



JRC – Institute for Environment and Sustainability, Land Management and Natural Hazard Unit (Ispra)



Agricultural Research Council
Research Centre for Soil/Plant System (CRA-RPS, Rome)
Research Centre for Agrobiological and Pedology (CRA-ABP, Florence)



CNR – Institute for Mediterranean Agricultural and Forestry Systems (Ercolano – NA)

4th International Workshop on Digital Soil Mapping
Rome, 24-26 May 2010
CNR Conference Room, Piazzale Aldo Moro, 7 - 00185 Roma

“From Digital Soil Mapping to Digital Soil Assessment: identifying key gaps from fields to continents”

THIRD CIRCULAR AND FINAL PROGRAM

SCIENTIFIC COMMITTEE

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Cristiano BALLABIO- University of Milano-Bicocca (UNIMIB), Italy
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Francesca GARFAGNOLI- University of Firenze, Italy
Maria de Lourdes MENDONÇA-SANTOS – EMBRAPA Solos, Brazil
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Simone Priori, CRA-ABP, Roma

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FLIGHTS, TRASPORTATION AND ACCOMMODATION

FLIGHTS:

The international Airport “Leonardo da Vinci” of Rome

http://www.adr.it/portal/portal/adr/Fiumicino/Leonardo_da_vinci/Header_Window?action=2

is located in the western area (Fiumicino site) of the City, served by train, bus and taxi services for downtown.

Taxi service: The fixed price by Rome municipality for taxi transportation is 45 €. **Be careful of NCC limousine or not authorized people asking for more expensive fees.** The authorized taxi are white cars with Rome municipality licence number on the side.

Train service: There are scheduled trains from Airport station for Termini Central Station and Ostiense Station (then you can take the B metro for downtown). Ticket price is 14 € for Termini Railway Station and 8 € for Ostiense Station one way.

From Termini Station the departures are every 30 minutes, from 5.52 a.m. (from Rome) and 6.36 a.m. (from Fiumicino Airport). Last departure is at 10.52 p.m. (from Rome) and at 11.36 (from Fiumicino Airport).

ACCOMMODATION:

Official Accommodation and other tourist information will be self made by the Participants following the list of Hotels and B&B at website: <http://2010.digitalsoilmapping.org>

Unofficial Other cheaper hotels and b&b can be found at:

<http://www.rome-accommodation.net/rome-apartments/ap27-raffaello.xhtml>

<http://www.venere.com/hotels/rome/university-campus-citta-universitaria/?sd=22&sm=05&sy=2010&ed=26&em=05&ey=2010&pval=2&rval=1&ref=750745>
<http://www.rentalinrome.com/aboutus.htm>

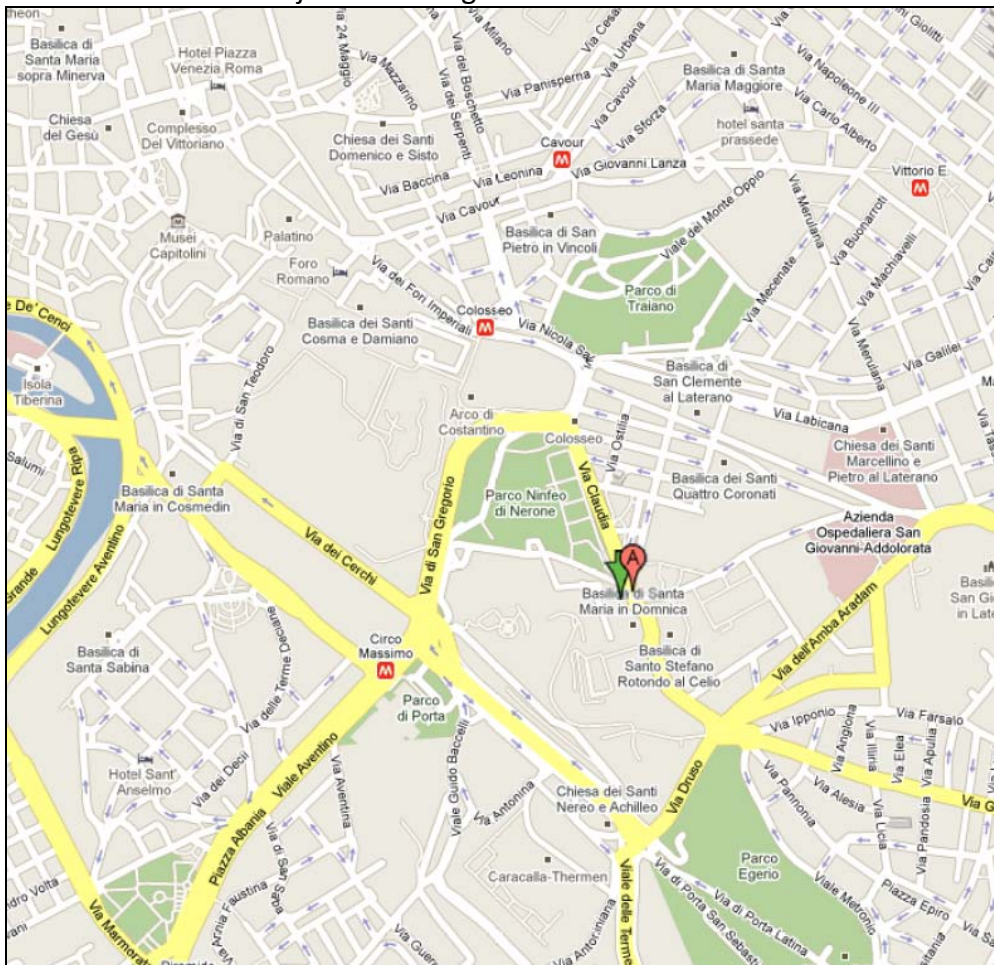
IMPORTANT NOTICES:

TAKE WITH YOU A COPY OF REGISTRATION FORM AND PAYMENT TRANSFER (IF YOU HAVE ALREADY PAID)

SEND A COPY OF THE EXTENDED ABSTRACTS ALSO TO dsm2010@entecra.it MAIL ADDRESS

GENERAL INFORMATION

The **Early Registration** will be on Sunday 23 of May, at our CRA Research Centre for study of the Soil-Plant System (CRA-RPS), from 3.00 to 6.00 p.m. The CRA-RPS (**A point** in the map) is located in Via della Navicella 2-4, at the end of Piazzale del Celio. You can take the Metro B Line and stop at Colosseo Metro Station, then turn round the Colosseo and take Via Claudia until the end, then you will find the Entrance of CRA-RPS just on the right.



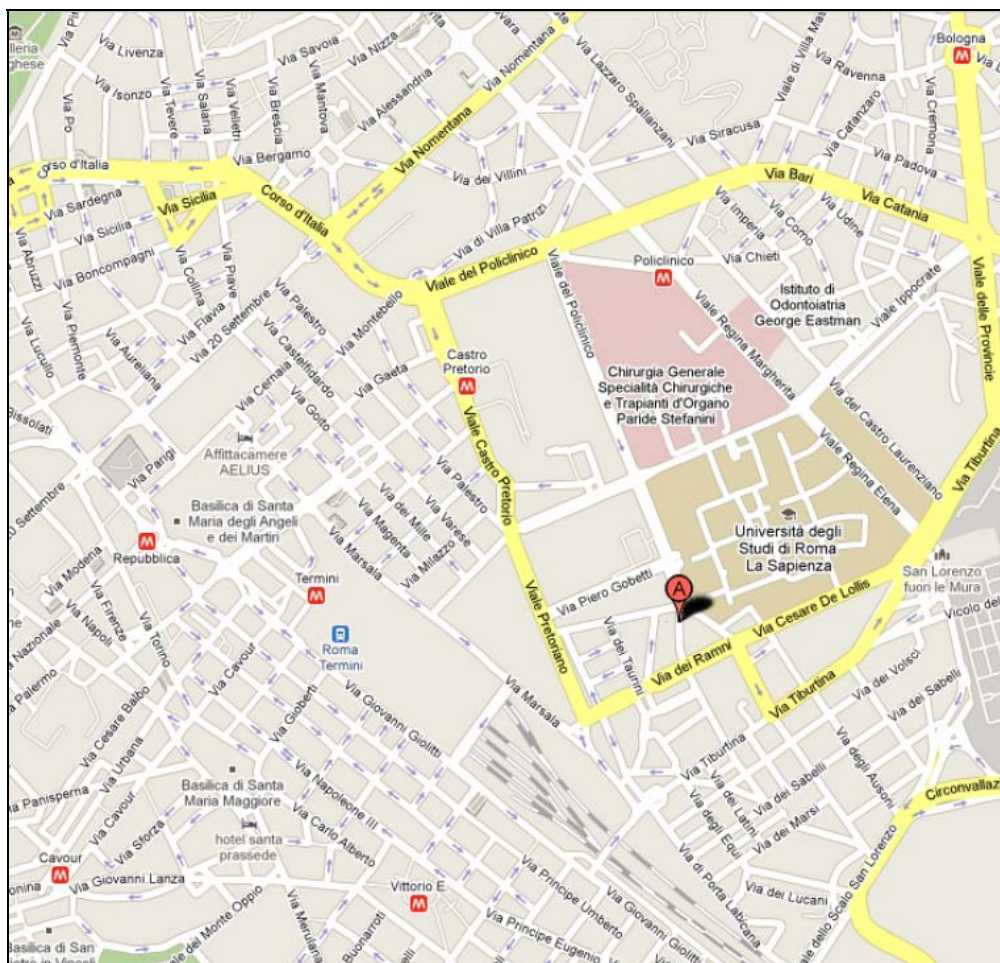
The **Opening Social** will be held on Monday evening, starting from 8.00 p.m., nearby Colosseo Area

