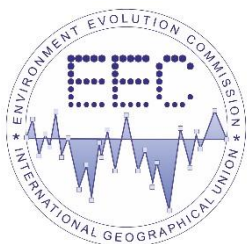


International Geographical Union



Environment Evolution Commission



REPORT OF COMMISSION ACTIVITIES IN 2020

A. Membership

The structure of your current steering committee, including all names and contact details. The number of Commission/Task Force corresponding members (i.e. your 'membership' - circulation - list, in total and, if at all possible, by country as of 31 December 2020). The counts of members by country are exceedingly helpful in documenting to the International Science Council (ISC) and other international organizations the IGU's extensive reach.

The Chair of the Commission: Dr. Redzhep Kurbanov (Russia), M.V. Lomonosov Moscow State University, Faculty of Geography, Department of Quaternary paleogeography, Institute of Geography RAS

119991, Moscow, GSP-1, 1 Leninskiye Gory, Phone: +7(495) 939-22-54; Fax +7(495) 939-88-36, e-mail: roger.kurbanov@igras.ru

The Joint chair of the Commission: Dr. Farhad Khormali, Gorgan University of Agricultural Sciences and Natural Resources, Gorgan, Islamic Republic of Iran, e-mail: khormali@yahoo.com

The vice chair of the Commission: Dr. Dongju Zhang (China), Research School of Arid Environment and Climate Change Lanzhou University, e-mail: djzhang@lzu.edu.cn

The members of Commission's Steering Committee:

1. Thomas Stevens, Department of Earth Sciences, Uppsala University, Uppsala, Sweden, e-mail: thomas.stevens@geo.uu.se
2. Sergey Sedov, Institute of Geology, National Autonomous University of Mexico, Mexico City, Mexico, e-mail: serg_sedov@yahoo.com
3. Gabor Újvári, Institute for Geological and Geochemical Research, RCAES, HAS, Hungary, e-mail: ujvari.gabor@csfk.mta.hu
4. Anu Kaakinen, Department of Geosciences and Geography, University of Helsinki, Finland, e-mail: anu.kaakinen@helsinki.fi
5. Slobodan Marković, Department of Geography, University of Novi Sad, Novi Sad, Serbia, e-mail: slobodan.markovic@dgt.uns.ac.rs
6. Maciej T. Krajcarz, Institute of Geological Sciences, Polish Academy of Sciences, Research Centre in Warsaw, Warszawa, Poland, e-mail: mkrajcarz@twarda.pan.pl

7. Aida Abdykanova, Department of Anthropology, Technology and International Development Department American University of Central Asia, e-mail: abdykanova_a@auca.kg

B. The number of commission members in total and by country as of 30 December 2020.

Russia – 145, Belarus -8, Ukraine – 8, Kazakhstan – 3, Azerbaijan -3, Estonia – 1, Lithuania - 3
Kirgizstan – 1, Turkmenistan -1, Germany -15, Czech Republic – 3, Poland -3, Japan – 7, China -25, Israel -1, Australia -1, Great Britain -3, Canada – 1, USA – 6, Netherlands -2, India -3, Chile – 1 Turkey -2.

Total - 246

Additionally, the participants of each conference and meeting are automatically on the mailing list for 2-3 upcoming events.

B. Meetings

a. The meetings your commission organized in 2019-20 with information on their locations, dates, and numbers of participants.

1. The 5th International Conference and young scientist school “Ecosystem dynamics in the Holocene” Moscow, Russia, 11-15 November 2019; 172 participants.
2. The special session of the Commission in frame 1st IALE-Russia International Online Conference «Landscape Science and Landscape Ecology: Considering Responses to Global Challenges», Moscow, 14-18 September 2020, online. Session title: “Wildfire as a global phenomenon: long-term fire dynamics, ecosystem response and fire management”, 27 participants.

b. A brief summary of the topics addressed at each meeting and the findings or conclusions resulting from the discussions if appropriate (please do not simply paste in the conference programme!). Please do highlight any new initiatives and insights identified at each meeting. Note, please do not include the full conference programme but please do include a photograph or two if you have them).

