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Dear friends and colleagues!

We are pleased to introduce you the new issue of the Newsletter of the IGU Commission on Environment Evolution. This Bulletin includes the meeting reports, the invitation to the 33rd International Geographical Congress in Beijing, information about our new publications and forthcoming events.

The information of the commission activity and Newsletter is presented on web-site:
<http://eecom.org>

Elena Novenko



It is with deep regret and profound sadness that we have to inform you that Professor **Andrey Velichko**, the first chair and organizer of our Commission unexpectedly passed away on November, 11. It would be hard to find a more passionate, loyal and devoted colleague. His personality and contribution will leave behind a grateful memory.



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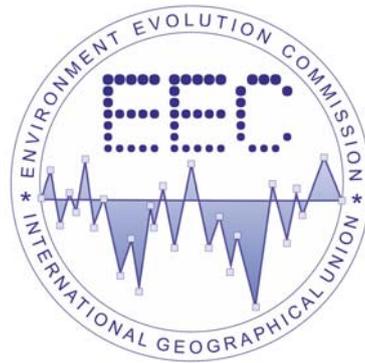
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THE IGU COMMISSION ON ENVIRONMENT EVOLUTION



The Commission on Environment Evolution is one of the research bodies of the International Geographical Union. The Commission has been organized in a first time of the IGU history in 2004. The main goal of the commission activity is to study human and environmental interaction including climate, landscapes and culture from the Paleolithic epoch until present. The principal lines of research are: **Landscape dynamics, Natural Processes and Human impact**. The Commission is focused also on assessment of role of climate and landscape in development of the human society evolution as well as the anthropogenic influence on environmental conditions.

The basic aims of the Commission on Environment Evolution are:

- to create a network of specialists in paleoecology, landscape evolution, climate changes and human-environment interaction;
- to stimulate active cooperation among scientists (exchanging data, common data standards, joint projects);
- to compile and to distribute information on paleoenvironmental research beyond national borders.

To achieve its aims, the Commission on Environment Evolution provides follow media for the exchange of information between specialists

- special session in a frame of the IGU Congresses and Regional Conferences;
- Commission's meetings (Conferences, Workshops and young scientists school dedicated to different problems of environment evolution and paleoecology);
- special issues on environment evolution-related topics in various peer-reviewed journals;
- homepage of the Commission on Environment Evolution (<http://eecommm.org>);
- The new annual newsletter of the Commission

THE STRUCTURE OF ORGANIZATION

The Environment Evolution Commission consists of 11 regional working groups. The leaders of WGs are the members of Commission Steering Committee

The chair of the Commission

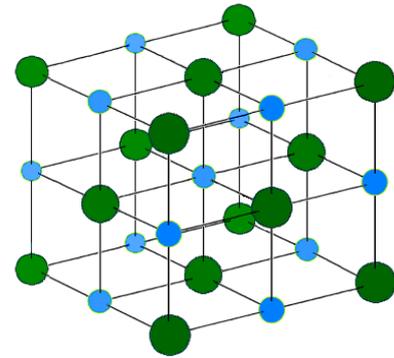
Dr. T. Boettger. (Germany). Helmholtz Centre for Environmental Research – UFZ, Department of Catchment Hydrology, e-mail: tatjana.boettger@ufz.de

The vice chair of the Commission:

Dr. Fahu Chen (China). Research School of Arid Environment and Climate Change, Lanzhou University, e-mail: chenfh@lzu.edu.cn

The secretary:

Dr. Elena Novenko (Russia). M.V. Lomonosov Moscow State University, Faculty of Geography, e-mail: lenanov@mail.ru



The Steering Committee:

1. Dr. Lukas Barton (USA). Department of Anthropology, University of Pittsburgh.
2. Dr. Bernhard Weninger (Germany). Institute of Prehistoric Archaeology, University of Cologne.
3. Professor T. Sugai (Japan), The University of Tokyo.
4. Dr. P Kershow (Australia) Monash University; School of Geography and Environmental Science.
5. Dr. Ch. Turner (Great Britain) Quaternary Environments Group, Dept. of Geography, University of Cambridge.
6. Dr. M. Stancikaite (Lithuania), Institute of Geology and Geography.
7. Dr. V. Zernitskaya (Belarus) Institute of Geochemistry and Geophysics, National Academy of Sciences of Belarus.
8. Dr. L. Bezusko (Ukraine) National University "Kyiv-Mohyla Academy"
9. Dr. A. Tsatzkin (Israel) University of Haifa.
10. Dr. Rama Prasad (India) Dept. of Geography, University of Rajasthan, Jaipur.

