

# The 2014 field symposium 'Late Quaternary terrestrial processes, sediments and history: from glacial to postglacial environments'

Andreas Börner<sup>1,\*</sup>, Małgorzata Pisarska-Jamroży<sup>2</sup>, A.J. (Tom) van Loon<sup>3</sup>

<sup>1</sup>State Authority for Environment, Nature Protection and Geology of Mecklenburg-Vorpommern, State Geological Survey, Goldberger Strasse 12, 18273 Güstow, Germany;

<sup>2</sup>Geological Institute, Adam Mickiewicz University, Maków Polnych 16, 61-606 Poznań, Poland;

<sup>3</sup>Emeritus; Adam Mickiewicz University. Present address: Valle del Portet 17, 03726, Benitachell, Spain;

\*corresponding author: e-mail: andreas.boerner@lung.mv-regierung.de

Under the auspices of the INQUA TERPRO Commission, the Peribaltic Working Group has organised the 2014 annual field symposium in Latvia; it was held from from August 17 to August 22. The organisers were Māris Nartišs (Chair), Māris Krievāns (Secretary), Aivars Markots, Evija Tērauda, Vitālijs Zelčs (all from the University of Latvia in Riga) and Juris Soms (Daugavpils University, Latvia).

The field symposium was attended by 54 participants from 8 countries and was aimed at studying the regional Quaternary geology and palaeoecology of Latvia in this part of the Peribalticum. It was highly interesting to compare the Latvian Quaternary geology with that of south-eastern Lithuania, about 400 km farther south, where the group met in the fall of 2013. In both years, the participants represented a truly international earth-science community, which stimulated exchange of ideas and discussions.

After registration at the Faculty of Geography and Earth Sciences in Riga on August 17, the participants moved to the Ratnieki Conference and Recreational Centre of the University of Latvia (Līgatne municipality). The scientific part of the conference started there the next day with a field trip.

The excursion led to the south-east, where the area near Daugavpils was visited. The participants were introduced into the history of the Lower Gauja spillway valley at Sigulda and the Late Glacial and postglacial environmental changes of Lake

Āraiši (Vidzeme Upland), the Triečupīte River valley and the foreland of the Vidzeme Upland. At the 4<sup>th</sup> stop, the internal structure of the third terrace of the Gauja River was shown (Fig. 1) and its genesis was discussed in quite some detail. Particularly interesting were the discussions about soft-sediment deformation structures with a periglacial origin and those, in another layer, of possibly seismic origin. The participants then returned satisfied to Ratnieki.

The second day was devoted to presentations; these were held in the Conference Centre. A total of 13 oral and 23 poster presentations were delivered, which took the whole day. The various presentations are all documented in a well prepared, full-colour abstract and excursion guide book of over 150 pages. After the intense presentations and discussions of this day, the participants had a more relaxed evening, when the official conference dinner was held.

During the morning field trip of day 3, the Veselava end moraine in the north-west of the Vidzeme area (Fig. 2), the inland dunes at Smilškalni (Middle Gauja Lowland), the Madona-Trepe ice-marginal ridge at Smeceres sils (East-Latvian Lowland) and the glaciokarst kettles at Vietalva village were presented; this excursion day ended with a visit to the Upper Daugava spillway valley and the associated gully network at Vasargeliški. The night was spent in the Dinaburg Hotel at Daugavpils.

During day 4 we visited, in the Daugavpils area (East-Latvian Lowland), a kame terrace in the Up-



**Fig. 1.** Participants of the excursion during a discussion about the origin of soft-sediment deformation structures at the Gauja River terrace close to Valmiera Town

per Daugava depression and a recessional moraine ridge at the glacial depression of Lake Rāzna. The Late Glacial and Holocene development of Lake Rāzna were explained on the basis of biostratigraphical data. Finally, an inland dune-field landscape near Daugavpils was visited.

