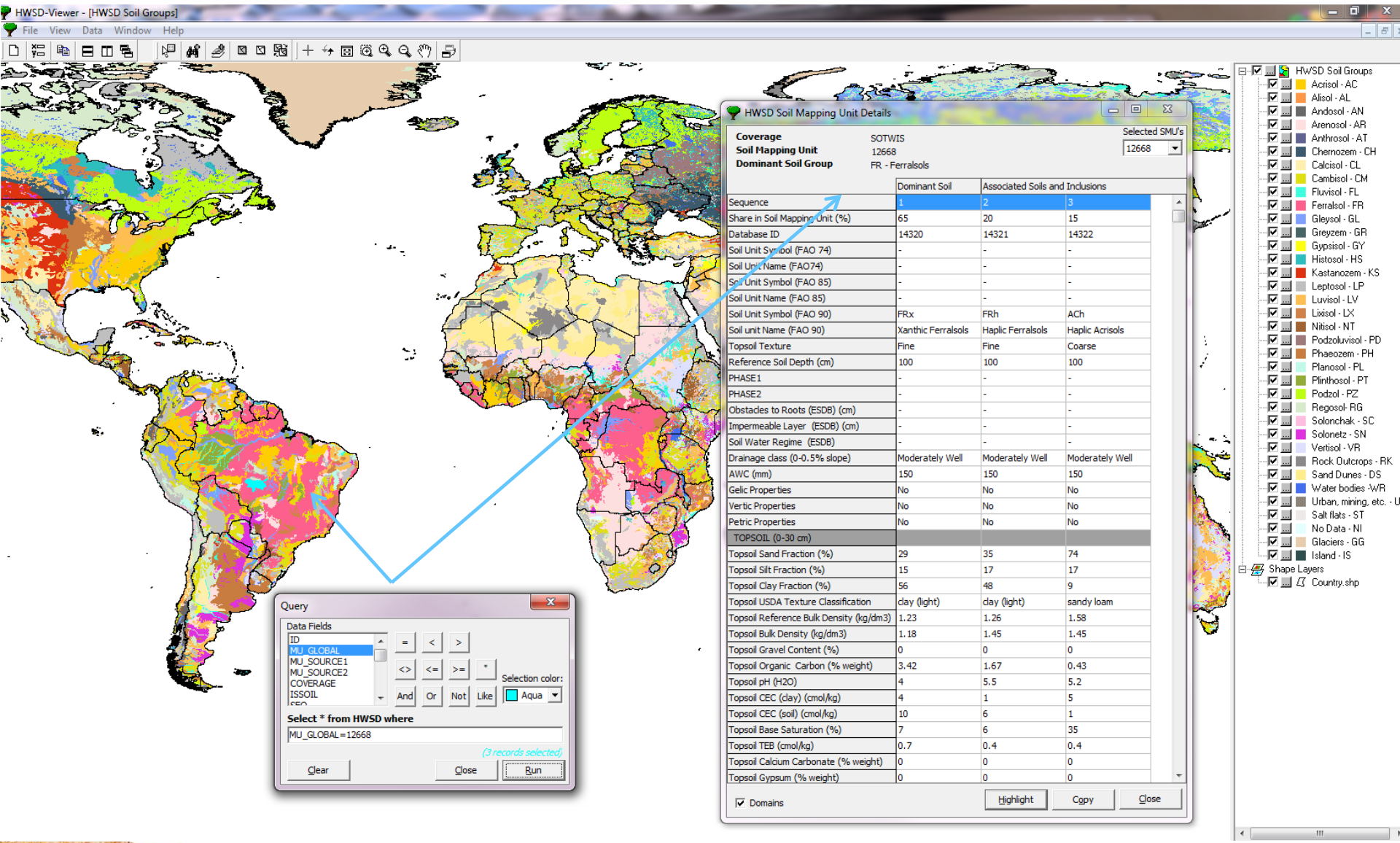


# Harmonized World Soil Database (2006)



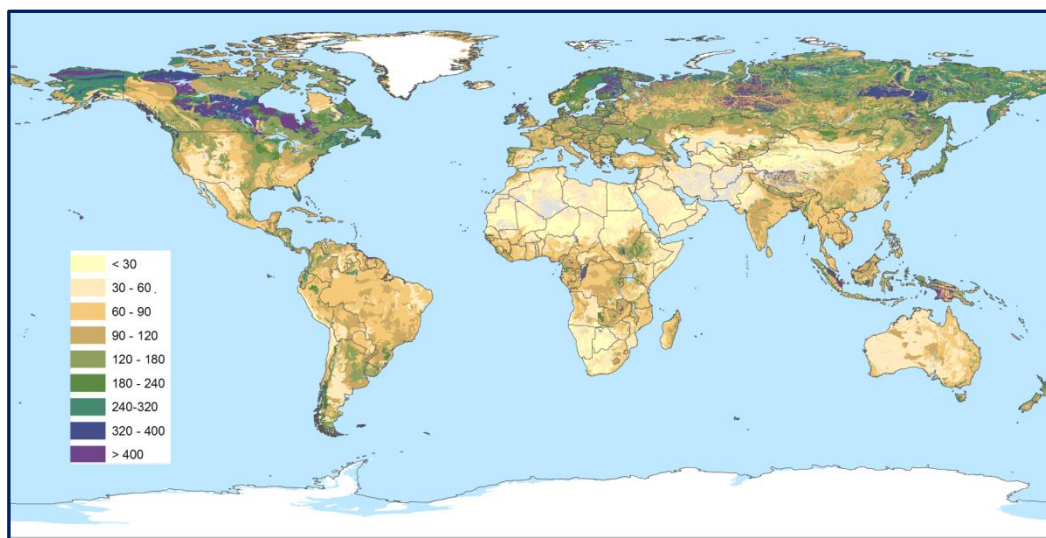
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# HWSD Viewer



# New developments based on HWSD

- WISE30sec (Batjes, 2015): disaggregated version of HWSD based on Köppen climate zones. Considers 20 soil properties. Estimates derived from ISRIC-WISE database for 7 depth classes up to 2m.



- S-World (Stoorvogel, 2014): disaggregated version of HWSD based on standardized toposequences. Map units attributed with soil property data from ISRIC-WISE database.

