

SILURIAN TIMES

NEWSLETTER OF THE INTERNATIONAL SUBCOMMISSION ON
SILURIAN STRATIGRAPHY (ISSS)

(<http://silurian.stratigraphy.org>)

INTERNATIONAL COMMISSION ON STRATIGRAPHY (ICS)

No. 31 (for 2023)

Edited by David Ray



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Cover photo: Overview of the Aeronian to lower Telychian of El Pintado section 1, Sevilla Province Spain, showing the position of the new GSSP for the base of the Telychian Stage. Insert: <i>Spirograptus guerichi</i> from El Pintado section 1, the first appearance of which marks the base of the Telychian Stage (Courtesy of David Loydell).	

IUGS statement on the Russian Federation's invasion of Ukraine



To the leaders of all IUGS committees, commissions, and activities:

The International Union of Geological Science (IUGS) has published its statement in reaction to the invasion of Ukraine by the Russian Federation. Our statement requires that active involvement of scientists from Russian institutions in IUGS groups and activities should cease until further notice. This includes withdrawing the offer to host the International Geological Congress in St. Petersburg, Russia in 2028.

The scientific community in Russia provides highly valuable contributions to the commissions and publications of IUGS. We note that an impressive number of Russian scientists have distanced themselves for their governments decision and we are proud of their courage. Our actions at this time are not personally directed towards our colleagues, but we must firmly oppose the aggressive actions of the Russian government.

This statement was agreed by the IUGS executive in Paris, France on the 18th March 2022.

Professor John Ludden CBE, FRSE, MEA, RAS President of IUGS

SILURIAN TIMES Number 31 (for 2023)

CHAIRMAN'S CORNER

Dear Silurian Colleagues,

The year 2023 proved to be a dynamic period for the ISSS again. The first ISSS business meeting in several years was held in the frame of thematic session SC13 – New stratigraphic insights into the Silurian story – organized at the 4th International Congress on Stratigraphy (STRATI 2023, 11-13th July) in Lille, France. The business meeting, led by Vice-Chair Carlo Corradini, closely followed the preliminary program published in the Chairman's corner section of the Silurian Times no. 30. Unfortunately, I apologize for my absence in Lille due to health issues.

On this occasion, I extend my heartfelt congratulations to Bing Huang, the second laureate of the ISSS Koren' Award recognizing excellence in research related to Silurian stratigraphy and paleontology by young researchers. The award ceremony, delayed by the Covid gap in the ISSS meetings, finally took place in Lille.

New ISSS executive and voting body for 2024-2028

The ISSS elected new officers for the term 2024-2028, subsequently approved by the ICS executive. Carlo Corradini (Italy) assumes the role of the new chairman, Thijs Vandenbroucke (Belgium) as the new vice-chair, and Emilia Jarochovska (Netherlands) as the new secretary. Bing Huang (China), will serve his second term as a web-person.

Five new titular members, nominated and chosen from corresponding members, have been elected: Annalisa Ferretti, Juan Carlos Gutiérrez-Marco, Emilia Jarochovska, Valeri Sachanski, and Ladislav Slavík. In turn, Axel Munnecke, Petr Štorch, Živilé Žigaitė, and, for formal reasons, also David Loydell, Michael Melchin, Carlton Brett, Anna Kozłowska, and Wang Yi, have stepped down after their long-term dedicated service to the subcommission. The nomination of additional titular members to complete the voting body of the ISSS for 2024-2028 is currently in progress.

We also welcome 8 new corresponding members: Zhongyang Chen, Neo E.B. McAdams, Ana Mestre, Muhammad Aqqid bin Saporin, Amalia Spina, Zongyuan Sun, Rongchang Wu, and Seth A. Young. As nominated by titular members.

Recent activities of the ISSS

Activities of the Subcommission focused on the long-intended replacement of previously ratified but currently inadequate basal stratotypes of selected Silurian stages, achieving significant progress in 2023.

