

3rd Global Workshop on Digital Soil Mapping

Digital Soil Mapping: Bridging Research,
Production, and Environmental Application



30 September - 3 October, 2008
Utah State University, Logan, Utah, USA

Auditorium (Room 216)
Eccles Conference Center

Tuesday, 30 September 2008

17.00-18.00 Registration
Lobby, Eccles Conference Center

Wednesday, 1 October 2008

	TITLE	PRESENTER	INSTITUTION
7.00-8.30	Registration Lobby, Eccles Conference Center		
8.30-9.00	Welcome and Introduction	Janis Boettinger	Utah State University
9.00-9.30	DSM 2008 Keynote Address: Soils are Back on the Global Agenda	Alfred Hartemink	ISRIC-World Soil Information

Session 1: Evaluating and Using Legacy Data in Digital Soil Mapping

Chair: Jon Hempel, USDA Natural Resources Conservation Service
Rapporteur: Maria de Lourdes Mendonça-Santos, EMBRAPA Solos

9.30-10.00	Keynote Address: Soilscapes Basis for DSM in New Zealand	Allan Hewitt	Landcare Research
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10.00-10.30 Break

10.30	e-SOTER: Regional Pilot Platform as EU Contribution to a Global Soil Observing System	Vincent van Engelen	ISRIC-World Soil Information
10.40	Hierarchical Soil GIS of Russia	Polina Koroleva	V.V. Dokuchaev Soil Science Institute
10.50	Updating of Large-Scale Soil Maps with the Use of Digital Mapping Techniques	Yekaterina Vilchevskaya	V.V. Dokuchaev Soil Science Institute

	TITLE	PRESENTER	INSTITUTION
11.00	Legacy Soil Data Harmonization and Database Development	Endre Dobos	University of Miskolc

11.10	Toward Digital Soil Mapping in Canada: An Overview of Existing Soil Survey Data and Related Expert Knowledge	Scott Smith	Agriculture and Agri-Food Canada
11.20	Assessment of the Areas of Salt-affected Soils in the European Part of Russia on the Basis of a Digital Map of Salt-affected Soils of Russia, 1:2.5 M scale	Galina Chernousenko	V.V. Dokuchaev Soil Science Institute
11.30	Updating the Dutch Soil Map Using Soil Legacy Data: A Multinomial Logistic Regression Approach	Bas Kempen	Wageningen University
11.40	Mapping the Extent of Organic Soils in Denmark Using GIS and Legacy Soil Information	Mogens Greve	Århus University
11.50	Digital Soil Property Mapping Using Legacy Data	Thomas Mayr	Cranfield University

12.00-13.00	Lunch	Rooms 205-207 Eccles Conference Center
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13.00-13.30	Discussion
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Session 2: Exploring New Sampling Schemes and Environmental Covariates in Digital Soil Mapping

Chair: David Brown, Washington State University

Rapporteur: Amanda Moore, USDA Natural Resources Conservation Service

13.30-14.00	Keynote Address: Environmental Covariates for DSM in the Western USA	Janis Boettinger	Utah State University
14.00	Modeling Soil Depth based upon Topographic and Landscape Attributes	Teklu Tesfa	Utah State University
14.10	Using Remotely Sensed Vegetation Cover to Digitally Map Soils in Remote, Steep, Humid Temperate Climates	Bruce Frazier	Washington State University
	TITLE	PRESENTER	INSTITUTION
14.20	Applying Geochronology in Predictive Digital Mapping of Soils	Jay Noller	Oregon State University
14.30	Landform Mapping of the North Cascades National Park, Washington	Phil Roberts	Washington State University

14.40	Applying Conditional Latin Hypercube (cLHS) for Selecting Soil Sampling Locations for Digital Soil Mapping at Parque Estadual da Mata Seca, MG, Brazil	Maria de Lourdes Mendonça-Santos	Empresa Brasileira de Pesquisa Agropecuária, Centro Nacional de Pesquisa de Solos
14.50	Geostatistics and Remote Sensing: An Improvement in Image Classification	Annamaria Castrignanò	Agricultural Research Council-Research Unit for Cropping Systems in Dry Environments

