

Ivan I. Vasenev
Viacheslav I. Vasenev
Laboratory of agroecological monitoring, modeling and prediction of ecosystems
Russian Timiryazev State Agrarian University (RTSAU)
Moscow. Russia

Conference Report

Agroecological assessment and functional-environmental optimization of soils and terrestrial ecosystems *held in* RTSAU, Moscow (Russia) 18-22 May 2015

1. Introduction

From 18 to 22 May 2015, the Department of Ecology and the Laboratory of agroecological monitoring, modeling and prediction of ecosystems of Russian Timiryazev State Agrarian University (RTSAU) hosted the ESSC international conference “Agroecological assessment and functional-environmental optimization of soils and terrestrial ecosystems (AGROFOSTER)” in Moscow (Russia).

The Congress was attended by about 90 scientists from 26 countries of Europe, America, Asia and Africa to discuss the new advancements, achievements and challenges in soil and environmental sciences with especial attention on the impacts of soil erosion, degradation, sealing and pollution on the environment as well as adaptation of agricultural and urban ecosystems and land-use to dynamical environmental conditions at the multiple scales. The most recent research results were presented in contest of the development of sustainable and environmental-friendly anthropogenic soils and ecosystems, climate-smart agriculture and best management land-use practices

In the course of the Opening Ceremony several distinguished delegates delivered their opening speeches. These include representatives of scientific, governmental and business communities: C. Dazzi (President of the European Society for Soil Conservation), S. Shoba (President of the Dokuchaev Soil Science Society), V. Nechaev (Rector of RTSAU), Y. Dukhanin (Head of Land Policy and Crop Production Development Department of Moscow Regional government), J. Rubio (Vice Chair of the European Soil Bureau Network - ESNB (JRC, EC, M. Fatiev (“Moszelenstroy” JCS), M. Loktionov (EuroChem corporation), V. Naumov (Dean of Faculty of Soil Science, Agrochemistry and Ecology, RTSAU) and I. Vasenev (Chair of IUSS Commission 3.1, Department of Ecology, RTSAU and Organizing Committee).

The Conference was supported by the international and national scientific societies and research institutes (International Union of Soil Sciences - IUSS, European Society on Soil Conservation – ESSC, Dokuchaev Soil Science Society – DSSS, Russian Timiryazev State Agrarian University – RTSAU, Moscow State University – MSU and Peoples’ Friendship University of Russia) and some private agencies working in environmental area (Moszelenstroy, EuroChem, BASF).

The main themes and subjects, that have been presented and discussed by the 4 invited lectures, the 56 oral presentations, the high number of posters presented in the thematic sessions and during the scientific excursion, are summarized in this report.

More information and a comprehensive program of the Conference can be found at:
www.essc-congress2015.ru

2. The scientific program

The Conference consisted of ten thematic main sessions, covering different aspects of monitoring, analysis and modeling soil processes, functions and services in natural, agricultural and urban ecosystems. Each session was convened by highly-recognized experts in the introduced fields. The scientific contributions were held by experienced scientists as well as young PhD candidates or researchers which actively enriched the well-balanced program of the Conference.

The Session #1 «Policies and strategies to support and maintain soil agroecological quality» was introduced by Prof. J. Rubio (Spain) and Prof. V. Kiryushin (Russia). The session included reports from the most competent experts in land-use policy and management, including the president of President of the Dokuchaev Soil Science Society Prof. S. Shoba, Vice-rector in science of RTSAY Prof. A. Golubev and one of the founders of Russian soil erosion school – Prof. M. Kuznetsov. The reports covered research and political issues in monitoring, assessment and management of soil resources. The Session #2 «Soil quality agroecological assessment and modeling» was convened by Dr. J. Stoorvogel (Netherlands) and Prof. I. Vasenev (Russia). Several interesting case studies on the bioclimatic and anthropic impacts (sealing, irrigation and acidification) on soil quality were described for EU, European and Siberian parts of Russia. The Session #3 «Monitoring of the anthropogenic impacts, soil protection and risk assessment» was presented by Prof. S. Torma (Slovakia) and Prof. O. Makarov (Russia). Reports at the session mainly focused on soil erosion analysis at the multiple scales. Particular interest was also devoted to logging as an anthropogenic effect on soil functions. Dramatic decrease in soil organic carbon stocks was shown in result of logging practices in Central and Western Africa by Dr. T. Chiti. Parallel session #4 «Climate-smart agriculture: scientific, practical and political aspects», convened by Prof. R. Valentini (Italy) and Prof. V. Chernikov (Russia) focused on the theoretical and practical aspects of sustainable agriculture. A fascinating key note lecture «When is agriculture climate-smart? A call for proper soil management», given by J. Stoorvogel from Wageningen University was followed by two researches in agroecological analysis. The first one presented temporal variability in green house gases (GHG) emissions measured by the first eddy-covariance station on croplands in Russia. The second one gave a very interesting study of life cycle analysis of meat production. The Session #5 «Soil ecological functions and ecosystem services: from concepts to application» was introduced by Dr. M. Samardzic (Serbia) and Dr. A. Yaroslavtsev (Russia). The session was focused on analysis and assessment of the key soil functions (i.e. transport, nutrient storage etc) in agro landscapes. Especial attention was given to the implementation of the soil functional analysis in lands-use planning and optimization. The Session #6 «Modeling and evaluation of the spatial-temporal variability of soil features and processes», convened by Prof. T. Dostal (Czech Republic) and Prof. E. Shein (Russia) highlighted the recent achievements in mapping and dynamic modelling of soil processes and threats. Diversity of case studies, including Tibet, Portugal, Eastern and Western Europe gave a clear message on the variability of natural and anthropogenically altered soils in space and time. The Session #7 «Environmental impact assessment and soil environmental quality certification» was introduced by J. Konecna (Czech Republic) and O. Nesterova (Russia). The reports at the session focused on anthropogenic and mainly technogenic effects on soil health and quality. The research presentations were complemented by a nice overview of teaching environmental impact assessment within the scope of Tempus STREAM project given by Dr. V. Semal. Important issues of ecotoxicology and biodegradation were discussed in the Session #8

