



Food and Agriculture
Organization of the
United Nations

5th African Soil Partnership plenary meeting

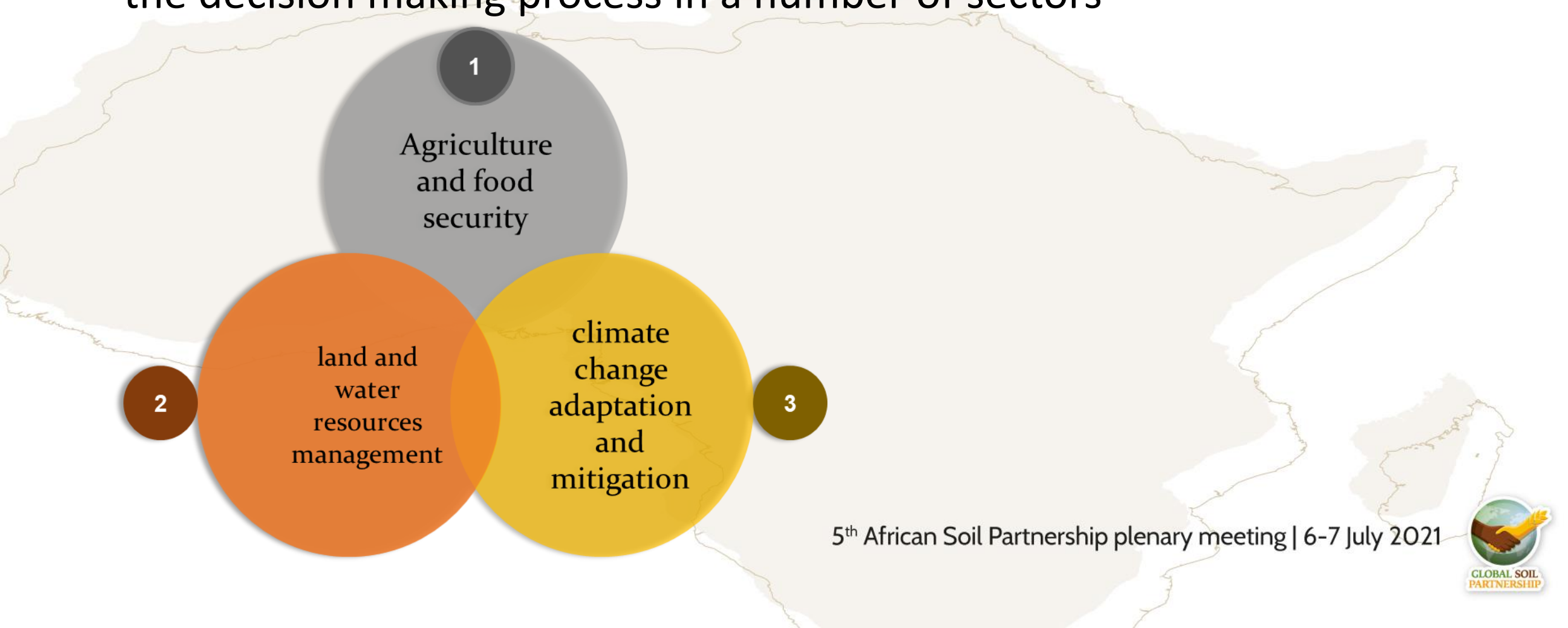
VIRTUAL MEETING
6-7 JULY 2021

Establishment of Lesotho Soil
Information System
Selebalo J. Ramakhanna



LESIS overview and focus following background information

The establishment and functioning of LESIS was intended to support the decision making process in a number of sectors



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Project Outputs

- **OUTPUT 1:** Lesotho National Soils Map developed (*digital soil maps, overlaying of digital soil map with the existing topographic data set and land cover maps*).
- **OUTPUT 2:** Technical capacities for soil survey and digital mapping developed (*GIS, soil survey and laboratory analysis*).
- **OUTPUT 3:** Digital soil property maps and soil suitability applications developed (*soil suitability maps for selected crops*).
- **OUTPUT 4:** Dissemination of results and information

