



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

Nº 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.

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SPEAKERS



Dr. Elvira Dovletyarova

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Dr. Viacheslav Vasenev

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Tatiana Morin

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Dr. Tatiana Prokofeva

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Dr. Richard Shaw

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Prof. Jean Louis Morel

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Prof. Andrey Smagin

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Dr. Maha Deeb

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SPEAKERS



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Prof. Michael Leuchner

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Prof. Harold Van Es

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Dr. Alex Yaroslavtsev

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Prof. Riccardo Valentini

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Peace Noble Prize Laureate as a member of IPCC

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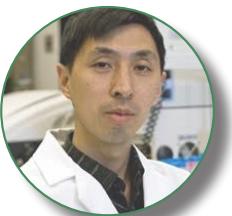
Dr Viacheslav Vasenev (RUDN)

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SPEAKERS



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Dr. Pavel Konstantinov
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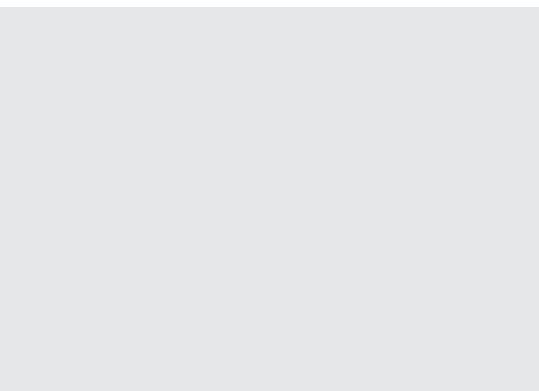
Olga Romzaykina
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Anya Paltseva
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TRIP ADVISORS



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
PhD in biology, 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.

TRIP ADVISORS



Lilia Alaeva
Associate Professor 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.

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PARTNERS



RUDN University



International Union of Soil Science



Russian Science Foundation



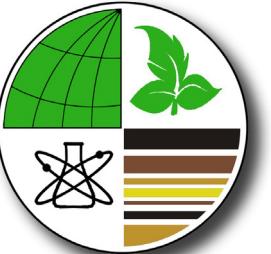
Moscow City Government



Russian Timiryazev State Agrarian University



Brooklyn College



Institute of Physicochemical and Biological Problems in Soil Science



Central Forest Biosphere Reserve



Capacity Building Projects



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



Kola Science Center
Russian Academy of Sciences



Technical University Berlin



Pan-Eurasian Experiment



NYC Urban Soils Institute

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. 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.

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field summer school

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Peoples' Friendship University of Russia

Peoples' Friendship University of Russia (RUDN University) 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.

Peoples' 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 thousands of students study in the University and more than 5 thousands 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 thousands of students attend the program of additional education in University.

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, *Restaurant Galaktika, Miklukho-Maklaya str.10/2*



• Day 2 -July 22 (Monday)

10:00-10:30 Opening ceremony, *Research Council Hall*
Welcome notes:

Dolzhikova Angela, PhD, Vice-Rector for Advanced Education;
Riccardo Valentini, prof., Head of Laboratory RUDN University (Russia), Tuscia University (Italy);
Zhongqi Cheng, prof., Earth and Environmental Sciences Brooklyn College of The City University of New York (USA);
Thomas Nehls, dr., Center for Building Greening (CIBG), Chair for Ecohydrology, Technische Universitaet Berlin, (Germany);

Harold Van Es, prof., School of Integrative Plant Science Soil and Crop Sciences Section College of Agriculture and Life Science Cornell University (USA);

Elvira Dovletyarova, dr., Department of Landscape design and sustainable ecosystems, RUND University (Russia)

(group photo)

10:30-11:00 L0 Introduction to MUGIS V.Vasenev (RUDN, Russia), *Research Council Hall*

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, *Restaurant City, Miklukho-Maklaya str. 17*

14:00-15:00 L2 Classification of urban soils (RF, US, WRB) T. Prokofeva (LMSU, Russia), *Hall 1 ATI*

15:00-16:00 P2 Classification (soil judgement) T. Prokofeva (LMSU, Russia), *Hall 1 ATI*

16:00-16:30 Coffee-break, *Room 314 ATI*

16:30-18:00 L3 SUITMAs: formation, functions and ecosystem services J.L. Morel (UL, France), *Hall 1 ATI*

