

GFZ

Helmholtz Centre
POTSDAM

HELMHOLTZ CENTRE POTSDAM
**GFZ GERMAN RESEARCH CENTRE
FOR GEOSCIENCES**

Andreas Börner, Heiko Hüneke, Sebastian Lorenz
(eds.)

**Field Symposium of the INQUA PeriBaltic
Working Group**

**"From Weichselian Ice-Sheet
Dynamics to Holocene Land
Use Development in Western
Pomerania and Mecklenburg"**

- Abstract Volume -

Scientific Technical Report STR19/01

Recommended citation:

Börner, A., Hüneke, H., Lorenz, S. (Eds.) (2019), Field Symposium of the INQUA PeriBaltic Working Group "From Weichselian Ice-Sheet Dynamics to Holocene Land Use Development in Western Pomerania and Mecklenburg". Abstract Volume. Scientific Technical Report STR 19/01, Potsdam: GFZ German Research Centre for Geosciences.
DOI: <https://doi.org/10.2312/GFZ.b103-19012>

Imprint

HELMHOLTZ CENTRE POTSDAM
**GFZ GERMAN RESEARCH CENTRE
FOR GEOSCIENCES**

Telegrafenberg
D-14473 Potsdam

Published in Potsdam, Germany
August 2019

ISSN 2190-7110

DOI: <https://doi.org/10.2312/GFZ.b103-19012>
URN: urn:nbn:de:kobv:b103-19012

This work is published in the GFZ series
Scientific Technical Report (STR)
and electronically available at GFZ website
www.gfz-potsdam.de



This work is licensed under a Creative Commons Attribution 4.0 International License.
(CC BY 4.0) <https://creativecommons.org/licenses/by/4.0/>

Andreas Börner, Heiko Hüneke, Sebastian
Lorenz (eds.)

Field Symposium of the INQUA PeriBaltic Working Group

**"From Weichselian Ice-Sheet
Dynamics to Holocene Land
Use Development in Western
Pomerania and Mecklenburg"**

Abstract Volume

Scientific Technical Report STR19/01

**Field Symposium of the INQUA PeriBaltic Working Group
“FROM WEICHSELIAN ICE-SHEET DYNAMICS TO
HOLOCENE LAND USE DEVELOPMENT IN
WESTERN POMERANIA AND MECKLENBURG”**

Abstract Volume

**Edited by
Andreas Börner, Heiko Hüneke, Sebastian Lorenz**

**Greifswald University, Institute for Geography and Geology
Helmholtz Centre Potsdam - German Research Centre for Geosciences, Potsdam
State Authority for Environment Nature protection and Geology of
Mecklenburg – Western Pomerania, Geological Survey, Güstrow**

Table of Contents

| | <i>Page</i> |
|--|--------------|
| <i>Table of contents</i> | 2 |
| <i>Welcome note and introduction</i> | 3 |
| <i>Abstract list in alphabetical order</i> | 4-7 |
| <i>Abstracts in alphabetical order</i> | 8-133 |
| <i>Acknowledgements</i> | 134 |
| <i>Notes</i> | 135 |

**The Late Pleistocene-Early Holocene palaeoenvironmental evolution in the SE Baltic region:
a multi-proxy palaeolimnological approach based on the Kamyshovoe Lake record**

Druzhinina, Olga^{1,2*}, Stančikaitė, Miglė³, Kublitskiy, Yury², Nazarova, Larisa^{4,5,6}, Strykh, Ljudmila²,
Gedminienė, Laura³, Vaikutienė, Giedrė⁷ and Subetto, Dmitry²

¹ Shirshov Institute of Oceanology, Russian Academy of Sciences, 36, Nahimovskiy prospekt, 117997 Moscow, Russia

² A. Herzen State Pedagogical University, Nab. Moyki 48, St. Petersburg, 191186, Russia

³ Nature Research Centre, Institute of Geology and Geography, Akademijos Str. 2, 08412 Vilnius, Lithuania

⁴ Potsdam University (The Institute of Earth and Environmental Science), Am Neuen Palais 10, 14469 Potsdam, Germany

⁵ Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, Research Unit Potsdam, Telegrafenberg A43, 14473 Potsdam, Germany

⁶ Kazan Federal University, Kremlyovskaya str., 18, 420018 Kazan, Russia

⁷ Vilnius University, M. K. Čiurlionio 21/27, 03101 Vilnius, Lithuania

* E-mail corresponding author: olga.alex.druzhinina@gmail.com

The Kamyshovoe Lake (54° 22' 605" N, 22° 42' 790" E, 189 m a.s.l.) sedimentary record in the southeastern Baltic Sea Region was studied to reconstruct climatic fluctuations and abiotic responses to them during Late Glacial and Early Holocene time. New results of geochemical, chironomid, isotopic, and palaeomagnetic data analysis were correlated with earlier evidence for lithological and palynological changes in the Kamyshovoe Lake record (Kublitskiy et al., *subm.*). The fragment of the record studied encompassed an interval between ca. 16 000 and 6 500 cal. a BP.

