



Food and Agriculture  
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# AFACI - Training Session

Training on National Soil Databases and Soil Property Mapping

02-03 and 09-10 February 2021 - Virtual (9am - 12pm | Rome GMT+2)

**Project:** Preparation of the Soil Atlas of Asia through the update of national soil maps and National Soil Information Systems for AFACI Countries

**Project Output 2:** National soil profile databases and gridded maps of soil properties and threats are produced

**Activity 2.1:** Regional workshop on creating/maintaining national soil databases and soil property mapping

**Synopsis:** The aim of this training is to support AFACI beneficiary countries in creating/maintaining their national soil databases and in soil property mapping using national soil profile databases. At the end of the training, countries will have clear requirements for their soil databases, as well as methodologies and tools for producing their national soil property maps.

The training session will be focus on;

- Preparation and harmonisation of soil national profile databases
- Preparation of auxiliary dataset to be used to predict selected soil properties
- Digital Soil Mapping approaches to produce national gridded maps of basic soil properties and threats
- Setting a timeline for deliverables (National Soil Profile Databases, National Gridded Soil Maps)

**Registration:** [LINK](#). After registering, you will receive a confirmation email containing information about joining the meeting.

**Lecturers:** Ms Isabel Luotto, Mr Yi Peng, FAO UN Global Soil Partnership



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## Agenda

### DAY 1 (3h) - Opening, Introduction and Data Preparation

1. High Level OPENING - 15'
2. Introduction - 15'
3. Software, Tools - 10' (R, RStudio, QGIS)
4. National Soil Profile Data Preparation: Import, Explore, Merge Site and Layer Data - 60'
5. National Soil Profile Data Preparation: Exploratory Data Analysis; Detecting and Getting Rid of Outliers, NA Values - 60'
6. Pedotransfer functions; Soil Depth Estimates; Data Transformation - 20'

## Notes/Material

- **Training Material**
- **Software/Tools**
- **Slides**

## Get Prepared

1. Participants are to install necessary software and make their national soil profile data and site data ready (xlsx, csv, txt).



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## DAY 2 (3h) - Data Preparation, Fundamentals of Digital Soil mapping

1. Environmental Covariates: selection and preparation of predictors - 45'
2. Environmental Covariates: preparing final table for modelling/mapping - 45'
3. Theory of Linear Modelling - 10'
4. Stepwise Multiple Linear Regression - 20' \*
5. Theory of Spatial Interpolation (Kriging) and Mapping with Regression Kriging - 30' Yi
6. Theory of Spatial Interpolation (Random Forest) and Mapping with Random Forest - 30'

## Notes

- Training Material
- Slides

## Get Prepared

1. TBD



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## DAY 3 (3h) - Soil Property Mapping (Soil Texture)

Map of soil textural classes will be prepared at national scale, at 1km spatial resolution up to 2 m (where possible) depth using digital soil mapping.

1. Data preparation (Soil Profile Data, Predictors) - 60'
2. Digital Soil Mapping - Soil Texture - 100'
3. Exporting, saving, styling outputs - 20'
4. QA Session

## Notes

- Training Material
- Slides

## Get Prepared

1. TBD



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## DAY 4 (3h) - Soil Organic Carbon Mapping

1. Data preparation (Soil Profile Data, Predictors) - 60'
2. Digital Soil Mapping - Soil Organic Carbon- 100'
3. Exporting, saving, styling outputs - 20'
4. QA Session

## Notes/Material

- **Training Material**
- **Slides**

## Get Prepared

Participants to study/read

1. GSOCmap Cookbook
2. GSOCmap Country Guidelines and Technical Specifications



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## DAY 5 (3h)

1. Mapping other soil properties (pH, EC, ESP) - 40'
2. Setting a timeline and the modality for project deliverables (National Soil Profile Databases, National Gridded Soil Maps) - 40'
3. Preparations for the second session (Soil Organic Carbon Sequestration Modelling) - 30'
4. Closure

## Notes

- Training Material
- Slides

## Get Prepared

1. TBD