



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

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

SPEAKERS



Dr. Elvira Dovletyarova
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Dr. Viacheslav Vasenev
Department of Landscape design and sustainable ecosystems, RUND University (Russia)
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Tatiana Morin
NYC Urban Soil Institute (USA)
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Dr. Tatiana Prokofeva
Associate Professor LMSU, Soil Science faculty
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Dr. Richard Shaw
State Soil Scientist USDA-Natural Resources Conservation Service (USA)
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Prof. Jean Louis Morel
Laboratory of Soils and Environment Université de Lorraine (France)
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Prof. Andrey Smagin
Soil Science Faculty LMSU (Moscow, Russia)
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Dr. Maha Deep
Department of Earth and Environmental Sciences City University of New York - Brooklyn College, CUNY (USA)
e-mail: mahadeeb.y@gmail.com

SPEAKERS



Dr. Diego Giuliarelli
Department of Innovation of Biological Systems, Food and Forestry DIBAF Tuscia University (Italy)
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Irina Veretelnikova
Department of ecology RSAU-MTAA named after K.A. Timiryazev
Department of Landscape design and sustainable ecosystems, RUND University (Russia)
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Prof. Michael Leuchner
Physical Geography and Climatology
RWTH Aachen University (Germany)
Former Springer Publishing Editor
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Prof. Riccardo Valentini
Tuscia University (Italy)
RUDN University (Russia)
Peace Noble Prize Laureate as a member of IPCC
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Ilya Mochalov
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Dr. Giovanna Sala
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Dr. Andrey Dolgikh
Geography Institute Russian Academy Science (Russia)
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Dr. Kristina Ivashchenko
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SPEAKERS



Dr. Thomas Nehls
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Head of Center for Innovation and
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Anya Paltseva
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Center of The City University of
New York NYC Urban Soil Institute
(USA)



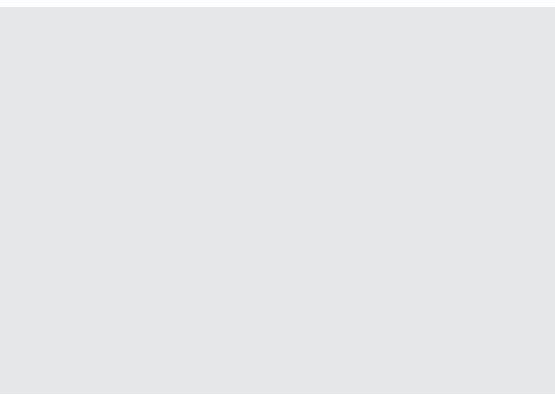
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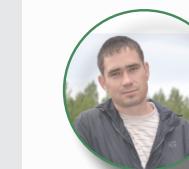
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Alexander Neaman
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TRIP ADVISORS



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
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 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
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.

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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

ГЕОГРАФИЧЕСКИЙ ФАКУЛЬТЕТ
МГУ имени М.В. Ломоносова

Geography faculty of
Lomonosov Moscow State University



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.

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field summer school

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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.

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.

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 SUITMA's 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 in landscape architecture

I. Mochalov (Mochalov Design Studio), Zaryadie park., Conference hall.

12:00-13:00 P7 Reading and interpretation monitoring data

L. Belotti (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 L12 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 L16 Soil pollution and human health H. Mielke (TU, USA), Hall C

18:00-19:00 L17 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



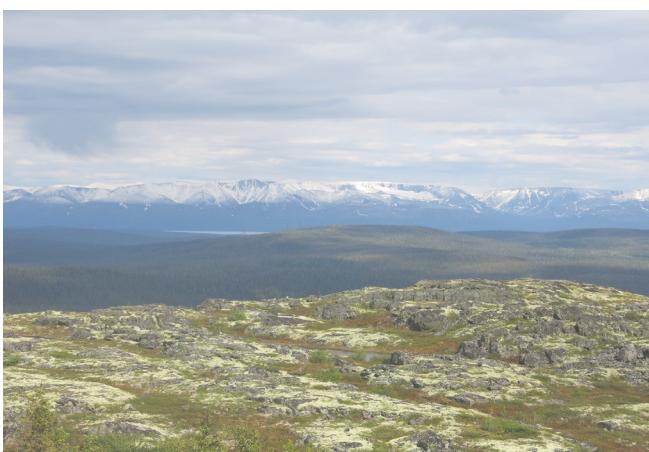
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11:00-12:00 PN0 Anthropogenic soils and landscapes from sea to sea V. Vasenev (RUDN, RU)
12:00-12:30 PN1 Subarctic environment P. Konstantinov (LMSU, RU)
12:30-13:00 PN2 Natural and urban forests of boreal climate I. Vasenev (RSAU, RU)
13:00-14:00 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

