The Abdus Salam International Centre for Theoretical Physics

College on Soil Physics: Soil Physical Properties and Processes under Climate Change

Organizer(s): Directors: D. Gabriels, E. Skidmore, D. Nielsen, I. Pla Sentis. Local Director: GC Ghirardi.
Trieste - Italy, 30 August 2010 - 10 September 2010

Venue: Leonardo da Vinci Building Main Lecture Hall

Final programme

Monday, 30 August 2010 (Room:Leonardo da Vinci Building Main Lecture Hall)
Chairperson: Donald Gabriels

08:15 - 09:15	(Room: Leonardo da Vinci Building, Lobby) --- Registration ---
09:15 - 10:15	**Welcome Session: Introduction to the College by the Organizers. Self-presentation of participants.**
10:15 - 10:45	**Ildefonso Pla Sentis** / *Departament de Medi Ambient i Ciencias del Sol, Universitat de Lleida, Leida, Spain* **Soil Physics and Climate Change**
10:45 - 11:00	(Room: Leonardo da Vinci Building, Lobby) --- Coffee Break ---
11:00 - 12:00	**Miroslav Kutilek** / *Czech Technical University, Prague, Czech Republic* **Paleopedology and paleoclimate: False hypopthesis?**
12:00 - 14:00	--- Lunch Break ---
14:00 - 15:20	**Miroslav Kutilek** / *Czech Technical University, Prague, Czech Republic* **Paleopedology and paleoclimate: Consequences for soil physics**
15:20 - 18:00	--- Free time to visit Trieste town centre ---
18:30 - 21:00	(Room: Leonardo da Vinci Building Cafeteria) --- Welcome Reception ---

Tuesday, 31 August 2010 (Room:Leonardo da Vinci Building Main Lecture Hall)
Chairperson: Donald Nielsen

08:30 - 09:50	**Ildefonso Pla Sentis** / *Departament de Medi Ambient i Ciencias del Sol, Universitat de Lleida, Leida, Spain* **Soils and their physical properties**
09:50 - 10:00	**GianCarlo Ghirardi** / *ICTP & University of Trieste* **The ICTP's Associateship Scheme**
10:00 - 10:20	(Room: Leonardo da Vinci Building, Lobby) --- Coffee Break ---
10:20 - 12:00	--- ICTP administrative procedures ---
12:00 - 13:30	--- Lunch Break ---
13:30 - 14:50	**Marcello Pagliai** / *Istituto Sperimentale per lo Studio e la Difesa del Suolo, Firenze, Italy* **Soil texture, soil structure, soil porous system**
14:50 - 15:10	(Room: Leonardo da Vinci Building, Lobby) --- Coffee Break ---
15:10 - 16:30	**Marcello Pagliai** / *Istituto Sperimentale per lo Studio e la Difesa del Suolo, Firenze, Italy* **Soil structure stability and soil surface sealing and crusting**
16:30 - 17:00	**Presentations by participants** Soil water erosion risk assessment in V aniversario watershed from Cuyaguateje River, west of Cuba (ALONSO BRITO Gustavo - Universidad Agraria de la Habana, Havana, Cuba) 15' Average ground contact pressure and stress distribution to predicting compaction under tracks and tyres (ARAUJO JUNIOR Cesar Francisco - Agricultural Research Institute of Parana, Londrina, Brazil) 15'

Wednesday, 1 September 2010 (Room:Leonardo da Vinci Building Main Lecture Hall)
Chairperson: Edward Skidmore

08:30 - 09:50	**Donald Gabriels** / *Department of Soil Management, UNESCO Chair on Eremology, Ghent University, Belgium* **Flow of water in saturated soils: Darcy's law**
09:50 - 10:10	(Room: Leonardo da Vinci Building, Lobby) --- Coffee Break ---
10:10 - 11:30	**Ildefonso Pla Sentis** / *Departament de Medi Ambient i Ciencias del Sol, Universitat de Lleida, Leida, Spain* **Flow of water in unsaturated soils: infiltration, soil water potential and retention**
11:30 - 12:00	**Presentations by participants** Lysimeter to estimate real-time evapotranspiration under field conditions (ARISTIZABAL BOTERO J.A - Universidad Nacional de Colombia, Medellin, Colombia) 15' Soil quality and productivity influenced by land use and topography in semiarid regions (ASADI Hossein - University of Guilan, Rasht, Iran) 15'
12:00 - 14:00	--- Lunch Break ---

14:00 - 15:20 **Klaus Reichardt** / *Universidade de Sao Paulo, Piracicaba, Brazil*
Climate and Soil Water Balance: principles

