



RUDN
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NYC Urban Soils Institute



Российский
научный фонд



International Union of Soil Sciences

3 MUGIS 2019 SUMMER SCHOOL

ANTHROPOGENIC AND NATURAL SOIL LANDSCAPES IN EUROPEAN RUSSIA: FROM SEA TO SEA

3 MUGIS-2019 is supported by Russian Science Foundation Project

№ 19-77-30012

3MUGIS.org

What is 3MUGIS?

The 3MUGIS summer school is an annual event, which addresses relevant contemporary environmental consequences and opportunities of urbanization with special emphasis on soil functions. The event is organized under the umbrella of the International Union of Soil Science (IUSS), RUDN University (Russia) and the Urban Soil Institute (USA) with strong cooperation from universities, institutions and research teams from around the world. The inaugural summer school was organized to coincide with the SUITMA 9 international congress in Moscow in May 2017, and attracted students and young researchers from 8 countries. In 2018, 3MUGIS included two parts: an intensive week of lectures, followed by a week long field tour observing natural and anthropogenic soils and landscapes from the taiga to the steppes of Russia.

What is new in 3MUGIS 2019?

Building from considerable experience and feedback from participants during the first two years, the organizers have decided to further focus the school on solid practical skills in monitoring, modeling and mapping urban soils and green infrastructure over different climatic and anthropogenic conditions. Lessons from traditional, long-standing and internationally recognized zonal soil geography field courses from Moscow State University (Russia) and the University of California (USA) are being incorporated to provide additional structure, congruence, and rigor to the 3MUGIS program. The organizers intend for the school to become a globally recognized training program that provides students with first hand field experience examining anthropogenic impact sequences across conventional soil forming factors from Sub-arctic to Dry steppe climates.

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SPEAKERS



Dr. Elvira Dovletyarova
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SPEAKERS



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Prof. Harold Van Es
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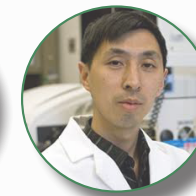
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TRIP ADVISORS



Liliia Alaeva
Docent of Department of Ecology and Land resources.
Voronezh State University.
PhD in biology. Member of European Geoscience Union. Scientific interests are forest soil formation, forest ecosystems, ecological state of forest soils, soil cover of floodplain terraces.



Anton Belik
Assistant of Department of Ecology and Land resources.
Voronezh State University.
PhD in biology. Member of European Geoscience Union. Scientific interests: GIS in ecology, geostatistics, agroecology, spatial variety of soil fertility, ecological state of floodplain and terrace lakes.



Yulia Sotnikova
PhD, Head of Department.
Department of legal environmental expertise, "EcoCenter" LLC.
The main research interests are related to environmental protection and risk assessment with a special focus on landscapes of Central Chernozemic region.

TRIP ADVISORS



Dmitrii Sarzhanov
PhD, Expert.
Department of legal environmental expertise, "EcoCenter" LLC.
The main research interests are related to biogeochemical interaction between soils, vegetation and atmosphere in urban ecosystems.



Elena Negrobova
Assistant of Department of Ecology and Land resources.
Voronezh State University.
Deputy Director of the Voronezh regional center for waste management. Scientific interests: fauna and ecology of soil animals and solid waste management.



Ivan Vasenev
Professor and Head of Ecology Department.
Russian State Agrarian University – Moscow Timiryazev Agricultural Academy.
Expert in Agroecology, Environmental and Soil Science with especial interest in soil ecology and dynamics, land quality evaluation and land-use planning, smart-system of environmental monitoring and agroecological management, DSS for best available farming practice, Podzoluvisol and Chernozem conservation, soil erosion and degradation processes control, soil cover patterns and within-field variability of soil fertility and crop yield.



Natalya Saltan
Candidate of biological sciences, research scientist of laboratory of plant introduction and acclimatization.
Polar-alpine botanical garden-institute of Kola Science Centre of RAS.
Professional interests involve studying functions and ecosystem services of urban soils, their spatial variability and temporal dynamics. A specific focus in research is given to pollution of urban soils by heavy metals and studying of the chemical composition of plants.



