Welcome to the Second International Summer School for Students and Young Scientists

“Natural environment of Arctic and Alpine areas: relief, soils, permafrost, glaciers and biota as indicators of climatic changes”

04-19 July 2013, Tomsk-Aktru (Russia)

Earth & environmental sciences – the view from the High Altai
The Second International Research-Educational Summer School “Natural environment of Arctic and Alpine areas: relief, soils, permafrost, glaciers and biota as indicators of climatic changes” will start in the cosy city of Tomsk. This famous cultural centre has been named “the Siberian Cambridge”. There will be 3 days for the field excursion to the High Altai (1200 km South from Tomsk). This will cross different landscape zones, such as south taiga, sub-taiga, forest-step, step, mountain taiga, mountain meadow, mountain tundra, glacial and periglacial area. Participants can observe different geographical provinces, such as West-Siberian Plain, Piedmont Altai, High North Altai, High Central Altai and High South-East Altai. All this will provide an opportunity to become acquainted with a great variety of landscapes, different types of relief and paleogeographical relics, well-expressed geological structures and evidences of earthquakes, amazing biodiversity in ecosystems, unique archaeological objects and the dynamic variety of nomadic populations.

The main part of the School (3 days) will be at the Aktru Research Station of the National Research Tomsk State University. The Station was founded by M.V. Tronov, the distinguished scientist and Professor of the Tomsk State University, who is a founder of the Siberian Glaciological Scientific School. There will be various field excursions as well as lectures at the Station and in its surroundings.

The two-day journey back to Tomsk will repeat trans-zonal excursions. Other interesting places will then be seen and elucidated in the lectures.

Location:

Tomsk is situated in Western Siberia at the very geographical centre of Eurasia: an ideal meeting place for analytical minds! Tomsk is on the Tom River in the southwest of Siberian Federal District, Russia, the administrative centre of Tomsk Oblast. One of the oldest towns in Siberia, Tomsk celebrated its 400th anniversary in 2004. There are many beautiful ancient wooden buildings there. With a population of half a million, Tomsk is a city of students: 100,000 students (every fifth citizen) in 6 universities. Neither Moscow nor St-Petersburg has such a large proportion of students and scientists as Tomsk (http://en.wikipedia.org/wiki/Tomsk).

Tomsk State University (TSU), which was established in 1878 by Tsar Alexander II as an Imperial Siberian University, is the first higher educational institution in the Asian part of Russia. Now it is one of the leading Russian National Research Universities (http://inter.tsu.ru/en/index.php).
Aktru Research Station which belongs to Tomsk State University is located in the highest alpine South-East part of the Altai Republic near the border with Mongolia, 2150 metres above sea level. The most striking geographical aspect of the Republic of Altai is its mountainous terrain. The Republic is situated within the Russian part of the Altai Mountains system, which covers a large part of the Republic and continues into neighboring Kazakhstan, Mongolia and China. The region continues to experience periodic notable seismic activity, which is visually made apparent through the mountains' characteristically high and rugged mountain ridges, separated by narrow and deep river valleys. The Republic's highest peak, Mount Belukha (4,506 m), is the highest point in Siberia. Since 2011 Aktru Research Station is observer member of INTERACT - International Network for Terrestrial Research and Monitoring in the Arctic (http://www.eu-interact.org/field-sites/stations-with-observer-status/aktru-scientific-research-station/).

How to get to Tomsk?

Moscow - Tomsk

There are 4 direct 4-hours flights from Moscow to Tomsk, by different Airlines: S7 and Transaero from Domodedovo airport, Utair from Vnukovo airport and Aeroflot from Sheremetyevo airport. There is also a direct train Moscow-Tomsk named “Tomich”, along the famous Trans-Siberian Railway. This takes 2 and a half days.

