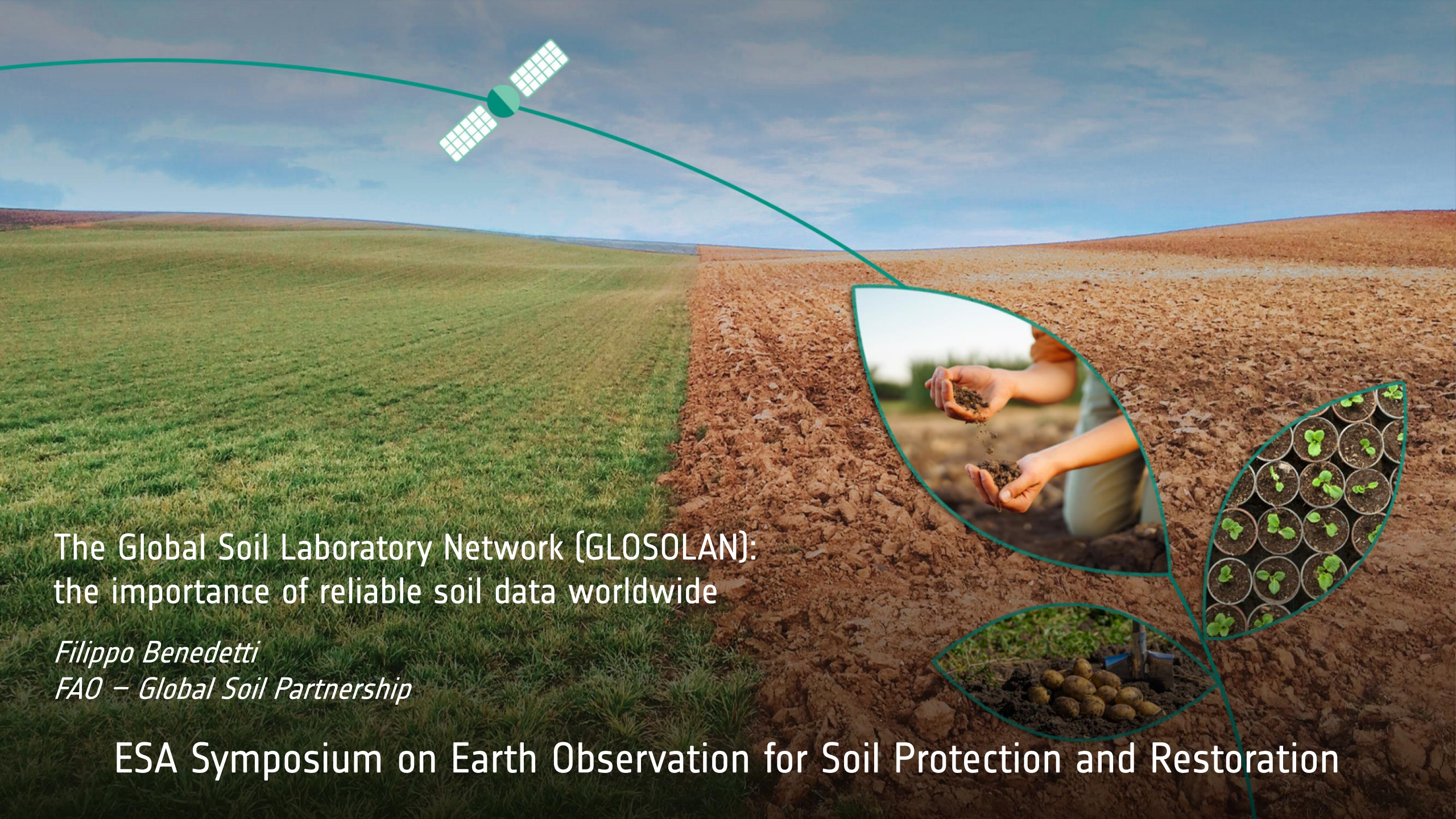


The Global Soil Laboratory Network (GLOSOLAN): the importance of reliable soil data worldwide