Marina Slukovskaya
PhD, Senior Researcher.
Laboratory of geo-inspired technologies and environmental safety of the Arctic region, Kola Science Centre, Russian Academy of Sciences, Apatity, Russia.
Ecologist, plant biogeochemist.
Main scientific interest: Techno soil development and remediation of metals polluted industrial barrens in the Arctic.



Maria Korneykova
Head of Laboratory.
Institute of North Industrial Ecology Problems – Subdivision of the Federal Research Centre "Kola Science Centre of Russian Academy of Science".
Microbiologist, microbial ecologist, aeromycologist. Research is focused on qualitative (biodiversity and structure) and quantitative (abundance, biomass) indicators of microbial communities in background and contaminated soils, particularly in Arctic and Subarctic zones.



Tatiana Deviatova
Professor and Head of Department of Ecology and Land resources.
Voronezh State University.
Director of the autonomous non-commercial organization "Voronezh Regional Center for Waste Management", the expert The Federal Service for Supervision of Natural Resources, the Russian Federation, Head of the Public Council on Ecology of the Voronezh region. ecological state of urban soils and chernozems and dynamics of their biological activity under the influence of anthropogenic factor.



Sergey Gorbov
Professor, Head of Laboratory of Biogeochemistry .
Southern Federal University, Academy of Biology and Biotechnology SFedU.
Research of natural and anthropogenically transformed soils of southern Russia. Study of the specificity of the accumulation of organic matter in urban soils. Investigation of soil pollution in urban areas.

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PARTNERS



RUDN University



International Union of Soil Science



Russian Science Foundation



Moscow City Government



Capacity Building Projects



Russian academic excellence project



Russian Timiryazev State Agrarian University



The Central Chernozem State Biosphere Nature Reserve named after Professor V.V. Alekhin



Voronezh State University



Brooklyn College



Kola Science Center Russian Academy of Sciences



Technical University Berlin



Institute of Physicochemical and Biological Problems in Soil Science



Geography faculty of Lomonosov Moscow State University



Pan-Eurasian Experiment



Central Forest Biosphere Reserve



Urban Soil Institute



South State University

3MUGIS-2019 SUMMER SCHOOL PROGRAM

Five days of focused on-campus training in skills relevant to the sites visited will occur at RUDN University in Moscow city. They will be followed by an expanded two-week field tour from the White Sea (Kandalaksha town, 67N; 32E) to the Azov Sea (Taganrog town, 47N; 38E). The tour will give students a unique overview of the natural and cultural diversity of European Russia. Five zones (forest-tundra, taiga, deciduous forest, forest-steppes and steppes) will be studied in regard to key issues of urban development, including industrial pollution, forest management, agricultural development, and urban-rural interactions. Urban soils and green infrastructure at each of the region will be studied in comparison to natural references. Conventional field descriptions and classification will be amplified by advanced techniques of in-field analysis. Lecture and field parts will consistently follow the problem-oriented framework to be presented at the final team and individual projects, and a short quiz will occur after each field tour stop that covers topics most relevant to that stop.

“
Field summer school
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Peoples' Friendship University of Russia

Peoples' Friendship University of Russia (PFUR) is an international classical university. Preparation of the highly qualified experts in various professional fields, educating young people with excellent career perspectives worldwide and joining people of different nationalities, races and religions with knowledge – are the key priorities of PFUR.

People Friendship University of Russia was founded on February 5, 1960 by Governmental decision of USSR. February 22, 1960 University was named after Patrice Lumumba – a symbol of African nations' fight for independence. PFUR is governed by the rector Professor Vladimir Philippov, a doctor in physics and mathematics, an academician of Russian Academy of Sciences and a chairman at Higher Attestation Commission in Ministry of Education of Russian Federation. Near 25 ths of students study in the University and more than 5 ths of them are students from foreign countries. They represent 139 countries of the world. Students can choose among 30 bachelor programs, 33 specialties and 91 master programs. More than 25 ths of students attend the program of additional education in University.

