

SPECIAL PEEEX SCIENCE CONFERENCE ISSUE

This special issue of the journal *Geography, Environment, Sustainability* includes the publications presented at the 3rd Pan-Eurasian Experiment (PEEX) Science Conference which was held on September, 19-22nd, 2017, in Moscow, Russia. The conference was hosted by Lomonosov Moscow State University, Faculty of Geography. More than 150 participants from 12 countries (Finland, China, Norway, Germany, Denmark, etc) took part in this event.

The Pan-Eurasian Experiment (PEEX) Program (www.atm.helsinki.fi/peex/) is an international, multi-disciplinary, multiscale bottom-up initiative (Kulmala et al. 2015, 2016; Lappalainen et al. 2016, 2017). The main scientific mission of the PEEEX Program is to understand large-scale feedbacks and interactions between the land-atmosphere-ocean continuum in the changing climate of northern high latitude and in China (Lappalainen et al. 2016). The Program was developed for integrating observational and modeling framework to identify different climate forcing and feedback mechanisms in the northern parts of the Earth system, and therefore enable more reliable predictions of future regional and global climate. Besides climate change–air quality issues, the PEEEX Program aims to provide a continuum from deep scientific understanding to socio-economic solutions (Kulmala et al. 2015).

Within the above scientific framework, the program of the 3rd PEEEX Science Conference included 23 sessions on various topics, such as urban air quality, the phenomenon of «heat Islands» in cities, natural hazards, environmental change and human health, arctic aerosols, remote sensing research and education. Altogether 181 abstracts were submitted; of which 113 (63%) represented atmospheric sciences, 24 (13%) ocean sciences, and 44 (24%) socio-economic disciplines, including political and epidemiological sciences, research infrastructures (12; 7%), and university science oriented education (5; 3%) (Lappalainen et al. 2018; this issue).

This issue of the journal contains 13 papers concerning different PEEEX scientific topics. The issue is opened by an overview of the first 5 years of the PEEEX Program operation and its future prospects (Lappalainen et al.). In the Section “Geography” Grigoriev and Frolova discuss some phenomena of the terrestrial water storage change and its impact on water balance over European part of Russia. The presentation of the National Atlas of the Arctic as a set of geographic, ecological, economic, historical-ethnographic, cultural, and social features is given by Kasimov et al. The Arctic topic is also concerned in the paper devoted to the problems of permafrost dynamics in the coastal zone of eastern-Asian sector of the Arctic (Pizhankova) as well as in the paper “Western Russian arctic coastal dynamics hydrometeorological forcing in XX-century and current state (Shabanova et al.). In the “Environment” Section two papers are devoted to evaluating methane emissions from thermokarst lakes in the southern tundra of Western Siberia (Kazantsev et al.) and from the Siberian Arctic Shelf (Pankratova et al.). The aerosol radiative and temperature effects in clear-sky conditions are discussed in (Chubarova et al.) using COSMO model. The Myslenkov et al. paper concerns long-term statistics of storms in the Baltic, Barents and White seas as well as

future climate projections for the Baltic sea. The role of PEEEX program and indicators for digitalization of sustainable development goals especially in the environmental field are discussed by Bobylev et al. in the "Sustainability" Section. Two papers of this issue are devoted to human health: "The human health effects due to continuous emissions from Severonikel smelters of the Kola Peninsula by Alexander Mahura et al. and "Influence of climatic factor on naturally determined diseases in a regional context" by Malkhazova et al. The Lassi Heininen paper concerns some aspects of the Arctic geopolitics from classical to critical approach. A few other papers, which had been presented at the 3-rd PEEEX Science Conference, will be published in the next issues of GES journal. ■

REFERENCES

Kulmala M., Lappalainen H.K., Petäjä T., Kerminen V-M., Viisanen Y., Matvienko G., Melnikov V., Baklanov A., Bondur V., Kasimov N., and Zilitinkevich S. (2016). Pan-Eurasian Experiment (PEEX) Program: Grant Challenges in the Arctic-boreal context. *J. Geography Environment Sustainability*, 2, pp. 5–18, DOI:http://dx.doi.org/10.15356/2071-9388_02v09_2016_01.