The **Workshop Banquet** will be held on Tuesday evening, from 8.30 p.m. in a characteristic restaurant in Downtown Rome

The **Workshop Conference Room** is located in CNR central palace, in Piazzale Aldo Moro 7: this site is near the Sapienza University Main entrance, back of the Termini Station. The Entrance to the Conference Room is just on the left of main entrance, in Via dei Marrucini. The distance from Metro Termini Station is about 10 minutes walk. In Termini you can find both the A and B lines and city bus main station for transportation all around downtown.



Workshop Location (A point)



POSTER AND ORAL PRESENTATION, CONFERENCE ROOM FACILITIES

The CNR Conference room and adjacent poster room is covered with free wireless internet connection:

Username: ospite.convegna

Password: ospiteconvegna

Poster must not exceed **150 cm (width) x 100 cm (height)** in size.

Oral presentation are accepted in MS Powerpoint (office 1997-2003 or compatible versions), you must give a copy of it at Workshop Helpdesk by USB connection.

The nomenclature of file should be "name_session_dsm210.ppt", es.

McBratney_S1_dsm2010.ppt

DEFINITIVE WORKSHOP PROGRAM

SUNDAY 23 – 3.00 – 6.00 p.m. Pre-Registration at CRA-RPS Research Centre (Via della Navicella 2-4, Rome)

Workshop Program

MONDAY 24 - Registration Desk

Registration Desk open from 8.00 to 9.00 a.m.

MONDAY 24 - Introducing Workshop

- 9.00-9.15 *"Digital soil mapping: understanding the value proposition"*, **Neil Mc Kenzie**, DSM WG Chairman, CSIRIO
- 9.15-9.30 *"Soil Knowledge as base of agro-forestry research in Italy"* **Giuseppe Scarascia-Mugnozza**, Head of CRA Land, Agronomy and Forestry Department
- 9.30-9.45 *"Importance of DSM for the European Commission"* **Luca Montanarella**, Action Leader in SOIL - Land Management and Hazard Unit, Institute for Environment and Sustainability, Joint Research Centre EC

MONDAY 24 – Session 1: From Global to Local DSM

Global DSM - **Chairman: Alfred Hartemink, Rapporteur: Maria de Lourdes Mendonça Santos**

- 9.55 – 10.15 **Mc Bratney A.** (Keynote Speaker) *"On the global DSM methodology"*
- 10.15 - 10.35 **Mc Millan B.** *"A Proof of Concept Project to Apply and Compare Alternative DSM Methods in Several Test Areas"*
- 10.35 - 10.50 **Gregory L. et al.** *"From conventional survey to the three-dimensional grid of GlobalSoilMap.net: a demonstration using the Australian Soil Resource Information System"*
- 10.50 - 11.05 **Hempel J. et al.** *"GlobalSoilMap.net: Canada-United States Digital Soil Mapping case"*
- 11.05 - 11.25 COFFEE BREAK**