PFUR today is a dynamically developing research and educational centre, including 9 faculties and 5 institutions. Agrarian-technological institute, organized on July 1st 2015 on the base of Agrarian faculty, is a key research and scientific subdivision of PFUR, qualifying experts in soils science, environmental science and sustainable development of anthropogenic ecosystems. More than thousand of bachelors, master and PhD students study at the four institute departments each year. Applied research and projects are carried out using the facilities of the laboratory of food quality certification, the cadastral and land evaluation centre and the landscape architecture and design studio. International collaboration is among the main priorities of the institute. Four master programs in English are provided, including a double-diploma master program with Tuscia University (Italy) "Management and design of urban green infrastructure". Agrarian-technological institute is a regular participant of student and staff mobility programs with the Netherlands, Italy, Germany, Austria, Greece, China, USA, African and South American countries.

CONDITIONS

3MUGIS-2019 summer school will host international groups up to 35 participants. 3MUGIS-2019 participants will receive 3 ECTS, recognized by educational programs worldwide. Participation fees will cover accommodation, two meals per day, travelling inside Russia and all materials necessary for courses. The participation fee is anticipated to be 1,200 euro. All of the foreign participants will also receive visa support and any other assistance with organization of their trip to Moscow.

3MUGIS-2019 SUMMER SCHOOL PROGRAM

Time/Activity/Place

• Day 1 – July 21 (Sunday)

15:00-19:00 Registration and accommodation in the RUDN campus, ATI reception

19:00-23:00 Ice-breaking party

• Day 2 -July 22 (Monday)

10:30-11:00 L0 Introduction to MUGIS V.Vasenev (RUDN, Russia), Hall 2 ATI

11:00-12:00 L1 Soils and plants in urban environment V.Vasenev (RUDN, Russia), Research Council Hall

12:00-13:00 P1 Interactions between air and soil pollution V.Vasenev (RUDN, Russia), Research Council Hall

13:00-14:00 Lunch

14:00-15:00 L2 Classification of urban soils (RF,US,WRB) T.Prokofeva (LMSU, Russia) & R.Shaw (USI, USA), Research Council Hall

15:00-16:00 P2 Classification (soil judgement) T.Prokofeva (LMSU, Russia) & R.Shaw, USI, USA), Research Council Hall

16:00-16:30 Coffee-break

16:30-18:00 L3 SUITMAs: formation, functions and ecosystem services J.L. Morel (UL, France), Research Council Hall

18:00-19:00 P3 Assessing SUITMAs ecosystem services J.L. Morel (UL, France), Research Council Hall

19:00-21:00 Sport/outdoor activity, RUDN Campus

• Day 3 – July 23 (Tuesday)

10:00-11:00 L5 Soil constructions: from theory to practice A. Smagin (LMSU, Russia), Hall B

11:00-12:00 L6 Modeling heat and water fluxes in soil constructions A. Smagin (LMSU, RU) & M. Deeb (RUDN, CUNY, USA), Hall B

12:00-13:00 P4 Estimation of soil hydrological properties A. Smagin (LMSU, RU) & M. Deeb (RUDN, CUNY, USA), Hall B

13:00-14:00 Lunch

14:00-15:00 L7 Modeling surface runoff from green urban infrastructure T. Nehls (TUB, Germany), Hall B

15:00-16:00 P5 Modeling the water balance for green infrastructures T. Nehls (TUB, Germany), Hall B

16:00-16:30 Coffee-break

16:30-18:00 L8 Remote sensing for monitoring and modeling GI D. Giuliarelli (UNITUS, Italy), Hall B

18:00-19:00 P6 Modeling dynamics of urban forests by RS I. Veretelnikova (RUDN, Russia), Hall B

19:00-20:00 Workshop "How to write a scientific paper?" M. Leuchner (Springer, Netherlands), Hall B

20:00-21:00 Pizza time



• Day 4 – July 24 (Wednesday)

09:00-10:00 Transfer to Zaryadie park

10:00-11:00 L9 Tree Talkers: new generation technique for tree monitoring R. Valentini (RUDN, RU/ UNITUS, Italy), Zaryadie park. Conference hall.