15.00-15.30 Break

15.30	Land Surface Feedback Dynamic Patterns Extracted from MODIS and their Relationships with Soil Types	A-Xing Zhu	University of Wisconsin-Madison
15.40	Remote Spectral Sensing of Biological Soil Crusts in Digital Soil Mapping, Canyonlands National Park, USA	Megan Hirschi	Utah State University
15.50	Scale Effects on Terrain Attribute Calculation and their use as Environmental Covariates for Digital Soil Mapping	James Thompson	West Virginia University
16.00	Application of Conditioned Latin Hypercube Sampling for DSM in Arid Rangelands in Utah	Colby Brungard	Utah State University
16.10	Comparison of Conventional and Pedometric Approaches for Mapping Soil Types	Stephen Roecker	USDA Natural Resources Conservation Service

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16.20	A New Method for Identifying Terrain Shape from DEMs	Jacek Blaszczyński	USDOI Bureau of Land Management National Operations Center
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16.30-17.00 Discussion

18.30-20.30 Opening Social

The Italian Place
48 Federal Avenue

Thursday, 2 October 2008

7.30-8.00 Registration

Lobby, Eccles Conference Center

8.00 Review of Day1

Introduction to Day 2

Session 3: Using Integrated Sensors or Other Technologies for Inferring Soil Properties or Status

Chair: Alex McBratney, University of Sydney

Rapporteur: Florence Carré, Joint Research Centre

8.20-8.50 **Keynote Address:** Raphael Viscarra Rossel CSIRO Land & Water
The Soil Spectroscopy Group and
the Development of a Global
Spectral Library

8.50 The Use of Hyperspectral Imagery Philippe Lagacherie INRA LISAH
for Digital Soil Mapping in
Mediterranean Areas

9.00 Exploring ASTER Imagery for Christine Blinn Virginia Polytechnic
Digital Soil Mapping in the Mojave Institute & State
Desert University

9.10 Classifying Ugandan Dambo Philip Dennison University of Utah
Wetland Soils Using Multispectral
and Topographic Remote Sensing
Data

9.20 Soil Organic Carbon Estimation Gustavo Vasques University of Florida
from Lab-Based Spectroscopy in
the State of Florida

9.30 VIS/NIR Mapping of SOC and Maria Knadel University of Århus
Extent of Organic Soils in the Nørre
Å valley

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9.40 Potential and Limitations of "on- Ross Bricklemyer Washington State
the-go" VisNIR Spectroscopy for University
Measuring and Mapping Soil Clay
and Organic Carbon Content

9.50 Catch-up Session

10.00- 10.30 Break

10.30 Digital Soil Mapping Using Emily Engle New Mexico Tech
Quantitative Hydrologic Remote
Sensing

10.40	Using Electromagnetic Induction Images of a Watershed Subsurface to Predict Soil Textural Properties	Hiruy Abdu	Utah State University
10.50	Digital Soil-class Mapping using Proximal and Remotely Sensed Data at the Field Level	John Triantafilis	University of New South Wales
11.00-11.30	Discussion		

Session 4: Innovative Inference Systems

Chair: Sabine Grunwald, University of Florida

Rapporteur: Gan-Lin Zhang, Chinese Academy of Sciences

11.30-12.00	Keynote Address: Topography Revisited: Towards a New Spatial Data Mining Framework for Terrain-based Digital Soil Mapping	Thorsten Behrens	University of Tübingen
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12.00-13.00	Lunch	Rooms 205-207 Eccles Conference Center	
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13.00	Large Scale Digital Mapping of the Soil Cover Pattern	Daniil Kozlov	Lomonosov Moscow State University
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	TITLE	PRESENTER	INSTITUTION
13.10	Spatial Prediction and Uncertainty Assessment for Mapping the Spatial Distributions of Soil Organic Carbon in Hebei Province of China	Yongcun Zhao	State Key Laboratory of Soil and Sustainable Agriculture, Institute of Soil Science, Chinese Academy of Sciences
13.20	Application of Artificial Neural Network and Decision Tree in a GIS-based Predictive Soil Mapping in sloping area. A Case Study of Hoi Num Rin Sub-watershed, Thailand	Ruamporn Moonjun	International Institute for Geo-information Science and Earth Observation