Filippo Benedetti
FAO – Global Soil Partnership

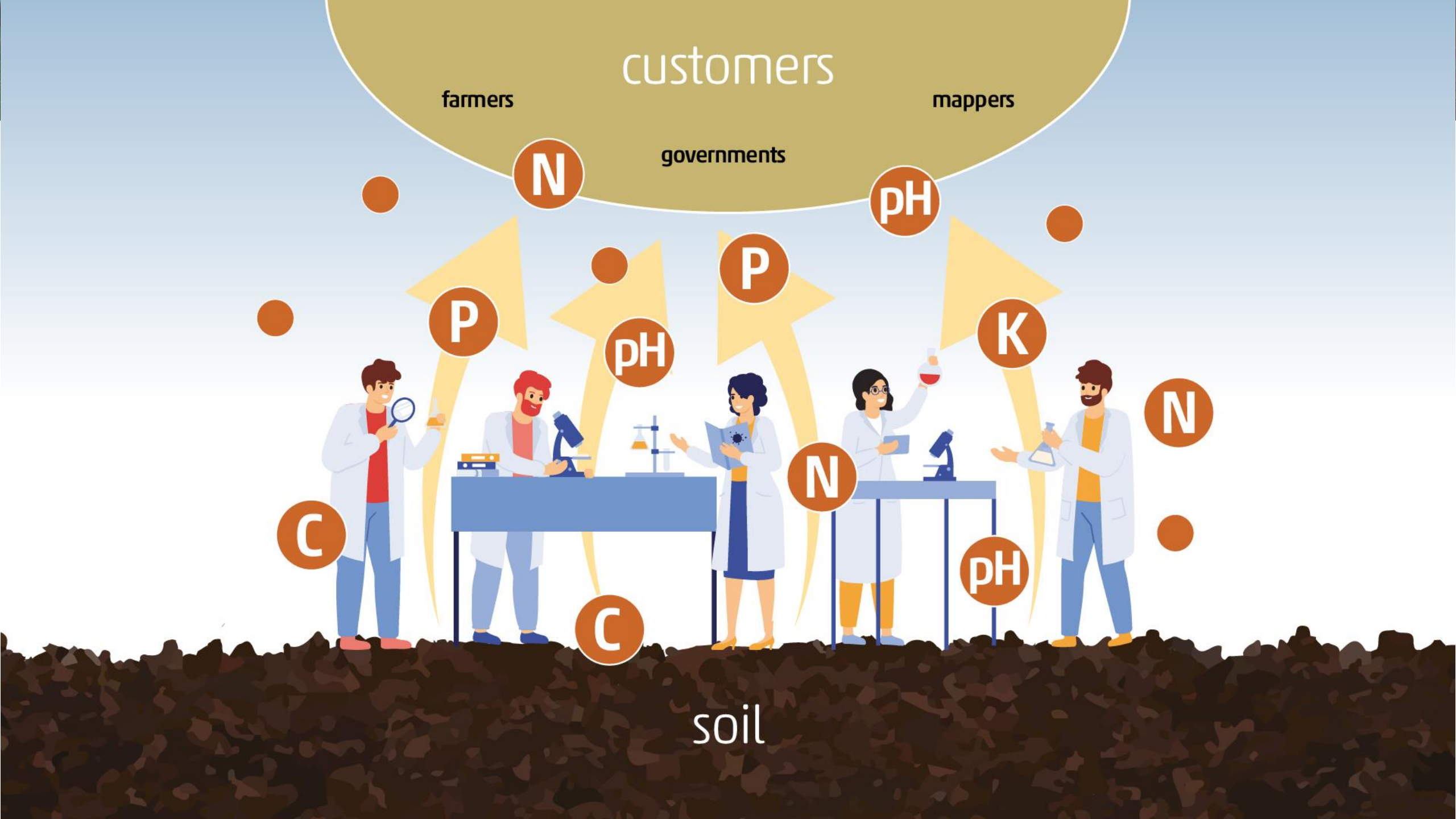
ESA Symposium on Earth Observation for Soil Protection and Restoration

Global Soil Partnership

- Established in 2012, hosted by FAO
- Globally recognized mechanism
- Mission:
  - To position soils in the Global Agenda
  - To promote sustainable soil management