POSTER SESSION

1	Pásztor L. et al. <i>“Operational application of the Digital Kreybig Soil Information System for the identification of Less Favoured Areas in Hungary according to the common European biophysical criteria”</i>
2	Marechek M. et al. <i>“GIS Model of the Central Kamchatka's Soil Cover”</i>
3	Niculita M. et al. <i>“Estimation of soil properties based on geomorphometrical parameters approach using regression kriging modeling for DSM in Iasi County”</i>
4	Truskavetsky S. <i>“The Digital Mapping of Ukrainian Soils On the Base of High Resolution Space Images”</i>
5	Magini S. et al. <i>“The map of the soil systems of Italy”</i>
6	Niaçşu L. and Ursu A. <i>“Supervised methods used in digital soil mapping Soil cover predicting based on natural pattern”</i>
11.25 - 11.40	Reuter H. I. and Montanarella L. <i>“Digital soil mapping using European soil data: Soil texture class and stone content”</i>
11.40 - 11.55	Hengl T. et al. <i>“Estimating global Soil Organic Carbon stock using ISRIC WISE soil profile database”</i>
11.55 - 12.10	Dobos E. et al. <i>“Landform mapping for SOTER at scale 1:1 million using SRTM-DEM”</i>
12.10 - 12.25	Nachtergaele F. <i>“Qualitative and quantitative aspects of world and regional soil databases”</i>
12.25 - 12.40	Greve M. et al. <i>“Predictive mapping of the clay content of Danish soils in 90 meter resolution – a comparative analysis between ordinary kriging and regression tree-models”</i>
12.40-14.00	LUNCH
14.00 - 14.15	Lagacherie P. et al. <i>“Processing legacy soil data for global digital soil mapping : the case of the Cap Bon Region (Northern Tunisia)”</i>
14.15 - 14.30	Lacoste M. et al. <i>“Digital mapping of soil parent material in Brittany: learning with points as training data for a regional extrapolation”</i>
14.30 - 14.45	Smith S. et al. <i>“Digital Soil Mapping at multiple scales in British Columbia, Canada”</i>
14.45 - 15.00	Panagos P. et al. <i>“MEUSIS, a Multi-Scale European Soil Information System (MEUSIS)”</i>
15.00 - 15.15	Piccini C. et al. <i>“Regression kriging in soil organic matter evaluation: predicted maps for Abruzzo region (Italy)”</i>
15.15 - 15.30	Pásztor L. et al. <i>“Spatial extension of soil data collected within the Hungarian Soil Information and Monitoring System as a candidate for the Digital Soil Map of Hungary”</i>
15.30 - 15.45	Dobos E. et al. <i>“Soil parent material delineation using MODIS data”</i>
15.45 - 16.00	Myers D. B. et al. <i>“Digital mapping of soil carbon fractions for regional assessment of soil carbon spatial variability in FL, USA”</i>
16.00 - 16.20	COFFEE BREAK
	POSTER SESSION
1	Puzachenko R. B. et al. <i>“Digital soil mapping based on field measured soil characteristics, remote sensing data and the digital elevation model of Regional scale”</i>
2	Sandlersky R. B. et al. <i>“Large-scale soil properties mapping using remote sensing data and digital relief model for interpolation”</i>
3	Fantappiè M. <i>“Digital soil mapping of Sicily using GIS-oriented surveying and CLORPT modeling”</i>
4	Garfagnoli F. et al. <i>“Mapping of soil parameters through VNR and SWIR imaging spectrometry: preliminary data from Mugello (Tuscany, Italy)”</i>
5	L’Abate G. and Costantini E.A.C. <i>“The database of the Italian soil cultural heritage”</i>
6	Emadi M. et al. <i>“Mapping soil Salinity using cokriging method in Arsanjan plain, southern Iran”</i>
7	Najafian A. et al. <i>“Spatial variability of important soil characteristics in semiarid ecosystems, a case study in Marvdasht plain, southern Iran”</i>
8	Vrascj B. et al. <i>“The disaggregating and downscaling of vector soil map”</i>
9	Królewicz S. et al. <i>“Integration of multiresolution remote sensing data for high resolution soil mapping”</i>