18:00-19:00 P3 Assessing SUITMA's ecosystem services J.L. Morel (UL, France), *Hall 1 ATI*

19:00-21:00 L4 Advances in analysis of soil-plant interactions Y. Kuzyakov (GOE, Germany), *Hall 1 ATI*

• Day 3 – July 23 (Tuesday)

10:00-11:00 L5 Soil constructions: from theory to practice A. Smagin (LMSU, Russia), *Room 203 ATI*



11:00-12:00 L6 Modeling mass fluxes in soil constructions A. Smagin (LMSU, RU) & M. Deeb (RUDN, CUNY, USA), *Room 203 ATI*

12:00-13:00 P4 Estimation of soil hydrological properties A. Smagin (LMSU, RU) & M. Deeb (RUDN, CUNY, USA), *Room 203 ATI*

13:00-14:00 Lunch, *Restaurant City, Miklukho-Maklaya str. 17*

14:00-15:00 L7 Modeling surface runoff from paved urban soils T. Nehls (TUB, Germany), *Hall 1 ATI*

15:00-16:00 P5 Simulating the water balance of paved urban soils T. Nehls (TUB, Germany), *Hall 1 ATI*

16:00-16:30 Coffee-break, *Room 314 ATI*

16:30-18:00 L8 Remote sensing for monitoring and modeling GI D. Giuliarelli (UNITUS, Italy), *Hall 1 ATI*

18:00-19:00 P6 Modeling dynamics of urban forests by RS I. Veretelnikova (RUDN, Russia), *Hall 1 ATI*

19:00-20:00 Workshop "How to write a scientific paper?" Y. Kuzyakov (GOE, Germany), *Hall 1 ATI*

20:00-21:00 Pizza time

• Day 4 – July 24 (Wednesday)

08:30-10:00 Transfer to Zaryadie park

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

11:00-12:00 L10 How to Measure Economic Benefits of Public Spaces and Parks I. Mochalov (Mochalov Design Studio), *Zaryadie park., Conference hall*

12:00-13:00 P7 Reading and interpretation monitoring data G. Sala (RUDN, Russia) & A. Yaroslavtsev (RSAU, Russia), *Zaryadie park., Conference hall*

13:00-14:00 Lunch

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

15:00-16:30 P8 Visual tree assessment in Zaryadie Park O. Fareeva (RUDN, Russia) & A. Vanini (UNITUS, Italy), *Zaryadie park., Conference hall*

16:30-18:00 L12 C stocks and fluxes 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., Conference hall*

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

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 1 ATI*

11:00-12:00 L14 Soil health: possible implementation for urban areas H. Van Es (CU, USA), *Hall 1 ATI*