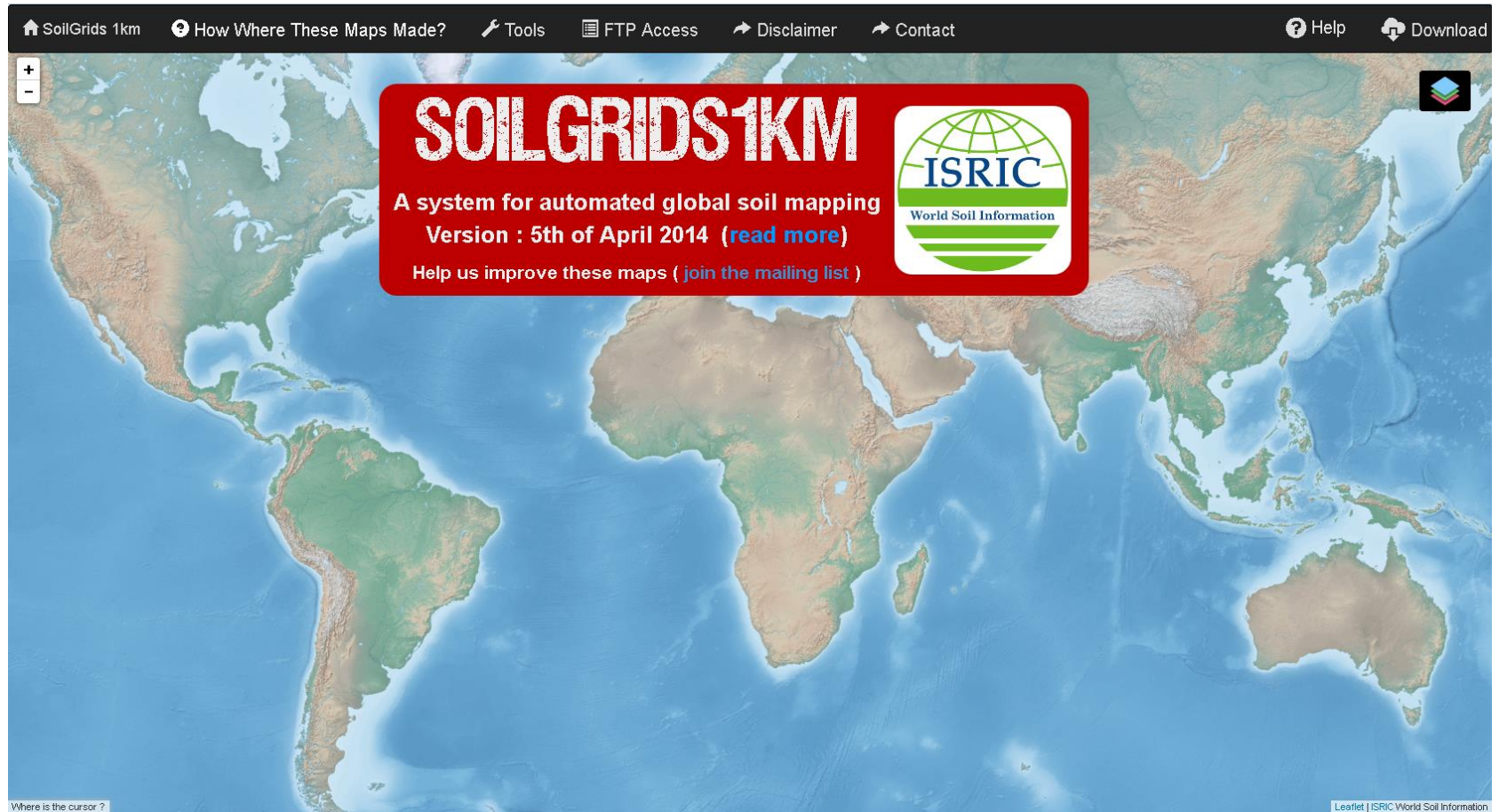
Batjes NH, 2015 (in review). Class transfer function derived soil property values for broad-scale modelling (WISE30sec) with estimates of global soil carbon stocks. *Geoderma*

Stoorvogel JJ, 2014. S-World: A global map of soil properties for modelling. In: Arrouays et al. (Eds). *GlobalSoilMap – Basis of the global spatial soil information system*, 227-231.





# Gridded data: SoilGrids1km (2013)



Hengl et al., 2014. SoilGrids1km — Global Soil Information Based on Automated Mapping. PLoS ONE 9(8): e105992.



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# SoilGrids1km characteristics