«Bioremediation and reclamation of degraded or contaminated lands», convened by Dr. J. Vasin (Serbia) and Dr. V. Semal (Russia). The session covered a broad range of environmental problems, including soil pollution and reclamation, monitoring quality of hemozems (contaminated soils) and analysis of soil biological activity. A very interesting report was given by Dr. I. Andreeva on implementation of rapeseeds for biofuel production. Increasingly important issues of urbanization effect on soil quality were discussed at the Session #9 «Urban soils: from classification and monitoring to assessment of functions and services», introduced by O. Nesterova and V. Vasenev (both from Russia). The research presented at the session highlighted existing problems in environmental assessment and certification of urban soil's quality. Different approaches, including GHG emissions, measuring microbiological activity and analyzing soil physical properties were proposed for the environmental control and quantification of urban soils' processes and functions. Finally the Session #12 «Advances in monitoring, modeling and prediction of C stocks and fluxes in natural and managed ecosystems», convened by Dr. T. Chiti (Italy) and Dr. A. Yaroslavtsev (Russia) gave the floor to experts in advanced methods of carbon assessments. High-detailed mapping, gamma-ray and Vis-NIR spectroscopy, chamber measurements of soil respiration and eddy covariance techniques to measure net ecosystem exchange were presented for the case studies in China, Italy and different bioclimatic zones of Russia.

The Conference was implemented by a considerable poster session, where a lot of young scientists' researches were presented. For an overview of the abstracts, either of presentations or poster sessions, use the above mentioned link of the Conference. The ESSC provided a grant to support the participation of young researchers to the Conference. During the Conference, Dr Sarah Buckingham (working at the Scotland's Rural College, Edinburgh, UK) was awarded the ESSC grant by the ESSC grant Commission.

At the end of the Conference the Prof. Carmelo Dazzi read the AGROFOSTER-ESSC International Conference resolution, which has been approved unanimously by the participants.

3. The social program

Besides to the intensive scientific activities, the social life of the participants of the congress was rich in remarkable events. The first day of the conference ended at the university restaurant, where an ice-breaking reception was organized. Local food and drinks complemented by a spectacular concert given by the student ensemble of folk dance and song set up the most friendly atmosphere, which remained till the end of the congress. The field scientific excursion took place at the third conference day. Participants of the tour had an opportunity to overview a nice catena of Albeluvisols (sod-podzolic soils) with different evidences of agricultural transformation. Field analysis and descriptions of soil profiles, kindly organized by a famous Russian soils-scientist Prof. I. Yashin were followed by interesting discussions, covering a vast range of issues from soil morphology to agrarian policy. After lunch at the local restaurant in a unique folk style, a visit to one of the first organic farms in Russia was organized. An interesting and detailed excursion given by the head manager of the farm was followed by a dinner with tasting of local honey and bread. On the way to the organic farm everyone could observe a famous Pereslavl-Zalesskiy settlement – one of key element of the Russian Golden Ring.

The primary results of the conferences were discussed during a congress banquet, organized in a beautiful 18th century hall of the Moscow State University historical building, located in front of the Kremlin. Variety of local food and a very nice string band was appreciated by the participants so much, that official ceremonies and award speeches left the floor for common dancing, in which all the fellow soil scientists succeeded.



Photo 1 – Prof. I. Vasenev is awarded by Prof. C. Dazzi for his remarkable efforts in organization and hosting the ESSC congress



Photo 2 – Participants to the Conference banquet in front of the Kremlin



Photo 3 – During the field excursion.