



AUGUST 12-17, 2018 BRAZIL

Soil science:  
beyond food and fuel

[www.21wcss.org](http://www.21wcss.org)



## Symposia

### Remote Sensing Applied to Soil Science

#### First Consideration

This session will be the first Symposia of Remote Sensing (RS) as part of the World Congress of Soil Science, composed by key speeches, oral selected oral and poster presentations. The importance of RS as a 'partner' on soil science is not new, and dates from more than 100 years (i.e., aerial photographs). Since then, hundreds of equipment have been developed, and from a simple tool, RS became an innovative scientific discipline. The symposia will have the presence of important references on the area such as Prof. Eyal Ben-Dor who was a precursor of the Near Infrared Reflectance Analysis of soils and was the first scientist and a pioneer to apply the Hyper Spectral Remote Sensing technology to soils. Prof. José Alexandre Demattê, also in coordination, was the first full professor in RS and soil spectroscopy in Brazil. In addition to the above two scholars, we have the honor to present Prof. Marcos Rafael Nanni as the third candidate for organizing this session. Prof Nanni is an expert in proximal and remote sensing of soil, and has worked in RS with drones and the AISA-Fenix airborne hyperspectral sensors. Today, he is the head of one of the most powerful and equipped group on proximal and remote sensing of soils in Brazil. Despite the organizers short presentation, we will have two important keynote speeches, **Prof G. Zalidis** : "*Promoting remote sensing applications for optimizing soil and water management supporting climate smart agriculture in the Balkan region*" and **Prof. J. Cierniewski**: "*Remote sensing as a tool to study soils and their impact on the Earth's climate*."

#### Interests for submission/Objectives, poster/oral presentation

Papers related with remote sensing and soils of any specific area (erosion, physics, fertility, chemistry, microbiology, mineralogy, soil classification, mapping, pollution, soil management) will be welcome. Despite these, other topics, such as (a) updating the advance remote sensing technology for Soil Science applications; (b) soil remote sensing data analyses by chemometric methods; (c) integration of the multi and hyperspectral sensors data for soil science; (e) use of the remote sensing data in digital soil mapping, (f) precision agriculture, (g) soil attributes prediction, land use, soil monitoring and soil environment impact; (h) available platforms and data bases for soil remote sensing studies; (i) integration of remote sensing with soil science, (j) data-mining soils in remote images; (k) integration of proximal with remote sensing soil data, (l) reviewing the new technology and missions for the future soil science; (m) proximal sensing papers well be welcome sense related with remote sensors; (n) all platforms, satellite, airborne, Unmanned Aerial Vehicle (UAV); (o) sensors from any part of the spectrum (i.e., gama, x-ray, ultraviolet, optical, middle infrared, radar, others) are welcome.

## Submission/Selection

Submission can be made as indicated in the WCSS call, where will be selected oral and poster presentations.