13.30	Prediction of Soil Parameters using Artificial Neural Network	Hussein Elarabi	University of Khartoum
13.40	Mapping Heavy Metal Content in Soils with Multi-Kernel SVR and LIDAR Derived Data	Cristiano Ballabio	University of Milano-Bicocca
13.50	Evaluation of the Transferability of a Knowledge-Based Soil-Landscape Model	Jessica Philippe	USDA Natural Resources Conservation Service
14.00	Simulation of the Two-Dimensional Vertical Structures of Alluvial Soil Textural Layers from Borehole Observations	Weidong Li	University of Connecticut
14.10	Random Forests Applied as a Soil Spatial Predictive Model in Arid Utah	Alexander Stum	USDA Natural Resources Conservation Service
14.20-15.00	Discussion		
15.00-15.30	Break		

Session 5: Global Digital Soil Mapping

Chair: Janis Boettinger, Utah State University

15.30-16.00	Keynote Address: Methodology for Global Digital Soil Mapping	Alex McBratney	University of Sydney
	TITLE	PRESENTER	INSTITUTION
16.00	Updating of Small-scale Soil Maps of China using Digital Soil Mapping Techniques	Gan-Lin Zhang	State Key Laboratory of Soil and Sustainable Agriculture, Institute of Soil Science, Chinese Academy of Sciences
16.10	GlobalSoilMap.net: Canada-United States Digital Soil Mapping Case Study	Jon Hempel	NRCS Natural Resources Conservation Service

16.20	GlobalSoilMap.net: Latin America	Maria de Lourdes Mendonça-Santos	Empresa Brasileira de Pesquisa Agropecuária, Centro Nacional de Pesquisa de Solos
16.30	GlobalSoilMap.net: Europe	Florence Carré	European Commission-Joint Research Centre
16.40	GlobalSoilMap.net: Oceania	Neil McKenzie	CSIRO
16.50	Harmonized World Soil Database	Freddy Nachtergaele	Food and Agriculture Organization
17.00	Homosoil: A Procedure for Identifying Areas with Similar Soil Forming Factors	Alex McBratney	University of Sydney
17.10-17.30	Discussion		
19.00-22.00	Workshop Dinner with Live Music and Dancing	Ballroom of The Bullen Center Cache Valley Center for the Arts 43 South Main	

Friday, 3 October 2008

7.30-8.00 Registration

Lobby, Eccles Conference Center

8.10 Review of Day 2
Introduction to Day 3

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Session 6: Using Digital Soil Mapping Products for Soil Assessment and Environmental Applications

Chair: Alfred Hartemink, ISRIC-World Soil Information

Rapporteur: David Rossiter, ITC Enschede

8.30-9.00	Keynote Address: terraGIS: A Web-based Geographic Information System for Natural Resource Management in Cotton Growing Areas of Australia	John Triantafyllis	University of New South Wales
9.00	Mapping the CN ratio of the forest litters in Europe	Florence Carré	European Commission-Joint Research Centre

9.10	Automatic Interpretation of Quickbird Imagery for Digital Soil Mapping (North Caspian Region, Russia)	Maria Konyushkova	V.V. Dokuchaev Soil Science Institute
9.20	Monitoring of Soil Salinity in Irrigated Lands of Golodnaya Steppe (Uzbekistan)	Dmitry Rukhovich	V.V. Dokuchaev Soil Science Institute
9.30	Estimating Soil Organic Matter Content by Regression Kriging	Chiara Piccini	Agricultural Research Council-Research Centre for the Soil-Plant System
9.40	Modelling and Digital Soil Mapping of the Organic Carbon Stock in the Topsoil (0-10 cm) of Rio de Janeiro State, Brazil	Maria de Lourdes Mendonça-Santos	Empresa Brasileira de Pesquisa Agropecuária, Centro Nacional de Pesquisa de Solos
9.50	Catch-up Session		