15:20 - 15:40 (Room: Leonardo da Vinci Building, Lobby)
--- Coffee Break ---

15:40 - 17:00 **Klaus Reichardt** / *Universidade de Sao Paulo, Piracicaba, Brazil*
Climate and soil water balance: Spatial/temporal variability of components

Thursday, 2 September 2010 (Room:Leonardo da Vinci Building Main Lecture Hall)
Chairperson: Ildefonso Pla Sentis

08:30 - 09:50 **Donald Nielsen** / *Department of Land, Air and Water Resources, University of California, Davis, USA*
Theoretical and practical aspects of solute transport

09:50 - 10:10 (Room: Leonardo da Vinci Building, Lobby)
--- Coffee Break ---

10:10 - 11:30 **Donald Nielsen** / *Department of Land, Air and Water Resources, University of California, Davis, USA*
Geostatistical analysis of landscape properties

11:30 - 12:00 **Presentations by participants**

Modeling of western boundary currents (BALOG Irena - Institute for Meteorology, University of Belgrade, Serbia) 15'

Saturated hydraulic conductivity of a Typic Haplustert as influenced by solutions of anionic series (BARDHAN Gopali - Central Rice Research Institute, Cuttack, Orissa, India) 15'

12:00 - 14:00 --- Lunch break ---

14:00 - 15:15 **Presentations by participants**

Are cover crops a water competitor in semi-arid agro-ecosystems? (BODNER Gernot - University of Natural Resources and Applied Life Sciences, Vienna, Austria) 15'

Physical properties and mineralogical composition of some representative soils from Argentina (BRESSAN Emiliano M. - INTA-CIRN, Buenos Aires, Argentina) 15'

A method to mapping the spatial variability of soil physical quality (CEDDIA Marcus Bacis - Universidade Federal Rural do Rio de Janeiro, Brazil) 15'

Modern techniques for assessing soil degradation using remote sensing and GIS (DARWISH MOSTAFA K.M. - National Research Center, Cairo, Egypt) 15'

Estimation of soil hydraulic properties through pedotransfer function approach and its applications in various landscape scale (SANTRA Priyabrata - Central Arid Zone Research Institute) 15'

15:30 - 17:30 --- Visit to Miramare Castle ---

Friday, 3 September 2010 (Room:Leonardo da Vinci Building Main Lecture Hall)
Chairperson: Edward Skidmore

08:30 - 09:50 **Luis Carlos Timm** / *Federal University of Pelotas, Brazil*
Applied time/spatial series analysis in soil physics

09:50 - 10:10 --- Coffee Break ---

10:10 - 11:30 **Klaus Reichardt** / *Universidade de Sao Paulo, Piracicaba, Brazil*
Dimensional analysis and scaling in soil physics

11:30 - 12:00 **Presentations by participants**

Climatologic water balance for a central pivot 15 N fertirrigated coffee crop (BORTOLOTTO Rafael Pivotto - Universidade de Sao Paulo, Piracicaba, Brazil)) 15'

Adapting soil loss using rusle for a watershed in Trinidad, West Indies (BALKISSOON Stasha Katrina - University of the West Indies, St. Augustine, Trinidad) 15'

12:00 - 14:00 --- Lunch Break ---

14:00 - 15:20 **Donald Nielsen** / *Department of Land, Air and Water Resources, University of California, Davis, USA*
Autoregressive analyses of soil attributes

15:20 - 15:40 --- Coffee Break ---

15:40 - 16:40 **Presentations by participants**

A new wet sieving approach for various land uses under a semi-arid climate (DEVIREN SAYGIN Selen - University of Ankara, Turkey) 15'

Determination of thermal properties of some Bulgarian soils using indirect methods (DONEVA Katerina Y. - N. Pushkarov Institute of Soil Science and Agroecology, Sofia, Bulgaria) 15'

Gravimetric sampling density for accurate crop water use calculation of Gezira clay soil, Sudan (ELSHEIKH Eman Rahamtalla - Agricultural Research Corporation, Khartoum, Sudan) 15'

Modeling water flow in undisturbed soil columns by breakthrough curves of chloride (ERSAHIN Sabit - Karatekin University, Cankiri, Turkey) 15'

Monday, 6 September 2010 (Room:Leonardo da Vinci Building Main Lecture Hall)
Chairperson: Donald Nielsen

08:30 - 09:50 **Ildefonso Pla Sentis** / *Departament de Medi Ambient i Ciencias del Sol, Universitat de Lleida, Leida, Spain*
Land degradation processes