## Abstracts topics

Division 1: *Soil in Space and Time*

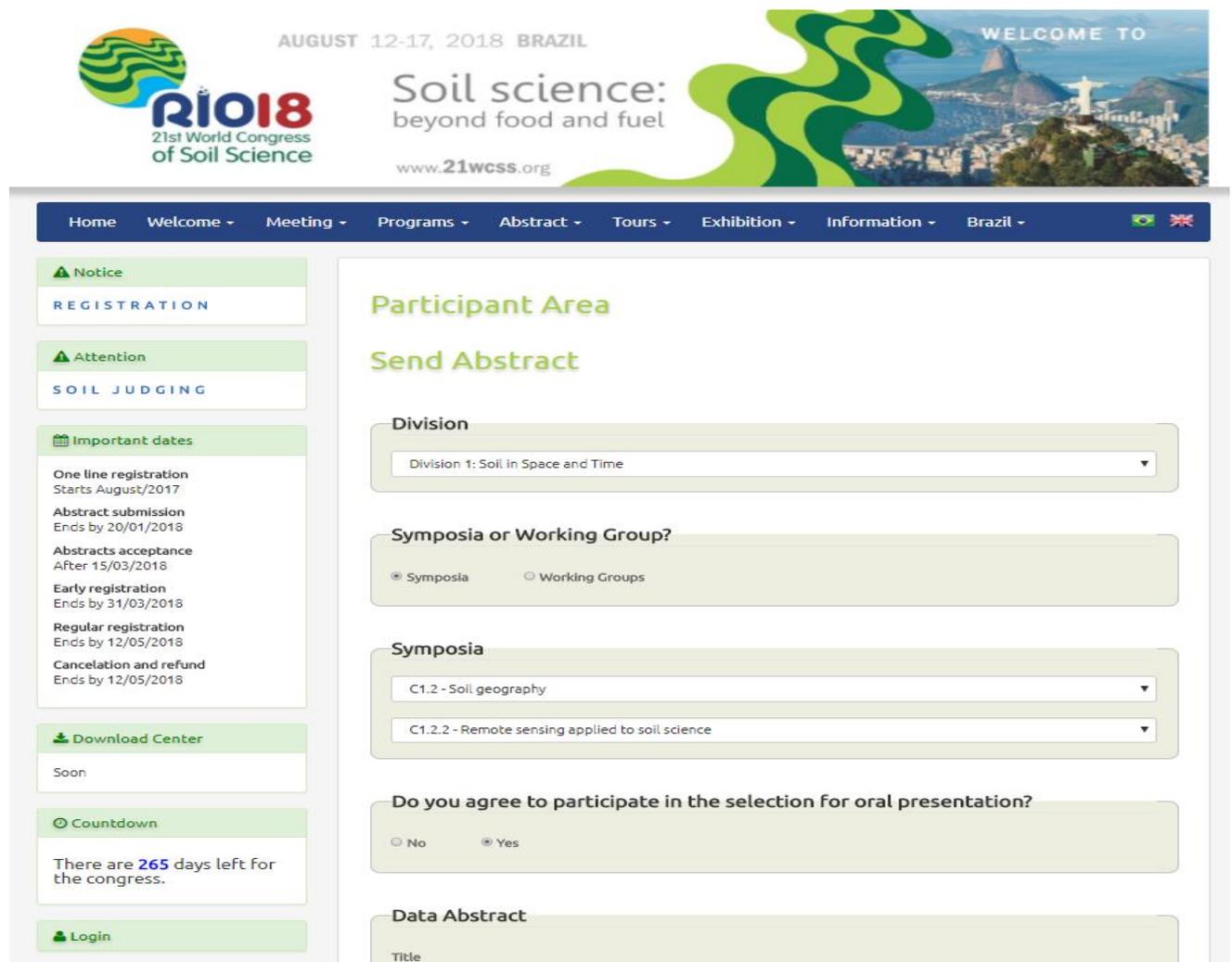
1.2: *Soil geography*

**1.2.2: *Remote sensing applied to soil science***

## Making your submission

Steps for Abstract Submission in the **Remote sensing applied to soil science Symposia**:

- i. Access the 21st World Congress of Soil Science at [www.21wcss.org](http://www.21wcss.org)
  - ii. Go to *Registration process*
  - iii. In the Participant Area go to *Send Abstract*
  - iv. Select *Division 1: Soil in Space and Time*
  - v. Click at *Symposia*
  - vi. Select *C1.2 - Soil geography*
  - vii. Select *C1.2.2 - Remote sensing applied to soil science*
- See the figure below:



The screenshot displays the website for the 21st World Congress of Soil Science (Rio18) in August 2018, Brazil. The main banner features the event logo, dates, and a scenic view of Rio de Janeiro with the text 'WELCOME TO Soil science: beyond food and fuel'. Below the banner is a navigation menu with options like Home, Welcome, Meeting, Programs, Abstract, Tours, Exhibition, Information, and Brazil. On the left side, there are several utility boxes: 'Notice' with a 'REGISTRATION' link, 'Attention' with a 'SOIL JUDGING' link, 'Important dates' listing registration and submission deadlines, 'Download Center' with a 'Soon' message, 'Countdown' showing 265 days left, and a 'Login' button. The main content area is titled 'Participant Area' and 'Send Abstract'. It contains a 'Division' dropdown menu set to 'Division 1: Soil in Space and Time', a 'Symposia or Working Group?' section with radio buttons for 'Symposia' (selected) and 'Working Groups', a 'Symposia' section with two dropdown menus set to 'C1.2 - Soil geography' and 'C1.2.2 - Remote sensing applied to soil science', a 'Do you agree to participate in the selection for oral presentation?' section with radio buttons for 'No' and 'Yes' (selected), and a 'Data Abstract' section with a 'Title' input field.

# Remote Sensing Applied to Soil Science

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## **Coordinator: Prof. Eyal Ben-Dor**

Full Professor at the Geography and Human Environment Department, Tel Aviv University, Israel.