The Aeronian working group submitted two parallel formal proposals for the new Global Stratotype Section and Point of the Aeronian Stage. One of the proposed sections was located in Rheidol Gorge, in the classic area of central Wales, U.K. (Melchin et al. 2023). The second candidate was located in Hlásná Třebaň in the equally classical Barrandian area of Central Bohemia, Czech Republic (Štorch et al. 2018). On October 16th 2023 the ISSS voting body of titular members selected the Czech section at Hlásná Třebaň as the more suitable candidate and

submitted the winning proposal to the ICS for further discussion and approval. The new stratotype was approved by the ICS on December 29th 2023.

The Telychian working group proposed the El-Pintado-1 section, in the El Pintado Reservoir area of Seville province, Spain, for the new Global Stratotype Section and Point of the Telychian Stage. The formal proposal of the new GSSP was approved by subsequent voting by the titular members of the ISSS on November 2nd 2023, and submitted for further discussion and approval to the ICS. The ICS approved our proposal for the new Telychian GSSP on January 4th 2024.

IUGS ratification of the new GSSPs for Aeronian and Telychian stages was announced on January 24th 2024. The next and last step in the formal process will be the publication of the new GSSPs in Episodes. I extend my thanks and heartfelt congratulations to all members and other colleagues working on these two GSSPs, which replaced former, no longer adequate stratotypes.

Significant progress was achieved in the accessibility and refurbishment of the Silurian homepage located at the ICS web page. A substantial update was conducted by our web-person Bing Huang in cooperation with ICS web-person Nick Car.

Upcoming activities

The next ISSS meeting will be a joint conference with the Subcommittee on Devonian Stratigraphy, hosted by the Geological Institute of the Bulgarian Academy of Sciences and the University of Mining and Geology “St. Ivan Rilski“ in Sofia, Bulgaria, in September 12–17th 2024. Please see the second circular of the conference below.

Efforts to find good tools for the subdivision of the Pridoli Series into two stages, in the type area of this unit (Manda et al. 2023), were discussed in Lille. In response to the largely positive reception of this concept at the Lille STRATI Congress, a formal proposal for the Radotnian Stage with the GSSP located at Hvízdalka near Radotin (Czech Republic) will be submitted to ISSS members for discussion before the ISSS-SDS conference in Sofia. The proposed marker horizon is the lowest occurrence of the easily-identifiable and relatively cosmopolitan graptolite *Wolynograptus bouceki*. The lower stage of the Přídolí Series, with the proposed name Jarovian, will share its GSSP with Přídolí Series at Požáry near Řeporyje, Czech Republic.

Further search for sections suitable for the new GSSP of the Wenlock Series continued in a Llandovery/Wenlock boundary succession available from drill-cores in Gotland, Sweden, as earlier reported by Brad Cramer. Another promising section has been recently examined near the classical locality Vyskočilka in Prague, Czech Republic. It is about time to reactivate the temporarily silenced base Wenlock working group.

Formation of a Homerian working group should also be considered to restudy the current, inadequate Homerian GSSP. Czech colleagues have been working in advance on a Sheinwoodian-Homerian boundary section exposed in the Kosov Quarry, Czech Republic. We have to search for some other candidate sections for the base Homerian GSSP.

Last but by no means least, the application of Standard Auxilliary Boundary Stratotypes in the Silurian System should be discussed. This category, formally applied by some other subcommittees was recognized by the ICS in October 2022.

Please get ready to send me your comments, suggestions, and proposals regarding the upcoming business meeting in Sofia, and, in turn, stay tuned to receive further details in due time. David Ray made a significant update to the list of corresponding members and Silurian experts. We have reduced the number of corresponding members to those who have made a recent contribution to the Silurian Times (i.e., in the last few years). Please, check the address list at the end of the Silurian Times and send changes and pending updates to David's email address (daveray01@yahoo.com). We would greatly appreciate this help, which will also indicate your willingness to participate in present and future activities of the subcommission.