MEETING REPORT



IGU REGIONAL CONFERENCE 2015, MOSCOW, RUSSIA, 17-21 AUGUST, 2015.

The Regional Conference is the annual meeting of the International Geographical Union. The conference in Moscow, 2015, was focus on five main themes: Urban Environment, Polar Studies, Climate Change, Global Conflict and Regional Sustainability. The program was rooted in principals of diversity and interdisciplinary exchange. It was feature a variety of meetings, including plenary sessions, lectures, panel discussions, workshops and other events. It was also provide opportunities for sharing ideas on IGU projects and on the role of geographers in international initiatives such as Future Earth.

The Commission on Environment Evolution organized 3 special sessions:

1) Environment Evolution and Human Activity in the late Quaternary (Conveners: A.A. Velichko and T. Boettger).

The session was focused on the long-term studies of landscapes evolution, climate dynamics and human activity in different geographical regions during the Pleistocene and the Holocene. New results of the experimental and theoretical studies focused on human-environment interactions in the different regions of the Northern and Southern Hemispheres in past epochs were presented. The poster and oral presentations were based on detailed paleontological information (pollen, macrofossil, diatoms, etc); geomorphological data, paleolimnic and paleohydrological materials, radiocarbon dates, stable isotope data and the evidence about beginning of human activities.

2) Landscape dynamics and human impacts during the last millennium (Conveners: E.Yu. Novenko and D.N. Koslov).

The session was focused on a review of available knowledge on the forced and unforced climate variability and dynamics of human-environment interactions during the last millennium and the late Holocene. Fruitful discussion needs presenting and analysis of already existed data sets and results of new observations, data from natural archives, results of modeling experiments, etc. One of the key scientific questions of the session was to explain how human activities have influenced and changed natural ecosystems during

the last millennium and in the recent past.

3) Climate - vegetation interaction under current and future climate change scenarios (Convener: A.A. Olchev).

The session was aimed to bring together the specialists working in the fields of climate, vegetation and land use changes. Modern climate changes have significant impact on growth and functioning of the different plant community. On the other hand, the climate is very sensitive to land cover and vegetation changes. What is the main mechanisms of climate - atmosphere interactions, how the vegetation and land use changes influence the climate system and what is the response of the different plant communities to climate change are key questions for discussions in the session. The specialists working in the different scientific areas (meteorologists, climatologists, forest ecologists, paleogeographers, modeling experts, etc.) were take part in the session.

The program included **55 oral** presentations and **19 posters**. The participants from Russia, Denmark, Kazakhstan, Rumania, India, China, Egypt, Saudi Arabia, Israel, Brazil and Peru took part in these special sessions.

The main topics that have been discussed on the special sessions: landscape and climate dynamics in the Pleistocene and the Holocene in different region of the World, initial occupation of the Eurasia by men, men and environment interaction and land use in the Holocene and in the recent past, modern forest ecosystems and prognosis of their dynamics in future. The special attention was paid to the problems of palaeogeography of Caspian basin and environment evolution of arid zone in the Late Quaternary.



Session "Environment Evolution and Human Activity in the late Quaternary", presentation by Tamara Yanina



Introduction of the special session "Climate - vegetation interaction under current and future climate change scenarios" by Alexander Olchev



Discussions during the session "Environment Evolution and Human Activity in the late Quaternary"



Field trip in Kolomenskoye



COMMISSION'S RECENT PUBLICATIONS

The Special Issue of **Geographical review of Japan ser. B** on “Environment Evolution and Human Activity in the Late Quaternary: Geographical Pattern”

The title: Environment Evolution and Human Activity in the late Quaternary: Geographical Pattern.

