



Coordinating and integrating state-of-the-art
Earth Observation Activities in the regions of
North Africa, Middle East and Balkans
and Developing Links with GEO related initiatives
toward GEOSS

GEO-CRADLE Project Meeting 2
16th November, 2016

Task 4.2



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Outlines



- Collecting soil samples
- Data acquisition
 - Chemical-physical
 - Spectral
 - Standards
 - Additional information
- Storage





Collecting the samples





Collecting the samples

Field sampling

- Use a national soil map and collect:
 - Different soil types
 - Diverse locations
 - Various land uses
 - Varied depths

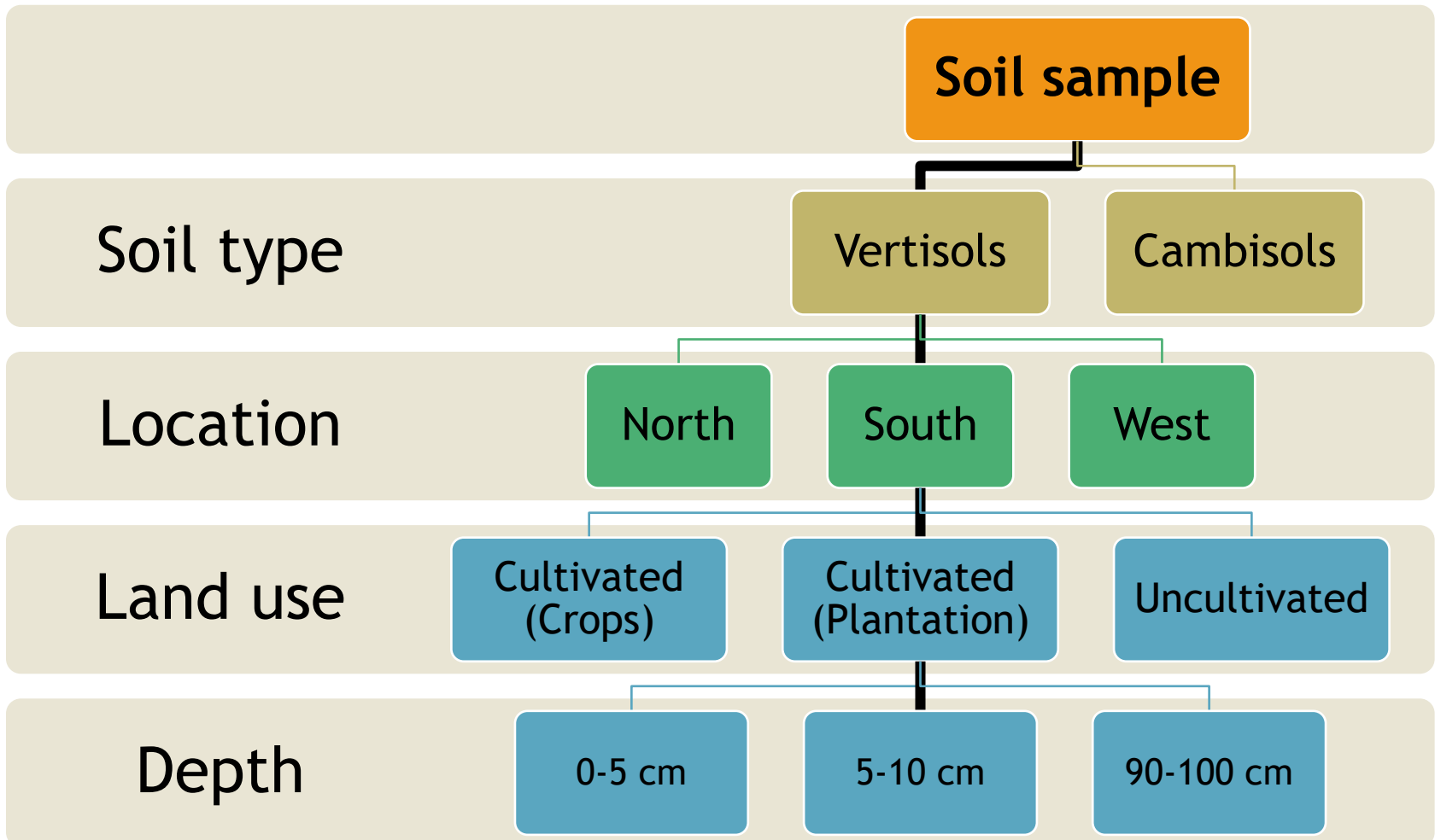
≥ 100 gr of sample

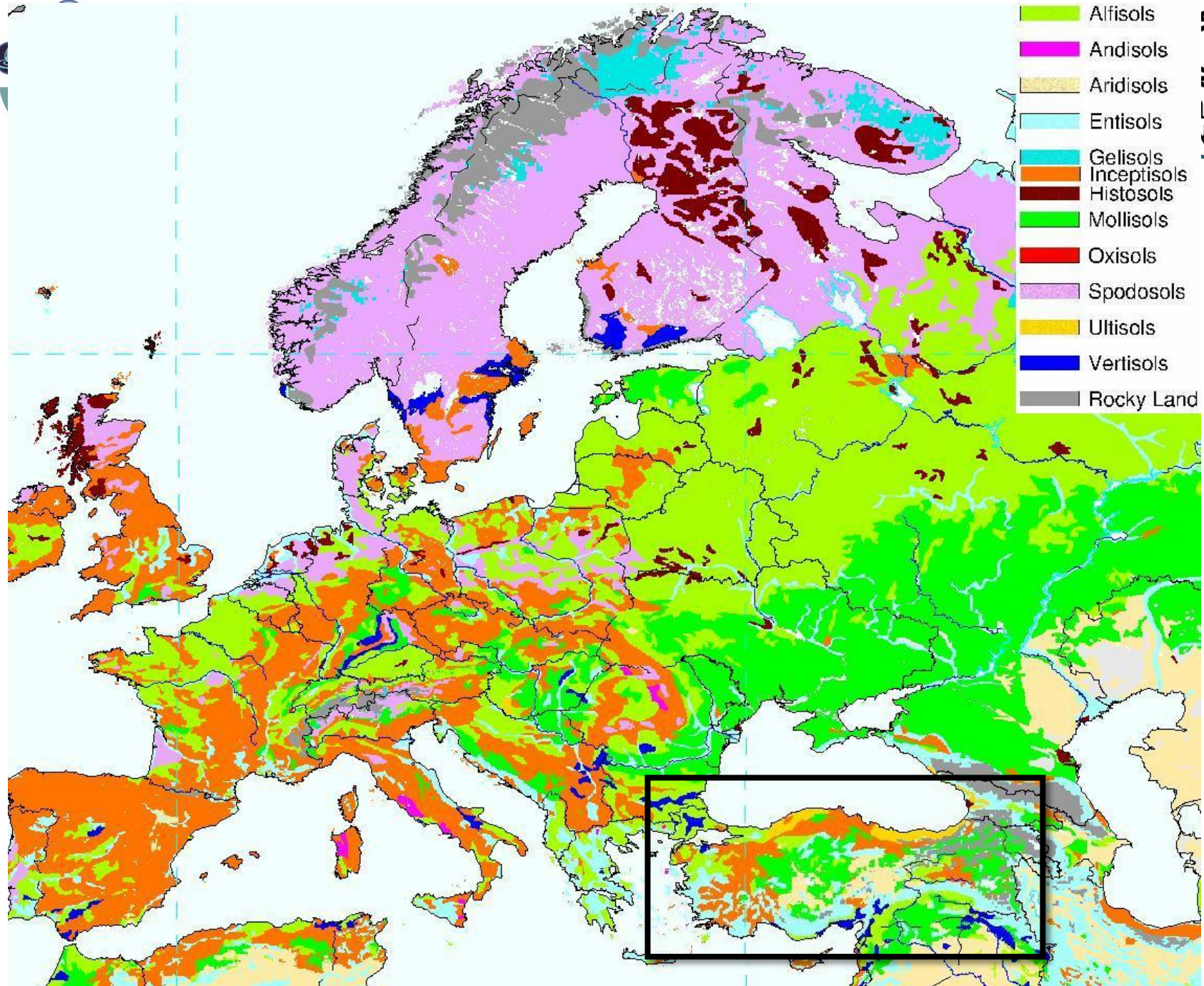




Collecting the samples

Field sampling







Collecting the samples



Take-away

- Use soil samples which have been collected:
 - Ministry of agriculture
 - Research institutes
 - Laboratories
 - Surveyors