In this place I wish to thank Secretary David Ray, Vice-Chair Carlo Corradini, and web-person Bing Huang for their permanent collaboration. In particular, David's hard work on the Silurian Times and his effective communication with titular and corresponding members has been appreciated very much.

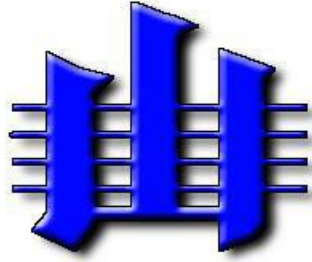
References:

Loydell, D.K., Frýda, J., Gutiérrez-Marco, J.C. 2015. The Aeronian/Telychian (Llandovery, Silurian) boundary, with particular reference to sections around the El Pintado reservoir, Seville Province, Spain. *Bulletin of Geosciences* 90, 4, 743-794.

Manda, Š., Slavík, L., Štorch, P., Tasáryová, Z., Čáp, P. 2023. Division of Přídolí Series in Central Bohemia: graptolite and conodont biostratigraphy, faunal changes, and geochemical record. *Newsletters on Stratigraphy*, 56, 1, 89-123.

Melchin, M.J., Davies, J.R., Boom, A., De Weirtd, J., McIntyre, A.J., Russell, C., Vandenbroucke, T.R.A., Zalasiewicz, J.A. 2023. Integrated stratigraphic study of the Rhuddanian-Aeronian (Llandovery, Silurian) boundary succession at Rheidol Gorge, Wales: A proposed Global Stratotype for the base of the Aeronian Stage. *Lethaia* 56, 1, 1–23.

Štorch, P., Manda, Š., Tasáryová, Z., Frýda, J., Chadimová, L., Melchin, M.J. 2018. A proposed new global stratotype for Aeronian Stage of the Silurian System: Hlásná Třebaň section, Czech Republic. *Lethaia*, 51, 3, 357–388.



International Commission on Stratigraphy
Subcommission on Silurian Stratigraphy
ANNUAL REPORT 2023

1. TITLE OF CONSTITUENT BODY and NAME OF REPORTER

Subcommission on Silurian Stratigraphy (ISSS)

Submitted by:

Petr Štorch, Chair, ISSS

Department of Palaeobiology and Stratigraphy

Institute of Geology of the Czech Academy of Sciences

Rozvojeová 269, Prague, CZ 165 00, Czech Republic

Tel.: +420-233-087-261

Email: storch@gli.cas.cz

2. OVERALL OBJECTIVES AND FIT WITHIN IUGS SCIENCE POLICY

Mission statement

The objectives of the Subcommission relate to three main aspects of IUGS policy:

- (1) The development of an internationally agreed scale of chronostratigraphic units, fully defined by GSSPs at Series and Stage levels and related to a hierarchy of units (Substages, Standard Zones, Subzones etc.) to maximize relative time resolution within the Silurian Period;
- (2) Establishment of frameworks and mechanisms to encourage international collaboration in understanding the evolution of the Earth during the Silurian Period;
- (3) Working towards an international policy concerning conservation of geologically important sites (such as GSSPs, global and regional stratotype sections, etc.).

Goals

- Rationalization of Global chronostratigraphical classification;
- Intercalibration of fossil biostratigraphies, integrated zonations, and recognition of global datums;

- Establishment of magneto- and chemo-stratigraphic scales;
- Redefinition of stage boundaries and restudy of global boundary stratotype sections;
- Correlation of Silurian rock successions and events, including marine and non-marine;
- Application of astronomically tuned cyclostratigraphy integrated with radiometric data and biostratigraphy;

3. ORGANISATION - interface with other international projects / groups

Organisation

The ISSS is a Subcommittee of the International Commission on Stratigraphy. The Subcommittee is organized by an Executive consisting of Chairman, Vice-Chairman, Secretary, and Webperson who are all Voting Members of the Subcommittee. In the Subcommittee elected for 2020-2024 there are eleven other Voting Members. Five members have been replaced by four new Voting members in March 2020. Broad network of Corresponding Members has first of all a responsibility for communication in both directions between the Subcommittee and researchers on Silurian topics in their region. Secondly, they represent a broad spectrum of specialized stratigraphical disciplines from those countries or regions where Silurian rocks are extensively studied in relation to fundamental and/or applied geological research.

