



**The 4th international Workshop within the project  
“Development of expert systems based on large-scale soil-  
geographic databases”**

**IV международный семинар/конференция в рамках проекта  
«Разработка экспертных систем на основании  
крупномасштабных почвенно-географических баз данных»**

December 11-23, 2019, Faculty of Soil Science of Lomonosov Moscow State  
University, Moscow, Russian Federation

**Participants / Участники:**

	<b>Kingdom of Thailand</b>
Mr. Weera Pathakheenang	Photogrammetrist, Professional Level; Information and Communication Technology Centre
Mr. Wattana Pattanathaworn	Soil surveyor, Professional Level; Soil Resources Survey and Research Division
	<b>Republic of the Union of Myanmar</b>
Dr. Cho Mar Htwe	Staff Officer, Land Use Department of Department of Agriculture
Mr. Aung Kyaw Thu	Senior Research Assistant of Department of Agricultural Research
	<b>Tutors</b>
Alyabina Irina O.	Project manager, professor of Department of geography of soils of Faculty of Soil Science of Lomonosov Moscow State University, Doctor of Biological Science
Golozubov Oleg M.	Project IT manager, leading researcher of Department of geography of soils of Faculty of Soil Science of Lomonosov Moscow State University, PhD
Golozubov Danila O.	Programmer
Litvinov Iurii A.	Senior Lecturer at the Academy of Biology and Biotechnology. DI. Ivanovsky, PhD
Kirillova Vasilisa A.	Project manager assistant, researcher of Department of geography of soils of Faculty of Soil Science of Lomonosov Moscow State University, PhD

## **Organizers of the international Workshop / Организаторы международного семинара:**

Shoba Sergey Alekseyevich: Dean of Faculty of Soil Science of Lomonosov Moscow State University, Doctor of Biological Science, corresponding member of Russian Academy of Science / Шоба Сергей Алексеевич: Декан факультета почвоведения МГУ имени М.В. Ломоносова, д.б.н., член-корреспондент РАН

Alyabina Irina Olegovna: Project manager, professor of Department of geography of soils of Faculty of Soil Science of Lomonosov Moscow State University, Doctor of Biological Science / Алябина Ирина Олеговна: Руководитель проекта, профессор кафедры географии почв факультета почвоведения МГУ имени М.В. Ломоносова, д.б.н.

Golozubov Oleg Modestovich: Technical project manager, leading researcher of Department of geography of soils of Faculty of Soil Science of Lomonosov Moscow State University, PhD / Голозубов Олег Модестович: Технический менеджер проекта, в.н.с. кафедры географии почв факультета почвоведения МГУ имени М.В. Ломоносова, к.б.н.

Litvinov Iurii Alekseyevich: Senior Lecturer at the Academy of Biology and Biotechnology. D.I. Ivanovsky, PhD / Литвинов Юрий Алексеевич: Южный Федеральный университет, старший преподаватель Академии биологии и биотехнологии им. Д.И. Ивановского, к.б.н.

Kirillova Vasilisa Alekseevna: The assistant manager of the project, researcher of Department of geography of soils of Faculty of Soil Science of Lomonosov Moscow State University, PhD / Кириллова Василиса Алексеевна: Ассистент менеджера проекта, н.с. кафедры географии почв факультета почвоведения МГУ имени М.В. Ломоносова, к.б.н.

## **Program of the 4th Workshop / Программа IV семинара**

### ***Wednesday December 11 / Среда 11 Декабря***

*Arrival & Check in at the hotel / Приезд и заселение участников семинара в гостиницу «Университетская»*

### ***Thursday December 12, 1<sup>st</sup> day / Четверг 12 Декабря, 1-ый День:***

*Official opening of the workshop / Официальное открытие семинара*

<b>TIME</b>	<b>TOPIC</b>	<b>RESPONSIBLE</b>
9:00 - 11:00	Entry coffee-break, round table, representing participants and tutors. Considering participant's data examples, formulation the goals of workshop for each country and participant.	All
9:00 - 13:00	<b>Section 1</b> Information system "Soil-geographical database of Russia "(IS SGDBRF) – as a prototype of the National soil data centre (NSII in terms of GSP FAO).	Alyabina I. Golozubov O.
13:00 - 14:00	LUNCH	
14:00 - 17:30	<b>Seminar 1</b> Installation and deployment of training kit, hardware and system software, composition, purpose	Golozubov O. Golozubov D
17:30 - 18:00	<b>Practice 1</b> Installing and configuring a virtual client-server centre	Golozubov D.