All papers of the special issue are available on web-site:

https://www.jstage.jst.go.jp/browse/geogrevjapanb/87/0/_contents

This special issue presents six papers on a wide range of subjects including human–environment interaction in the past, landscape evolution during the Pleistocene and Holocene, recent and future climatic changes, anthropogenic impacts on ecosystems, flood geomorphology, wetland development, and approaches for modelling land surface–atmosphere interactions. These topics are the basis of collaboration within the international scientific community investigating environment evolution and prognosis. This special issue is devoted to studies conducted in the Eurasian and Western Pacific region (Fig. 1).

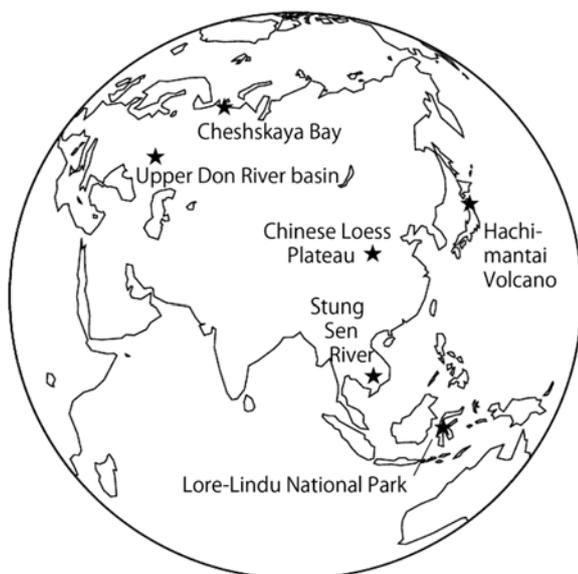


Fig.1. Locations of the six study sites within the Eurasian and Western Pacific region.

Rudenko and Taldenkova carried out a high-resolution micropaleontological analysis of bottom sediments of Cheshskaya Bay in the southeastern Barents Sea and marine beds exposed in an abraded terrace along the eastern coast of the Kanin Peninsula to reconstruct Holocene vegetation and climatic changes. Pollen analyses revealed that (1) an arctic desert environment that was colder and drier than the present climate dominated during the early Preboreal period; (2) the gradual advance of shrubby birch and pine forest resulted from significant climatic amelioration since the Boreal period; (3) subsequent expansion of birch forests marked the Holocene regional climate optimum; and (4) re-establishment of dwarf birch and pine forest signaled the vegetation response to the cooling that has occurred since the end of the Atlantic period.

The advantages and usefulness of pollen analysis for the investigation of environmental change are also demonstrated by Novenko and Volkova, who reconstructed the middle and late Holocene vegetation and climatic history of the forest–steppe ecotone area in the Upper Don River basin in the southwestern Russia. Their analysis revealed that landscape dynamics in the region have been driven by changes in effective moisture and that reductions in annual precipitation by 50–100 mm were sufficient to increase the proportion of steppe communities within the complex landscape (during the time periods 7000–6000 and 2500–1700 cal yr BP). According to their analysis of pollen and plant macrofossil records, although signals of anthropogenic vegetation disturbance have been clear since the middle Atlantic period, human-induced changes in the vegetation remained subtle until the Medieval period.

The Chinese Loess Plateau has a semi-arid climate with monsoonal influence. This region is experiencing the most severe soil erosion in the world, induced by the destruction of natural vegetation for cultivation. Matsunaga's study focused on human impacts across the Chinese Loess Plateau by assessing the current balance among afforestation, grain production, and water use in river basins on the plateau based on data collected from the statistical yearbooks of the Yan'an district. His findings suggest that the balance among these three land uses has been improved by the Grain-for-Green Policy in the river basins on the Chinese Loess Plateau.