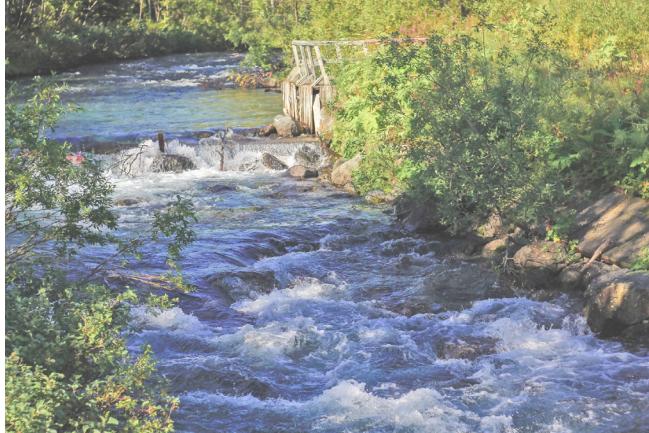


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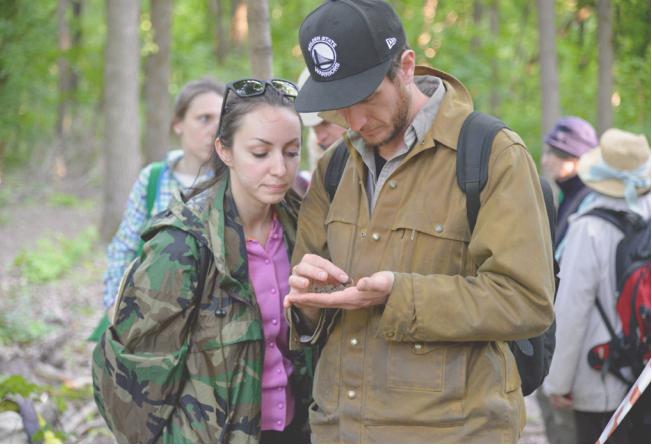
12:00-13:00 P10 Soil health assessment H. Van Es (CU, USA), [Hall 1ATI](#)
13:00-14:00 Lunch, [Restaurant City, Miklukho-Maklaya str. 17](#)
14:00-15:00 L15 Advances in soil microbial ecology K.Ivashchenko (RAS, Russia), [Hall 1ATI](#)
15:00-16:00 P11 Microbial indexes of soil health K.Ivashchenko (RAS, Russia), [Hall 1ATI](#)
16:00-16:30 Coffee-break, [Room 314 ATI](#)
16:30-18:00 L 16 Assessing soil pollution by heavy metals Z. Cheng (CUNY, USA), [Hall 1ATI](#)
18:00-19:00 L 17 Soil pollution and human health H.Mielke (TU, USA), [Hall 1ATI](#)
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), [Hall 1ATI](#)
20:00-22:00 "Moscow by night" bus-excursion
• Day 6 - July 26 (Friday)
10:00-11:00 L18 Urban climate: from local to global P.Konstantinov (LMSU, Russia), [Hall 1ATI](#)
11:00-12:00 PN0 Anthropogenic soils and landscapes from sea to sea V. Vasenev (RUDN, Russia), [Hall 1ATI](#)
12:00-12:30 PN1 Subarctic environment M. Korneykova, [Hall 1ATI](#)
12:30-13:00 PN2 Natural and urban forests of boreal climate I. Vasenev (RSAU, Russia), [Hall 1ATI](#)
13:00-14:00 Lunch, [Restaurant City, Miklukho-Maklaya str. 17](#)
14:00-14:30 PN3 On the way from woods to steppes K.Ivashchenko (RAS, Russia), [Research Council Hall](#)
14:30-15:00 PN4 Visit to the soil Zar I. Vasenev (RSAU, Russia), [Research Council Hall](#)
15:00-15:30 PN5 Russia South S.Gorbov (SSU, Russia), [Research Council Hall](#)
15:30-16:00 Farewell to Moscow E. Dovletyarova & T.Morin, [Research Council Hall](#)

FIELD TOUR

• Day 7 – July 27 (Saturday)
10:30-13:00 Flight Moscow DME-Apatiti
13:00-14:00 Accommodation
14:00-15:00 Lunch, [Tirvas near botanical garden](#)
15:00-17:30 Alpine botanical garden in Khibiny mountains. Soil vertical zonality in Subarctic climate
17:30-19:00 Museum of rocks in Kirovsk
19:00-21:00 Urban soils and green infrastructure of Apatity town



21:00-22:00 Dinner, [Khvorost café \(Apatity\)](#)
• Day 8 – July 28 (Sunday)
08:00 Breakfast in hotel, [Slivki café \(Apatity\)](#)
09:00-09:30 Departure from hotel
09:30-11:30 Lapland natural reserve + Tea/coffee time after excursion
11:30-13:00 Zonal and disturbed soils of Kola Peninsula
13:00-15:30 Remediated industrial barrens
15:30-16:30 Lunch in Monchegorsk, [Kruzhka café](#)
16:30-19:00 Green Infrastructure of an industrial polar town
19:00-20:00 Transfer to hotel
20:00-23:00 Barbecue at Karavella Hotel
• Day 9 – July 29 (Monday)
07:30-08:00 Breakfast at Karavella Hotel
08:00-09:00 Closing lecture "Urban and technogenic landscapes of Russian Arctic" by M. Slukovskaya and M.Korneykova (at Karavella Hotel)
09:00-10:00 Transfer to Murmansk
10:00-13:00 Green Infrastructure of a polar city, sightseeing in Murmansk
13:00-14:00 Lunch at Goose rest
14:00-16:00 Bus transfer to Teriberka village at the shore of Arctic Ocean
16:00-18:30 Sightseeing in Teriberka + Tea/coffee time
18:30-19:30 Dinner at "Teribersky bereg"
19:30-23:00 Bus transfer to Apatity
• Day 10 – July 30 (Tuesday)
08:00-10:30 Breakfast
10:30-11:00 Departure from hotel
11:00-14:00 Flight Apatity- Moscow SVO
14:00-17:30 Bus transfer Moscow SVO - Central Forest Natural Reserve
17:30-18:30 Museum of the Forest Natural Reserve
18:30-20:00 Sport activities
20:00-23:00 Banya (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