1. The 5th International Conference and young scientist school “Ecosystem dynamics in the Holocene” was organized by the Commission on Environment Evolution together with the Russian Academy of Science. The chair of the organizing committee of the Conference was Dr. Elena Novenko (the chair of the Environment Evolution Commission). The conference was structured to promote the discussion and debate of key scientific questions focused on the long-term studies of ecosystem dynamics, climate changes and human activity in different geographical regions during the Holocene (the last 11700 years) as well as on new methods and approaches for reconstructions of the past environmental changes. It provided unique opportunities for scientists to introduce novel ideas and studies in the following topics: i) Dynamics of marine, fresh water and terrestrial ecosystems in the Holocene; ii) Holocene landscape and climate changes; iii) Natural and anthropogenic factors in the Holocene ecosystem dynamics; iv) Environment condition and human occupation in the Holocene; v) Ecological modeling and forecasting; and vi) Methods of ecosystem studies. The program of the conference included **90 oral and 72 poster presentations, 172 participants** took part in the meeting. Presentation demonstrated that the expertise of the modern state of natural ecosystems and projections of their future changes is quite impossible without comprehensive understanding of the past environment and climate dynamics and ecosystem functioning including its adaptation to human impact. Oral and poster presentations introduced new results of the experimental and theoretical studies of ecosystem dynamics in the

Holocene based on various methods and information including detailed palaeoecological data (pollen, plant macrofossil, diatoms, testate amoebae, etc), radiocarbon dates, evidence about beginning of human activities and archeological findings. Particular attention in the Conference was paid to the questions of the human – environment interactions and ecosystem responses to human impact in the past epochs. One of the sessions in a frame of the conference was devoted to wildfire as a global phenomenon during the Holocene. A series of presentations demonstrated evidence of landscapes dynamics and fire frequencies in the past revealed from pollen, plant macrofossils, macro-charcoal records from peat and lake sediments and soils charcoal data.

The Young scientist school was organized on the last day of the Conference. The program of the school consisted of 6 lectures and 3 workshops for the most important methodological problem of palaeoecology, 67 master and PhD students and early career researchers attended on the meeting.



Participants of the 5th International Conference and young scientist school “Ecosystem dynamics in the Holocene”

2. The special session “Wildfire as a global phenomenon: long-term fire dynamics, ecosystem response and fire management” in frame 1st IALE-Russia International Online Conference «Landscape Science and Landscape Ecology: Considering Responses to Global Challenges», Moscow, 14-18 September 2020, online.

The session was devoted to fires as a major factor strongly influencing all natural, economic and social processes. The session was focused on the following resect topics: 1) fire frequencies and environmental changes in different regions during the Holocene and the recent past; 2) human impacts on landscapes and fires in different time periods, including historical time; 3) satellite monitoring of forest fires; 4) landscape factors of fire spread and containment; 5) ecosystem dynamics under different natural and human-driven fire regimes; 6) post fire vegetation recovery, forest management and biodiversity conservation. The session included 16 oral and 12 flash presentations.

c. The meetings or other events you plan to hold in 2021 and later years, including locations, dates, and the topics/themes to be addressed.

1) The Environment Evolution Commission will organize 2 special sessions on the **34th International Geographical Congress** (16-20 August, 2021, Istanbul, Turkey):

Session 1 Environment Evolution and Human Activity from the Holocene to Anthropocene

Climate change is a major factor strongly influencing all natural, economic and social processes, and varying enormously across space and time. The aim of this session is to bring an up-to-date perspective on environmental and climatic change and its impact on landscape dynamics and land use. We invite experts from such fields as paleogeography, geology, archaeology, ecology and biology to make presentations that convey and exchange academic viewpoints on any aspects of the field. The proposed session will focus on the following resect topics: 1) environmental changes and climate variability during the Holocene and Anthropocene; 2) human impacts on landscapes in different time periods, including historical time and recent past; 3) use of paleoanalogues to develop prognostic scenarios of geosystem dynamics.

Session 2 Climate-vegetation interactions under present and projected future climate conditions

The session is 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 are 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. We invite to take part in the session the specialists working in the different scientific areas including geography, meteorology, climatology, ecology, remote sensing, mathematical modelling, etc. The main topic of the session: 1) land use and vegetation changes under altered climate conditions; 2) climate - vegetation interaction in past, present and future; 3) the climate regulation functions of terrestrial ecosystems; 4) fluxes of greenhouse gases in terrestrial ecosystems: field measurements and numerical simulations.

2) The second International Conference "Pathways of Evolutionary Geography" dedicated to the 90th anniversary of Professor A.A. Velichko, the first Chair and founder of the IGU Commission on Environment Evolution, November 23-25, 2021, Moscow, Russia.

The Conference will be forum for geographers from evolutionary geography, palaeogeography and geomorphology. The conference will include oral and poster presentation and give a possibility of research collaborations of specialists in co-evolution of human societies and natural environment to present the new results of studies and ideas. The program of the conference will be focused on four major issues of evolutionary geography: 1) Actual problems of the palaeogeography. Multiscale landscape and climate changes of the Earth the Quaternary period. 2) Paleogeographical basis of modern landscapes. Assessment of modern state of landscapes using retrospective analysis. 3) Geoarchaeology: Environmental forcing of human society formation during the Pleistocene and Holocene. 4) Quaternary geochronology. Application of different methods of dating in palaeogeographic reconstructions.

