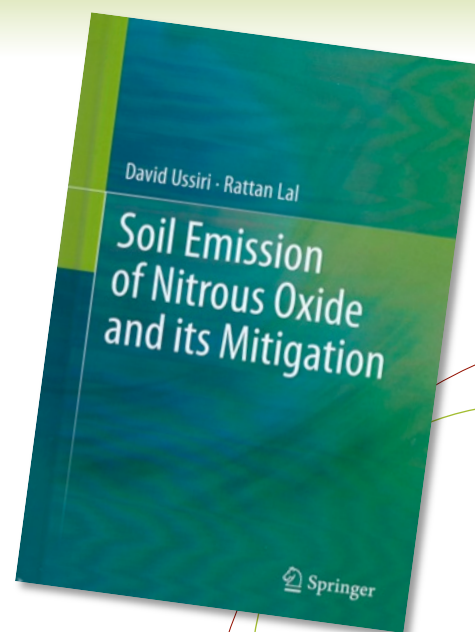


David Ussiri and Rattan Lal's new book, Soil Emission of Nitrous Oxide and its Mitigation, is now available.

This book describes the anthropogenic sources of  $N_2O$  with major emphasis on agricultural activities. It summarizes an overview of global cycling of N and the role of nitrous oxide on global warming and ozone depletion, and then focuses on the major source - soil borne nitrous oxide emissions. The spatial-temporal variation of soil nitrous oxide fluxes and underlying biogeochemical processes are described, as well as approaches to quantify fluxes of  $N_2O$  from soils. Mitigation strategies to reduce the emissions, especially from agricultural soils, and fertilizer nitrogen sources are described in detail in the latter part of the book.



# **UNU - Institute for Integrated Management of Material Fluxes and of Resources**

Dr. Lal presented: *Nexus of Soil, Water, Waste*

10 December, 2012 Dresden, Germany

The opening ceremony of the new Institute for Integrated Management of Material Fluxes and of Resource.

<http://unu.edu/about/unu-system/flores>

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# Dr. Lal's Travels And Presentations



In Paris, January 2013, from right to left are Rolf Derpsch from Parague, Rattan Lal from OSU and Amir Kassam from the University of Reading ,UK.

**Institut de l'Agriculture Durable**  
*Presented: Towards Sustaining Agriculture*  
22-26 January 2013 Paris, France



## **XI Agricultural Sciences Congress Agricultural Education: Reshaping India's Future**

*Presented: Educating Future Agricultural Scientists &  
Academics in India*

Orissa University of Agriculture & Technology,  
7-9 February 2013 Bhubaneswar, Odisha, India  
<http://www.icar.org.in/en/node/5509>

In Boston February 2013, at the AAAS Annual Meeting. Included in the photo are the conveners of the session:  
Dr. Fred Vacosek (3<sup>rd</sup> from right) and  
Dr. John Sadler (center).

## **American Association for the Advancement of Science (AAAS): The Beauty and Benefits of Science**

*Presented: The Water Nexus*  
14-18 February 2013, Boston, MA  
<http://www.aaas.org/meetings/>





# Dr. Lal's Travels And Presentations

In Potsdam, Germany, February 2013. Those seated from left to right are Dr. Knut Ehlers (German Federal Environment Agency), Prof. Rattan Lal (OSU) and Dr. Luc Gnacadja (Secretary General, UNCCD).



**Institute for Advanced Sustainability Studies (IASS)**  
26-27 February 2013  
Potsdam, Germany.



From L to R are: Dr. Ross Welch from Cornell, Dr. Anita Spring from UFL, Gainesville, Dr. Rattan Lal (OSU), Adrian Ares ( Director SANREM,VT) and Dr. Michael Bertsen (PI, SANREM).