Day 5 started with a presentation of the internal morphology and structure of the Lāči drumlin in the Zemgale drumlin field. In the surroundings of Baldone (central Latvian lowland) we were introduced to the morphology and internal structure of a ribbed moraine and drumlin remnant. Unfortunately, a sudden heavy rain shower with hail destroyed the two well-prepared large profiles that had been prepared at this site. They gradually were destroyed while the participants tried to shelter un-

der a group of umbrellas; it was a blessing in disguise, as many interesting discussions were started during this weather-forced close being together.

### Acknowledgements

Looking back to this meeting, it is entirely clear that Māris Nartišs and all other members of the organising team managed to arrange a highly interesting field meeting. The participants were presented numerous new results of recent geoscientific investigations of the Weichselian glaciation, the Late Glacial transitional phase and the Holocene history of this part of the Peribalticum. We thank the organisers for their inspiring presentation and



**Fig. 2.** Latvian colleagues explain the internal structure of the Veselava end moraine in the Vidzeme area

their enthusiasm that made this symposium an overwhelming. We look forward to visiting Latvia soon again!

### Annex: Abstract and excursion guide book

The printed abstract and excursion guide is available at the Faculty of Geography and Earth Sciences, University of Latvia, Rainis Blvd. 19, Riga, LV1586, Latvia. It is also available in PDF format from internet: [http://www.geo.lu.lv/fileadmin/user\\_upload/lu\\_portal/projekti/gzzf/Lekciju\\_saraksti/2014\\_rudens/Peribaltic\\_2014\\_Latvia\\_Excursion\\_Guide\\_and\\_Abstract\\_book.pdf](http://www.geo.lu.lv/fileadmin/user_upload/lu_portal/projekti/gzzf/Lekciju_saraksti/2014_rudens/Peribaltic_2014_Latvia_Excursion_Guide_and_Abstract_book.pdf).