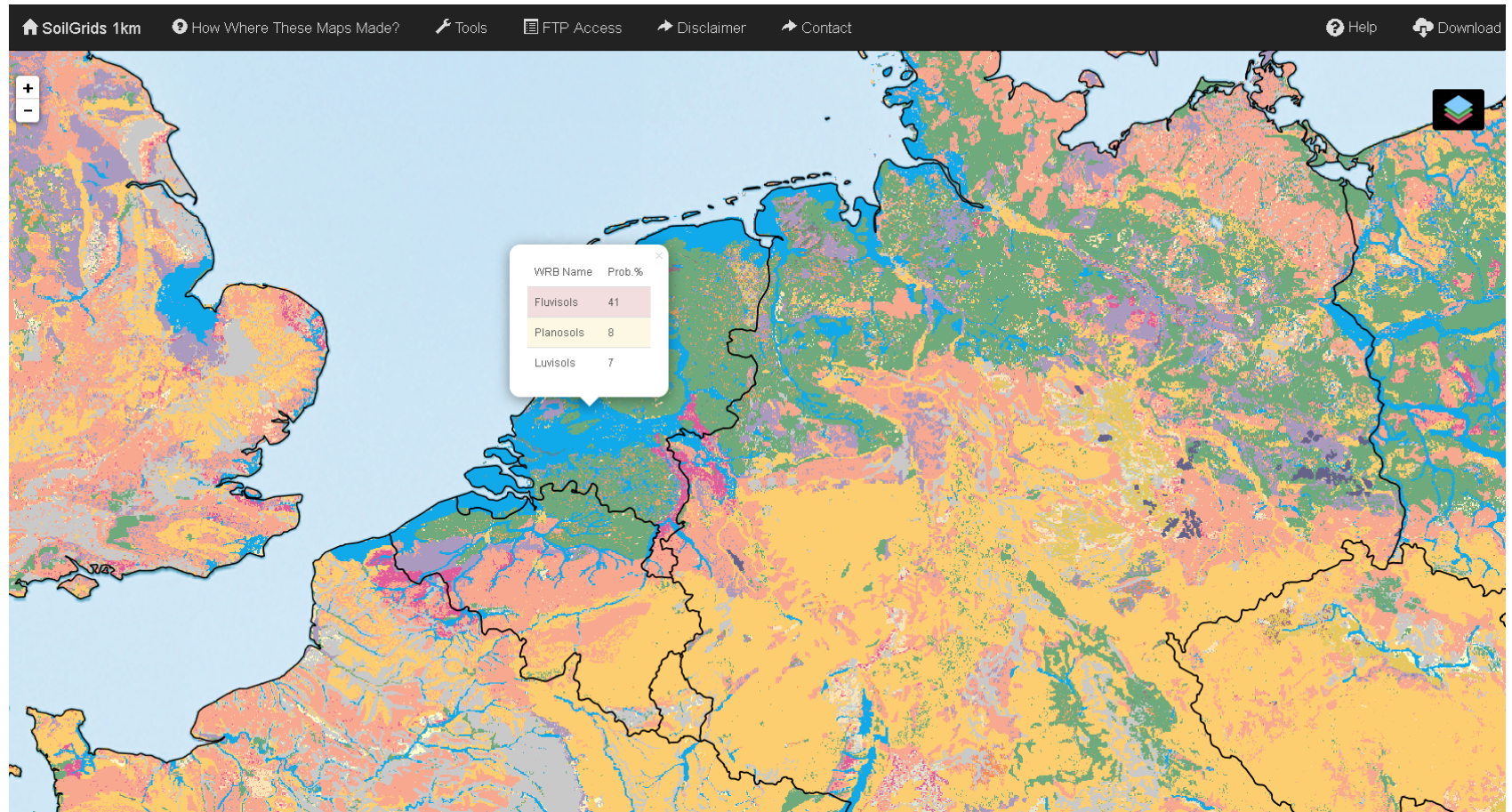
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- Set of global soil property (7) and class maps (2)
- 6 depths up to 2 m, quantified uncertainty (90% prediction interval)
- Digital soil mapping
- Automated modelling and mapping framework (R)
- Supported by a webservice and SoilInfo app for querying, and download and upload of soil data