http://www.fao.org/global-soil-partnership/en/

tion and Restoration, 06 – 07 Marc


customers
farmers
governments
mappers
N
pH
P
P
pH
K
N
N
C
C
pH
soil

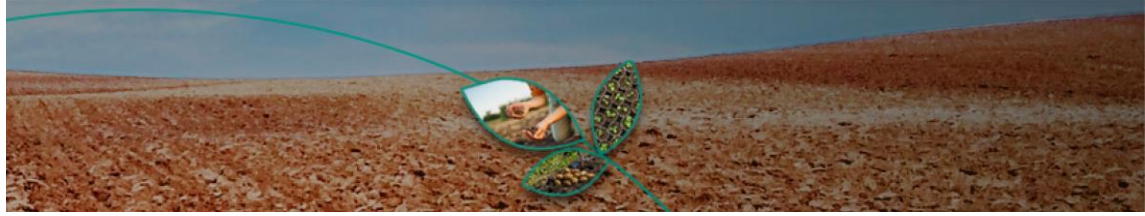
Established in 2017

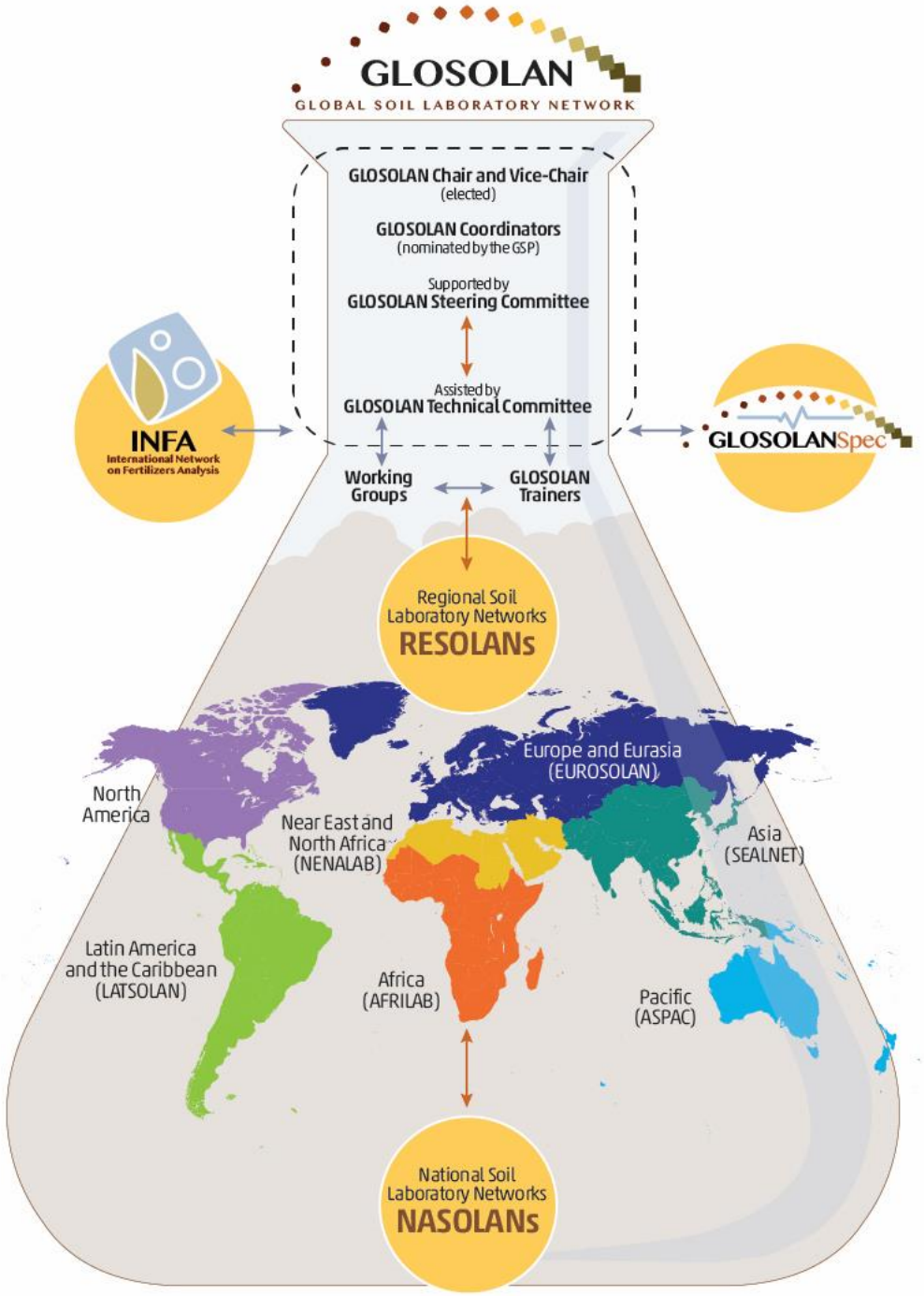
GLOSOLAN
GLOBAL SOIL LABORATORY NETWORK

….if you can not measure it, you can not manage it…

To be successful in global soil management, a Global Soil Laboratory Network is essential

Ensure the quality of soil data
WORLDWIDE





We operate at all levels…

GLOBAL

REGIONAL

NATIONAL

Main areas of work:

- Harmonization of Standard Operation Procedures (SOPs)
- Training on the implementation of GLOSOLAN SOPs
- Training on safety and health