Prof. Eyal Ben-Dor is a Full Professor at the Tel Aviv University (TAU) and was the chair of the Geography and Human Environment Department at Tel-Aviv University from 2005-2009 and again from 2012-2015. Currently he is serving as the head of the remote sensing laboratory (RSL) within this department. The RSL consist of more than 15 personals including sabbatical fellows, post doc candidates, visiting professors and students from abroad, technician and students for both PhD and MSc degrees. He has more than 24 years of experience in remote sensing of the Earth, with special emphasis on the Hyperspectral Remote Sensing technology (HRS) and soil spectroscopy. He developed many applications using the HSR technology for civil engineering, medicine, veterinary, environmental science, water, vegetation, atmosphere and soil. In 1992 he received his PhD from the Hebrew University of Jerusalem, Faculty of Agriculture in Soil Science where he received the Mokady Award for excellence. From 1992-1994 he conducted a post doc fellowship in CSES (Center of Study the Earth from Space) university of Colorado at Boulder under supervision of Prof Goetz and Prof. Kruse. The fellowship he earned was supported by the Baron-de-Hirsh and Rotchild and NOAA foundations. He was a pioneer in studying the contribution of HSR technology to both soil and urban environments and has developed many applications to that end. His studies focus on both quantitative and qualitative analyses of field and laboratory reflectance data and on processing of airborne and orbital hyper spectroscopy data for precise and advanced terrestrial and atmosphere mapping. He is the owner of 4 patents in various fields where two has been selected for commercialization. He has a strong background in soil science, spectroscopy and remote sensing and is an author of more than 200 papers, book chapters and technical reports. He was awarded in 2006 by the Tel Aviv University Vice President as an excellent researcher amongst the 1000 professors within the Tel Aviv University and was appointed by the Ministry of Science to be the founder and the leader of the Israeli Hyperspectral Group: Center of Excellence (IHSR-CE). He is a chair of ISPRS WG VII/3 Information extracted from hyper spectral sensors and a Chair of WG8 in EUFAR Hyperspectral Information of Soil. He is a member of the international scientific committee of HysPIRI HSR sensor of NASA and an advisor to the SHALOM ASI-ISA HSR orbital mission. Recently (2017) he was appointed as a member of the advisory board of the Sentinal-10 mission by the European Space Agency (ESA). He was appointed as the GEO principle of Israel in 2015. Prof. Ben Dor had chaired and organized the 6<sup>th</sup> EARSEL SIG IS conference in Tel Aviv, March 2009 and another three international workshops under the EUFAR umbrella (2010, 2011, 2016).

Web: [www.tlvrslab.com](http://www.tlvrslab.com) E-mail: bendor@post.tau.ac.il

## **Vice-coordinator: Prof. José Alexandre M. Demattê**

Full Professor at the Department of Soil Science, College of Agriculture Luiz de Queiroz, University of São Paulo ESALQ/USP, Brazil



Dr. Demattê holds a bachelor's degree in Agronomy from the Federal University of Lavras (1990), Master's degree (1992) and Doctorate at the University of São Paulo, College of Agriculture Luiz de Queiroz (1995). Full Professor (1999). Post doc at the National Institute of Space Research, INPE (1995-1998). Visiting Scholar University of Arizona USA, INRA, France (1998), CSIRO, Australia, (2010), University of California, Davis, and Texas A & M University USA (2014). Researcher at CNPQ since 1997. He is currently a Full Professor of the Department of Soil Science, University of São Paulo, in the disciplines of soil management and conservation, remote sensing applied to soil survey and geoprocessing. Lines of research: remote sensing and geoprocessing applied to soils, soil survey and mapping, digital soil mapping, precision farming, and proximal sensing. Coordinator of the GeoCis Research Group (Geotechnologies in Soil Science). Leader of the Brazilian Soil Spectroscopy Group (CNPq) and Coordinator of the Brazilian Soil Spectral Library (BESB) construction. Has 30 year experience in remote sensing applied to soils, and 22 years with satellite soil sensing research.

Web: <http://esalq7.wixsite.com/jamdematte>

GeoCis Lab: <http://esalqgeocis.wixsite.com/geocis/lab> E-mail: [jamdemat@usp.br](mailto:jamdemat@usp.br)

#### **Collaborator: Prof. Marcos Rafael Nanni**

Full Professor and Researcher at the Department of Agronomy, University State of Maringá – UEM. Brazil.

Graduated in Agronomy (1986), Master (1995), PhD (2000), Associate Professor (2000) and Full Professor (2017), all in remote and proximal sensing applied to soils. Postdoctoral stage in Universidad Miguel Hernandez of Elche – Spain and at University of São Paulo (College of Agriculture Luiz de Queiroz). Has lessened in pedology, soil survey, land use planning, soil management, soil mapping, geoprocessing and remote sensing applied to soils. Has 30 years of experience in soil mapping in field and remote sensing techniques. Has mapped more than 0,5 million ha in Brazil. Research lines are related with: soil mapping (traditional and digital), geoprocessing, remote sensing (laboratory, field, aerial and orbital), soil chemometrics and precision agriculture. Dr. Nanni is an Associated Editor of the Brazilian Journal of Soil Science; Researcher of the Brazilian National Research Institute (CNPq); Coordinator of the geoprocessing and remote sensing laboratory of the department of agronomy/UEM. Member of the Brazilian groups: Precision Agriculture, Soil Mapping, Digital Soil Mapping.