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<tr>
<th>Air Company (Airport)</th>
<th>Moscow-Tomsk Flight number &amp; time (departure - arrival)</th>
<th>Tomsk-Moscow Flight number &amp; time (departure - arrival)</th>
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<tr>
<td>S7 (Domodedovo)</td>
<td>811 (23:35 – 06:40)</td>
<td>812 (08:00 – 09:35)</td>
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<td>Transaero (Domodedovo)</td>
<td>153 (22:50 – 06:00)</td>
<td>154 (07:25 – 09:00)</td>
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<td>449 (07:00 – 08:50)</td>
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<td>Aeroflot (Sheremetyevo)</td>
<td>SU 1530 (00:15 – 07:25)</td>
<td>SU 1531 (08:35 – 10:05)</td>
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Novosibirsk - Tomsk

by plane – approximately 40 minutes (Tomk-avia Air Company, flight 5004, departure 17:00, arrival 17:45, 3 times a week – Monday, Wednesday, Friday)
by train - approximately 5 hours
by bus or by car - approximately 4 hours (300 km)
Both Moscow and Novosibirsk have regular international airline connections with a number of cities all over the world.

Who can participate?

We expect to receive about 30 international students and young scientists (age range: 18-35 years old).

Summer School fee

Summer School fee for 2013 is 650 Euro: field trip expenses, accomodation, campings, food and registration fee are included.
IMPORTANT! Personal outfit

Taking into account the high-mountain field conditions for the Summer School, personal sleeping-bags and tents as well as proper field clothing and shoes are desirable. If you have any problems in these respects, please let us know.

Publication of School Materials

The lectures and some papers of students and young scientists will be published in the “TSU proceedings”.

Contacts

Michael Mochalov E-mail: mvm@ums.tsu.ru, phone: +7(3822)529558, fax: +7(3822)529558

School coordinator

Sergey N. Kirpotin - Vice-Rector for International Affairs, Professor, Doctor of Sciences, National Research Tomsk State University, 36 Lenin Ave., Tomsk, Siberia, 634050 RUSSIA. Tel.: +7 (3822) 529644 Fax.: +7 (3822) 529558 E-mail: kirp@mail.tsu.ru Internet: www.inter.tsu.ru

Certificate

School graduates will obtain a certificate from the National Research State University of Tomsk

Application form

Surname
Name
Second name
Date of birth
Name of organization (full name)
Student, master (select necessary)
For students of full-time tuition:
Course (select necessary): I, II, III, IV, V, VI
Specialty (select from the list)
For students of correspondence study
Specialty (select from the list)
For Ph.D candidate of full-time tuition
Course: 1, 2, 3
Specialty (select from the list)
For Ph.D candidate of correspondence study
Specialty (select from the list)
Contact telephone (with city code)
E-mail
Official invitation

For the official invitation, we require the following data: scanned copy of passport, an official place of study/work and position, and also the postal address to which originals of invitations will be sent.

Deadlines

- **30 April 2013** Notification of acceptance of abstract for oral or poster presentation.
- **31 May 2013** Last day for submission of applications.

