



International Workshop “Soil Spectroscopy: the present and future of Soil Monitoring”

FAO HQ, Rome, Italy, 4-6 December 2013
Austria Room C237

International Advisory Board

Eyal Ben-Dor – Tel Aviv University (TAU)

David Brown – Washington State University (WSU)

Keith Shepherd – World Agroforestry Centre (CGIAR)

José Demattê – University of Sao Paulo (USP)

Raphael Viscarra-Rossel - the Commonwealth Scientific and Industrial Research Organization (CSIRO)

Pierre Dardenne – Centre Wallon de Recherche Agronomiques (CRA)

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Luca Montanarella - JRC

Bas van Wesemael – Université Catholique de Louvain (UCL)

Antoine Stevens - UCL

Third announcement

The workshop is scheduled from 4th to 6th of December 2013, at FAO Headquarters, Rome, Italy.

The 5th of December has been established by United Nations as the **World Soil Day**. The choice to have the workshop on these dates will be a unique opportunity to increase the visibility of soil spectroscopy, which will be a pillar for the establishment of a sustainable global soil monitoring system.

The three topics of the conference will be:

- 1) Soil spectroscopy: new techniques, calibration-validation, and analysis of large scale spectral libraries

Keynote speakers: David J. Brown, Raphael Viscarra Rossel

The first day will be characterized by the most technical sessions of the workshop. The two sessions of the day should provide the audience with an overview of (I) the new multivariate calibration techniques developed in the last five years, (II) the calibration-validation problem and its relation to scale and space, (III) the analysis of the large scale spectral libraries, and (IV) the application of laboratory and field spectroscopy data for the calibration of hyperspectral remote sensing images.

- 2) Soil spectroscopy to monitor the state of soil resources in the present and in the future

Keynote speakers: Keith Shepherd, Jose Demattê

The audience will be most likely expanded to policy makers and stakeholders that will be invited to hear about soil spectroscopy as the new technique to monitor soil properties. The two sessions of the day will **be characterized by outstanding examples of daily use of integrated or stand-alone applications of soil spectroscopy** to monitor the state of soil resources, and the integration of soil spectroscopy in the digital mapping of soil properties. Submissions showing operational use of soil spectroscopy will be preferred

- 3) Harmonization of the protocol for the collection of laboratory spectra

Keynote speakers: Eyal Ben-Dor, Pierre Dardenne

Many spectral libraries have been created without a standard able to guarantee data quality, repeatability accuracy, and data sharing. The two sessions of the day will focus on the strategy to define the best practice guidelines for soil spectroscopic analysis. Abstract showing the effect of laboratory protocols, spectrometers and laboratory reference methods on soil spectral measurements and models are expected.

Call for Abstracts

The LC of the international workshop “Soil spectroscopy: the present and the future of soil monitoring” invites you to submit abstracts for oral contributions to the three workshop topics. All abstracts will be reviewed by IAB and LC and assigned to the appropriate session.

All abstracts must be submitted to the following email addresses: GSP-Secretariat@fao.org; marco.nocita@jrc.ec.europa.eu by **15th September, 2013**.

Abstracts should be no longer than one page. Figures and tables are not permitted.

Important Dates

Abstract Submission deadline: 15th September 2013

Notification of Abstract Acceptance: 1st of October, 2013

Deadline for registration: 15th of November, 2013

Logistics

Workshop is open as no registration fee is requested. There will be a number of participants limited to 80.

Whoever interested in participating to the workshop, even if not included in the program, should register at the GSP website.

Unfortunately, no funds will be available to cover travel or accommodation costs. The participants are requested to make their own hotel reservations.

For the location of the FAO headquarter please check the website (<http://www.fao.org/forestry/25119-04e1a0111678a66dec30187b9356ffeea.pdf>).