Current research activities and future plans are communicated through publication of the annual ISSS newsletter, *Silurian Times*, distributed as an email attachment and a web release. Website: <https://stratigraphy.org/subcommission-silurian/> contains newsletters, meeting announcements, discussion posting-boards, bibliography of Silurian articles, links to related sites, and other information.

Interface with other international projects / groups

IGCP project no. 652 “Reading geologic time in Paleozoic sedimentary rocks” and newly established “International Subcommittee on Geochronology” under chairmanship of B. D. Cramer, titular member of the ISSS.

Collaboration will continue with stratigraphically neighbouring subcommittees on Ordovician (ISOS) and Devonian (SDS) stratigraphy. A joint ISSS-SDS conference is planned for September 2024 in Sofia, Bulgaria.

3a. Current Officers for 2020-2024 period:

Chair: **Petr Štorch** (second term)

Vice-Chair: **Carlo Corradini** (second term)

Secretary: **David Ray** (first term)

Webperson: **Bing Huang** (first term)

4. EXTENT OF NATIONAL/REGIONAL/GLOBAL SUPPORT FROM SOURCES OTHER THAN IUGS

National/regional support has been provided to active members of Aeronian, Telychian and Wenlock GSSP working groups to facilitate their work.

5. CHIEF ACCOMPLISHMENTS IN 2023 (including any publications arising from ICS working groups)

- Silurian Times No 30 was edited by the secretary, David Ray, and distributed in April, 2023, posted on the web site for the ISSS, and circulated as an email attachment to all titular and corresponding members of the Subcommission. It contained the reports on previous meetings, announcements of planned meetings, the latest news and recent publications on Silurian research.
- The Aeronian working group accomplished its task by submission of two parallel proposals for new base Aeronian GSSP which should replace current GSSP located in the Trefawr track cutting in Wales, UK (Melchin et al. 2023, Štorch et al. 2023). Of the two candidate sections - Rheidol Gorge in Wales, UK and Hlásná Třebaň in the Czech Republic - the latter has been selected by subsequent voting by the titular members of the ISSS and submitted to the ICS for further discussion and approval.
- The Telychian working group has completed its work by formal proposal of the El Pintado 1 section in Spain for new GSSP for the Telychian Stage to replace present GSSP in the Cefn Cerig quarry section in Wales, UK (Loydell et al. 2023). The new GSSP has been approved by voting by the titular members of the ISSS and the proposal has been submitted to ICS for further discussion and formal approval.

Melchin, M.J., Davies, J.R., Boom, A., De Weirtdt, J., McIntyre, A.J., Russell, C., Vandenbroucke, T.R.A., & Zalasiewicz, J.A. (2023). Integrated stratigraphical study of the Rhuddanian-Aeronian (Llandovery, Silurian) boundary succession in the Rheidol Gorge, Wales: a proposed Global Stratotype Section and Point for the base of the Aeronian Stage. *Lethaia* 56(1), 1–23. <https://doi.org/10.18261/let.56.1.8>

Manda, Š., Slavík, L., Štorch, P., Tasáryová, Z., & Čáp, P. (2023). Division of Přídolí Series in Central Bohemia: graptolite and conodont biostratigraphy, faunal changes, and geochemical record. *Newsletters on Stratigraphy*, 56 (1), 89–123. <https://doi.org/10.1127/nos/2022/0695>

Melchin, M.J., Davies, J.R., Boom, A., De Weirtdt, J., McIntyre, A.J., Russell, C., Vandenbroucke, T.R.A., & Zalasiewicz, J.A. (2023). Proposed Redefinition of the Global Stratotype Section and Point (GSSP) for the Base of the Aeronian Stage (Llandovery Series, Silurian System) at the Rheidol Gorge Section, Wales, UK.