OUTPUT 2: Technical capacities for soil survey and digital mapping developed



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DSM Softwares used

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QGIS 3.8 Zanzibar

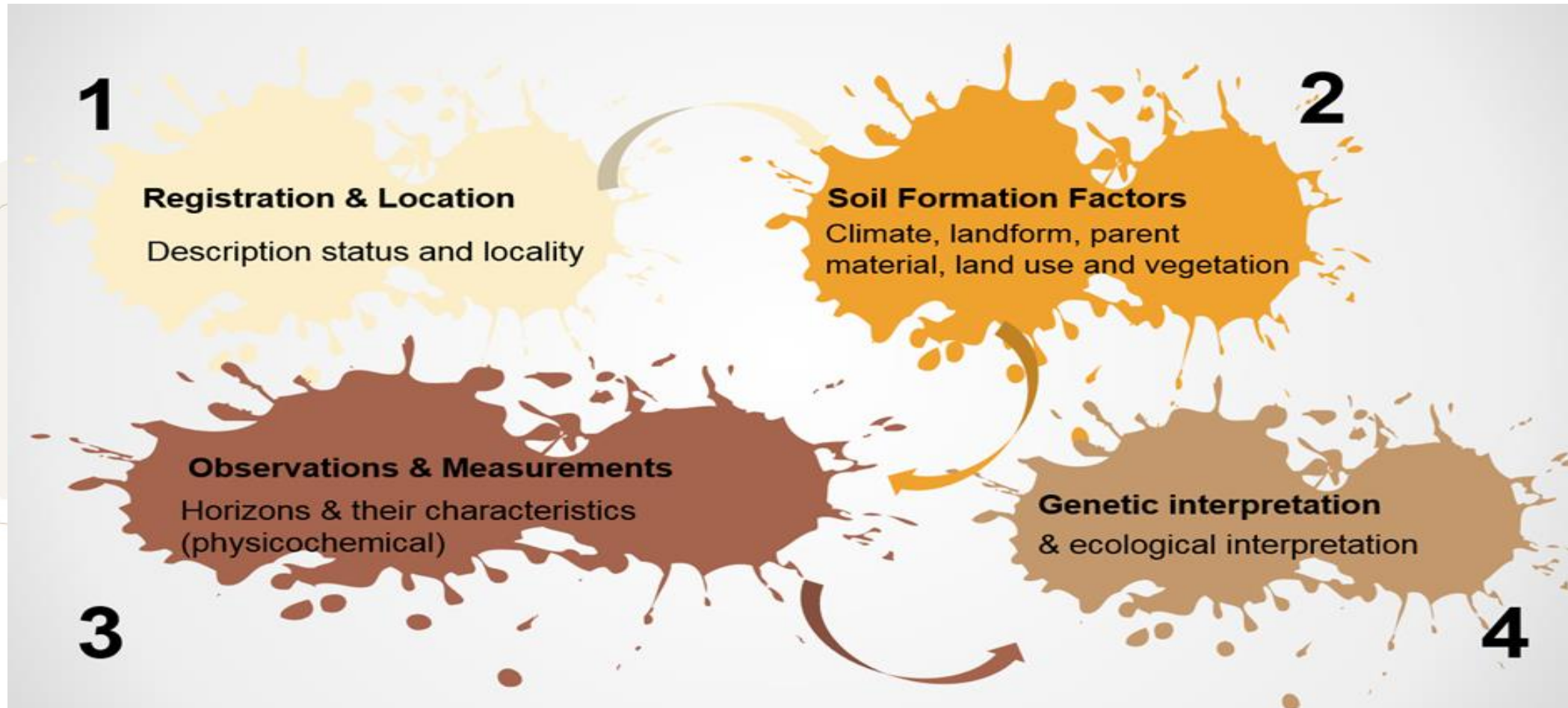
QGIS 3.10 A Coruña

SAGA
System for Automated Geoscientific Analyses

ILWIS

R Studio

The process of soil description, classification, and site quality and land use system (WRB, 2006)



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Location: Ha- Ntlama, Maseru