In contrast with semi-arid stable continents, humid, temperate, tectonically active regions like Japan are characterized by rugged mountains covered with dense forests; here, mass movement has played an important role in their landscape evolution. Sasaki and Sugai examined geomorphological controls on the distribution and development of wetlands in the Hachimantai Volcanic Group of northeastern Japan, with a focus on landslide activity. Their findings show that inside landslide areas wetlands are widely scattered, whereas outside these areas wetlands are unevenly distributed on original volcanic surfaces as small peat bogs in nivation hollows or crater ponds. They found that landslide activities have created wetlands of various ages and that the dissection of landslide bodies may accelerate wetland developmental stages, that is, the transition from ponds to peat bogs. The authors conclude that large-scale landslides have the potential to create biological and landscape diversity by forming coexisting wetlands of various ages and types.

Tropical monsoon river systems are strongly influenced by severe chemical weathering and extreme seasonal fluctuation of water discharge. To understand the dynamic changes

of tropical river environments, Nagumo et al. focused on channel bars that appear during the dry season in the lower Stung Sen River, a major tributary of the Mekong River in Cambodia. By coupling geomorphic interpretation of aerial photographs and satellite images with field investigations, they identified the microtopography of the floodplain and riverbed and classified four types of channel bar: (1) lateral bars; (2) point bars; (3) concave-bank benches; and (4) diagonal and island bars. They suggest that the bar types vary according to channel sinuosity and changes in the volume of transported sediment, which is controlled by shifts of the flow regime of the Stung Sen River.

Finally, Olchev and Gravenhorst estimated the sensitivity of the carbon and water cycles of the mountainous tropical rain forest in Lore-Lindu National Park in Central Sulawesi, Indonesia, to projected changes in climatic conditions at the end of the 21st century based on simulation results of a process-based CO₂ and H₂O exchange model. Their findings demonstrate a very high sensitivity of net ecosystem exchange and evapotranspiration to both the projected climatic changes and the possible reduction of nutrients in plants due to the impact of gradually elevated atmospheric CO₂ and depletion of soil nutrient resources. They emphasize that a limited nutrient supply can significantly reduce gross primary production, net ecosystem exchange, and evapotranspiration in the future, but when the atmospheric CO₂ increase is balanced with an adequate nutrient supply, the projected climatic changes will lead to increased gross primary production, soil wetness, groundwater level, and surface runoff in the study area.

Although these six studies were conducted in a particular region of the world, they present a diversity of landscapes ranging from arctic tundra to tropical rain forest. By conducting research across a broad array of geographical conditions, we can gain insight into environment evolution from a global perspective, thus helping us to achieve sustainable societies in the future.

Toshihiko SUGAI and Elena Yu. NOVENKO

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ser. B. 87(2), 2015.P.115-121.

A. Oltchev and G. Gravenhors. Effects of climate changes on net ecosystem exchange of CO₂ and evapotranspiration of a tropical rain forest. // *Geographical review of Japan ser. B.* 87(2), 2015.P. 122-130.

https://www.jstage.jst.go.jp/browse/geogrevjapanb/87/0/_contents

CALL FOR PAPERS

Special issue of “**Russian Journal of Ecosystem Ecology**”

The Environment Evolution Commission organizes a special issue of “**Russian Journal of Ecosystem Ecology**” dedicated to the topics of Commission’s session in frameworks of Moscow Regional Conference of IGU, 17-21 August, 2015.

Information about journal see <http://rjee.ru/>

The proposed title: **Landscape dynamics and human impact during the last millennium.**

The main topics of the special issue:

- Landscapes evolution and human activity in different geographical regions during the last 1000 years (late Holocene).
- Climate - vegetation interaction under current and future climate change scenarios

- Abstract submissions – February 2016
- Paper submission – June 2016

FORTHCOMING EVENTS



THE 33RD INTERNATIONAL GEOGRAPHICAL CONGRESS „SHAPING OUR HARMONIOUS WORLDS”, 21-25 AUGUST, BEIJING, CHINA

All information about the Congress is available on the web-site <http://www.igc2016.org>