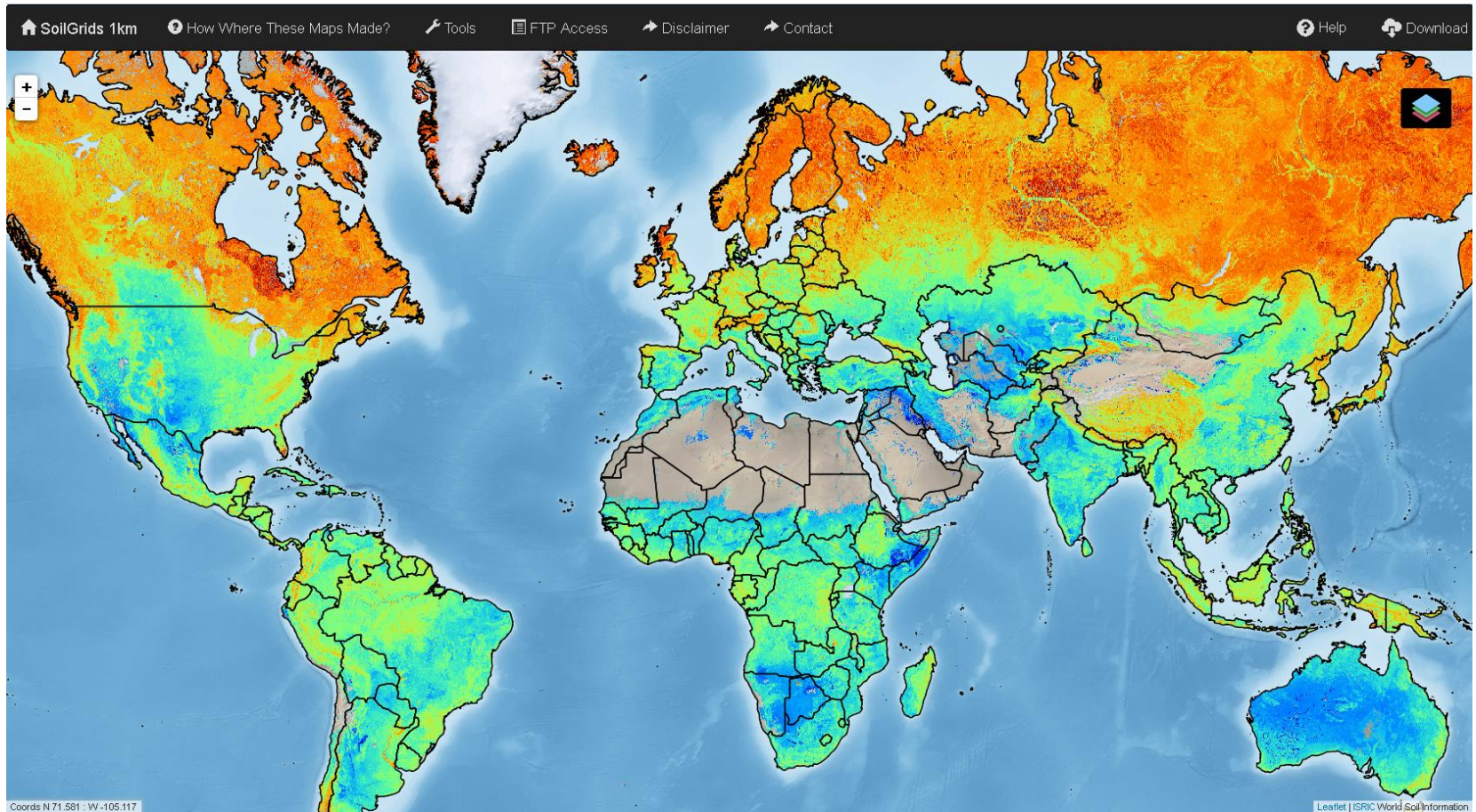
# Soil class maps (WRB / Soil Taxonomy)



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# Soil property maps (organic carbon)