11:00-12:00 L10 Innovation is landscape architecture I. Mochalov (Mochalov Design Studio), Zaryadie park., Conference hall.

12:00-13:00 P7 Reading and interpretation monitoring data L. Belelli (FM, Italy), G. Sala (RUDN, Russia) & A. Yaroslavtsev (RSAU, Russia), Zaryadie park.

13:00-14:00 Lunch

14:00-15:00 L11 Visual tree assessment A. Vanini (UNITUS, Italy), Zaryadie park

15:00-16:30 P8 Comparison VTA and monitoring results O. Fareeva (RUDN, Russia) & A. Yaroslavtsev (RSAU, Russia), Zaryadie park

16:30-18:00 L 12 C stocks and GHG emissions in urban soils S. Castaldi (USC, Italy) & V. Vasenev (RUDN, Russia), Zaryadie park. Conference hall

18:00-19:00 P9 Monitoring soil and plant respiration in situ O. Gavrichkova (CNR, Italy), Zaryadie park

19:00-20:00 Workshop "Cultural layers of ancient Moscow" A. Dolgikh (IG RAS, Russia), Zaryadie park

20:00-22:00 Walking down town

• Day 5 – July 25 (Thursday)

10:30-11:00 L13 Soil health: concept and approaches to assess H. Van Es (CU, USA), Hall C

11:00-12:00 L14 Soil health: possible implementation for urban areas H. Van Es (CU, USA), Hall C

12:00-13:00 P10 Soil health assessment H. Van Es (CU, USA), Hall C

13:00-14:00 Lunch

14:00-15:00 L15 Advances in analysis of soil-plant interactions Y. Kuzyakov (GOE, Germany), Hall C

15:00-16:00 P11 Microbial indexes of soil health K. Ivashchenko (RAS, Russia), Hall C

16:00-16:30 Coffee-break

16:30-18:00 L 16 Soil pollution and human health H. Mielke (TU, USA), Hall C

18:00-19:00 L 17 Assessing soil pollution by heavy metals Z. Cheng (CUNY, USA), Hall C

19:00-20:00 P12 Soils polluted by copper mining in Chile: Studies on ecotoxicology and phytoremediation A. Neaman (Escuela de Agronomía, Pontificia Universidad Católica de Valparaíso, Quillota, Chile)

20:00-22:00 "Moscow by night" bus-excursion

• Day 6 - July 26 (Friday)

10:00-11:00 L15 Urban climate: from local to global P. Konstantinov (LMSU, Russia), Room 423



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11:00-12:00 PN0 Anthropogenic soils and landscapes from sea to sea V. Vasenev (RUDN, RU)

12:00-12:30 PN1 Subarctic environment P. Konstantinov (LMSU, RU)

12:30-13:00 PN2 Natural and urban forests of boreal climate I. Vasenev (RSAU, RU)

13:00-14:00 Lunch

14:00-14:30 PN3 On the way from woods to steppes K. Ivashchenko (RAS, RU)

14:30-15:00 PN4 Visit to the soil Zar I. Vasenev (RSAU, RU)

15:00-15:30 PN5 Russia South S. Gorbov (SSU, RU)

15:30-16:00 Farewell to Moscow E. Dovletyarova & T. Morin

16:00-16:30 Coffe-break

16:30-21:00 Packing for the field tour and free time

FIELD TOUR

• Day 7 – July 27 (Saturday)

10:30-13:00 Flight Moscow SVO-Apatiti

13:00-14:00 Accommodation

14:00-15:00 Lunch (Tirvas near botanical garden)

15:00-17:00 Alpine botanical garden in Khibiny mountains. Soil vertical zonality in Subarctic climate