Lab #: 449-452



Surface and climate characteristics

Surface rock: No
Coarse fragments: Very few
Slope class: Gentle sloping
Flooding: No
Surface seal: No
Surface cracks: Yes
Surface drainage: Well drained
Soil temputure: Mesic
Landuse: Cropland
Crop: Maize
Landcover; Rainfed Agriculture
Date of sampling: 07 Dec 2018

Profile description A-Horizon (0-55cm)

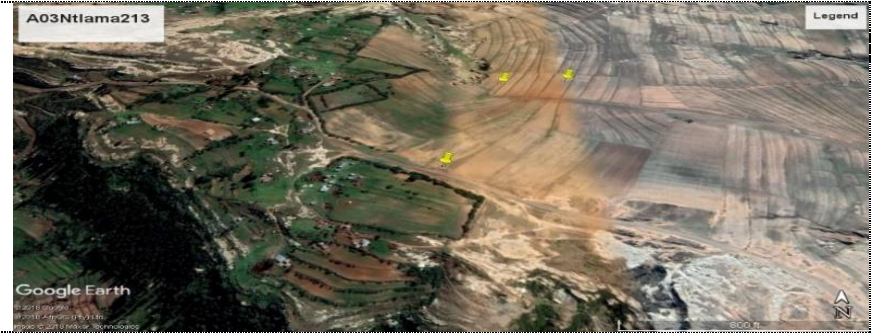
Colour moist: 10YR7/6
Colour dry: 10YR4/6
St0ructure type: Crumby
Structure size: Very fine/ thin
Mottles: No
Root presence: Abundant, few
pH soil: 4.98
Carbonate reaction: No detectable visible or audible effervescence

Profile description B-Horizon (55-140cm)

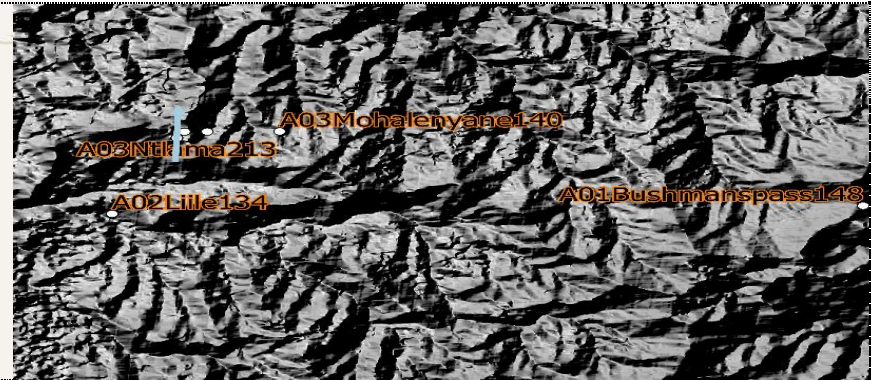
Colour moist: 10YR 6/6, 10YR 7/6, 10YR 6/6
Colour dry: 10YR 6/6, 10YR 7/6
Structure type: Single grain, masive
Structure size: Very fine/ thin, none
Mottles: No, Yes
Mottle type: Concentrations
Root presence: few
pH soil: 4.64
Carbonate reaction: No detectable visible or audible effervescence

Berea Series

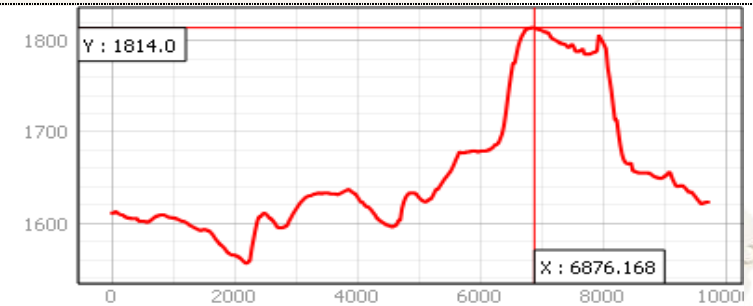
WBR Soil Classification: Ferric Cambisols (Arenic)