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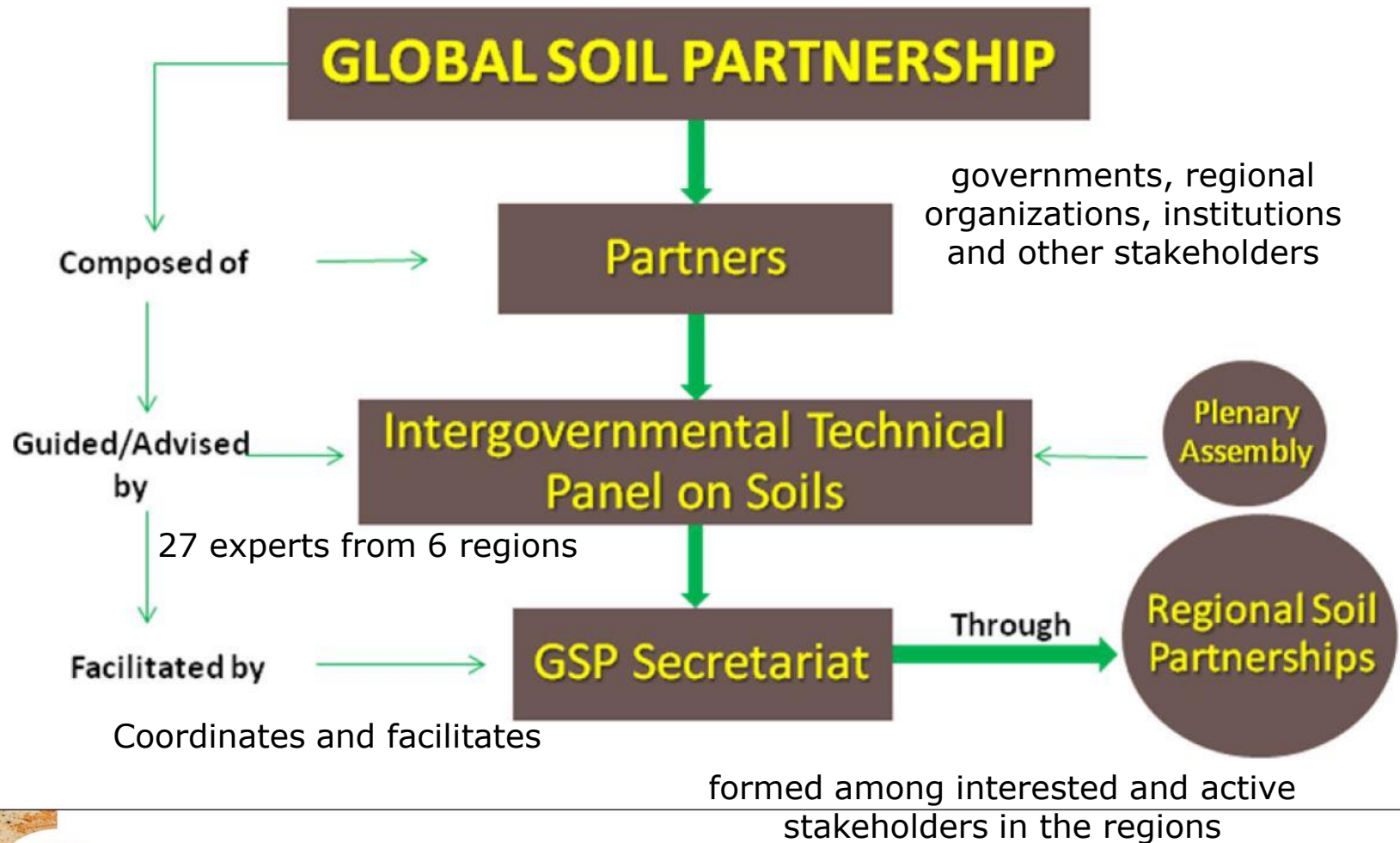
# Global Soil Partnership



- Founded (2012) by and led FAO.
- No international governance body exists that advocates for and coordinates initiatives to ensure that **knowledge and recognition of soils are appropriately represented in global change dialogues** and decision making processes.
- There is need for coordination and partnership to create a **unified and recognized voice for soils** and to **avoid fragmentation** of efforts and wastage of resources.
- Vision: **improve governance of the limited soil resources of the planet** in order to guarantee healthy and productive soils for a food secure world, as well as support other essential ecosystem services, in accordance with the sovereign right of each state over its natural resources.



# GSP Governance



# GSP Pillar IV

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- Aim: enhance quality and quantity of soil data and information
- Establish **SoilSTAT**: monitoring and forecasting the condition of soil resources to spatially explicit report on soil status.
- World reference soil profile and point database
- Global polygon coverage: update of HWSD
- Global grids: HWSD\_v2.0, fine resolution grid (100 m)





# Developments @ISRIC in 2015

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- Niels Batjes: **WoSIS 2: World Soil Information System**. ISRICs institutional database to store (harmonized) soil data (profiles and maps).
- Tom Hengl: **SoilGrids250m** and the **SoilInfo App**
- Jorge Mendes de Jesus (Stephan Mantel): **Virtual Soil Museum**: web-based platform to access the World soil Reference collection.



# Thank you!



## World Soil Information

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