On Local DSM - Chairman: Sabine Grunwald, Rapporteur: Hannes Reuter

16.20 - 16.35

16.35 - 16.50	Casa R. et al. <i>"Soil texture and organic matter estimation of an agricultural field from hyperspectral remote sensing"</i>
16.50 - 17.05	Wilford J. <i>"A weathering intensity index for the Australian continent using airborne gamma-ray spectrometry and digital terrain analysis"</i>
17.05 - 17.20	Follain S. et al. <i>"Soil electrical resistivity: a tool to map present soil properties linked to past landscape parameters"</i>
17.20 - 17.35	Loonstra E. and Van Egmond F. M. <i>"Mapping clay content in northern Europe with a Mole"</i>
17.35 - 17.50	Brodsky L. et al. <i>"Study of soil water content effects on soil reflectance spectroscopy analysis"</i>
17.50 - 18.05	Thomas M. et al. <i>"Magnetic susceptibility soil sensing for soil survey and digital soil mapping in upland South Australia"</i>
	Stevens A. et al. <i>"Validity of soil properties predictions from imaging spectroscopy and soil covariates in extrapolation domain"</i>

TUESDAY 25 – Session 2: Innovative Inference Systems, DSM issues and operational tools, Dynamic Assessment in DSM

Innovative Soil Inference System - **Chairman: Jon Hempel, Rapporteur: Janis Boettinger**

9.00 - 9.15	Chirico G. et al. <i>"Mapping soil hydraulic properties by scaling particle size distributions: functional evaluation at hillslope scale"</i>
9.15 - 9.30	Geng X. et al. <i>"Soil Property Retrieval Using Polarimetric Time Series RADARSAT-2 Imagery"</i>
9.30 - 9.45	Vasques G. et al. <i>"Search for a multiscale soil organic carbon spatial model in Florida. Part II: spatial dependence of soil-landscape relationships"</i>
9.45 - 10.00	Häring T. and Schröder B. <i>"Sampling optimization using image segmentation"</i>
10.00 - 10.15	Priori S. et al. <i>"Using ARP geoelectrical system to estimate soil water storage capacity in vineyards"</i>
10.15 - 10.35	COFFEE BREAK
POSTER SESSION	
1	Odierna P. et al. <i>"A functionality pedoindex on a quantitative scale"</i>
2	Fasheng Zhang et al. <i>"Mapping Surface Soil Organic Matter Based on Landsat TM Image"</i>
3	Oueslati I. et al. <i>"Use of vegetation and topographic classification to predict the soil organic carbon concentration in forest areas"</i>
4	Penizek V. et al. <i>"Observing bare soil in vegetated areas by LANDSAT multi-temporal composite"</i>
5	Golovanov D. and Yamnova I. <i>"Digital Soil Mapping in Space and Time of Tian Shan Old Alluvial Piedmont Plain"</i>
6	Constanje R. et al. <i>"The effect of scale on DSM outputs"</i>
7	Blaschek M. and Duttmann R. <i>"Prediction of chemical soil properties using regression kriging and artificial neural networks in strongly altered paddy soil landscapes in Southeast China"</i>

Digital Soil Mapping and operational tools - **Chairman: Raphael Viscarra-Rossel, Rapporteur: Francesca Garfagnoli**

10.35 - 10.50	Vasques G. et al. <i>"Search for a multiscale soil organic carbon spatial model in Florida. Part I: influence of extent, resolution, and geographic region"</i>
10.50 - 11.05	Hong S. Y. et al. <i>"Soil Carbon Storage Mapping Using Soil Profile and Monitoring Data in Korea"</i>
11.05 - 11.20	Taylor et al. <i>"On the inclusion of vegetative covariates in digital soil modelling of subsoil properties."</i>
11.20 - 11.35	Casco Sarmiento E. et al. <i>"Comparison of four machine learning algorithms for digital soil mapping in the Vale dos Vinhedos, RS, Brazil"</i>
11.35 - 11.50	Waltner I. et al. <i>"Application of a centroid-based concept for the correlation of national soil classification with the WRB"</i>
11.50 - 12.05	Brungard C. and Boettinger I. <i>"Predicting Soil Attribute and Taxonomic Classes Using Random"</i>

- Forests in Arid Rangelands, Utah, USA."*
- 12.05 - 12.20 **Dart R.O. et al.** "Digital Soil Mapping at Parque Estadual da Mata Seca, MG, Brazil: Applying Regression Tree to predict soil classes"
- 12.20 - 12.35 **Kozlov D. N. and Sorokina N.P.** "Digital mapping of agroecological properties of soddy-podzolic soils"