Štorch, P., Manda, Š., Vodička, J., Butcher, A., Tasáryová, Z., Frýda, J., Chadimová, L., Melchin, M.J. (2023). Formal proposal for a new Global Boundary Stratotype Section and Point (GSSP) for the Aeronian Stage at Hlásná Třebaň, Czech Republic.

Loydell, D.K., Gutiérrez-Marco, J.C., Štorch, P., Frýda, J. (2023). Proposal for a replacement Global Stratotype Section and Point (GSSP) of the Telychian Stage (Llandovery, Silurian).

6. SUMMARY OF EXPENDITURE IN 2023:

Expenditures

STRATI2023 Congress in Lille: 2 x conference fee - 800 US\$; 1 x air ticket - 360 US\$; 2 x train ticket - 90 US\$; Koren' award for young Silurian researcher - 500 US\$.

Total US\$ 1,750

7. SUMMARY OF INCOME IN 2023:

Carried forward from 2022 US\$ 2,750
ICS Allocation US\$ 0

Total US\$ 2,750

Balance (carried forward from 2023) US\$ 1,000

8. BUDGET REQUESTED FROM ICS IN 2024

Requested ICS Allocation US\$ 3,000

9. WORK PLAN, CRITICAL MILESTONES, ANTICIPATED RESULTS AND COMMUNICATIONS TO BE ACHIEVED NEXT YEAR:

- ISSS working group focused on restudy of the base of the Homeric GSSP will be established and working group for base Wenlock GSSP will be reactivated.
- Division of the Přídolí Series into Jarovian and Radotinian stages proposed by Manda *et al.* (2023) will be discussed. The Silurian Subcommittee will be hopefully able to complete this work by submission of the formal proposal of the Hvízd'alka section as a GSSP for the upper Přídolí unit - Radotinian Stage.
- Joint ISSS-SDS conference with field-meeting and business meeting in Sofia, Bulgaria, postponed due to Covid related travel restrictions and subsequent Russian war, will take place in September 2024 in collaboration with Geological Institute of Bulgarian Academy of Sciences and University of Mining and Geology, Sofia.
- Continuing updates of the website for Silurian Subcommittee by webmaster Bing Huang.

Potential funding sources external to IUGS

Most of the costs of preparing Silurian Times and research activities of the working groups will be met by local support from host institutions and participation by individuals through national research grants and travel grants from their own authorities. Some minor expenses may be covered from budget carried forward from 2023.

10. OBJECTIVES AND WORK PLAN FOR THE PERIOD 2024-2028

- Principal work will be devoted to GSSP-related research activities – restudy of some previously ratified but currently inadequate stratotypes and search for sections suitable for auxiliary stratotypes.
- Base Wenlock working group will be reactivated in order to examine stratigraphic and correlation potential of the new Telychian-Sheinwoodian boundary section discovered in Prague-Vyskočilka
- Restudy of the Homerician GSSP will join the program.
- Establishment of working groups for the replacement base Gorstian GSSP and base Ludfordian GSSP
- Works on higher-resolution correlation of principal Silurian biozonations (graptolite, conodont, and chitinozoan) with carbon isotope excursions in the timeframe provided by presumed new radiometric data.

Notice: The proposed voting body of the ISSS for 2024-2028 was not approved by the ICS in March 2024. Five voting members who have served for 12 or more years are not eligible for an additional term of service. The nomination and election of new titular members is currently in progress.