The results obtained have led the authors to the following conclusions:

1. Palaeoclimatic chironomid-inferred reconstruction reflects summer temperature fluctuations of approximately 5°C over the period of ca. 15 300 – 6 800 cal. a BP. Mean July temperature was shown to increase from ca. 15 300 to 14 370 cal. a BP with an exceptionally high reconstructed temperature (19.8°C). A decreasing trend for summer temperatures is observed between 14 370 and 12 000 cal. a BP, when a minimum temperature (11.5°C) was recorded. A steady but very smooth rising temperature trend with fluctuations between 12.5 and 14.0°C persisted until ca. 9 800 cal. a BP, when a warmer period (14.1 – 16.0°C) began.
2. The Kamyshovoe Lake sequence reflects clear environmental responses to short-term early Holocene climatic oscillations superimposed upon general warming: about 11 300 cal. a BP, 10 700 – 10 500 cal. a BP, and 10 000 – 9 800 cal. a BP. These cooling events are diagnosed by chironomid analysis and changes in the palynological spectrum, geochemical record and lithostratigraphy of the sediments.
3. Despite marked changes in the vegetation around Kamyshovoe Lake at the onset of the Holocene climatic warming dated at 11 700 cal. a BP, no clear sediment responses at that time have been detected. All available data, including recent geochemical, isotopic and palaeomagnetic evidence, prove that both the terrestrial and limnic environments remained unstable until ca. 11 500 cal. a BP, when the sedimentation environment began to transform markedly.

The detailed study of bottom sediments from Kamyshovoe Lake has considerably expanded our knowledge of the climate and changes in the lake systems in the southeastern Baltic Sea Region at the Pleistocene-Holocene boundary. The results obtained show the significance of local factors and conditions which, together with global processes, could be responsible for differences in the response of natural systems to global trends. The study of Kamyshovoe Lake shows that in this case differences were indicated by the non-simultaneous and unequally distinct pattern of the response of individual natural components to global changes in climate.

Acknowledgements – The expeditional part of this research was done with a support of the state assignment of IO RAS (Theme No. 0149-2019-0013). The laboratory studies (Chironomid analysis) were supported by the RSF (grant No.18-77-10016) and the Deutsche Forschungsgemeinschaft (DFG) Project NA 760/5-1 and DI 655/9-1. This study was partly financed by the S-MIP-17-133 from the Research Council of Lithuania.

References

Kublitskiy, Y., Druzhinina, O., Stančikaitė, M., Nazarova, L., Strykh, L., Gedminienė, L., Uogintas, D., Skipityte, R., Arslanov, Kh., Vaikutienė, G., Kulkova, M. and Subetto, D. (submitted). The Late Pleistocene - Early Holocene Palaeoenvironmental Evolution in the SE Baltic Region, Kaliningrad District, Russia: a new approach based on chironomid, geochemical and isotopic data from Kamyshovoe Lake. *Boreas*.

Acknowledgements

The organizers and participants of the Field Symposium of the INQUA PeriBaltic Working Group 2019 want to thank the following institutions for support and cooperation:

**GFZ - Helmholtz Centre Potsdam -
German Research Centre for Geosciences**

GREBAL-project team from University of Poznań (Poland)

Greifswald University, Institute for Geography and Geology

**LUNG MV - State Authority for Environment Nature protection and Geology
Mecklenburg-Western Pomerania, Geological Survey, Güstrow**

**Ministry of Agriculture and the Environment
Mecklenburg-Western Pomerania, Schwerin**

Müritzeum - Nature Discovery Center, Waren (Müritz)

**Lower Saxony State Office for Cultural Heritage, Battlefield
Archaeology, Tollense Valley Germany, Hannover**

We thank the German Academic Exchange Service (DAAD) and the International Office of the Greifswald University for funding participants from partner universities.

We are grateful to the following sponsors for its financial support:

UmweltPlan GmbH Stralsund

GEO Projekt Schwerin GbR

Unternehmerverband Mineralische Baustoffe e. V.

Lagerstättegeologie-GmbH Neubrandenburg

GIG Gesellschaft für Ingenieurgeologie mbH Schwerin

Carlsberg Deutschland - Mecklenburgische Brauerei Lübz GmbH



ISSN 2190-7110