09:50 - 10:10 --- Coffee Break ---

10:10 - 11:30 **Donald Gabriels** / *Department of Soil Management, UNESCO Chair on Eremology, Ghent University, Belgium*
Factors affecting water erosion

11:30 - 12:00 **Presentations by participants**

Characterization of the preferential water flow and contaminant transport in structured soils (FER Miroslav - Czech University of Life Sciences, Prague, Czech Republic) 15'

Variability of hydromorphic soils: a state space approach (AQUINO Leandro Sanzi - Federal University of Pelotas, Pelotas, Brazil) 15'

12:00 - 14:00 --- Lunch Break ---

14:00 - 15:20 **Donald Gabriels** / *Department of Soil Management, UNESCO Chair on Eremology, Ghent University, Belgium*
Desertification and aridity and drought

15:20 - 15:40 --- Coffee Break ---

15:40 - 16:55 **Presentations by participants**

Short-term effect of organic residues from bioenergy production on soil properties: implications on soil fertility and soil C sequestration (GALVEZ PEREZ Antonia - Instituto Andaluz de Ciencias de la Tierra, Granada, Spain) 15'

Investigation of rainwater chemistry and wet deposition at the EMEP site in Armenia (GEVORGYAN Lusine - Environmental Impact Monitoring Centre, Yerevan, Armenia) 15'

Soil temperatures in Australia and El Niño and southern oscillation (HAKEEM Shaik H. - Bureau of Meteorology, Darwin, Australia) 15'

Use of saline water as a source of irrigation (IBRAIHI Mohammed A. - University of Kerbala, Kerbala, Iraq) 15'

Soil quality improvement on highly weathered dry land soils of Jaffna Peninsula, Sri Lanka (JEGAJEEVAGAN Kanagaratnam - University of Jaffna, Jaffna, Sri Lanka) 15'

Tuesday, 7 September 2010 (Room:Leonardo da Vinci Building Main Lecture Hall)
Chairperson: Donald Gabriels

08:30 - 09:50 **Moacir de Souza Dias Junior** / *Universidade Federal de Lavras, Brazil*
Soil mechanical properties processes

09:50 - 10:10 --- Coffee Break ---

10:10 - 11:15 **Moacir de Souza Dias Junior** / *Universidade Federal de Lavras, Brazil*
Soil compaction

11:15 - 11:25 **GROUP PHOTOGRAPH**

11:30 - 12:00 --- Main Lecture Hall reserved for a staff meeting ---

12:00 - 14:00 --- Lunch Break ---

14:00 - 15:20 **Filippo Giorgi** / *ICTP, Trieste, Italy*
Climate change: from global to regional scales

15:20 - 16:00 **Presentations by participants**

Groundwater study of a subtropical small-scale wetland (GaMampa wetland, Mohlapetsi River catchment, Olifants River basin, South Africa) (KOGELBAUER Ilse - University of Natural Resources and Applied Life Sciences, Vienna, Austria) 15'

Surface runoff generation under different land uses in a Mediterranean mountain catchment (LOAIZA USUGA Juan Carlos - National University of Colombia, Medellin, Colombia) 15'

Analysis of water movement in soils under no tillage management in Argentina (LOZANO Luis Alberto - National University of La Plata, Buenos Aires, Argentina) 15'

16:00 - 16:20 --- Coffee Break ---

16:20 - 16:50

Historical changes in the environment of the Chinese Loess Plateau (WANG Li - Institute of Soil and Water Conservation, Shaanxi, P.R. China) 15'

Assessment of the Cambisol structure sustainability under different land uses systems in Western Amazon (CARUANA Paula - Federal University of Lavras, Brazil) 15'

Wednesday, 8 September 2010 (Room:Leonardo da Vinci Building Main Lecture Hall)
Chairperson: Edward Skidmore

08:30 - 09:50 **Ildefonso Pla Sentis** / *Departament de Medi Ambient i Ciencias del Sol, Universitat de Lleida, Lleida, Spain*
Soil salinity and irrigation requirements

09:50 - 10:20 --- Coffee Break ---

10:20 - 11:50 **Presentations by participants**

The soil degradation and desertification in the central southern of Vietnam (NGUYEN Ha Manh - Institute of Geography, Hanoi, Vietnam) 15'

Development of early warning system for soil quality changes under tropical conditions (OKON Paul Bassey - University of Calabar, Nigeria) 15'

Assessment of the suitability of anthill soil as earthen water reservoir lining material (OLADIPO Isaac Olaposi - Federal Polytechnic, Ado Ekiti, Nigeria) 15'