APPENDIX (Names and Addresses of Current Officers and Voting Members)

Nominated officers

Petr Štorch, Chair
Department of Palaeobiology and Stratigraphy
Institute of Geology of the Czech Academy of Sciences
Rozvojová 269, Prague, CZ 165 00, Czech Republic
Tel.: +420-233-087-261
Email: storch@gli.cas.cz

Carlo Corradini, Vice-Chair
Dipartimento di Matematica e Geoscienze
Università di Trieste
via Weiss 2, I- 34128, Trieste, Italy
Tel.: +39-040-5882033
Email: ccorradini@units.it

David C. Ray, Secretary
School of Geography, Earth and Environmental Sciences
University of Birmingham
Birmingham B15 2TT, United Kingdom
Tel.: +44-07792638177
Email: daveray01@yahoo.com

Voting Members

Alyssa M. Bancroft
Indiana Geological and Water Survey
Indiana University
915 East 11th Street, Bloomington, 47405, Indiana, USA
Tel.: +1-(812)856-5313
Email: ambancroft@iu.edu

Carlton E. Brett
Department of Geology
University of Cincinnati
345 Clifton Court, Cincinnati, OH 45221-0013, Ohio, USA
Tel.: 513-556-4556
Email: carlton.brett@uc.edu

Bradley D. Cramer
Department of Earth and Environmental Sciences
University of Iowa
Iowa City, 52242 Iowa, USA
Tel.: 319-335-0704
Email: bradley-cramer@uiowa.edu

Bing Huang, Webperson
Nanjing Institute of Geology and Paleontology
Chinese Academy of Sciences
39 East Beijing Road, Nanjing, 210008, China
Tel.: +86-2583282189
Email: bhuang@nigpas.ac.cn

Anna Kozłowska
Instytut Paleobiologii
Polish Academy of Sciences
51/55 Twarda, 00-818, Warszawa, Poland
Tel.: +48-22-6978872
Email: akd@twarda.pan.pl

David K. Loydell
School of Earth and Environmental Sciences
University of Portsmouth
Burnaby Road, Portsmouth PO1 3QL, UK
Tel.: 023-92-842-698
Email: david.loydell@port.ac.uk

Tõnu Meidla
Institute of Ecology and Earth Sciences,
University of Tartu
14A Ravila Street, Tartu, 50411 Estonia
Tel: +372-7375895
Email: tonu.meidla@ut.ee

Michael J. Melchin
Department of Earth Sciences
St. Francis Xavier University
Antigonish, Nova Scotia B2G 2W5, Canada
Tel.: +1-902-867-5177
Email: mmelchin@stfx.ca

Axel Munnecke
GeoZentrum Nordbayern
University of Erlangen-Nürnberg
Loewenichstrasse 28, 91054 Erlangen, Germany
Tel.: +49-09131-85-26957
Email: axel.munnecke@gzn.uni-erlangen.de

Thijs Vandenbroucke
Department of Geology
Ghent University
Krijgslaan 281/ S8, BE-9000, Ghent, Belgium
Tel.: 09-264-4515
Email: Thijs.Vandenbroucke@UGent.be

Wang Yi
Nanjing Institute of geology and Paleontology
Chinese Academy of Sciences
39 East Beijing Road, Nanjing, 210008, China
Email: yiwang@nigpas.ac.cn

Zivile Zigaite
Department of Organismal Biology
Uppsala University
Norbyvägen 18A, 752 36 Uppsala, Sweden
Email: zivile.zigaite@ebc.uu.se

Working group leaders

Base of Aeronian GSSP Restudy Working Group
Leader: Petr Štorch

Base of Telychian GSSP Restudy Working Group
Leader: Michael J. Melchin

Base of Wenlock GSSP Restudy Working Group
Leader: David K. Loydell

See the ISSS website <https://stratigraphy.org/subcommission-silurian/> for full list of the new officers and voting members elected for 2024-2028.

REPORTS OF ACTIVITIES IN 2023



4th International Congress on Stratigraphy
strati 2023
11th -13th July 2023, Lille, France

New stratigraphic insights into the Silurian story, Lille, France

Date: July 12th 2023.