Gales Lab: <http://gales.uem.br> E-mail: [mrnanni@uem.br](mailto:mrnanni@uem.br)



#### **Speaker: Prof. George Zalidis**

Professor at the Aristotle University of Thessaloniki (AUTH) Faculty of Agriculture, Greece.

The Professor George Zalidis is director of the Laboratory of Remote Sensing and Geographical Information Systems, and the Associate President of the Faculty of Agriculture, A.U.Th. His specialization in the field of Applied Soil Science started with a Degree of Agriculture (Faculty of Agriculture, A.U.Th., Greece) and continued with a PhD in Soil Physics from the Michigan State University in U.S.A. He has published over 80 research articles, made over 40 oral presentations in Greek and national conferences, has participation in 3 Greek and 5



national scientific unions, he is referee in several Greek and 3 national scientific journals. He is also a member of numerous national and international professional organizations, and has been an Affiliate Professor in International Institutes. He has worked and supervised in over 60 national and European research project and sustainability, bioremediation of degraded areas, restoration and rehabilitation ts. His basic qualifications are: Research focused on topics such as soil pollution, soil quof wetland ecosystems, wetland inventory and mapping.

Web: [www.i-bec.org](http://www.i-bec.org) E-mail: [zalidis@i-bec.org](mailto:zalidis@i-bec.org)

**Speeker: Prof. Jerzy Cierniewski**

Professor at the Department of Soil Science and Remote Sensing of Soils, Institute of Physical Geography and Environmental Planning, Adam Mickiewicz University in Poznań, Poland.

Professional interests: Measurements and computer modeling of soil bidirectional reflectance, application of remote sensing techniques for soil science. Research activity: Author and co-author over 100 publications, referee for papers submitted to remote sensing journals such as: International Journal of Remote Sensing, Remote Sensing of Environment, IEEE transactions on Geoscience and Remote Sensing, Journal of Applied Remote Sensing, Optical Engineering. Principal investigator of the following research project (in the past 12 years): 2011-2014 Variation the short-wave solar radiation amount reflected from the soils resulting from their different tillage; 2009-2012 Hyperspectral reflectance properties of soils in Poland; 2009-2012 Estimation of soil organic carbon content using hyperspectral data; 2006-2008 Bare soil albedo at various illumination conditions and the soil surface shape; 2004 Distribution of sky radiation in the optical domain for modeling the bidirectional reflectance function for soil surfaces; 2004 Virtual soil surfaces for prediction of soil image in various illumination and observation conditions; 1999-2001 A directional reflectance model of cultivated soil surfaces taking into account their aggregates and micro-relief.



Web: <http://ztg.amu.edu.pl/index.htm> E-mail: [cienje@amu.edu.pl](mailto:cienje@amu.edu.pl)

## Agenda

August (the precise day is still under revision)\*

| Hour***                     | GENERAL PROGRAM  |
|-----------------------------|--|
| 15:15 – 15:20               | Introduction – Prof. José Alexandre M. Demattê: <i>The first Symposia of Remote Sensing (an integrative powerful science) in the 21th World Congress of Soil Science,</i>              |
| 15:20-15:25                 | Future overview: <i>Hyperstpectral image data: 'from pedon to space soil sensing'</i> , Prof. Marcos R. Nanni  |
| 15:25 – 15:40               | Opening - Prof. Eyal Ben-Dor: <i>"Soil remote sensing in the era of 4th industrial revolution"</i>   |
| 15:40 – 16:05               | Key Speech 1 - Prof. George Zalidis**: <i>Promoting remote sensing applications for optimizing soil and water management supporting climate smart agriculture in the Balkan region</i> |
| 16:05 – 16:30               | Key Speech 2 - Prof. Jerzy Cierniewski**: <i>Remote sensing as a tool to study soils and their impact on the Earth's climate</i>   |
|                             | <b>Oral Presentation***</b>  |
| 16:30 – 16:55               | 1Selected  |
| 16:55 – 17:05               | 2Selected  |
| 17:05 – 17:15               | 3Selected  |
| 17:15 – 17:30               | 4Selected  |
| 17:30 – 17:45               | 5Selected  |
| 17:45 – 18:00               | 6Selected  |
|                             |  |
| <b>Date to be announced</b> | <b>POSTER PRESENTATION</b>   |

\* specific date still under revision

\*\* key Speeches: 20 min presentation plus 5 min questions; Oral presentation selected: 12 min presentation and 3 min questions.

\*\*\* Oral and poster presentations will be selected by the symposia commission after papers submission.

*In complement to 21th WCSS Organization Committee students from the following research groups are collaborating to this specific symposia.*



**THE REMOTE SENSING  
LABORATORIES**

