

## **Annual Soil-Ecological Excursion across West Siberia**

Beginning in 1995, annual field trips through the southern part of Western Siberia have been organized for students, researchers, and lecturers from different universities throughout Europe. These field trips were initiated by Dr. Siewert (Soil Department, Berlin Technical University, Germany) and Dr. Barsukov (Institute of Soil Science and Agrochemistry, Novosibirsk, Russia) and vigorously supported by Prof. Gadjiev, the director of the same institute.

The primary goal of the field trip is the interdisciplinary exchange of experience and knowledge, and surmounting the language barrier by demonstrating the interrelationships of various undisturbed (by human activity) ecosystem components. The focus of the excursion is on soil formation processes resulting from the interaction of climate, vegetation and geological substrata. Characteristics of soil formation and ecosystem succession under continental climatic conditions, as well as the impressive wealth of unaltered or virtually untouched landscapes of great beauty, are compared with those of agricultural and forest plantations. In the course of the excursion 23-27 soil profiles are described using Russian, German, and WRB soil classification systems. Most of these soils represent unique local varieties and carry the signature of cryogenic processes. With regard to vegetation, the complete geobotanical description is presented for each site, including the dominant species, species significant to humans, and indicator species in particular. Such descriptions highlight the relationships between vegetation, soil, and climate factors. A few sites with extremely high biodiversity (up to 120 species of tall vascular plants per 100 square meters) are visited in the course of the excursion.

Currently, the excursion covers all latitude bioclimatic zones from the taiga to the southern forest steppe, including steppe ecosystems on the West Siberian Plain and all elevation belts from the tundra to the steppe and the Central Asian semi-desert zone in the Altai Mountains region (near the Mongolian border). Some of the most interesting ecosystems and regions visited in the course of the excursion include:

in the West Siberian Plain – one of the biggest expanses lowland in the world

- southern taiga subzone: dark coniferous forest including Siberian cedar
- azonal formation within the southern taiga subzone: the biggest peat bog ecosystem in the world
- forest-steppe zone: natural combination of primary birch forest islands and dry meadows
- azonal formation within forest-steppe zone: area of arid salted meadows and hyperhumid black taiga
- southern part of forest-steppe zone: true steppe ecosystem and famous Russian chernozem

in the Altai mountains – the biggest and most complex Siberian mountain range

- central Asian semi-desert zone - looks like the northern part of the Gobi desert in Mongolia: unique plants on toxic soils, paleosols, Pleistocene lake deposits, and the late Pleistocene terminal moraine
- mountainous steppe belt: paradoxes of continental climate and previous historical landscape development – xerophyte grasses next to the spruce forest and peat mosses, permafrost, and seasonal frost
- mountainous forest-steppe belt: park-like Siberian larch forest with well-developed herbs layer on northern slopes in combination with mountain steppe on southern slopes - typical landscape of continental mountains
- mountainous forest and tundra belts: abrupt changes within a short distance from subalpine forest with high herbs to different types of mountainous tundra with recent and relic cryogenic features

as well as different types of recent glaciers, solifluction, pingo, and alpine meadows.

The excursion is guided by experienced Russian scientists (e.g. soil specialists, a geobotanists, and geomorphologists) from the Institute of Soil Science and Agrochemistry, Central Siberian Botanical Garden, Novosibirsk, and Biology & Soil Department of the Tomsk State University, Tomsk. The guides inform participants throughout the excursion route, and because opinions and interpretations often vary among participants and guides, the outcome is often a highly instructive, expert debate.

Scientists and students who specialize in ecology, soil science, botany, geomorphology and other related disciplines are invited to take part in future excursions. Ideally, the group is made up of 40% undergraduates, 40% graduate students, and at least 2 lecturers, satisfying both the educational- and research aims of the trip. More information regarding the excursion, including registration, is available at [www.siberian-expedition.de](http://www.siberian-expedition.de) or directly from the organizers via email (Dr. Siewert: [cs@csiewert.de](mailto:cs@csiewert.de), Dr. Barsukov: [paul@issa.nsc.ru](mailto:paul@issa.nsc.ru)).

The current excursion program is the result of seven years of field-trip experience, teamwork, and increasing support on part of the scientists from different countries and different fields of study. The active development of the excursion enables us to include new areas of increasing interest, to collect data about the region that are only rarely available in English, and to apply basic research in soil and vegetation sciences to such applications as global ecological problems and environmental protection.

In the future we are planning to develop the excursion program of shorter duration that retains the unique opportunity to examine great diversity of lowland and mountain ecosystems and emphasizes interactions and interrelations between biotic and abiotic components of ecosystems.

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Dr. Ch. Siewert and Dr. P. Barsukov, Excursion Organizers