Venue: the new Congress Centre of Lille University ‘Lilliad’ on the Campus of the Cité Scientifique (Science Campus) at Villeneuve d’Ascq, Lille.

Website: The STRATI 2023 Abstract Book can be accessed here (see section SC13: https://strati2023.sciencesconf.org/data/pages/book_strati2023_en_vd.pdf ; while more general information about the meeting can be found here: <https://strati2023.sciencesconf.org/>



Silurian Subcommittee business meeting group photo (photographer: Zuzana Strossová).

Description: This was the first ISSS meeting, after several years of silence. The meeting consisted of oral and poster presentations followed by an ISSS business meeting (see meeting minutes below). Below are the presentations submitted to the session alongside their position within the conference Abstract Book:

Arts et al. 2023. The imprint of Astronomical cycles in the Ludlow part of the type-Silurian Cellon section in the Carnic Alps, Austria. p. 294-295.

Chen et al. 2023. An overview of black shales through the Ordovician–Silurian transition in South China: stratigraphy, distribution, and environment. p. 296-297.

Chen et al. 2023. Silurian conodonts from western Yunnan and southern Xizang (Tibet), China. p. 298.

Frýda and Frýdová. 2023. The mid-Homerian (Silurian) biotic crisis in offshore settings of the Prague Synform, Czech Republic: the links between the evolution of marine chemistry and changes in graptolite diversity. p. 299 or 302-303.

Frýda et al. 2023. Evolution of Marine Chemistry during the Mid-Ludfordian Glaciation and the late Silurian Lau/Kozłowski extinction events. p. 300-301.

Kozłowska. 2023. Genicular structures of retiolitines (Graptolithina) as an indicator of the environmental changes across the lundgreni biotic crisis during the Homerian, Silurian. p. 304-305.

Loydell. 2023. The El Pintado section, Spain: replacement GSSP for the base of the Telychian. p. 306.

Luppold et al. 2023. Pridoli conodont and ostracod biostratigraphy from Hazro, SE Anatolia, Turkey. p. 307-308.

Melchin et al. 2023. Integrated stratigraphical study of the Rhuddanian-Aeronian (Llandovery, Silurian) boundary succession in the Rheidol Gorge, Wales: A proposed Global Stratotype Section and Point for the base of the Aeronian Stage. p. 309-310.

Radzevičius et al. 2023. Chemostratigraphy of the Silurian from Lupianka – 2 outcrop (Sudetes, Poland): A preliminary report. p. 311.

Slavik et al. 2023. Proposal for the subdivision of Pridoli Series based on stratigraphic markers defined in Central Bohemia. p. 312.

Stolfus et al. 2023. Expansion of Reducing Marine Environments during the Ireviken (Silurian) Biogeochemical Event. p. 313.

Štorch et al. 2023. Hlásná Třebaň section, Czech Republic: A proposed global stratotype for the base of the Aeronian Stage. p. 314.

Strossová et al. 2023. Graptolite-rich Ordovician-Silurian boundary and Rhuddanian reference section in the south-central Pyrenees, Spain: stratigraphy and correlation. p. 315.

Verniers et al. 2023. Review of the Silurian in Belgium. p. 316-317.

Vodicka and Butcher. 2023. Chitinozoans of the GSSP candidate for the Rhuddanian-Aeronian (Silurian) boundary in the Hlásná Třebaň (Prague Basin, Czech Republic). p. 318-319.

Želvys et al. 2023. $\delta^{13}\text{C}_{\text{carb}}$ isotope excursion through the lower Silurian of Ledai-179 borehole (Eastern Lithuania). p. 320-321.

Organisers: Petr Štorch, Carlo Corradini and David Ray

ISSS Business Meeting July 12th 2023

Minutes taken by Bing Huang and edited by Carlo Corradini, Petr Štorch and David Ray.

As the ISSS Chair, Petr Štorch, is not present due to illness, the ISSS Vice Chair Carlo Corradini chaired the meeting, and Bing Huang recorded the meeting minutes, in the absence of the ISSS Secretary, David Ray.