The 2016 International Geographical Congress in Beijing, China will be a forum for geographers from all over the world and from all geographic specialties. The theme of the Congress is Shaping Our Harmonious Worlds, which highlights today's common pursuit for harmony between humankind and nature, between environment and society, and for harmonious approaches to the world's hazards and conflicts. The Congress will serve the purpose to communicate of researchers in advanced knowledge, insights, viewpoints, techniques, and research results to better understand and respond to changes, coordinate conflicts, and bridge gaps in order to shape a sustainable Earth. Under this theme the quadrennial meeting of the IGU commissions and task forces will be organized. In addition, a rich variety of field excursions will be arranged so as to provide participants a chance to appreciate some of the unique natural features and cultural traditions of this ancient and modern country.

All information about the Congress is available on the web-site <http://www.igc2016.org>

The IGU Commission for Environment Evolution organizes 4 special sessions in a frame of this Congress

SESSION 1. Environment Evolution and Human Activity in the late Quaternary

Conveners: Tatjana Boettger and Elena Novenko

The special session of the IGU Commission on Environment Evolution will be focused on the long-term studies of landscapes evolution, climate dynamics and human activity in different geographical regions during the Pleistocene and the Holocene. We invite experts from different scientific areas to take part in our session and introduce new results of the experimental and theoretical studies focused on human-environment interactions in the different regions of the Northern and Southern Hemispheres in past epochs that are based on detailed paleontological information (pollen, macrofossil, diatoms, etc); geomorphological data, paleolimnic and paleohydrological materials, radiocarbon dates, stable isotope data and the evidence about beginning of human activities. New data and results obtained from archaeological sites and presentations that can comprise the results of environmental and archeological studies are very welcome.

SESSION 2. Climate - vegetation interaction under past and future climate conditions

Conveners: Alexander Olchev and Elena Novenko

The session is aimed to bring together the specialists working in the fields of climate, vegetation and land use changes. The climate changes have significant impact on growth and functioning of the different plant communities. On the other hand, the climate itself is very sensitive to land cover and vegetation changes. What are the main mechanisms of climate - atmosphere interactions in past and at present, how the vegetation and land use changes influence the climate system and what is the possible response of the different plant communities to climate change in future are key questions for discussions in the session. We invite to take part in the session the specialists working in the different scientific areas (meteorologists, climatologists, ecologists, paleogeographers, modeling experts, etc.)

The main topic of the session:

- 1) Climate and vegetation interactions in the past epochs;
- 2) Modern climate and vegetation changes;
- 3) Projections of possible future vegetation and land use changes under different climate change scenarios.
- 4) Effect of deforestation and land-use changes on climate at different spatial scales.

SESSION 3. Prehistoric Human Occupation and Environmental Changes on Tibetan Plateau and Surroundings

Conveners: Fahu Chen, David Madsen, Georg Mieke, Dongju Zhang

Tibetan Plateau, the highest and largest plateau of the world, and its surrounding mountains have exerted significant influence on the global climate and environment evolution. The high plateau is very sensitive to global climate change, and hostile for human permanent settlement due to its anoxic and harsh environment. Human began to occupy the Tibetan Plateau soon after modern human dispersed to the central and eastern Asia surrounding the Tibet Plateau during the time of strong climate fluctuations in the Last Glacial. Human then strongly changed the natural forestry on the mountains to grassland on the high Tibetan Plateau, especially through agriculture and pastoral economies since the middle Holocene, while deteriorating environment in turn tremendously affected social development in this high Tibetan Plateau.

The aim of this symposium is to bring an up-to-date perspective on the environmental and

climatic change and its impact on the process of prehistoric human occupation on the Tibetan Plateau since the late Pleistocene. We invite scholars who can make presentations on this issue from multi-disciplinary including geology, geography, archaeology, genetics, ecology and biology to convey and exchange academic viewpoints on any aspects of the field. The proposed session will include but not limited to 1) environmental change and climate variability during Late Quaternary; 2) When, where and how prehistorical people occupied the plateau; 3) how human affected the natural environments through grassland use and agriculture development.