Measurement

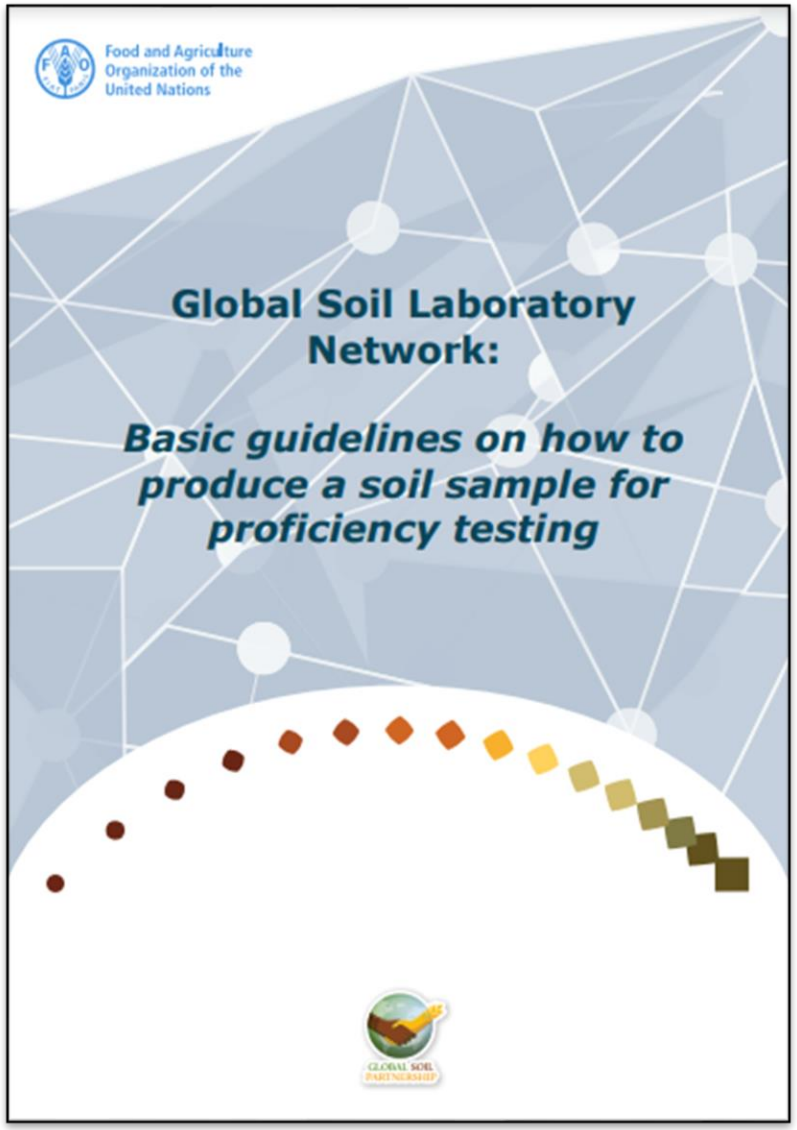
- Execution of external quality control (proficiency testing)
- Training on the execution of internal quality control

Quality control

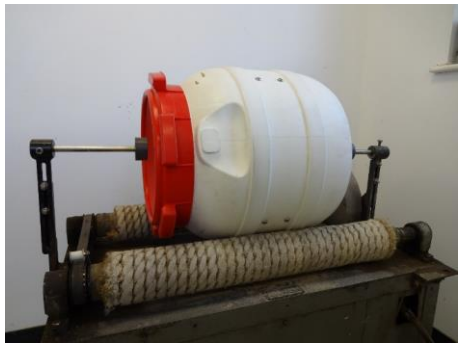
- Training on equipment use, maintenance and purchasing
- Establishment of a donation/bartering system
- Spectroscopy

Equipment

Quality control



- 2018 (regional PTs in Latin America and Asia)
- 2019 (global)
- 2022 (global)
- 2023/24 (regional PTs in Eurasia, Asia, Africa+NENA)
- 2024 (global)



GLOSOLAN PT 2022

- 240 laboratories from around 110 countries
- Targeted parameters (using GLOSOLAN SOPs)
  - Soil organic carbon
  - Available phosphorous
  - Total nitrogen
- Each lab received a set of 10 samples (6 soil types/5 blind replicates)
- Thanks to the support of BGS (UK) and IRD (France)