Workshop Agenda

TIME	Topic	Presenter	Chair
Day 1 : Wednesday 4th December			
Session 1 : “Soil spectroscopy: new techniques and calibration-validation procedures”			
8:00 – 9:00	Registration		
9:00 – 9:40	Welcome and opening	Moujahed Achouri, Director Land and Water, FAO Marco Nocita ,EC	
9:40 – 10:10	Keynote Speaker	David J. Brown	Chair: Bas van Wesemael
10:10 – 10:40	<i>Coffee break</i>		
10:40 – 11:00	Can small NIR calibrations at the farm scale be an alternative to large regional or global calibrations for farm soil mapping of soil type?	Bo Stenberg	Chair: Bas van Wesemael
11:00 – 11:20	Using nonlinear data mining techniques or clustering into spectrally similar subsets to improve the prediction performance of a large Brazilian vis-NIR spectroscopic library	Johanna Wetterlind	
11:20 – 11:40	Do we really need large spectral libraries for assessment of soil organic carbon at local scale?	Cesar Guerrero	
11:40 – 12:00	Prediction of soil chemical and physical properties with uncalibrated NIR data and site descriptors using optimized spectral preprocessing and neural network architecture	Matt Aitkenhead	
12:00 – 12:30	Discussion		
12:30 – 14:00	<i>Lunch</i>		
Session 2 : “Analysis of large scale spectral libraries”			
14:00 – 15:00	Keynote Speakers	Raphael Viscarra Rossel Antoine Stevens	Chair: Eyal Ben-Dor
15:00 – 15:20	Prediction of soil organic carbon at a national scale (France) using mid -and near- infrared reflectance spectroscopy.	Michael Clairotte	
15:20 – 15:40	Memory based learning methods and tools: towards efficient modeling, predicting and managing tasks in large scale soil spectral	Leonardo Ramirez Lopez	

	libraries.		
15:40 – 16:10	Coffee break		
16:10 – 16:30	Spectral data fusion for quantitative assessment of soils from Brazil	Fabricio Terra	Chair: Eyal Ben-Dor
16:30 – 16:50	Potential of MIR, TXRF and XRD as complementary techniques for assessment of soil properties	Erick Towett	
16:50 – 17:30	Discussion		
Day 2: Thursday 5th December World Soil Day			
Session 3: "Soil spectroscopy to monitor the state of soil resources in the present and in the future".			
9:00 – 10:00	Keynote Speakers	Keith Shepherd Josiane Masson (European Commission)	Chair: Luca Montanarella
10:00 – 10:20	Combining NIR spectral libraries with multi-temporal Landsat data for soil degradation monitoring	Christian Hergarten	
10:20 – 10:50	<i>Coffee Break</i>		
10:50 – 11:10	Identification of WRB diagnostic horizons from VIS-NIR spectral signatures	Adam Csorba	Chair: Luca Montanarella
11:10 – 11:30	The use of near-infrared spectroscopy for the characterization and classification of Japanese soil	Shin Abe	
11:30 – 11:50	Measurement of biochar properties, including aromatic carbon, and monitoring the concentration of charred material in soil using near-infrared (NIR) spectroscopy	B. Kusumo	
11:50 – 12:30	Discussion		
12:30– 14:00	Lunch		
Session 4: "Soil spectroscopy to monitor the state of soil resources in the present and in the future".			
14:30 – 15:00	Keynote Speaker	Jose Dematte	Chair: Marco Nocita
14:30 – 14:50	Soil spectroscopy as a tool for the spatial assessment of soil erosion states in agricultural semi-arid Spain	Sabine Chabrilat	
14:50 – 15:10	Development of remote sensing methods for assessing and mapping soil pollution with heavy metals.	S.V. Muradyan	
15:10 – 15:30	The use of spectral libraries to reduce the influence of soil moisture on the estimation of soil	F. Castaldi	

	properties from satellite imaging spectroscopy		
15:30 – 16:00	<i>Coffee break</i>		
16:00 – 16:20	Optimization of visible and near infrared reflectance spectroscopy (VNIRS) for field determination of topsoil chemical properties	Bernard Barthes	
16:20 – 16:40	Mid-infrared spectroscopy as a tool to identify and quantify soil organic carbon size fractions	Carole Noon	
16:40 – 17:00	The use of a hand-held mid-infrared spectrometer for the rapid prediction of total petroleum hydrocarbons in soil	Jose M. Soriano-Disla	
17:00 – 17:45	Discussion		
18:30 – 20:30	World Soil Day Cocktail		
Day 3: Friday 6th December			
Session 5: "Harmonization of the protocol for the construction of soil spectral libraries"			
9:00 – 9:30	Keynote Speaker	Eyal Ben-Dor	Chair: Antoine Stevens
9:30 – 9:50	Spectral reflective signature of open soil surface as an indicator of soil properties	I. Savin	
9:50 – 10:20	Analysis of soil in the field using using portable FTIR	A.H.J Robertson	
10:20 – 10:50	<i>Coffee Break</i>		
10:50 – 11:20	Keynote Speaker	Pierre Dardenne	
11:20 – 11:40	Common chemometric indicators for Prediction of Soil Organic Matter Content and Quality from Soil Spectra: A Review and Research Perspectives	Asa Gholidazeh	Chair: Antoine Stevens
11:40 – 12:30	Discussion		
12:30 – 14:00	<i>Lunch</i>		
14:00 – 15:00	Discussion and closing remarks		Marco Nocita (EC) Ronald Vargas (FAO)