Distinguished Visitors

Terry V. Callaghan – Royal Swedish Academy of Sciences Distinguished Professor; Professor of Arctic Ecology, University of Sheffield, UK; Head of the SCANNET/INTERACT Network. Terry Callaghan has worked on Arctic ecology for 43 years in all 8 Arctic countries as well as working in the Sub Antarctic. He played a fundamental role in establishing a British research base on high Arctic Svalbard and co-ordinated its first research programmes. His research focuses on the relationships between the Arctic environment and the ecology of Arctic plants, animals and ecosystem processes, including ecological responses to changes in climate, atmospheric CO$_2$ concentrations, and UV-B radiation. Terry Callaghan was a member of the United Nations Environment Programme’s expert panel on Stratospheric Ozone Depletion Effects for many years, and was a lead author of the Intergovernmental Panel on Climate Change (IPCC 2007) Polar and Ecosystems Chapters as well as the Millennium Assessment of Ecosystems’ Polar Chapter. He made major contributions to the Arctic Climate Impacts Assessment (ACIA) including outreach in the media, and briefings at all levels from primary schools and families to politicians, religious leaders of the world, Governments and Royalty. During this process, he was formally commended by Arctic Indigenous Peoples’
organisations for including their knowledge and addressing their concerns. He has initiated and chaired many international research groups within the International Arctic Science Committee (IASC) such as FATE (Feedbacks from Arctic Terrestrial Ecosystems), Dynamics of the Tundra Taiga Interface and the International Conferences on Arctic Research Planning (ICARP I and II), and is co-ordinator of SCANNET (Scandinavian and north European Network of Terrestrial Field Bases) that includes 33 research stations throughout the Arctic. Terry Callaghan has supervised about 30 PhD students and has produced about 350 scientific publications with over 400 colleagues from about 40 countries. He is included in the web of sciences’ list of “most frequently cited researchers” world-wide. In 2006 he was included in the group award of the Zayed International Prize for the Environment to the authors of the Millennium Ecosystem Assessment and in 2007 he was included in the group award of the Nobel Peace Prize as one of the Lead Authors of the IPCC that was jointly awarded the prize with Al Gore. Also in 2007, he hosted and addressed 27 Ministers of Environment and 50 Ambassadors from around the world and in 2009 hosted Climate Negotiators from the EU countries prior to the 2009 climate meeting in Copenhagen. He is currently involved in an Arctic Council-initiated assessment of the Arctic’s cryosphere (SWIPA) and has just led the SCANNET network in a bid to the EU for funding to increase access for researchers to the Arctic and to increase environmental monitoring activities. He will lead this 7.3 million Euros international project (INTERACT) for the next 4 years.

Vladimir Golovanevskiy – Professor, Director - Rio Tinto Centre for Materials and Sensing in Mining (RTCMSM), Curtin University of Technology, Australia, CRICOS Provider Code 00301J

Professor Vladimir Golovanevskiy holds a PhD in Materials Technology/Thermophysics from the Ukraine Academy of Sciences and Masters (Machine Design) and BEng (Mechanical) degrees from Kharkiv Polytechnic University, Ukraine. He has over 25 years experience in fundamental and applied research, teaching, industry, management and consultancy activities. Vladimir worked in a variety of roles in Australia, Russia, Ukraine and Germany in a range of industries from heavy engineering for underground mining to International Space Program to composite materials structures to artificial gems manufacture to cryogenics. He has published over 30 papers in international scientific journals and conference proceedings and has written over a 100 confidential reports on materials-related matters for various Australian and overseas industry groups. Vladimir has wide professional networks both nationally and globally, with research interests in advanced materials, engineering design, strong magnetic fields and wear management. He is actively engaged in building long-term, sustainable collaborative relationships with industry and research partners nationally and internationally to deliver step-change technology benefits to Rio Tinto.

Michael Brett-Crowther – Dr., Editor of the International Journal of Environmental Studies, with which he has been associated for 37 years. Concerned with relations among the six primary problems - food, energy, population, mass poverty, military expenditure, world monetary system. Has lectured in numerous universities and done research at Salford, Newcastle upon Tyne, and Imperial College (London). First Associate of Humboldt State University, California. Now lives in semi-retirement in Midi-Pyrenees, France. Has a long-standing concern with the history and culture of India, and has focused on Indian problems and potential solutions; e.g., December 2007 special issue on energy alternatives in India. 'Discovered' Professor Sergey Kirpotin’s work in Jonathan Dimbleby's BBC series on Russia, and brought its significance into prominence by the August 2009 special issue on Western Siberia.

Jürgen Herget – Prof. Dr., Juergen Herget is Professor of Physical Geography at the Department of Geography, University of Bonn, Germany, and specialist in geomorphology and palaeohydrology. He is working in and on the Altai Mountains since 1999, focusing on the formation, dynamics and decay of naturally dammed lakes. In cooperation with scientists from Tomsk State University, he investigated the high magnitude Pleistocene glacial lake outburst floods from the ice-dammed lake in upper Chuja River valley considering the palaeohydraulic interpretation of flood-related features and structures. Recently, another international project located in the upper headwaters started on recent lake formation considering the influence of the decay of mountain permafrost. In the international scientific network, he is active as secretary of the focus area of Hydrological Change and Climate (InQua) and as executive member of the Fluvial Archives Group (FLAG).
Preliminary Program:

04 July 2013 (Monday)

05.30 – 10.00 Arrival and settling
11.30 – 12.30 Registration (room 308, TSU main building, 36 Lenina Pr.)
13.00 – 13.50 Lunch at café «Minutka» (TSU main building, 36 Lenina Pr.)
14.00 – 18.30 Plenary session of School (Conference-hall, TSU Scientific Library)
19.00 – 21.00 Arrival dinner

05 July 2013 (Tuesday)

10.00 – 12.30 Plenary session of School (Conference-hall, TSU Scientific Library)
13.00 – 13.50 Lunch at café «Minutka» (TSU main building, 36 Lenina Pr.)
14.00 – 18.30 Excursion to TSU (Botanical Garden, Museum of Mineralogy, Museum of Paleontology, Herbarium, Zoo museum, Museum of Archeology and Ethnography)
Excursion around Tomsk by car accompanied by the guide, interpreter - Nina K. Rozhanovskaya

06 July 2013 (Wednesday)

08.00 – all day. Departure from Tomsk. Bus excursion to Barnaul-city (400 km from Tomsk). Stay, excursion and overnight stop in South-Siberian Botanical Garden at Altai State University, Barnaul.

07 July 2013 (Thursday)

08.00 – all day. Departure from Barnaul. Bus excursion to the bank of Katun-river near of Gorny-altaiisk city (450 km from Barnaul). Stay, excursions and overnight stop in tent camping at the bank of Katun-river.

08 July 2013 (Friday)

08.00 – all day. Departure from the Katun tent camping. Bus excursion to the Yaloman village in Central Altai (260 km from the Katun tent camping). Stay, excursions and overnight stop in Yaloman tent camping.
9 July 2013 (Saturday)
08.00 – all day. Stay, excursions and overnight stop in Yaloman tent camping.

10 July 2013 (Sunday)
08.00 – all day. Departure from the Yaloman tent camping. Bus excursion to the tent camping in Kurai intermountain step basin (200 km from the Yaloman tent camping). Stay, excursions and overnight stop in Kurai tent camping.

11 July 2013 (Monday)
Rising to Aktru Research Station using special off-highway vehicle. Settling in and familiarization with Station.

12 July - 13 July (Tuesday- Wednesday)
Lectures of TSU and invited lecturers, field excursions in Aktru Research Station Campus.
14 July – 16 July (Sunday – Monday)

Way back to Tomsk with excursions and stops in interesting places.

17-20 July

Departure from Tomsk.

IMPORTANT! Possible alterations

Taking into account weather conditions some changes could be made in the field-excursion Program.
Summer School Web-site

will be open on 15 September
Success Story

Responses about the First International Aktru Summer School 2011

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International Aktru Summer School in the Altai Mountains, International Journal of
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REPORT

A journey through space and time: the First International Aktru
Summer School in the Altai Mountains

TERRY V. CALLAGHAN
Royal Swedish Academy of Sciences, Stockholm SE-114 18, Sweden and Department of
Animal and Plant Sciences, Alfred Denny Building, University of Sheffield, Western Bank,
Sheffield S10 2TN, UK

Between the 4 and 19 of July 2011, the Tomsk State University in Siberia held its first international
summer school for students and young researchers at its field station, ‘Aktru’ in the Altai Mountains, close to the
southern border of Siberia and the northern border of Mongolia. The summer school was multi-disciplinary and
examined the theme of the ‘Natural environment of Arctic and Alpine areas: relief, soils, permafrost, glaciers and
biota as indicators of climatic changes’.