**Virginia Tech 4-6 April 2013**

## Forthcoming Conferences

**International Conference on Soil Carbon Sequestration: Climate, Food Security and Ecosystem Service.** The conference is hosted by the Soil Conservation Service of Iceland and the Agricultural University of Iceland  
**24-31 May 2013**

**IUSS – International Union of Soil Sciences**  
**Madison, Wisconsin 3-6 June 2013**  
<http://iuss-c-conference.org/>



**2<sup>nd</sup> Global Soils Week: Losing Ground?**  
**Berlin, Germany 27-31 October 2013**  
<http://www.iass-potsdam.de/research-clusters/global-contract-sustainability/sustainability-governance/global-soil-forum/global>



# Welcome



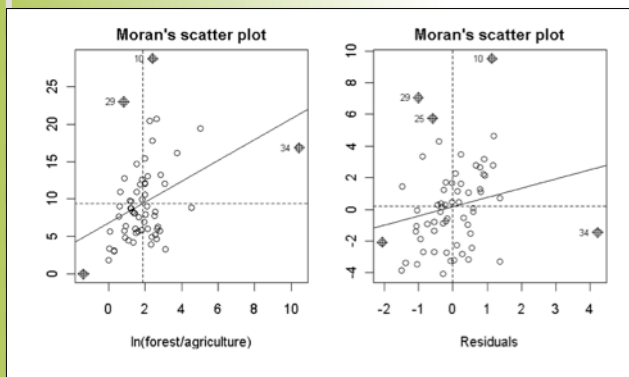
Contingency map of parishes



## Dr. Shiguo Jiang

Shiguo Jiang joined C-MASC as a Post Doctoral Researcher in February 2013. He obtained his Ph.D (2012) in Geography (Advisor: Dr. Desheng Liu) from The Ohio State University. Shiguo's dissertation is about the spatial distribution of classification quality for remote sensing imagery. His research provides a better understanding of land use land cover change and its impact on ecological systems and global warming.

Shiguo obtained his M.S. (2004) in Urban Studies (Advisor: Prof. Yixing Zhou), B.S. (2001) in Urban and Regional Planning (thesis advisor: Prof. Yixing Zhou), and B.A. (2001) in Economics, all from Peking University, China. He worked as an urban planner at Beijing Tsinghua Urban Planning and Design Institute (THUPDI) from 2004 to 2007, when he participated in more than twenty consulting projects for various city governments including Beijing, Hangzhou, Nanchang, Hohhot, Yinchuan, etc.



Shiguo's research focuses on understanding ecosystem and climate dynamics, land use land cover change, urban and regional planning through the integrated use of geospatial information technologies (GIS, remote sensing, and GPS) and spatial statistical methods. As a Post Doctoral Researcher at C-MASC, Shiguo simulates and models the impact of land use/agricultural practice on soil/water quality and thus the crop yield. He further examines the interaction among land use/agricultural practice, carbon sequestration, and climate change.

[jiang.152@buckeyemail.osu.edu](mailto:jiang.152@buckeyemail.osu.edu)



***The following article appeared in Pedon, a publication from Ghent University, Belgium.***

My name is Dr. Vincent de Paul Obade from Kenya. I am alumnus of the Physical Land Resources programme (2001-2003) of Ghent University. My journey into academia started after I completed my undergraduate degree in surveying from the University of Nairobi, Kenya. I met Prof. Dr. ir. Marc Van Meirvenne who was in Kenya for a project in setting up GIS facilities. I attended two seminar presentations of Prof. Van Meirvenne, where after I had the opportunity to discuss with him the topic of his presentations. I later joined the Physical Land Resources programme of Ghent University, where I pursued the management option. My master thesis research was entitled "Spatial Information Techniques for Wildlife Habitat Management, case study Nairobi National Park in Kenya", which was supervised by Prof. Dr. Robert De Wulf, from the laboratory of forestry and spatial information techniques.