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19:00-22:00 Barbecue in urban forest
22:00-23:00 Bus transfer to Serpukhov, accommodation in Korston hotel

• Day 13 - August 2 (Friday)

08:00-09:00 Breakfast in hotel
09:00-09:30 Bus transfer to Pushchino-on-Oka town
09:30-10:00 Introduction to deciduous forest zone: climatic, soil and vegetation features (conference hall of IPBSS RAS, Pushchino)
10:15-12:00 Urban park "Zelenaya zona" in Puschino: soils and vegetation cover overview
12:00-13:30 Semi-urban landscapes of Pushchino area (eco-way through waterfall to Oka river)
13:30-14:30 Lunch (café 'Pheniks')
14:45-15:30 Deciduous forest landscape overview
15:30-16:30 Transfer to Serpukhov
16:30-17:30 Excursion in the historical museum of Serpukhov
17:40-18:15 Transfer to train station
18:20-23:00 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, departure
09:00-10:00 Closing lecture "Natural and anthropogenic soils and landscapes of Central Chernozemic region" by Prof. I. Vasenev and Dr. V. Vasenev
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 holly 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

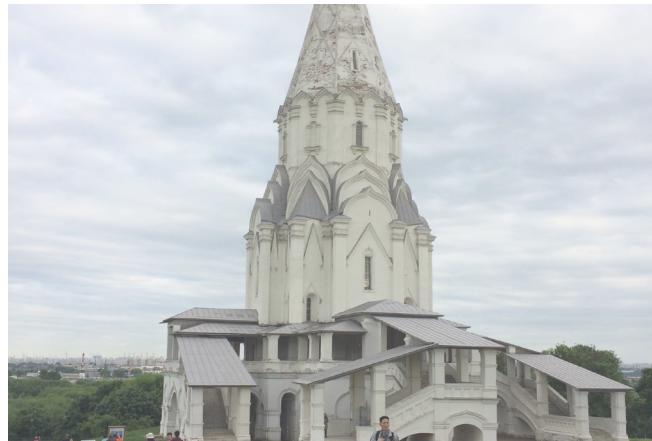


18:00-19:00 City tour

19:00-22:00 Dinner
22:00 Night train to Rostov-on-Don

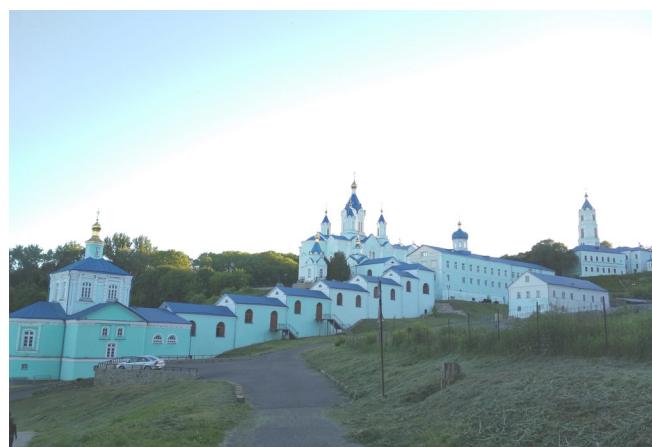
• Day 17 – August 6 (Tuesday)

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 coarse: forming factors, properties and functions
13:00-14:00 Dinner at the Golf Course Restaurant
14:00-18:30 Excursion to Starocherkasskaya village - the historical center of Don Cossacks
18:30-20:00 Dinner in the restaurant "Stari Gorod"
20:00-21:00 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. Gorbov
10:30-14:00 Team work on project preparation
14:00-15:00 Lunch
15:00-22:00 Team work on project preparation



• Day 20 - August 9 (Friday)

09:30-17:30 Bus excursion to Taganrog
17:30 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