SESSION 4. Climate Change and Human-Environment Interaction From Neolithic to Historical Periods

Conveners: Fahu Chen, David Zhang, Guanghui Dong, Peter.Turchin, John Dodson

The Neolithic revolution in the early Holocene promoted the shift towards food production from hunting and gathering to agriculture and pasture economy, and greatly changed the relationship between humans and their environments. From the Neolithic a rapid increase of human population occurred, and with the rise and fall of ancient cultures and civilizations, and changing environments, foundation for modern civilizations formed. Climate fluctuations over the last the period exerted the directions on human settlement spaces, cultural evolution and civilizations; while human activities in turn affected their surrounding environments. The period of interest saw humans exert influence and changed the nature of biological systems and earth surface processes, and ultimately became a major driver of changes at regional and global scale. These, in-turn, greatly affect human social and economic systems.

The session aims to explore the trajectory of climate change and human-environment interaction from the Neolithic to historical periods, and understand the pattern, mechanisms and evolution of man-environment relationships during the period. We welcome presentations concerning these issues from multi-disciplinary perspectives, to promote the advancement of research in the field. The session will include, but is not limited to 1) climate variability over the last 10, 000 years; 2) regional and global climatic, landform and environmental changes connecting with human impacts; and 3) Neolithic landform and environmental changes connecting with human impacts; and 3) Neolithic and historical culture development connecting with environmental and climatic changes.

IMPORTANT DATES AND DEADLINES:

Registration:

15 September, 2015 - 15 April, 2016 for early registration

16 April 2016 - 15 July, 2016 for regular registration

After 15 July, 2016 for late registration

15 February 2016. Deadline for submitting abstracts for papers and posters

16 April 2016. Notification of the results of the abstract review

21-25 August, 2016. The 33rd International Geographical Congress in Beijing, China:

IN MEMORIAM



Professor **Andrey Alekseevich Velichko**

One of the eminent geographers, the first chair of the Environment Evolution Commission, Andrei Alekseevich Velichko, passed away on November, 11, 2014.

Professor Andrei Velichko was born on June 27, 1931, in Rostov-na-Donu, Russia. He graduated from Moscow State University (Geography Department) in 1953. He defended successfully the PhD thesis in 1957 in the Institute of Geography, Academy of Sciences of USSR and obtained the degree of Doctor of Science in 1969 by the same Institute. Andrei Velichko obtained a professor nomination in 1980. For a long time until his unexpected death he was a head of Laboratory of Evolutionary Geography, Institute of Geography of Russian Academy

of Sciences.

Professor Andrei Velichko was a famous researcher in Late Cenozoic paleogeography including paleoclimatology, paleoecology of Early Man; he was a specialist in analysis of the environment and climate evolution for the assessment their present state and further development. He is an author of more than 350 scientific publications, including a lot of books and a grate number of articles in the most important scientific journals.

Professor Andrei Velichko was a member and coordinator of international scientific societies and projects: head of Soviet working group of the IGCP project 73\1\24 “Quaternary Glaciations of Northern Hemisphere” (1976-1983); coordinator of IGCP project 404 “Terrestrial carbon cycle during the last 125 000 year” (1996-1999); President of the Commission on Paleogeographic Atlas of the Quaternary, INQUA (1977-1990); Vice-president of INQUA (1991-1994); Vice-president of INQUA Carbon Commission (1995-2003); member of PAGES steering committee (until 1991), member of the national IGBP committee, Vice-president of national Quaternary association. During the number of years A.A.Velichko participates in joint international investigations (INTAS, NSF and bilateral projects) with colleagues from Canada, France, Germany, Holland, Hungary, Poland, USA. A.A.Velichko was the member of editorial boards of several international scientific journals: “Quaternary International”, “Quaternary Research”, “Quaternary Science Reviews”, "Studia Quaternaria".

In 2004 professor Andrei Velichko founded the IGU Commission for Environment Evolution and was its first chair until 2012.

Blessed memory of professor Andrei Velichko, famous scientist, will remain forever in the hearts of his friends and colleagues.