12.35 - 14.00 LUNCH

DSM in 3-D and Partially Dynamic DSM - **Chairman: Budiman Minasny, Rapporteur: Thomas Mayr**

- 14.00 - 14.15 **Piikki K. et al.** "Sensor Data Integration for 3D Soil Mapping and Soil Moisture Modeling"
- 14.15 - 14.30 **Kempen B. et al.** "Three-dimensional mapping of soil organic matter content using profile depth functions based on pedological knowledge"
- 14.30 - 14.45 **Poggio L. et al.** "Mapping spatio-temporal relationships between AWC and remote sensing-derived drought indexes at national scale."
- 14.45 - 15.00 **Ballabio C. et al.** "A plant ecology approach to high resolution digital soil mapping"
- 15.00 - 15.15 **Barthold F. et al.** "Method mining in Digital Soil Mapping: a combined Random Forest – Decision Tree approach to map reference soil groups (RSG) in China"
- 15.15 - 15.30 Sulaeman Y. & Minasny B. "Using legacy data to detect spatio-temporal changes in soil organic matter content in Indonesia"

Digital Soil Assessment - **Chairman: Luca Montanarella, Rapporteur: Rosario Napoli**

- 15.45 – 16.00 **De Andrade S. F. et al.** "Digital soil fertility mapping of the North, Northwest and Serrana state of Rio de Janeiro"
- 16.00 - 16.15 **Dlouhá S. et al.** "Correlation between soil magnetic susceptibility and heavy metal contents in soils as a basis for soil pollution mapping"

16.15 - 16.35 COFFEE BREAK

POSTER SESSION

- 1 **Stelluti M. et al.** "A two-step approach to characterize the pluviometric patterns in a southern region of Italy"
- 2 **Marchetti A. et al.** "GIS assessment of soil erosion with the RUSLE in Abruzzo region, Italy"
- 3 **Zottele F. et al.** "Irri4web: a decision support system for irrigation"
- 4 **Tsai C. C. and Chen Z. S.** "Incorporation of GIS, DEM and Terrain Analysis for Volcanic Digital Soil Mapping in Northern Taiwan"
- 5 **Stanchi S. et al.** "Mapping soil vulnerability and physical properties in Aosta Valley: a case study"
- 6 **Ionuț V. et al.** "Statistical spatial models of soil parameters. An approach using different methods at different scales"
- 7 **Królewicz S. et al.** "Creating digital soil maps on the basis of their printed versions using various techniques for image and vector processing and color statistics"
- 8 **Saghatelian A. et al.** "Development of remote sensing methods for assessment of heavy metal soil pollution near the city of Kajaran"
- 9 **Blaschek M. & Duttmann R.** "Prediction of chemical soil properties using regression kriging and artificial neural networks in strongly altered paddy soil landscapes in Southeast China"
- 16.35 - 16.50 **Heuvelink G. et al.** "Implications of digital soil mapping for soil information systems"
- 16.50 - 17.05 **Mayr T. et al.** "Digital Soil Assessment: a case study in England"
- 17.05 - 17.20 **Elosta F.** "The Simulation On environmental geological of Desertification Behavior In Libya"
- 17.20 - 17.35 **Golovanov D. M.** "Digital Mapping of Soil Salinity Changes in One of the Largest Oases of Mongolia According to Monitoring Data of 1977 and 2001"
- 17.35 - 17.50 **Salehi M.H. et al.** "Relationships between Soil and DEM Attributes using Canonical Correspondence Analysis (CCA)"
- 17.50 - 18.05 **Svoray T. et al.** "Assessment of soil degradation risks in the watershed scale"
- 18.05 - 18.20 **Owens P. R. et al.** "A Method for Mining Information from Soil Surveys to Create Functional Property Maps"

18.20 - 18.35 **Sollitto D. et al.** *"Soil salinisation assessment by multivariate geostatistics in a coastal basin of south-western Sicily (south Italy)"*

WEDNESDAY 26 - Session 3: Quality Data Assessment, Modelling Uncertainties in DSM and DSA

Modelling uncertainties - Chairman: Neil Mc Kenzie, Rapporteur: Philippe Lagacherie