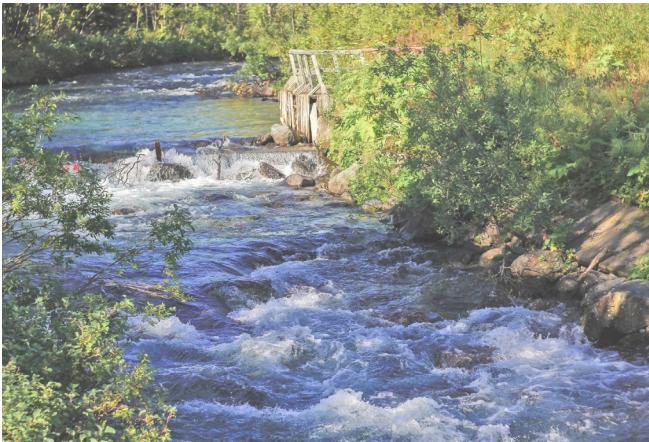


FIELD TOUR

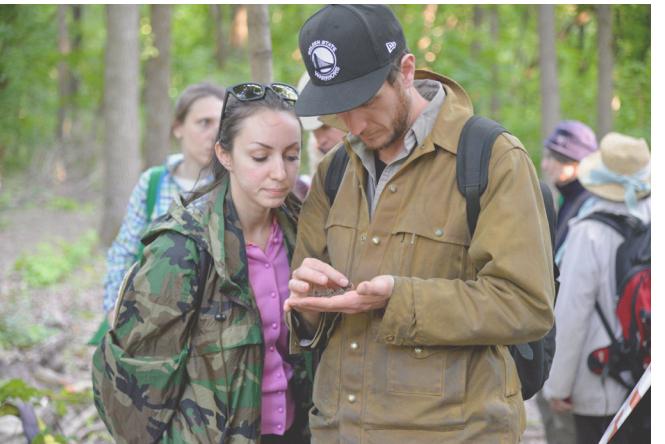
• Day 7 – July 27 (Saturday)
10:30-13:00 Flight Moscow SVO-Apatiti
13:00-14:00 Accommodation
14:00-15:00 Lunch (Tirvas near botanical garden)
15:00-17:00 Alpine botanical garden in Khibiny mountains. Soil vertical zonality in Subarctic climate
17:00-18:00 Museum of rocks in Kirovsk
18:00-20:00 Urban 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 Hotel



- 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 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
19:00-22:00 Barbecue in urban forest
- 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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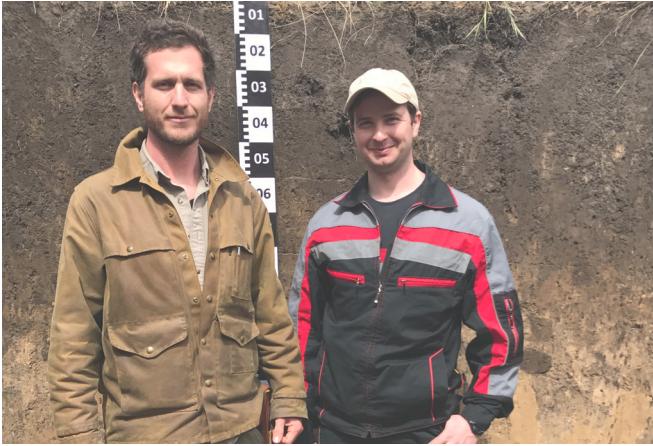
14:00-15:00 Lunch
15:00-17:30 Prioksko-Terrasny biosphere Reserve and Aurochs (European bison) nursery
17:30-23:00 Train transfer from Serpukhov to Kursk

• 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 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
14:00-17:30 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