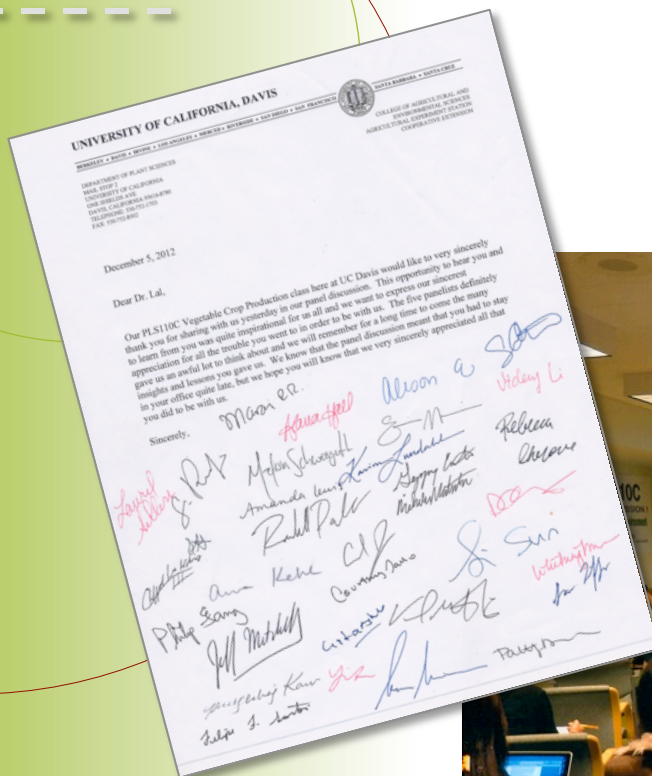
The education I received at Ghent University broadened my interest in the scientific planning and management of natural resources, and the importance of soils and biodiversity to the environmental health and the global economy. After completing my Master Programme, I had several job offers in Kenya. I worked as a survey engineer at the Ministry of Roads and Public works and taught environmental sciences courses at the United States International University. I was also an instructor/resource person in the surveying, cartography, and the environmental impact assessment courses offered at the Jomo Kenyatta University of Agriculture and Technology, in Kenya. With the strong background in research and the relevant scientific courses I received from

the Physical Land Resources programme at Ghent University, I was able to successfully complete my Ph.D at the South Dakota State University, USA. I am now a post-doctoral researcher at the carbon management and sequestration center of the Ohio State University, USA. Thanks to Ghent University for providing the initial opportunity, I can now fully serve, conduct research, teach other students, as well as learn in that pursuit.

[obade.1@osu.edu](mailto:obade.1@osu.edu)







# Digital Discussions



On 5 December 2012, Dr. Lal took part with over 30 students in University of California, Davis' PLS110C Vegetable Crop Production class in a discussion with other panelists via the web. It was a success in sharing knowledge but it also saved travel time and expenses, and greatly reduced the panelists' carbon footprint!



## Frosty Days

The Ohio State University, Columbus, Ohio, received one last snow shower on March 25, 2013. Everything was frosted white and very lovely but we are greatly anticipating the coming of Spring and warmer weather!



# Alumni in Action

## Congratulations!



**Chetan Singla** was selected for a fellowship under the Netherlands Fellowship Programme (NFP). Nuffic will award a grant to UNESCO-IHE Institute for Water Education to finance his fellowship for the program Groundwater Resources and Treatment during March 2013.  
[chetan\\_singla@yahoo.com](mailto:chetan_singla@yahoo.com)

UNESCO-IHE  
Institute for Water Education



## Recent C-MASC Alumni Graduates from The Ohio State University

Anjali Dubey	Ph.D
Samantha Sekar	M.Sc
Chris M. Eastman	M.Sc
M. A. Verughere	M.Sc

## On the Move

**Humberto Blanco-Canqui** from KSU to University of Nebraska, Lincoln, Assistant Professor of Soil Science, Department of Agronomy and Horticulture  
[hblancocanqui2@unl.edu](mailto:hblancocanqui2@unl.edu)

Acknowledgement to CAPES Foundation Ministry of Education Of Brazil by financial support.