### ***Friday December 13, 2<sup>nd</sup> day / Пятница 13 Декабря, 2-ой День:***

*Workshop & practical training / Семинар и практические занятия*

<b>TIME</b>	<b>TOPIC</b>	<b>RESPONSIBLE</b>
9:00 – 11:30	<b>Section 2</b> Inventory and digitizing agricultural and soil data.	Litvinov Iu. Golozubov O.

11:30 - 12:00	COFFEE BREAK	
12:00 - 13:00	<b>Section 2 (continuing)</b> Prepare a working project directory and create a working GIS project.	Litvinov Iu.
13:00 - 14:00	LUNCH	
14:00 - 16:00	<b>Seminar 2</b> Administering of MS SQL Server and web (Internet) server	Golozubov O. Golozubov D
16:00 - 16:30	COFFEE BREAK	
16:30 - 18:00	<b>Practice 2</b> Installing and configuring a virtual client-server centre	Golozubov D.

*Saturday December 14, 3<sup>rd</sup> day / Суббота 14 Декабря, 3-ий День:  
Workshop & practical training / Семинар и практические занятия*

TIME	TOPIC	RESPONSIBLE
9:00 - 11:00	<b>Section 3</b> Standardization, harmonization, multilingualism and unification of object-attribute model of soil data. Regional standards as analogs of ISO 28258 SQ (TS 190 soil quality) series standards. Description of data in XML-like standards.	Golozubov O.
10:30 - 11:00	COFFEE BREAK	
11:00 - 13:00	<b>Seminar 3</b> Working in LAN environment (participant's server&notebooks)	Golozubov D
13:00 - 14:00	LUNCH	
14:00 - 15:00	<b>Seminar 4</b> Soil related Data Table composition and description using MS ACCESS	Litvinov Iu. Golozubov O.
15:00 - 16:00	<b>Practice 3</b> Entry of profile data-V8 program; execution of the task on own participant's data	Golozubov O..
16:00 - 16:30	COFFEE BREAK	
16:30 - 18:00	<b>Practice 3 (continuing)</b> Setting up thesaurus, exporting to XML, checking and filtering data	Golozubov O.

*Sunday December 15, 4<sup>th</sup> day / Воскресенье 15 декабря, 4-ый День:  
Self training holiday*

*Monday December 16, 5<sup>th</sup> day / Понедельник 16 декабря, 5-ый День:  
Workshop & practical training / Семинар и практические занятия*

TIME	TOPIC	RESPONSIBLE
9:00 - 11:00	<b>Section 4</b> Conceptual model of the SGDBRF. Multilingual software package SOIL_ML_MultyL.	Golozubov O.
11:00 - 11:30	COFFEE BREAK	
11:00 - 13:00	<b>Seminar 4 (continuing)</b> Using MS ACCESS and MS XML Notepad to correct and update the object-attribute model of soil data description	Litvinov Iu.
13:00 - 14:00	LUNCH	
14:00 - 15:30	<b>Seminar 5</b> Outline of ISO 28258 and FAO guidelines (Cookbook). Their use for the development of Russian soil data description standards	Golozubov O.
15:30 - 16:00	COFFEE BREAK	
16:00 - 17:30	<b>Practice 4</b> Object model: soil section (profile), soil layer. Data entry form v8. Standardization of soil descriptions. Ability to enter information for a set of soil horizons or layers. Data entry for representative profiles.	Golozubov O.

**Tuesday December 17, 6<sup>th</sup> day / Вторник 17 Декабря, 6-ый День:**  
*Workshop & practical training / Семинар и практические занятия*

TIME	TOPIC	RESPONSIBLE
9:00 - 11:00	<b>Section 5</b> Infrastructure of typical soil data centre; concept of client-server organization of soil information storage; composition of system and software (SPO) of data centre; web services and standards of Internet exchange.	Golozubov O.
11:00 - 11:30	COFFEE BREAK	
11:30 - 13:00	<b>Seminar 6</b> Data analysis, model and work with typical projects at agrochemical Centres	Litvinov Iu.
13:00 - 14:00	LUNCH	
14:00 - 16:00	<b>Seminar 6 (continuing)</b>	Golozubov D.
16:00 - 16:30	COFFEE BREAK	
16:30 –18:00	<b>Practice 5</b> Object model: a plot of land (parcel). Principles of separate storage of spatial and attribute information. Identification of objects (land plots) in the database.	Golozubov O., Golozubov D.