Kulmala M., Lappalainen H.K., Petäjä T., Kurten T., Kerminen V-M., Viisanen Y., Hari P., Bondur V., Kasimov N., Kotlyakov V., Matvienko G., Baklanov A., Guo H., Ding A., Hansson H-C., and Zilitinkevich S. (2015). Introduction: The Pan-Eurasian Experiment (PEEX) – multi-disciplinary, multi-scale and multi-component research and capacity building initiative. *Atmos. Chem. Phys.*, 15, 13085-13096, doi:10.5194/acp-15-13085-2015.

Lappalainen H.K., Petäjä T., Kujansuu J., Kerminen V-M., Shvidenko A., Bäck J., Vesala T., Vihma T., De Leeuw G., Lauri A., Ruuskanen T., Lapshin V.B., Zaitseva N., Glezer O., Arshinov M., Spracklen D.V., Arnold S.R., Juhola S., Lihavainen H., Viisanen Y., Chubarova N., Chalov S., Filatov N., Skorokhod A., Elansky N., Dyukarev E., Esau I., Hari P., Kotlyakov V., Kasimov N., Bondur V., Matvienko G., Baklanov A., Mareev E., Troitskaya Y., Ding A., Guo H., Zilitinkevich S., and Kulmalas M. (2014). Pan Eurasian Experiment (PEEX) - A research initiative meeting the Grand Challenges of the changing environment of the Northern Pan-Eurasian arctic-boreal areas. *Geography, Environment, Sustainability*, 2017, 7(2):13-48.

Lappalainen H.K., Kerminen V.M., Petäjä T., Kurten T., Baklanov A., Shvidenko A., Bäck J., Vihma T., Alekseychik P., Arnold S., Arshinov M., Asmi E., Belan B., Bobylev L., Chalov S., Cheng Y., Chubarova N., de Leeuw G., Ding A., Dobrolyubov S.A., Dubtsov S., Dyukare E., Elansky N., Eleftheriadis K., Esau I., Filatov N., Flint M., Fu C., Glezer O., Gliko A., Heiman M., Holtslag A.A., Hörrak U., Janhunen J., Juhola S., Järvi L., Järvinen H., Kanukhina A., Konstantinov P., Kotlyakov V., Kieloaho A.J., Komarov A.S., Kujansuu J., Kukkone I., Kyrö E., Laaksonen A., Laurila T., Lihavainen H., Lisitz A., Mahur A., Makshtas A., Mareev E., Mazon S., Matishov D., Melnikov V., Mikhailov E., Moisseev D., Nigmatulin R., Noe S.M., Ojala A., Pihlatie M., Popovicheva O., Pumpanen J., Regerand T., Repina I., Shcherbinin A., Shevchenko V., Sipilä M., Skorokhod A., Spracklen D.V., Su H., Subetto D.A., Sun J., Terzhevik A.Y., Timofeyev Y., Troitskaya Y., Tynkkynen V.P., Kharuk V.I., Zaytseva N., Zhang J., Viisanen Y., Vesala T., Hari P., Hansson H.C., Matvienko G.G., Kasimov N.S., Guo H., Bondur V., Zilitinkevich S., Kulmala M. Pan-Eurasian Experiment (PEEX): Towards holistic understanding of the feedbacks and interactions in the land-atmosphere-ocean-society continuum in the Northern Eurasian region. *Atmospheric Chemistry and Physics*, European Geophysical Society (Germany), 2016, 16, c. 14421-14461

Lappalainen H.K., Altimir N., Kerminen V-M., Petäjä T., Makkonen R., Alekseychik P., Zaytseva N., Bashmakova I., Kujansuu J., Lauri A., Haapanala P., Mazon S., Borisova A., Konstantinov P., Chalov S., Laurila T., Asmi E., Lihavainen H., Bäck J., Arshinov M., Mahura A., Arnold S., Vihma T., Uotila P., de Leeuw G., Kukkonen I., Malkhazova S., Tynkkynen V.-P., Fedorova I., Hansson H.-C., Dobrolyubov S., Melnikov V., Matvienko G., Baklanov A., Viisanen Y., Kasimov N., Guo H., Bondur V., Zilitinkevich S. and Kulmala M. An overview of the first 5 years in operation and future prospects. This issue.