# Getulio de Freitas Seben Junior

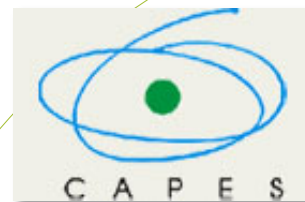
This April, Getulio de Freitas Seben Junior concluded his one year term as a visiting scholar with the Carbon Management and Sequestration Center at The Ohio State University under the direction of Professor Dr. Rattan Lal.

Getulio concluded his studies at the Technical in Agriculture at Federal Agrotechnical School of Mato Grosso in 1997, his BS in Engineer Agronomist at Mato Grosso do Sul State University in 2008, his MSc in Soil Science at São Paulo State University in 2010, where he is currently a PhD student.

Getulio's research is focused on the influence of "Land Use and Management Systems on Soil Organic Carbon Sequestration and Soil Physical Properties". During this research, Getulio and colleagues noted that No-till system increased C sequestration by  $0.23 \text{ Mg ha}^{-1}$ , compared to conventional tillage system. Also, within No-till system, corn as summer crop (in rotation with soybean or in monoculture) increased C stock by  $2 \text{ Mg ha}^{-1}$  compared to soybean in monoculture, and among winter crops sunn hemp increased C on soil by  $2.2 \text{ Mg ha}^{-1}$  compared to oilseed radish, and did not differ from corn, sunflower, pearl millet, pigeon pea and grain sorghum. The physical fractionation of the C in soil shows that the highest quantity is associated with minerals (52 %), follow by fine particulate organic C (32 %) and coarse particulate organic C (16 %).



Getulio accepts his certificate from Dr. Lal on April 8, 2013 during his farewell reception.





# André Baldansi Andrade

Andre joined C-MASC as a visiting scholar in May 2012 and completed his time here in April 2013. He is from Brazil, studying at Federal University of Lavras (UFLA) and has his BS in Agronomy Engineering. Andre was being sponsored by CNPq Agency from Ministry of Education of Brazil.

While here, his research focused on mechanisms of carbon retention in different soil textures at different altitudes in Brazil. Through studying soil characteristics, the results suggest different situations depending on the altitude that soils are located, showing this to be a potential factor to be considered when assessing Carbon in soils from Brazil.

During his time here, Andre has helped post-doc students and staff with soil, water, gases and biomass samplings at Waterman farm (Columbus), Michigan State and Wooster, Ohio. The analysis techniques he utilized consisted of soil carbon and nitrogen measurements through dry combustion method, specific surface area using BET method and Greenhouse gases measurements using Photoacoustic method, with a portable device.

In Brazil, he will write a paper regarding his research with soils of a forest-savanna ecotone (study area). Skills and experiences within C-MASC team included weekly seminars with the group and attending classes taught by Dr. Lal that will support him on future research and will be applied to his M.Sc. degree.



Andre completing field work.



Andre presenting at one of C-MASC's weekly seminars with Dr. Lal.

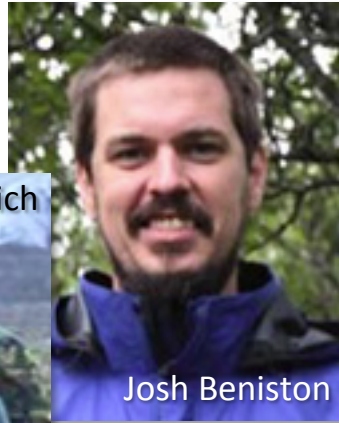




Ryan Hottle



Nick Stanich



Josh Beniston

## Graduate Student Honors

C-MASC graduate students, Ryan Hottle, Nick Stanich and Josh Beniston were recently accepted into the the Honor Society of Agriculture, Gamma Sigma Delta. Graduate students of outstanding ability with at least a 3.5/A =4.0 or better grade point average and who show great potential for future leadership can be nominated by chapter members and elected. Congratulations!