Estimation of above and below ground carbon stocks in selected land use patterns in Mt. Marsabit ecosystem (OUKO Caroline A. - Centre for Training and Integrated Research in Arid and Semi-Arid Land Development, Nanyuki, Kenya) 15'

Properties of soils derived from different parent materials in the Stolowe Mountains National Park (PIEPRZKA Roman - Institute of Soil Science and Environmental Protection, Wroclaw, Poland) 15'

Effects of rock fragments on water movement and solute transport in a Loess Plateau soil (ZHOU Beibei - Institute of Soil and Water Conservation, Yangling, P.R. China) 15'

12:00 - 13:30 --- Lunch Break ---

13:30 - 16:30 --- Visit to the Grotta Gigante ---

Thursday, 9 September 2010 (Room:Leonardo da Vinci Building Main Lecture Hall)
Chairperson: Ildefonso Pla Sentis

08:30 - 09:50 **Edward Skidmore** / *U.S. Department of Agriculture, Manhattan, Kansas, USA*
Wind erosion processes and prediction

09:50 - 10:10 --- Coffee Break ---

10:10 - 11:30 **Edward Skidmore** / *U.S. Department of Agriculture, Manhattan, Kansas, USA*
Dust emissions and climate

11:30 - 12:00 **Presentations by participants**

Assessment of susceptibility to mass erosion by logistic regression and Bayesian networks in mountainous landscapes of north-central Venezuela (PINEDA SOCORRO Maria C. - Universidad Central de Venezuela, Maracay, Venezuela) 15'

Evaluation of the spatial variability of beryllium-7 fallout in Piracicaba-SP, Brazil (PINTO MERIGUETTI Victor - University of Sao Paulo, Brazil) 15'

12:00 - 14:00 --- Lunch Break ---

14:00 - 15:20 **Gunay Erpul** / *University of Ankara, Turkey*
Inclined rainfall and wind and water erosion processes

15:20 - 15:40 --- Coffee Break ---

15:40 - 16:55 **Presentations by participants**

Growth and carbon storage of three young timber species in the Yungas of Bolivia (QUISPE MAMANI J.C. - Technical Unit of International Relations, La Paz, Bolivia) 15'

Soil physical and hydraulic properties by different soil tillage systems (SCHOLL Peter - University of Natural Resources and Applied Life Sciences, Vienna, Austria) 15'

The effect of time-variable soil hydraulic properties in soil water simulations (SCHWEN Andreas - University of Natural Resources and Applied Life Sciences, Vienna, Austria) 15'

Interactive effects of rising temperature and lowering moisture on soil water chemistry: An experimental growth-chamber approach (MAYMO HERNANDO Ana C. - Centro de Investigaciones sobre Desertificacion, Albal, Spain) 15'

A new heat pulse sensor for measuring soil profile evaporation (ZHANG Xiao - China Agricultural University, Beijing, P.R. China) 15'

Friday, 10 September 2010 (Room:Leonardo da Vinci Building Main Lecture Hall)
Chairperson: Donald Nielsen

08:30 - 09:30 **Presentations by participants**

Soil sustainability in relation to soil erosion in Shiwaliks of Lower Himalayas (SINGH Manmohan Jit - Punjab Agricultural University, Ludhiana, India) 20'

Land degradation by erosion: Samanalawewa catchment, Sri Lanka (UDAYAKUMARA E.P.N. - Asian Institute of Technology, Pathumthani, Thailand) 20'

Effectiveness of IWK biosolids application on growth of rubber in the nursery (YAHYA Abd Karim - Malaysian Rubber Board, Selangor, Malaysia) 20'

09:30 - 10:15 **Presentations by ICTP Associates**

Application of stable isotopes and soil geochemistry for understanding soil formation and paleoclimate (ACHYUTHAN Hema - Anna University, Chennai, India) 15'

Basis for soil carbon sequestration in Africa (ADENIYI M.O. - University of Ibadan, Nigeria) 15'

An evaluation of the spatial variability of soils of similar lithology under different land use types and degradation risks in a savannah agro-ecology of Nigeria (EZEAKU Peter I. - University of Nigeria, Nsukka, Nigeria) 15'

10:15 - 10:30 --- Coffee Break ---

10:30 - 12:00 **Ildefonso Pla Sentis** / *Departament de Medi Ambient i Ciencias del Sol, Universitat de Lleida, Lledia, Spain*
Soil salinity and irrigation requirements

12:00 - 14:00 --- Lunch Break ---

14:00 - 14:45 **Donald Nielsen** / *Department of Land, Air and Water Resources, University of California, Davis, USA*
Soil Physics - some of the past and today's opportunities

14:45 - 15:30 **Closing Session and Farewell**