The summer school was a great success and provided unique opportunities to young researchers from
many countries. Together with several eminent researchers in various fields and from different countries, the
young researchers and students travelled through environmental space across major eco-regions. The summer
school started with introductory lectures at the host institution, Tomsk State University (with national research
status), that is situated in the taiga coniferous forest region. The group then went by bus into the southern taiga,
characterised by mixed deciduous birch and coniferous forest and through the semi-arid steppe region to the
foothills of the Altai Mountains. The group then climbed by all-wheel-drive ex-military vehicles through the
mountain coniferous forests to the Aktru station that is located at the upper altitudinal tree-line. Within a short
walking distance, the group was able to access alpine meadows and fell-fields and finally, glaciers and the nival
environment. There are few places on Earth where it is possible to go through such diverse environmental space
within a short time and with such ease. The young researchers also travelled through time: from fascinating
lectures and field excursions that explained the formation of a landscape following a mega-tsunami some 25,000
years ago to compelling evidence of climate change in action at a location where a dynamic tree-line is above
glacier snouts and glacial retreat has been recorded for about 100 years, and intensively for about 50 years. In the
vicinity, there was also an impressive area where a large palsa plateau (a peatland with a permafrost core) was
rapidly degrading into a thermokarst lake and mire while trees were establishing in small thaw depressions.

The scale of the various phenomena was enormous: the expanses of the taiga forest were vast; the palsa
plateau was an analogue of what Fennoscandian palsa plateaus might have looked like at the start of the
Holocene. The mountains rose from the semi-arid steppes to around 4000 m into a climate regime that supported
glacier formation; and the after-effects of the mega-tsunami such as huge silt bars and ‘ripple lines’ on the steppes
were of staggering proportions. Furthermore, the diversity of ecosystems was impressive and Aktru is in the centre
of a biodiversity hot-spot as the region in general is host to many endemic species, some of which are threatened
by extinction.

The young researchers and students had access to experts with knowledge on geomorphology, hydrology,
permafrost, glaciology and ecology. Not only was the knowledge of these experts accessible to the students, the
experts themselves were very accessible as a result of their friendliness and the ‘mixing-pot’ format of the summer
school. Consequently, senior researchers as well as young scientists left the Aktru summer school wellinformed
about topics within and outside their professional fields of interest.

The foreign students and young researchers were welcomed to a remote and unique environment that
would be almost impossible to access without help and support from Russian colleagues and the very positive
interactions among participants will lead to future collaborations. In fact, all the ingredients were present: good
teachers were brought together with interested and able young researchers in a unique and fascinating physical
environment and within a good infrastructure with a friendly social environment. An immediate benefit is that
Aktru has now joined an international network of cold-region research stations (SCANNET-INTERACT) and Tomsk
State University and Aktru can now contribute within this circum-arctic network.

It is hoped that this Summer School will be the start of many.
29 August 2011

Dr. Sergey N. Kirpotin, Vice-Rector for International Affairs
Professor, Doctor of Sciences
National Research Tomsk State University
36 Lenin Ave., Tomsk, Siberia 634050, RUSSIA
kirp@ums.tsu.ru

Re: International Summer School: “Natural environment of Arctic and Alpine areas: relief, soils, permafrost, glaciers and biota as indicators of climatic changes” 4 – 19 July 2011

Dear Dr. Kirpotin:

This letter is an evaluation of the 2011 summer school offered by the University of Tomsk and Curtin University in Australia. I was a participant in the Summer School and so had a good view of its functioning.

Most of the students attending the school were from Australia and Russia, but some were from Germany, Netherlands, France, and the USA. The level of the students was in general undergraduate. The students were exposed to preliminary lectures in Tomsk, and also a tour of Tomsk itself. Thus the introductory material was both scientific and cultural. After Tomsk, the students were shown the glaciated Altai range near the Mongol border via two walking treks following a bus transect across the ecozones of Siberia. At the end, the students made brief presentations to each other of their own studies.

The initial presentations by the faculty were a good introduction to the landscape and environment of the field trip. The treks exposed the students, close up, to glaciated landscapes and glaciers that few had had the opportunity to see before.

The school seemed to me to be very successful, especially for an inaugural effort. The school was very well run. An unavoidable emergency arose (a family emergency for one student), and it was handled well. The food – in Tomsk, on the road, and at the Aktru Research station – was quite good. The students seemed to be happy and enthusiastic. I think the students benefitted from the general exposure to the Siberian countryside as well as to the formal lectures. The format seems to be very good, and I can see no changes necessary for the second year.