### The following abstracts are included:

- Astakhov, V., Shkatova, V., Zastrozhnov, A. & Chuyko, M.: Map of ice-marginal formations of European Russia.
- Baltrūnas, V., Karmaza, B., Katinas, V., Šeirienė, V. & Zinkutė, R.: Palaeoenvironmental changes and stratigraphy of Quaternary deposits of Lithuania.
- Bērziņš, D. & Karušs, J.: Mapping shallow groundwater surface in terrigenous sediments using ground penetrating radar.
- Bikše, J., Popovs, K., Dēliņa, A. & Babre, A.: Groundwater flow peculiarities induced by post-glacial and modern karst, Skaistkalne vicinity, Central Latvian plains.
- Börner, A., Hrynowiecka, A., Kuznetsov, V., Stachowicz-Rybka, R., Maksimov, F., Grigoriev, V., Niska, M. & Moskal-del Hoyo, M.: Palaeoecological investigations and <sup>230</sup>Th/U dating of Eemian interglacial peat sequence of Banzin, Mecklenburg-Western Pomerania, NE-Germany.
- Bregman, E.P.H.: The EU Encore Fresh Water Project: from fundamental research towards practice.
- Bregman, E.P.H., Lüse, I., Bakker, M., Pierik, H.J., Smit, F.W.H. & Cohen, K.M.: The Late Saalian Hondsrug megaflood, Drenthe, The Netherlands: the base of an unique new European Geopark.
- Dēliņa, A., Dūdiņa, K. & Popovs, K.: Effect of buried valleys on groundwater flow: a case study in the vicinity of Ventspils, NW Latvia.
- Druzhinina, O.: New data on the palaeoenvironment of South-Eastern Baltic region: results of the scientific project RFBR 1205-33013.
- Gedminienė, L., Rimkutė, G. & Stančikaitė, M.: Post-glacial environmental changes and the earliest human inhabitancy of the Lake Dukštelis area, Eastern Lithuania.
- Grigienė, A. & Jusienė, A.: Development of the Plateliai area in Late Weichselian and Holocene, NW Lithuania.
- Grube, A.: Current issues of geological mapping in Schleswig-Holstein, Germany.
- Hardt, J. & Böse, M.: Late Quaternary ice sheet dynamics in northeastern Germany – new insights in the formation of the Frankfurt ice marginal position based on the analysis of a high resolution LiDAR digital elevation model.
- Johansson, P., Voytekhovskiy, Y., Lauri, L.S., & Pihlaja, J.: ABCGheritage project – geological cooperation in northern Fennoscandia.
- Kalińska-Nartiša, E., Nartišs, M., Thiel, C., Buylaert, J.-P. & Murray, A.S.: Application of the pulsed OSL in field-spar contaminated aeolian sediments: a case study of Eastern Latvia and Southern Estonia.
- Kalla, K. & Hang, T.: Deglacial ice dynamics in Estonia as derived from glacial bedforms.
- Karmazienė, D.: Morphogenetic classification of kame terraces in the Late Nemunas glaciation area of Lithuania.
- Kuznetsov, D., Ludikova, A. & Sapelko, T.: The isolation stratigraphy of small lakes in northern Lake Ladoga basin in reconstructions of the Baltic Ice Lake final stage and early Holocene glacioisostatic uplift.
- Lamsters, K. & Karušs, J.: Glacial landforms in the fore-field of Múlajökull surge-type glacier, central Iceland.
- Lomp, P. & Rattas, M.: Carbonate cements in glacial sediments: a palaeohydrologic indicator of glacial environment.
- Ludikova, A.: The diatoms of the Baltic Ice Lake: new data from the Lake Ladoga region, the easternmost part of the Baltic Ice Lake.
- Panin, A.: Upper Dnieper River since LGM: ice damming, glacio-isostatic effects and climatic forcing.
- Pisarska-Jamroz, M., Van Loon, A.J., Woronko, B. & Sternal, B.: Heavy minerals as indicators of the source areas of the sediments in the Toruń-Eberswalde ice-marginal valley, NW Poland.
- Pujāte, A., Stankeviča, K., Dručka, A., Staškova, A., Ceriņa, A., Kalniņa, L. & Kuške, E.: Records of natural and human-induced environmental changes in Latvian lake sediments.
- Pukelytė, V.: The links between Quaternary palaeosurfaces and present surface of South Lithuania.
- Retiķe, I., Bikše, J., Kalvāns, A., Babre, A., Kalvāne, G. & Popovs, K.: Chemical characterization of Quaternary groundwaters in Latvia: a case study of trace element content.
- Rudnickaitė, E. & Guobytė, R.: Lithological variability in tills of the Samogitian Upland and surrounding area, Lithuania.
- Saarse, L.: Cyclical sedimentation pattern in the Lake Veetka, SE Estonia.
- Sarala, P.: Low-impact exploration methods promoting the Green Mining concept in Finland.
- Sarala, P. & Peuraniemi, V.: Extra short glacial transport – mechanisms and application.
- Semenova, L.P., Stepunin, A.V., Maksimov, A.V. & Marchenko-Vagapova, T.I.: Stratigraphy of Quaternary deposits, Sheet P-39 (Syktyvkar).
- Staškova, S., Ceriņa, A., Pujāte, A. & Kalniņa, L.: Palaeovegetation changes recorded by macroscopic fossil investigation data from Lake Ummis and Lake Mazais Ungurs sediments, Latvia.

- Tabuns, E., Kuksa, K., Nikitin, M., Levchenko, S., Baker, J. & Grigoriev, V.: Freshwater travertines from NW Russia - terrestrial archives of paleoenvironmental information.
- Vaikutienė, G., Skipitytė, R., Mažeika, J., Martma, T., Garbaras, A. & Barisevičiūtė, R.: Investigation of stable isotopes and diatom assemblages - a key for paleoenvironmental reconstruction, Curonian Lagoon, Lithuania.
- Van Loon, A.J. & Pisarska-Jamróży, M.: Pleistocene glacio-isostatic seismites in NW Poland.
- Van Loon, A.J. & Gruszka, B.: A giant loadcast resulting from ice re-advance over an esker near Ryssjön, South Sweden.
- Zaretskaya, N., Panin, A. & Shebotinov, V.: MIS 2 alluvial terrace and the problem of the LGM proglacial lake in the River Vychegda valley, North-East Europe.