each lab received 1 set →

each set =
10 soil samples →

GLO-01 -02 -03 -04 -05 -06 -07 -08 -09 -10

1 set: only **6** different soils

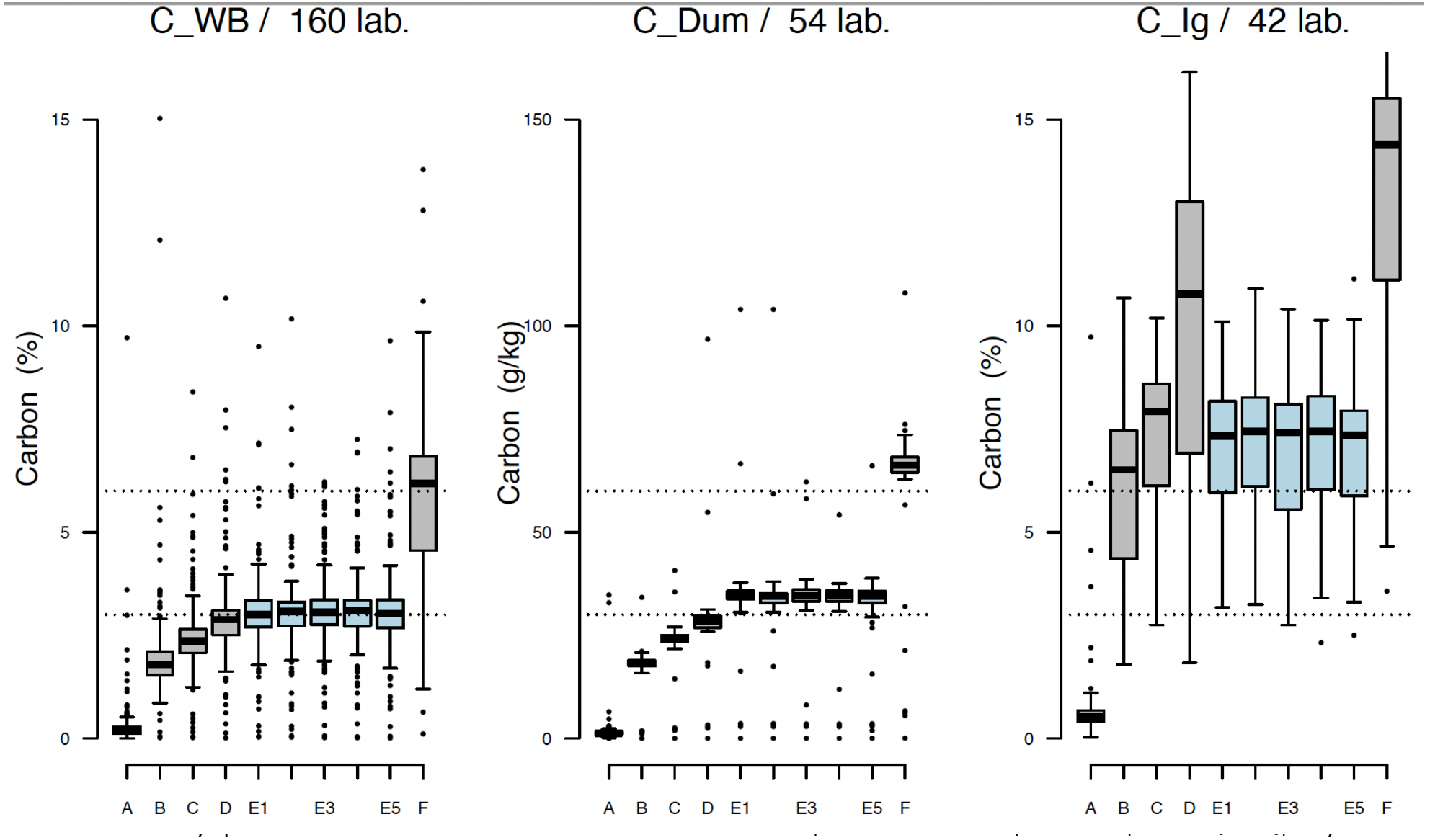
A B C D E F

E1
E2
E3
E4
E5

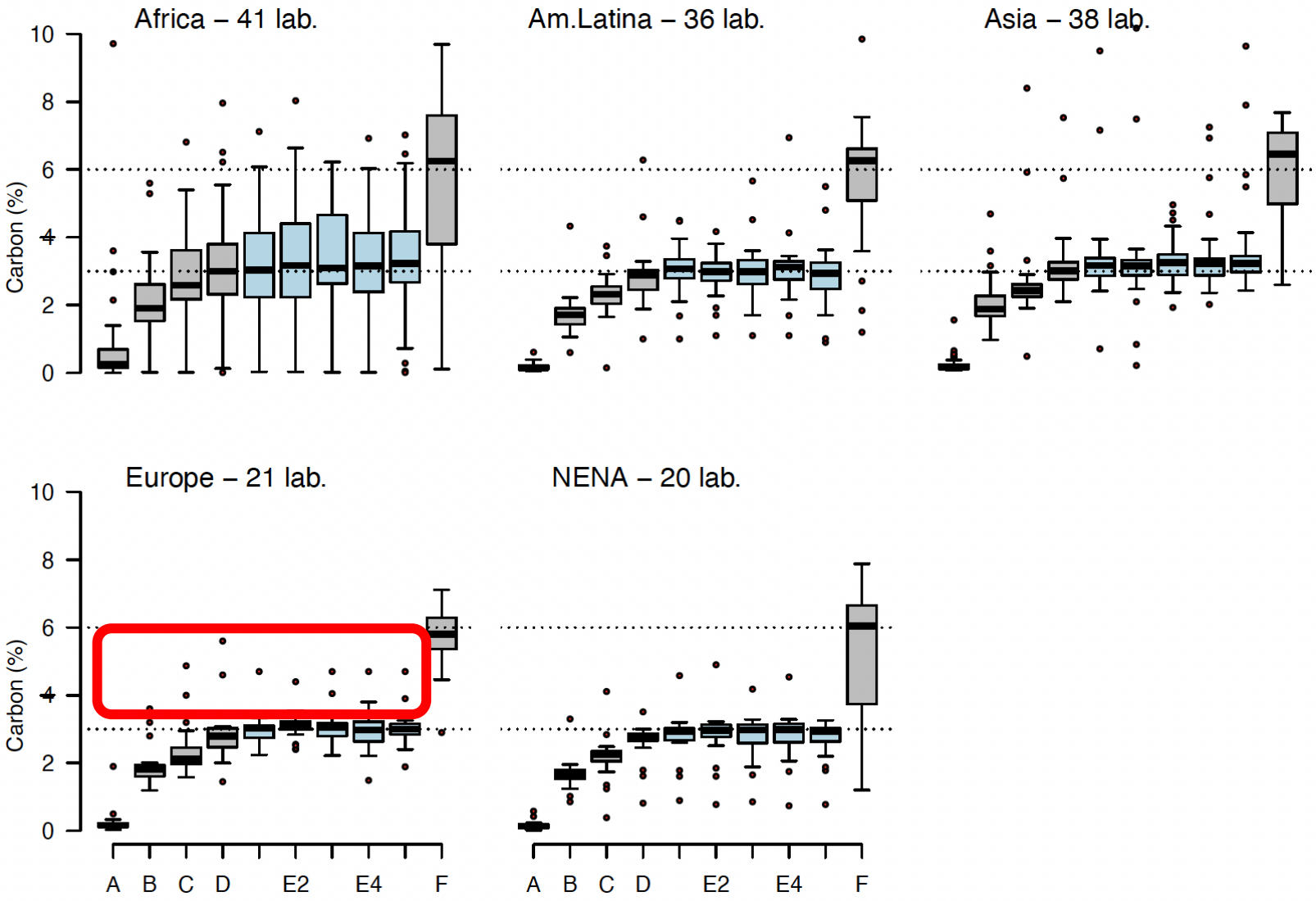
1 soil had 5 replicates

randomly distributed

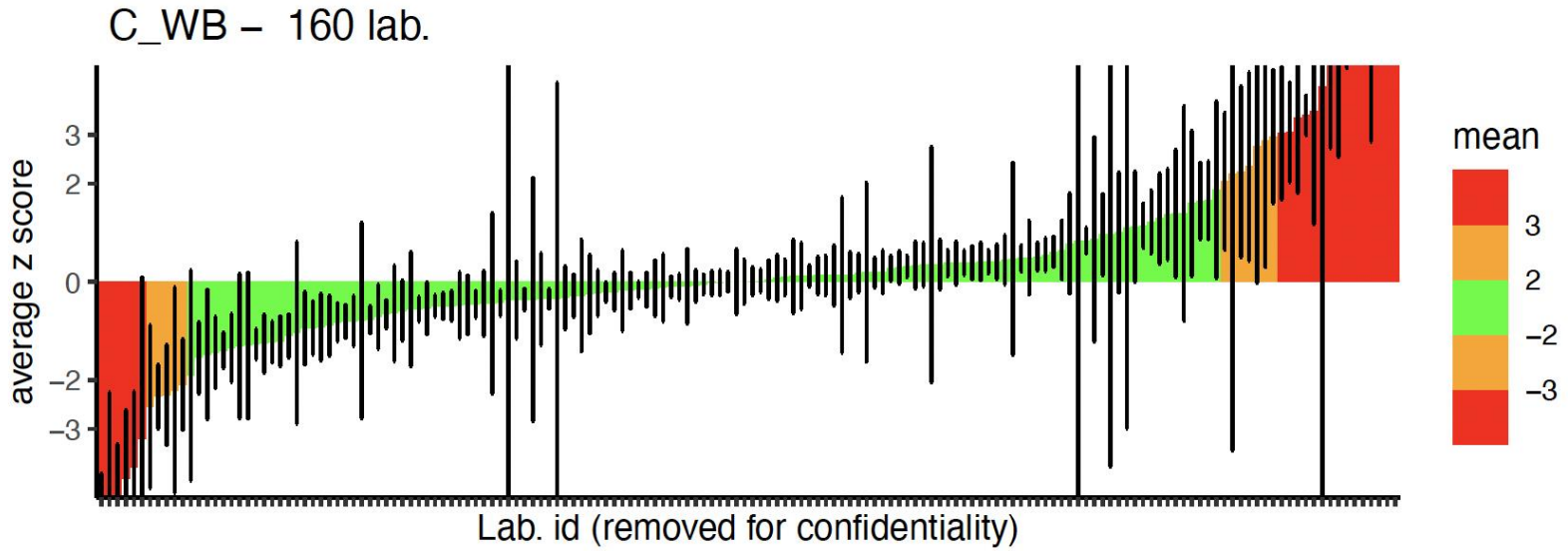