Remote sensing image



Relief Hill-shade



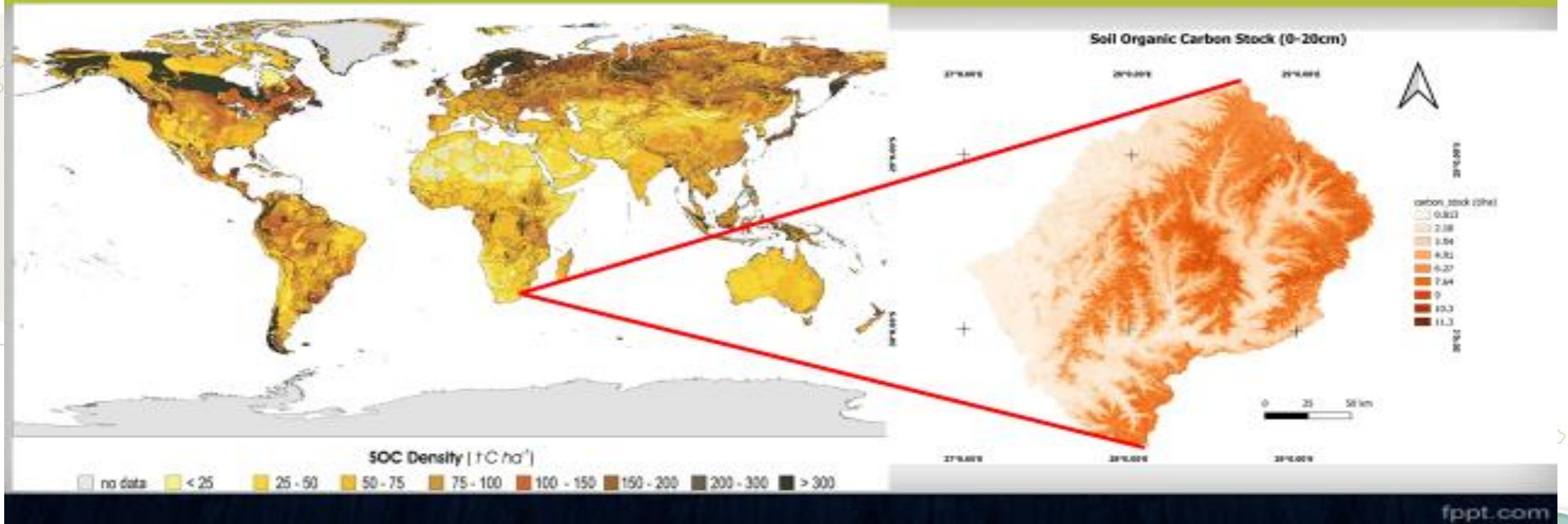
Soil profile location in the landscape

Produced maps

- Soil types (WRB-RBG, USDA-Series)
- Soil Properties (SOC, pH, EC, Total N, Phosphorous, OM, Bulk Density, Texture, (Sand, Silt, and Clay proportions), and Coarse Fragments, depth)
- Soil conditions (carbon stocks, pH, fertility and salinity)
- Soil threads (Erosion types and signs, erodibility, conservation practices)
- Land data (land cover, geology, rock cover, Agro-ecological zones)
- Climate (rainfall, temperature: max and min)

OUTPUT 1 &3:

SOC = First product in 2017 to GLOSIS;
along the journey achievement

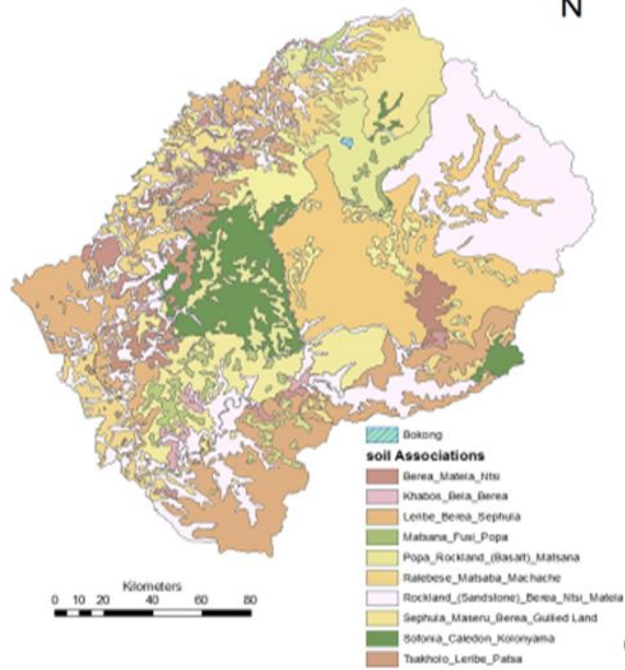


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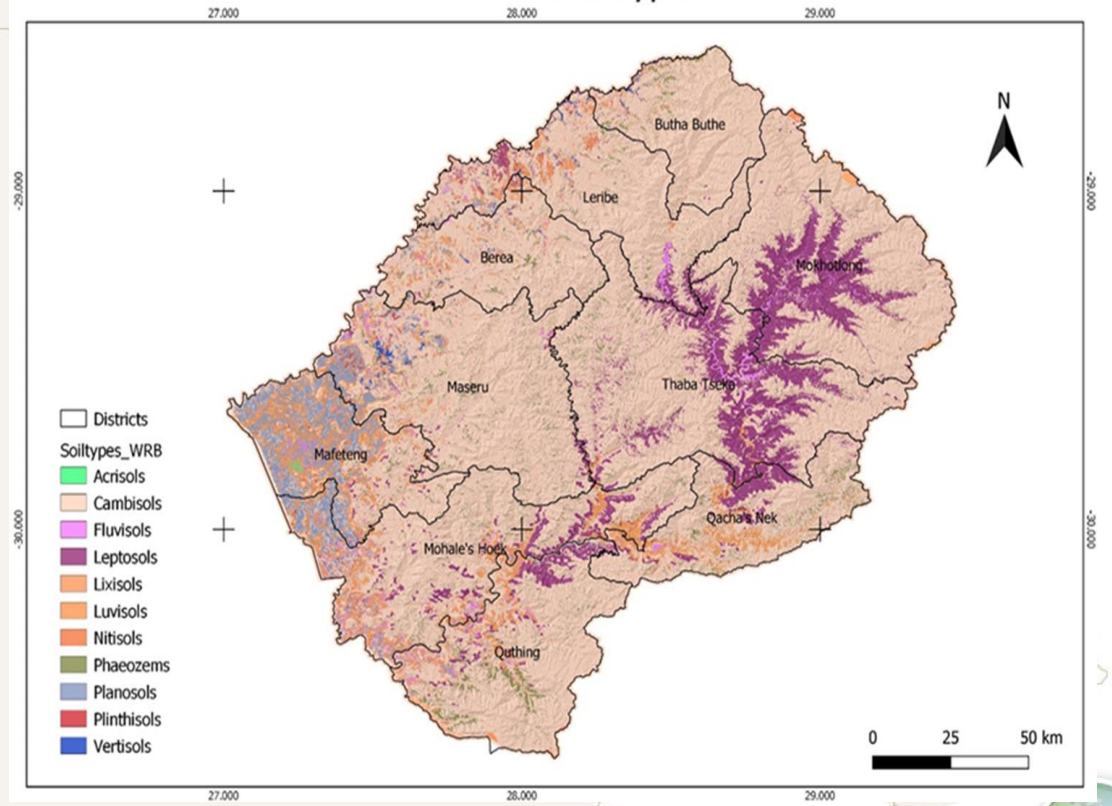


Maps produced

SOIL ASSOCIATIONS OF LESOTHO



Soil Type



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OUTPUT 4: Dissemination of results and information

- www.lesis.gov.ls
- Documents developed: Survey manual, lab protocols and policy brief



Constraints on dissemination:

- The produced materials are only for high level (policy) consumption. There is a need to produce for farmers.
- The website is for computer, need for mobile application.

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Successes post LESIS project

- The laboratory is part of GLOSOLAN
 - Member of Afrilab
 - Spectroscopy
- LESIS team participated in:
 - Soil salinity mapping
 - SOC sequestration potential mapping
- Soil sampling, analysis and suitability maps for all projects use LESIS protocols

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Thank you

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