Data acquisition



Chemical-physical properties

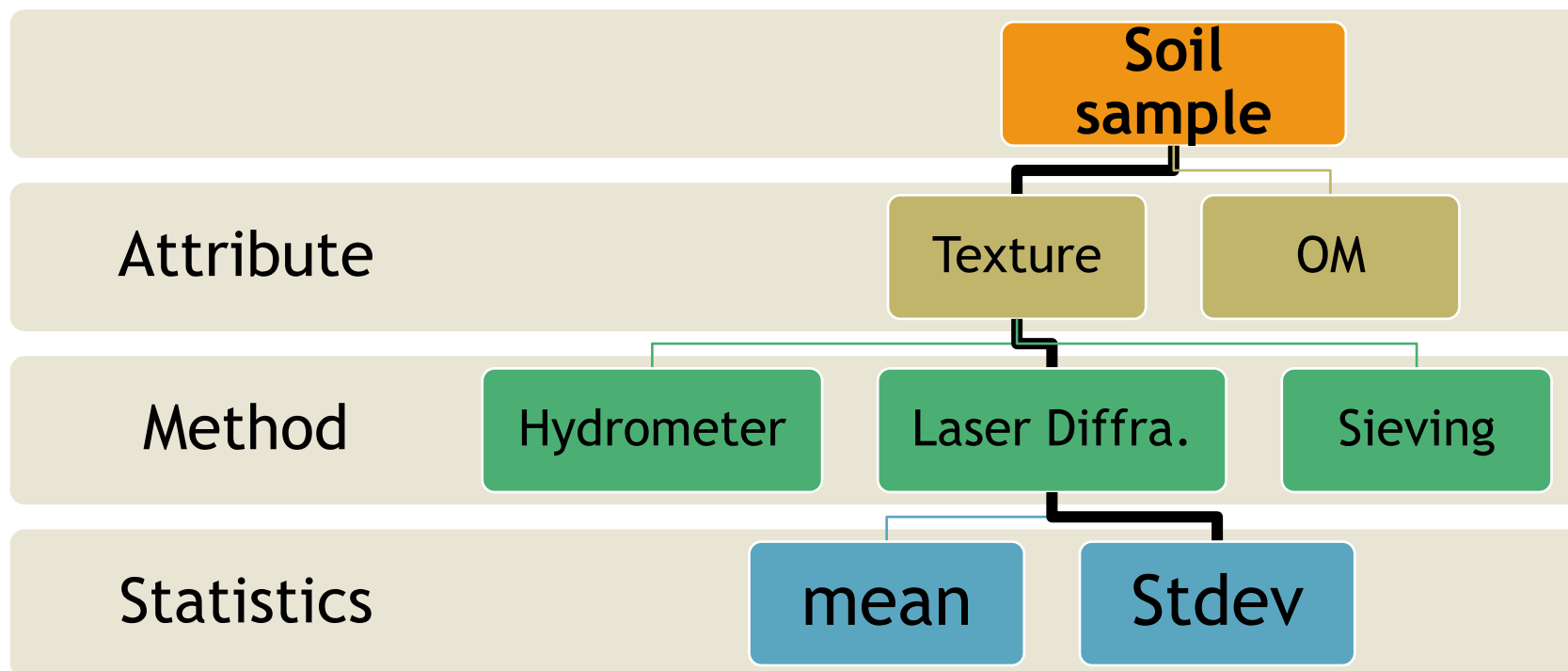
Obligatory properties

- Organic Matter (OM)
- CaCO_3
- Texture (sand, silt, clay)