17:00-18:00 Museum of rocks in Kirovsk

18:00-20:00 Urban soils and green infrastructure of Apatity town

20:00-23:00 Barbecue at Tik-Guba /Dinner at Khvorost café (Apatity)

• Day 8 – July 28 (Sunday)

08:00 Breakfast at Slivki café (Apatity)

09:00-09:30 Departure from hotel

09:30-11:00 Lapland natural reserve + Tea/coffee time after excursion

11:00-12:30 Zonal and disturbed soils of Kola Peninsula

12:30-14:30 Remediated industrial barrens

14:30-16:00 Bus transfer to Monchegorsk

16:00-17:00 Lunch in Monchegorsk (Kruzhka café)

17:00-19:00 Green Infrastructure of an industrial polar town

19:00-22:00 Transfer to hotel

22:00-23:00 Dinner at Karavella Hoteln



• Day 9 – July 29 (Monday)

08:00 Breakfast at Karavella

09:00-09:30 Departure from hotel

09:30-11:30 Green Infrastructure of a polar city

11:30-13:30 Sightseeing in Murmansk

13:30-14:30 Lunch at Goose rest

14:30-16:30 Bus transfer to Teriberka village at the shore of Arctic Ocean

16:30-22:00 Sightseeing in Teriberka + Tea/coffee time

22:00-23:00 Dinner at Karavella Hotel/Barbecue at Karavella Hotel

• Day 10 – July 30 (Tuesday)

08:00-10:30 Breakfast, closing lecture "Urban and technogenic landscapes of Russian Arctic" by M. Slukovskaya and M. Korneykova (at Karavella Hotel)

10:30-11:00 Departure from hotel

11:00-14:00 Flight Murmansk- Moscow DME

14:00-18:30 Bus transfer Moscow DME - Central Forest Natural Reserve

18:30-19:00 Museum of the Forest Natural Reserve

19:00-20:00 Sport activities

20:00-22:00 Banyia (Russian Sauna)

• Day 11 – July 31 (Wednesday)

09:00-09:30 Breakfast

09:30-13:00 Soils and landscapes of South taiga subzone (Albic podzolic soils and windfall soil complexes)

13:00-14:00 Lunch (in field)

14:00-17:30 C balance in fallowland ecosystems – long-term experiment of land abandonment

17:30-21:00 Barbecue at the lake bank

• Day 12 – August 1 (Thursday)

08:00-09:00 Breakfast, departure

09:00-13:00 Bus transfer Central Forest Reserve - Russian State Agrarian University

13:00-14:00 Lunch

14:00-16:00 Environmental monitoring station at urban farm in Moscow megapolis

16:00-17:30 Soil museum named after V.R. Williams

17:30-19:00 Closing lecture "Natural and anthropogenic soils and landscapes of South taiga subzone" by Prof. I. Vasenev

19:00-22:00 Barbecue in urban forest

22:00-23:00 Bus transfer to Pushchino-on-Oka town, accommodation in Academic hotel

• Day 13 - August 2 (Friday)

08:00-09:00 Breakfast in hotel

09:00-11:00 Urban soils in Pushchino town

11:00-13:00 City tour and visit to observatory

13:00-14:00 Forest landscapes at the bank of Oka river



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14:00-15:00 Lunch

15:00-17:30 Prioksko-Terrasny biosphere Reserve and Auerochs (European bison) nursery

17:30-23:00 Train transfer from Serpukhov to Kursk

• Day 14 – August 3 (Saturday)

08:00-09:00 Breakfast in hotel

09:00-09:30 Departure from hotel

09:30-13:00 Forest steppe landscapes and Chernozems, visiting Central Chernozemic Reserve

13:00-14:00 Lunch

14:00-17:00 Technosols on Chernozems - monitoring sites in industrial area of Kursk city

17:00-19:00 Gray forest soils (Dark Phaeosems) in the urban forest

19:00-23:00 Dinner and walk downtown

• Day 15 – August 4 (Sunday)