## Upcoming C-MASC Publications

Allen, Gerald. 2013. Watershed-Scale Assessment of the Hydrologic Impacts of Surface Coal Mining and Reclamation. Environmental Management. *In Review*.

de Paul Obade, V. Lal, R. 2013. Assessing land cover and soil quality by remote sensing and geographical information systems (GIS). Catena. 104, 77-92.

Mukherjee, A., Lal, R., and Zimmerman, A. Biochar Impacts on Physical Properties and Gaseous Emissions from A Scalped Crosby Silt Loam Soil; *In review*.

Mukherjee, A. Lal, R. 2013. Impacts of biochar on soil physical properties and associated parameters. Agronomy. *Accepted*.

Seben Jr., G.F., J.E. Corá, R. Lal. 2013. Aggregate Shape and Tensile Strength Measurement. Soil and Tillage Research. *In review*.

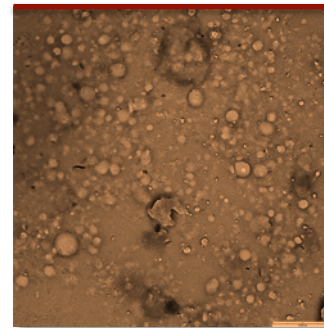
Seben Jr., G.F., J.E. Corá, R. Lal. 2013. No-Till and Cropping Systems on Physical Quality of an Oxisol at Tropical Region. Catena. *In review*.

Ruiqiang Liu and Lal, R. 2013. A laboratory study on amending mine soil quality. Water Air Soil Pollution. *In Review*.



# C-MASC Developments

On 5 March 2013, C-MASC and the International Program in Agriculture at OSU hosted a seminar titled “Africa’s Drylands: Crises and Opportunities” presented by Dennis Garrity, UN Drylands Ambassador Senior Fellow, World Agroforestry Centre  
[WorldAgroforestry.org](http://WorldAgroforestry.org)  
[EverGreenAgriculture.net](http://EverGreenAgriculture.net)  
 Chair, Landcare International  
[LandcareInternational.net](http://LandcareInternational.net)



Dr. Richard Liu synthesized a new type of nano-sized fertilizer, intending to enhance the fertilizer efficiency and reduce the nutrient spills.

Dr. Lal in CFAES blog:

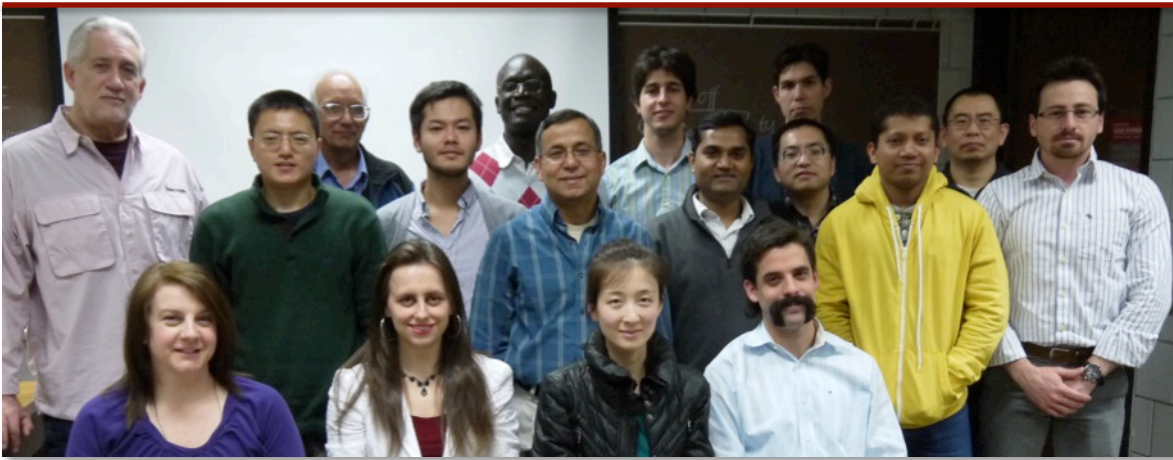
<http://sustainability.cfaes.ohio-state.edu/on-the-farm/watch-for-sustainability-science-scientist-ohio-state-is-a-paradise/>

Dr. Lal was featured as part of the “But for Ohio State” promotional campaign in video and print. Above is a small accordion-fold book featuring OSU President Gordon Gee, Dr. Lal and other prestigious Buckeyes.