In any new situation some changes may be in order. In this case, it appears that most of the students were in engineering, but the focus of the school was scientific and environmental. Perhaps a different focus would have been of greater interest to the students, although I suspect the value of exposure to natural sciences in a natural setting is probably of high value to all. If the natural sciences format is to be maintained, I think it might be of value to provide students before they board the airplane for Tomsk with a handout outlining the basic terms and concepts they will be dealing with during the school itself.

Overall, the summer school was an excellent experience.

Sincerely,

Alan Gillespie
Professor, Earth and Space Sciences
University of Washington
Seattle, WA 98195-1310 USA
12 September 2011

Professor Georgy V Mayer
Rector – Tomsk State University
36 Lenina Avenue
634050 TOMSK RUSSIA

Dear Professor Mayer,

**International Summer School**

As you might be aware, Curtin University recently participated in the Inaugural International Summer School organised by the Tomsk State University (TSU) at its Aktru Mountain Station in the Altai Mountains this July. Follow-on from a research seminar between Curtin University and TSU in Tomsk in October 2010, this Summer School was the latest achievement and next step in building successful relationships between our universities.

The event, with the overarching theme of *Natural Environment of Arctic and Alpine Areas: Relief, Soils, Permafrost, Glaciers and Biota as Indicators of Climatic Changes* was the result of a very significant effort by many TSU staff, led by Professor Sergey Kirpotin and brought together over 50 participants from eight countries. This included a group of 10 Curtin undergraduate students from the Faculty of Science and Engineering, PhD students from Russia, Germany, the US, France and the Netherlands, and world-renowned global climate change researchers from England, Germany, Russia, the US and Israel. The calibre of senior researchers participating in the School was exceptional, including a Nobel Prize Laureate Professor Terry Callaghan.

The School program included plenary sessions and lectures, undergraduate and postgraduate students’ presentations, 1200 kilometre journey through the Altai Mountains region, a stay at the Aktru station and guided tours of environmental hotspots etc, and has received extensive media coverage in Tomsk, including several newspaper articles and a series of TV programs.

Our students and staff had an amazing life changing experience and have made many friends within the Tomsk and other international academia and students. TSU hospitality has been excellent and the friendships made by our students and staff will, I am sure, last a lifetime. All this will help to further strengthen successful relationships between our universities.
I would also like to take this opportunity in thanking Professor Vladimir Golovanevskiy, Director of the Rio Tinto Centre for Materials and Sensing in Mining at Curtin University for his outstanding contribution towards this project, without which would not have been as successful.

Curtin University is intending to conduct a similar international event and we are hoping to be able to welcome TSU staff and students next year in Perth.

Professor Andris Stelbovics
Pro Vice Chancellor

cc: Prof Sergey N Kirpotin
    Prof V Golovanevskiy
I had the honor and pleasure to participate in the summer school in Tomsk and Aktru as foreign visiting professor. My personal experiences with the area and topic are based on more than 10 years field work in the Altai Mountains around Aktru station and scientific cooperation with scientists of Tomsk State University since 1999.

According to my impression, the summer school was successful. It is a real challenge to bring, guide and coordinate a group of students of different levels and different disciplines to Siberia and run a trip with new impressions to everyone. This problem was solved successfully due to the productive efforts of Prof. Kirpotin and his team. Also the support by Tomsk State University has to be thanked as the financial but especially also the logistical support was remarkable and made the first impressions of Tomsk and even Russia for all first-comers positive. Compared with previous trips, I was positively surprised about the smooth and well organization and management of the visit in Tomsk and the travel and stay in Aktru. I have not experienced such a comfortable, easy and enjoyable travel before.

In general, I would like to congratulate Tomsk State University for the successful summer school and the significantly improved visibility on the international level. Several scientists on different levels – students, candidates, aspirants up to established professors – now can confirm the good reputation of TSU by personal experiences.

Prof. Dr. Juergen Herget