Results: differences among methods

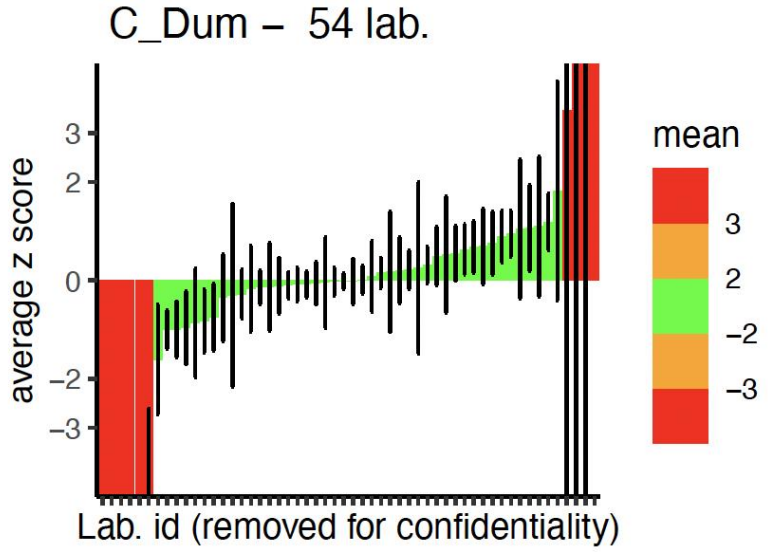


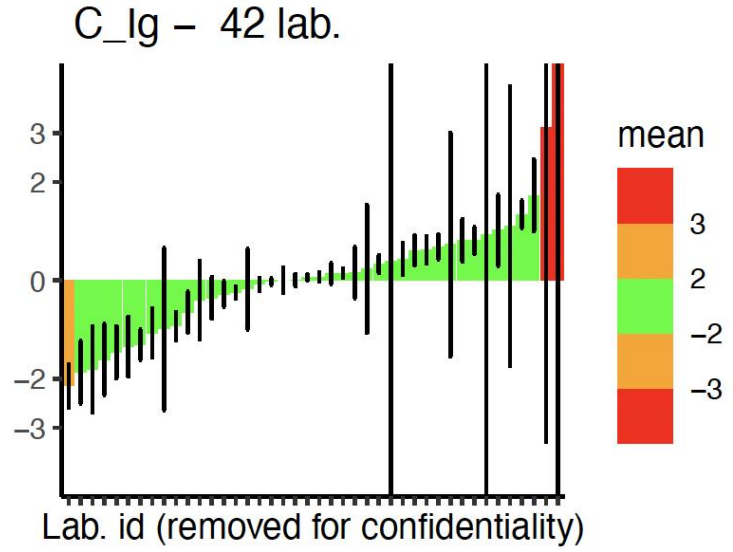
Results: differences among regions



Results: differences among laboratories



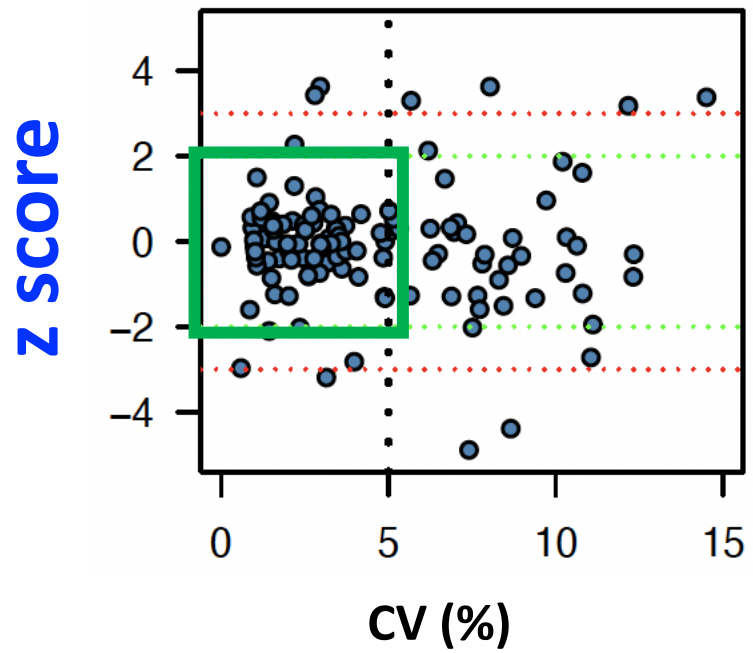




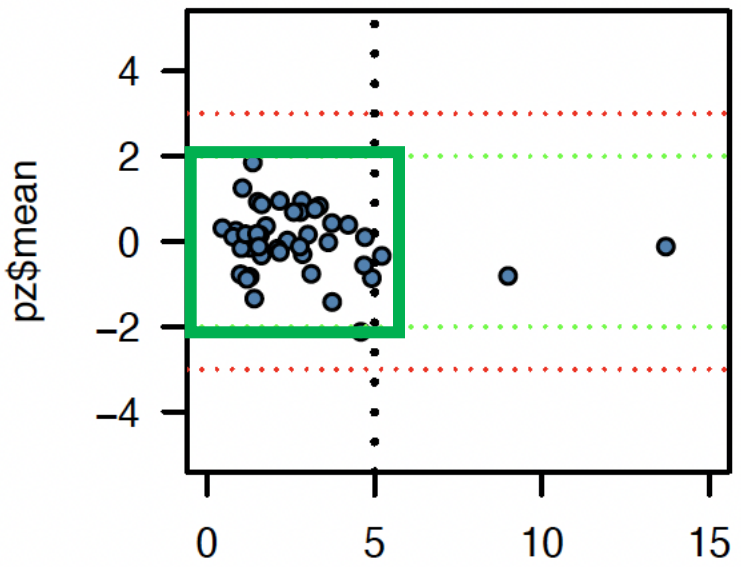