10.00-10.30 Break

10.30	Using DSM Data for Modeling Wind Erosion Events: Bridging the Gap between DSM and DSA	Florence Carré	European Commission-Joint Research Centre
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	TITLE	PRESENTER	INSTITUTION
10.40	Compiling Digital Soil Map of China at the scale of 1:1,000,000 using Soil Taxonomy based on Soil Database of China	Xuezheng Shi	State Key Laboratory of Soil and Sustainable Agriculture, Institute of Soil Science, Chinese Academy of Sciences
10.50	Spatial Variability of Soil Properties within Small Productive Landscapes in the Central Colombian Andes	Franco Obando-Moncayo	Universidad de Caldas
11.00	Biogeochemical Soil-Landscape Modeling	Sabine Grunwald	University of Florida

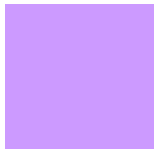
11.10	Soil Mapping by Integrating Remote Sensing, Geostatistics, and GIS	Martin Dokiburra	National Bureau of Soil Survey and Land Use Planning, India
11.20	Predictive Soil Maps based on Geomorphic Mapping, Remote Sensing, and Soil Databases in the Desert Southwest U.S.A.	Graham Dalldorf	Desert Research Institute
11.30-12.00	Discussion		

12:00-13:00 Lunch Room 205-207
Eccles Conference Center

Session 7: Protocol and Capacity Building for Making Digital Soil Mapping Operational

Chair: Jim Thompson, West Virginia University
Rapporteur: Scott Smith, Agriculture and Agri-food Canada

13.00-13.30	Keynote Address: Multi-criteria Assessment of Digital Soil Modeling Approaches	Sabine Grunwald	University of Florida
13.30	Completion of Operational Predictive Ecosystem Mapping (PEM) for 8.2 Million ha in the Cariboo Forest Region of BC, Canada: Results, Lessons Learned and Initial User Applications	Robert MacMillan	LandMapper Environmental Solutions Inc.
	TITLE	PRESENTER	INSTITUTION
13.40	Building Capacity for DSM in the Natural Resources Conservation Service: Mojave Desert Operational Initiative Case Study	Amanda Moore	USDA Natural Resources Conservation Service
13.50	Applying the Optimum Index Factor to Multiple Data Types for Production Soil Survey	Suzann Kienast-Brown	USDA Natural Resources Conservation Service
14.00	USDA Forest Service TEUI-Geospatial Toolkit	Haans Fisk	USDA Forest Service
14.10	USDA Forest Service TEUI-Geospatial Toolkit: A Case Study in Pre-Mapping for an Ecosystem Inventory	Kara Kleinschmidt	USDA Forest Service



14.20 Computer-assisted Geopedology for Predictive Soil Mapping

David Rossiter

ITC Enschede

14.30-15.00 Discussion

15.00-15.30 Break



15.30 Rapporteur Session 1

Maria de Lourdes Mendonça-Santos

Empresa Brasileira de Pesquisa Agropecuária, Centro Nacional de Pesquisa de Solos



15.40 Rapporteur Session 2

Amanda Moore

USDA Natural Resources Conservation Service



15.50 Rapporteur Session 3

Florence Carré

European Commission-Joint Research Centre

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16.00 Rapporteur Session 4

Gan-Lin Zhang

State Key Laboratory of Soil and Sustainable Agriculture, Institute of Soil Science, Chinese Academy of Sciences



16.10 Rapporteur Session 6

David Rossiter

ITC Enschede



16.20 Rapporteur Session 7

Scott Smith

Agriculture and Agri-Food Canada

16.30-17.00 Workshop Wrap-up

Janis Boettinger

Utah State University