The current C-MASC group takes time out after a seminar to celebrate the birthday of visiting scholar Andre Andrade (seated) from Brazil. From left to right: Dr. Hailin Zhang (VS - China), Getulio Freitas Seben, Jr. (VS - Brazil), Dr. Shiguo Jiang (Post Doc), Dr. Toru Nakajima (Post Doc), Dr. Atanu Mukherjee (Post Doc), Yanru Liang (VS - China), Dr. Gerald Allen (Post Doc), Dr. Upender Somireddy (Post Doc), Dr. Vincent de Paul Obade (Post Doc), Jennifer Donovan (staff), Dr. Jose Guzman (Post Doc), Marla Alessandra (VS - Brazil).

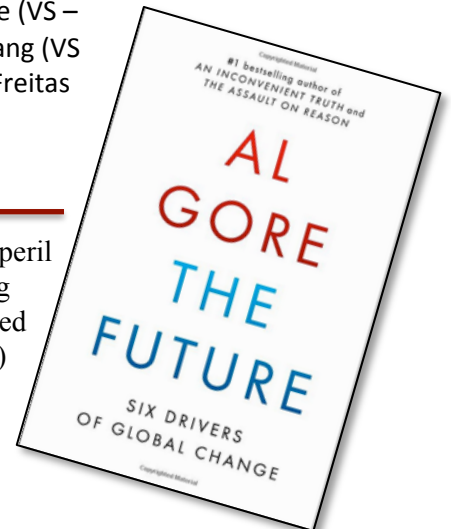
# Quarterly Review



C-MASC recently held their quarterly review to focus on their future goals. Seated in front from left to right are Jennifer Donovan (staff), Marla Alessandra (VS - Brazil), Yanru Liang (VS - China), and Ryan Hottle (SENR Grad student). Standing from left to right are Dr. Gerald Allen (Post Doc), Dr. Shiguo Jiang (Post Doc), Dr. Rattan Lal (Director), Dr. Toru Nakajima (Post Doc), Dr. Vincent de Paul Obade (Post Doc), Basant Rimal (staff), Andre Andrade (VS – Brazil), Dr. Upender Somireddy (Post Doc), Dr. Jose Guzman (Post Doc), Dr. Hailin Zhang (VS - China), Dr. Atanu Mukherjee (Post Doc), Dr. Richard Liu (Post Doc), and Getulio de Freitas Seben, Jr. (VS – Brazil).

From his earliest days in public life, Al Gore has been warning us of the promise and peril of emergent truths—no matter how “inconvenient” they may seem to be. As absorbing as it is visionary, *The Future* is a map of the world to come, from a man who has looked ahead before and been proven all too right. (From the back, inside cover of this book.)

[www.algore.com](http://www.algore.com)



## In Memorium...



### **Dennis Greenland, former IITA (1975-77) deputy director general passes into history**

Dennis J. Greenland, recipient of an Honorary Degree of Science from The Ohio State University, former IITA deputy director (1975-77), and former IRRI deputy director (1979-87), passed away on 23 December 2012 in the UK. He was an internationally renowned soil scientist.

Dr. Greenland contributed more than 180 papers to scientific journals and written three books, including *Cherish the Earth* (1994) and the IRRI book, *The Sustainability of Rice Farming* (1997). In addition, he edited seven more volumes on soil management.

Read more at <http://irri-news.blogspot.com/2013/01/dennis-j.html>

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