**Wednesday December 18, 7<sup>th</sup> day / Среда 18 Декабря, 7-ой День:**  
*Workshop & practical training / Семинар и практические занятия*

TIME	TOPIC	RESPONSIBLE
9:00 - 11:00	<b>Section 6</b> Life cycle and soil data circulation; interaction with GIS ArcGIS, QGIS, MapInfo. Standards of inter-network data exchange: GeoRSS, WFS, WMS, GeoJSON-based on XML-standards of soil data representation.	Golozubov O.
11:00 - 11:30	COFFEE BREAK	
11:30 - 13:00	<b>Section 6 (continuing)</b>	Alyabina I. Kirillova V.
13:00 - 14:00	LUNCH	
14:00 - 16:00	<b>Practice 6</b> Disaggregation legends of the soil maps for the taxa (semantic unit), the representation of contour information in a GIS	Litvinov Iu.
16:00 - 16:30	COFFEE BREAK	
16:30 –18:00	<b>Practice 6 (continuing)</b> Object model: soil mapping unit (SMU). Principles of preparation of different-scale cartographic data for loading into the database: preparation of spatial information, principles of soil name disaggregation of SMU	Litvinov Iu.

**Thursday December 19, 8<sup>th</sup> day / Четверг 19 Декабря, 8-ой День:**  
*Workshop & practical training / Семинар и практические занятия*

TIME	TOPIC	RESPONSIBLE
9:00 - 11:00	<b>Section 7</b> Methods of GIS analysis and project developing in the data centre environment. Principles of situational awareness and distributed data sources.	Golozubov O.
11:00 - 11:30	COFFEE BREAK	
11:30 - 13:00	<b>Seminar 7</b> Applied tasks (including calculation of normative yield, recommended dose of fertilizers, passport of fertility of the land plot, GSOC17 project)	Litvinov Iu.
13:00 - 14:00	LUNCH	
14:00 - 16:00	<b>Practice 6 (continuing)</b>	Litvinov Iu.

	Object model: mixed (combined) and individual soil samples. Data entry via input form and structured alphanumeric tables.	
16:00 - 16:30	COFFEE BREAK	
16:30 –18:00	<b>Practice 6 (continuing)</b>	Litvinov Iu.

*Friday December 20, 9<sup>th</sup> day / Пятница 20 Декабря, 9-ый День:  
Workshop & practical training / Семинар и практические занятия*

TIME	TOPIC	RESPONSIBLE
9:00 - 11:00	<b>Seminar 8</b> Presenting and testing participant's projects and data	Golozubov O., All
11:00 - 11:30	COFFEE BREAK	
11:30 - 13:00	<b>Section 8</b> Application examples solved with the SGDB-approach: best practices and solutions, including agrochemical Centres of the Ministry of agriculture of Russia	Kirillova V.
13:00 - 14:00	LUNCH	
14:00 - 15:00	<b>Section 8 (continuing)</b>	Golozubov O. Litvinov Iu.
15:00-16:00	<b>Seminar 8</b> Developing and testing of the data centre on the participant's data	Kirillova V. Litvinov Iu.
16:00 - 16:30	COFFEE BREAK	
16:30 –18:00	<b>Practice 7</b> Access to the server database from GIS (ArcGIS, QGis) to obtain soil information (contour and profile)	Litvinov Iu.

*Saturday December 21, 10<sup>th</sup> day / Суббота 21 декабря, 10-ый День:  
Workshop & practical training / Семинар и практические занятия*

TIME	TOPIC	RESPONSIBLE
9:00 - 11:00	<b>Seminar 8</b> Filtering and querying data samples, operations under geographic data types	Golozubov O.
11:00 - 11:30	COFFEE BREAK	
11:30 - 13:00	Developing and testing of the data centre on the participant's data	All
13:00 - 14:00	LUNCH	
14:00 - 16:00	<b>Practice 8</b> Access to the server database from GIS (ArcGIS, QGis) to obtain soil information (contour and profile)	All

*Sunday December 22, 11<sup>th</sup> day / Воскресенье 22 декабря, 11-ый День:  
Self training holiday*

*Monday December 23, 12<sup>th</sup> day / Понедельник 23 Декабря, 12-ый День:  
Workshop & practical training / Семинар и практические занятия*

TIME	TOPIC	RESPONSIBLE
<b>9:00</b>	<b>DEPARTURE FROM HOTEL</b>	
9:00 - 11:00	Developing and testing of the data centre on the participant's data	All
11:00 - 11:30	COFFEE BREAK	
11:30 - 13:00	Summarizing and discussion of future directions of development	All
13:00 - 14:00	LUNCH ROUND TABLE	All
	<b>DEPARTURE TO THE AIRPORT</b>	

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