Precision and accuracy: have the labs met them?

Yes, and in all regions

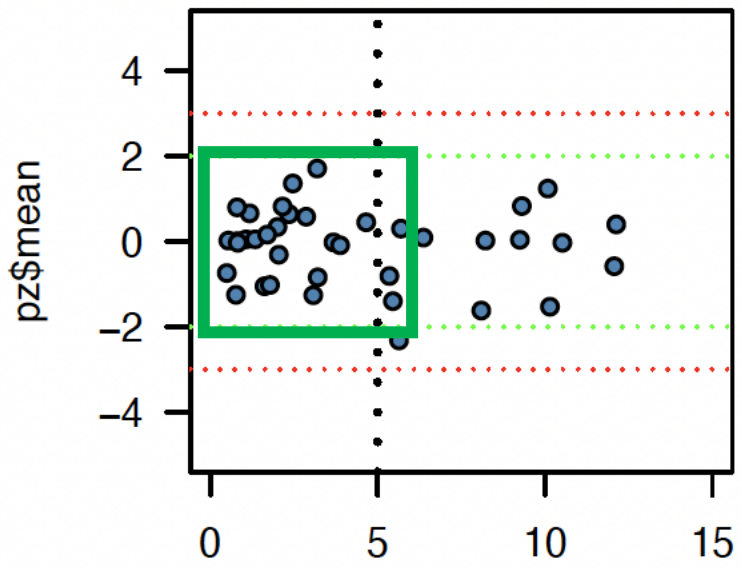
W&B



DUM



LOI



Some conclusions

- Different methods have different ranges of uncertainty
- Different methods are preferred in different regions
- Some laboratories have great need to take actions to improve their QA/QC practices (including capacity building of the lab staff)
- There are laboratories with good performance in all regions
- Inter-laboratory proficiency tests are key to assess soil data quality (precision and accuracy among laboratories for various methods)

Thanks for your attention

Filippo.Benedetti@fao.org