Prospective properties

- pH
- EC
- SSA
- Fe-oxides
- Heavy metals

Chemical-physical properties

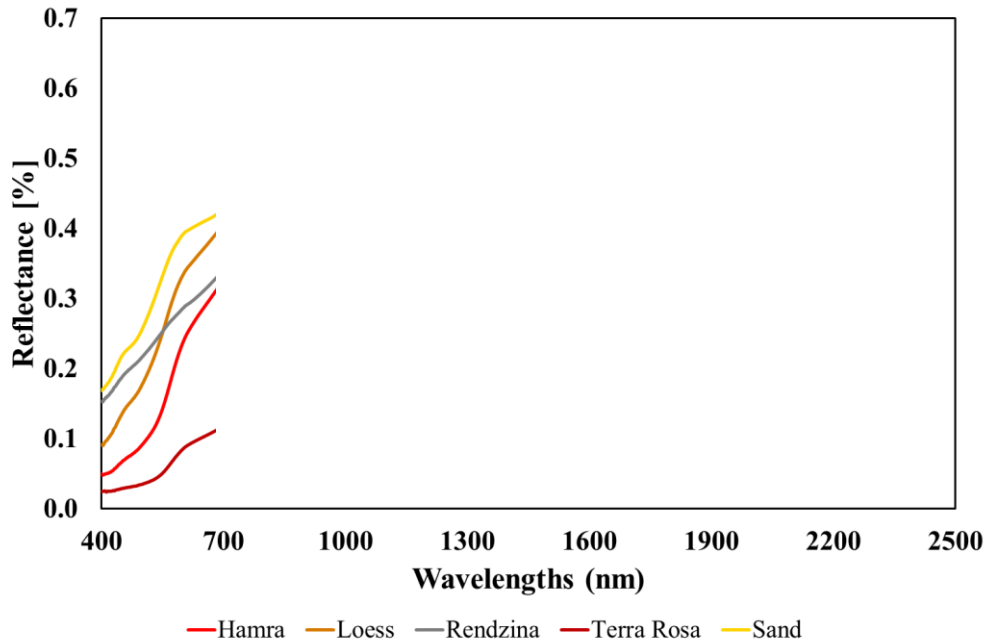




Data acquisition



Spectral measurement





Data acquisition



Standards

INTERNATIONAL JOURNAL OF REMOTE SENSING, 2016
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<http://dx.doi.org/10.1080/01431161.2016.1148291>



Normalizing reflectance from different spectrometers and protocols with an internal soil standard

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ABSTRACT

The internal soil standard (ISS) concept in which a soil standard sample, exhibiting stable spectral performance, is used to normalize and align all other soil spectral measurements – was further examined herein. Different spectrometers (Spectral Evolution and ASD Spectral Pro) were used to measure a set of soil samples with the soil standards sample as a reference. Two sand dune samples served as the ISS to align measurements made under different conditions and the results were compared. It was shown that the ISS method was able to correct the spectral information from one spectrometer to another; however, the differences in the results obtained when using the two different soil standards are discussed. The main conclusion of this paper is that the soil spectral user community should adopt the ISS method for the benefit of all, and the sooner the better. This will allow much more effective exploitation of all data sets acquired on a daily basis by the growing soil spectral community that still lacks standardization procedures.

ARTICLE HISTORY

Received 17 June 2015
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Data acquisition



Additional information

Obligatory

- Date of sampling
- Lat/Long (decimal)
- Elevation
- Depth
- Stills photo
- Spectrometer used and resolution

Prospective

- Surface description
- Vegetation description
- Profile description
- Climate zone (Koeppen code)



Data acquisition



Serial Number	1	2
Sample Code	IL-VR-XXXXX-030	IL-AT-XXXXX-005
Date of sampling	25.11.2015	29.07.2016
Photo number	1	2
Latitude	32.595561	33.879545
Longitude	34.542354	36.544444
Elevation (m)	40	350
Depth (cm)	30	5
Soil type (WRB)	Vertisol	Anthrosol
Soil type (USDA)	Vertisol	Anthrepts
Climate (Koeppen)	BWh	BWh
Spectrometer	ASD field spec Pro	ASD field spec Pro
Spectral resolution (nm)	1	1
OM (%)	2.8	3.2
CaCO3 (%)	3.4	2.9
Clay Fraction (%)	30	20
Silt Fraction (%)	25	30
Sand Fraction (%)	45	50
pH	7.5	6.8
EC (μ S)	2.8	8.6
Soil moisture (%)	1.6	3.5
350	0.049565	0.024690
351	0.049565	0.024690
352	0.048667	0.025166
353	0.048166	0.025108

Additional information

[WRB pdf](#)

[WRB/USDA equivalents](#)

- Glass jars
- Sample name
- Scanning code
- Categorized





Remember...