9.00 - 9.20 **Van Oijen M.** (Keynote speaker) *"How to Model uncertainties in environmental assessment?"*
9.20 - 9.35 **Buttafuoco G. et al.** *"Prediction and error modelling of soil organic matter based on spectral reflectance and geostatistical stochastic simulation"*
9.35 - 9.50 **Zhu A. et al.** *"Quantification and Visualization of Uncertainty Information in Digital Soil Mapping"*
9.50 - 10.05 **Nelson M. et al.** *"Model uncertainty for digital soil class maps produced using model-based geostatistics"*
10.05 - 10.20 **Bishop T. et al.** *"Enumeration of all sources of uncertainty in a digital soil map"*

10.20 - 10.40 COFFEE BREAK

POSTER SESSION

1 **Barbetti R. et al.** *"The ISIS software for soil correlation and typology creation at different geographic scales"*
2 **Wiesmeier M. et al.** *"A multi-model approach to map soil organic carbon in a semi-arid steppe ecosystem"*
3 **Sang N.** *"OISIN - Optimised Inventorying of Soil Information Networks"*
4 **Malone B. et al.** *"Spatial representation of digital soil maps: An issue of the spatial entity"*
5 **Najafian A. et al.** *"Comparison between different interpolation methods for mapping selected soil fertility properties in Marvdasht plain, Southern Iran"*

Quality Data Assessment, Evaluation and harmonization of legacy data for DSM and DSA- Chairman: Maria de Lourdes Mendonça Santos, Rapporteur: Cristiano Ballabio

10.40 - 10.55 **Mc Bratney A. et al.** *"Digital Harmonisation of Adjacent Analogue Soil Survey areas - 4 Iowa Counties"*
10.55 - 11.10 **Krenke A. N. and Puzachenko Yu. G.** *"Correction of medium scaled soil maps based on remote sensing data and digital relief models"*
11.10 - 11.25 **Thompson J. et al.** *"Regional Approach to Digital Soil Property Mapping using Legacy Data and Spatial Disaggregation Techniques"*
11.25 - 11.40 **Pásztor L. et al.** *"Evaluating spatial reliability of soil maps compiled exploiting spatio-temporal features of Digital Kreybig Soil Information System"*
11.40 - 11.55 **Belousova N. and Meshalkina J.L.** *"Harmonization of legacy data on Russian boreal soils published during last 60 years"*
11.55 - 12.10 **Kerry R. et al.** *"Area-to-point kriging of soil texture: an efficient use of legacy soil data from polygon maps"*
12.10 - 12.25 **Hannam J. et al.** *"Evaluation and harmonization of legacy soil data"*
12.25 - 12.40 **Slater B. and Subburayalu S.K.** *"DSM techniques for normalizing disparate soil attribute values across county boundaries in the US soil survey"*

12.40 - 14.00 LUNCH

14.00 - 14.15 **Libohova Z. et al.** *"Relationship between spatial resolution and accuracy of predictive maps Comparing Aggregation and Terrain Attribute Soil Mapping"*
14.15 - 14.30 **Slater B. and Subburayalu S.K.** *"DSM techniques for normalizing disparate soil attribute values across county boundaries in the US soil survey"*

- 14.30 - 14.45 **Malone B. et al.** *“Field validation of digital soil property maps”*
- 14.45 - 15.00 **Meshalkina J. L. et al.** *“Uncertainties Evaluation of Legacy and Modern Soil Data on Example of Arable Dark-Grey Forest Soils (Phaeozems Albic) of Bryansk Opolje, Russia”*
- 15.00 - 15.15 **Koschitzki T. and Möller M.** *“An approach to reclassify soil types regarding terrain plausibility”*

15.15 - 15.35 COFFEE BREAK

POSTER SESSION

- 1 **Shoba S. and Kolesnikova V.** *“Filling with attributive data of Soil Geographic Database of Russia”*
- 2 **Nikiforova A. A. et al.** *“Evaluation and harmonization of geographical and cartographical soil data from the platform of a system approach”*
- 3 **Teixeira et al.** *“Using remote sensing to renewal and rectify the soil boundaries in an soil map of the floodplains in the Central Amazon – Brazil”*
- 4 **Koroliuk A.Yu. and Ovechkin S.** *“Updating of the State Soil Map by means of DSM”*
- 5 **Ovechkin S. et al.** *“Map of diagnostic horizons – example of interpreting the soil map of South Russia”*
- 6 **Keller et al.** *“Procedures towards harmonized soil data in the framework of the Swiss National Soil Information System”*
- 7 **Krasilnikov P. et al.** *“Digital soil map of Russia: major gaps and possible solutions”*
- 8 **Pásztor L. et al.** *“Integration of spatial legacy data of independent soil surveys”*