08:00-09:00 Breakfast in hotel

09:00-09:30 Departure from hotel

09:30-13:00 Visit to Kursk Magnetic Anomaly - the largest mining area of metal ore

13:00-14:00 Lunch

14:00-17:00 Visit to the Korennaya Hermitage holy place. Bathing in cold springs (voluntarily)

17:00-19:00 Dinner

19:00-22:00 Bus transfer Kursk-Voronezh

• Day 16 – August 5 (Monday)

09:00-09:30 Breakfast in hotel

09:30-10:00 Departure from hotel

10:00-13:00 Natural and urban soils of Voronezh parks and botanical garden

13:00-14:00 Lunch

14:00-18:00 Pine forests and sandy soils of Venevitovo research station

18:00-19:00 City tour

19:00-22:00 Dinner

22:00 Night train to Rostov-on-Don

• Day 17 – August 6 (Tuesday)

09:00-12:00 Arrival to Rostov-on-Don, transfer to University campus, accommodation in student dormitories, lunch

12:00-13:00 Bus transfer to Botanical Garden

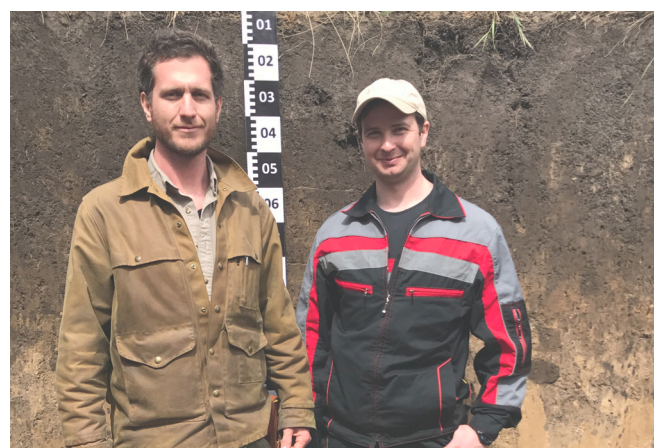
13:00-15:00 Soil profile at the bank of Temernik river

15:00-16:00 Excursion at the Botanical Garden and research labs

16:00-17:00 Second lunch

17:00-19:00 Alluvial soils and South Chernozems - profile description

19:00-22:00 Bus transfer to campus and dinner



• Day 18 – August 7 (Wednesday)

08:00 Departure from campus

09:00-09:30 Breakfast in hotel

09:30-10:00 Departure from hotel

10:00-10:30 Alluvial soils at the Don river valley

11:00-13:00 Constructed Technosols of a Golf course: forming factors, properties and functions

13:00-14:00 Dinner at the Golf Course Restaurant

14:00-17:30 Excursion to Starocherkasskaya village - the historical center of Don Cossacks

17:30-21:00 Picnic at the bank of Don river (swimming is possible)

21:00-22:00 Bus transfer to University campus

• Day 19 – August 8 (Thursday)

09:00-09:30 Breakfast in campus

09:30-10:30 Closing lecture "Urban soils and landscapes of Russian South" by Prof. S. Gorbow

10:30-14:00 Team work on project preparation

14:00-15:00 Lunch

15:00-21:00 Bus excursion to Taganrog and Azov Sea shore

21:00-22:00 Return to campus

• Day 20 - August 9 (Friday)

09:00-09:30 Breakfast in campus

09:30-14:00 Final test. Team work on project preparation

14:00-15:00 Lunch

15:00-19:30 Team work on project preparation

19:30-23:00 Closing party

• Day 21 – August 10 (Saturday)

10:00-12:30 Public defense of the reports by the project teams

12:30-13:00 Closing ceremony of 3MUGIS-2019

13:00-14:00 Lunch

14:00-23:00 Train transfer from Rostov-on-Don to Moscow. Arrival to Moscow at 7.35 AM

• Day 22 – August 11 (Sunday)

8:00 Arrival to Moscow