3) The Commission will organize special sessions in a frame of the extraordinary congress in Paris, France in 2022 and in 35th International Geographical Congress (2024, Dublin, Ireland).

We have also plan to organize and take parts in preparations of 4-5 online and off-line workshops and trainings for young scientists during the period 2021-2024.

C. Networking

a. Means, if any, by which your commission has collaborated with other IGU Commissions and Task Forces during 2019-20.

Commission's corresponding members and the members of Commission's Steering Committee had numerous individual contacts with the members of other Commissions IGU, such as IGU Commission of Cold Region Environments (C12.06) and IGU Commission of Karst (C12.23) especially during the IGU scientific actions.

b. Collaboration, if any, with other IGU commissions or other international, intergovernmental, or inter- and multi-disciplinary groups in 2019-20

1. The activities of the Commission are carried out in close cooperation with the Northern Eurasia Earth Science Partnership Initiative (NEFI-NEESPI <http://nefi-neespi.org>) that is aimed at developing an enhanced understanding of the interactions between the ecosystem, atmosphere, and human dynamics in northern Eurasia.

2. In 2020 the Environment Evolution Commission continued the tight collaboration with the IALE-Russia is a regional chapter of the International Association for Landscape Ecology (IALE) (<https://iale-russia.ru/index.php/en/>) with aim to stimulate active cooperation among scientist deal with landscape ecology, biodiversity, land use history, agriculture and nature conservation.

3. The Environment Evolution Commission has permanent relationship with Commission of Physical Geography of 'Russian Geographical Society', All-Russian non-governmental organization (<http://www.rgo.ru/ru>).

4. The Environment Evolution Commission has relationship with INQUA - International Union for Quaternary Research, Commission on Palaeoclimates (<http://www.inqua.org/>).

c. Cooperative efforts, if any, with ISC (International Science Council), and CIPSH International Council for Philosophy and Human Sciences) programs.

not

D. Publications

a. Newsletters, special journal issues, and books published in 2019-20 (please provide complete citations). Note these publications should only be included if they are directly related to Commission activities (I.e. not a list simply pasted in from the cvs of steering committee members!)

The Commission on Environment Evolution organized and published 3 special issues in high-level per-review journals abstracting in databases Web of Science and Scopus

1) Special issue of the Journal "**Quaternary International**" (Q1 journal, impact factor 2.19) "Climate change and human-environment interaction from Neolithic to historical times"

Edited by Elena Novenko, Pavel Tarasov, Lyudmila Shumilovskikh

Volume 516, Pages 1-214 (20 May 2019)

The special issue dedicated to the topics of Commission's session in frameworks of The 33rd International Geographical Congress in Beijing.

The special issue includes **13 papers**.

<https://www.sciencedirect.com/journal/quaternary-international/vol/516/suppl/C>

2) Special issue of the Journal "**GEOGRAPHY, ENVIRONMENT, SUSTAINABILITY**" "Climate - vegetation interaction: natural processes vs human impact"

Edited by Elena Novenko, Pavel Tarasov, Alexander Olchev
Vol 12, No 2 (2019), p.128-281
(open access)

The special issue aggregates the key scientific presentations in the commission session at the IGU Thematic Conference dedicated to the centennial of the Institute of Geography of Russian Academy of Sciences (Moscow, Russia, 4-6 June 2018).

The special issue includes **12 papers**

<https://ges.rgo.ru/jour/issue/view/45/showToc>

3). Special issue in the Journal: IOP Conference Series: Earth and Environmental Science, Volume 438, dedicated to the 5th International Conference "Ecosystem dynamics in the Holocene" 11–15 November 2019, Moscow, Russian Federation

Edited by Elena Novenko and Alexander Olchev

The special issue contains of **27 papers** focused of the most important problems of modern palaeogeography, palaeoecology and palaeoclimatology.

(open access)

<https://iopscience.iop.org/issue/1755-1315/438/1>

b. The current (accurate) URL of the commission's website.

<http://eecommm.org>

E. Archival Contributions

Materials and publications transmitted to the IGU archives by your commission. Copies of all newsletters, monographs, special journal issues, etc. should be sent to the IGU Secretary General upon publication for forwarding to the archivist. Photographs from your meetings, field excursions, or other events that you are willing to share are especially gratefully received and will be included in the IGU e-Newsletter.

Publications of the Commission, photos

F. Productive Use of previous IGU grant like supporting young scholars, publications and seminars from Low Income Countries.

Organizing of the Young scientist school in a frame of the 5th International Conference “Ecosystem dynamics in the Holocene” (Moscow, Russia, 11-15 November 2019) and participation of 67 master and PhD students and early career researchers from Russia were supported by the Environment Evolution Commission.