Summaries animated by **Alex McBratney**

- 15.35 - 15.45 *“Summary of Session 1 made from coordination of the rapporteurs of Day 1”* **Maria de Lourdes Mendonça Santos**
- 15.45 - 15.55 *“Summary of Session 2 made from coordination of the rapporteurs of Day 2”* **Janis Boettinger**
- 15.55 - 16.05 *“Summary of Session 3 made from coordination of the rapporteurs of Day 3 “* **Philippe Lagacherie**
- 16.05 - 16.30 *Round Table, Discussion and End of the 4th International Workshop on DSM - Animation by Alex McBratney, Neil McKenzie and Luca Montanarella, closing Workshop by Rosario Napoli and presentation of DSM 2012 Candidatures*

17.00 Departure for Field Trip

FIELD TOUR PROGRAM

The field tour will start from Rome (Workshop Site) at about 5 p.m of Wednesday 26th
 The arrival is scheduled for dinner time (8.00-8.30 p.m.) at Due Ponti Hotel in south area of Siena.
 The costs of Hotel

Field trip “Digital Soil Mapping” – Brolio, 27 May 2010

The field trip will take place by visit two different landscapes, both around Siena. The first Site to visit will be in the Chianti Senese hilly area, North West from the Hotel Location. The second one will be in the Eastern Hilly area of Montagnola Senese, nearby the Pievescola little town.

26 Wednesday evening - Arrival at Due Ponti Hotel in South part of Siena

27 Thursday

9.30: arrival at the experimental vineyards of “Barone Ricasoli” farm, Brolio

9.30 – 9.45: Welcome of the “Barone Ricasoli” farm director

9.45 – 10: Introduction of the research activities carried out in the farm by the CRA-ABP Research Center of Agrobiology and Pedology: “soil qualities for the quality of wine” (Costantini E.).

10 – 11: Field presentation and discussion about:

- **“Proximal survey made by Geocarta-A.R.P. (Automatic Resistivity Profiling), Geonics-EM38 and GSSI-Profiler EMP-400”** / (Priori S.)

Use of the EMI sensors and georesistivimeter in vineyards for the apparent electrical conductivity (ECa) maps. Comparison of the features, usefulness and defects of the three sensors. Application of the ECa maps for the estimation of clay, skeleton, moisture and other parameters useful for the viticulture. Exhibition of the EMI sensor EM38-MK2 and of its functioning.

- **“Proximal and remote sensors application for supporting precision viticulture in problematic soils”** / (Andrenelli M.C.)

Significant correlations were observed between resistivity values, measured by ARP machinery, and both NDVI and fractional vegetation cover. The coverage values were obtained from the “density green” provided by image analysis of orthophotos.

11 – 11.30: Exhibition of a soil profile and discussion (Costantini E., Priori S.).

Influence of agricultural pre-planting techniques (deep plowing, land leveling and reshaping, stone clearing, water management systems, “draining mattress”) on soil characteristics, functioning, and spatial variability.

11.30 – 12.30: Visit to the “Barone Ricasoli” wine cellars and tasting of wines produced in different soils.

12.30 – 14.30: Lunch near the Brolio castle

14.30 – 16.00: Visit to the Brolio castle

16.00: Departure to the “Montagnola senese” area

During the trip: geomorphological and pedological outlines of the surroundings of Siena, the long-lasting anthropic influence, pedogenesis of “Terra rossa” soils, geomorphology and soils of the “Montagnola senese” (Costantini E., Napoli R.).

17.30 -18.00: Stop and profile near Pievescola (Costantini E., Napoli R.).

Introduction of a polycyclic paleosol, discussion about paleosols distribution and Digital Soil Mapping, “The pedostratigraphic study of the soil cover”.

18.00: departure to Siena, where the arrival is foreseen at about 19.00

27 Friday

8.30 – Start for Siena downtown visit

9.00-11.30 – Free time for visit the historical heart (Piazza del Campo Sq., Mangia Tower, Municipality Palace, etc.)

11.30-12.00 departure for Rome

Arrival at Termini Central Station scheduled for 4.00 p.m. (with one stop on the road)