Agenda items discussed:

1. Tanya Koren‘ Award ceremony;
2. Information about upcoming ISSS online ballots on new base Aeronian and base Telychian GSSPs;
3. Other inadequate GSSPs of Silurian stages in need of replacement;
4. Proposed division of Přídolí Series into Jarovian and Radotinian stages;
5. Potential application of Standard Auxilliary Boundary Stratotypes in the Silurian System;
6. ISSS website;
7. ISSS membership;
8. Future Silurian meetings.

Attendance

Apologies from Petr Štorch for not being in Lille.

TMs (6) - Carlo Corradini (Italy, Vice Chair) Bing Huang (China) Brad Cramer (USA), David Loydell (UK), Anna Kozłowska (Poland), Thijs Vandenbroucke (Belgium).

CMs (5) - Junxuan Fan (China), Annalisa Ferretti (Italy), Juan Carlos Gutierrez Marco (Spain), Sigita Radzevičius (Lithuania), Jacques Verniers (Belgium).

Others (8) – Michiel Arts (Holland), Qing Chen (China), Zhongyang Chen (China), Jiří Frýda (Czech Republic), Neo McAdams (USA), Zuzana Strossová (Czech Republic), Jakub Vodička (Czech Republic), Tomas Želvys (Lithuania).

Note: the audience could have been larger, but the business meeting of the ISOS and SDS were scheduled at the same time.

1. Tanya Koren‘ Award ceremony

The Chair explained that the prize is an award to acknowledge early career Silurian research workers. The winner of this edition was already defined some time ago by a committee composed by Petr Štorch, Carl Brett, and Renbin Zhan, the former secretary of the Silurian subcommission, but due to covid restrictions it was not possible undertake the award ceremony. The prize consisted of a certificate of achievement and a financial reward.

The prize was awarded to **Dr Bing Huang** (Nanjing Institute of Geology and Palaeontology, China).



Bing Huang receiving the Tanya Koren‘ Award from Carlo Corradini.

2. Information about upcoming ISSS online ballots on new base Aeronian and base Telychian GSSPs.

The work on the new GSSP proposals for the Aeronian and Telychian is complete. Carlo Corradini informed us that we now have to conclude the process, in order to have the new GSSPs approved by the ICS in a short timeframe (as preferred by the ICS Chair, David Harper).

Carlo Corradini informed the meeting that the proposals should be first approved by the ISSS TMs, and later the formal proposal should be distributed to the ICS for discussion and to be formally voted upon.

Brad Cramer suggested that the proposals should be submitted to the TMs in the same format as they will be sent to the ICS.

Carlo Corradini and Brad Cramer also remarked that submitted materials should not just be about the scientific issues, but also include the stability of the time level and the accessibility of the GSSP. Also, the proposal should include (as much as possible) several ways to discriminate the boundary, in order that the boundary may be recognized in sections where the primary marker is not present.

As there are two proposals for the Aeronian GSSP, there is a need for a ballot. Similarly, the proposal for the Telychian GSSP, should be approved by the subcommission, before sending to ICS.

Carlo Corradini will ask the Chair, Petr Štorch, to start this procedure soon, in order to have the ICS voting completed before the change of the officers.

After the GSSPs have been ratified, a specific publication/s will be necessary.

3. Other inadequate GSSPs of Silurian stages in need of replacement

David Loydell talked about the base of the Wenlock and the difficulty in finding an alternative GSSP. However, there now seems to be some more possibilities. David Loydell mentioned that a potential section from Czech Republic is to be fully studied. After the two GSSPs (Aeronian and Telychian) has been completed, we can move back to the work on the base Wenlock replacement.

Carlo Corradini reports that many other Silurian GSSPs should be reconsidered (e.g., the Gorstian (=base of the Ludlow) and the Ludfordian). David Loydell mentioned the base of Homerian.

In the near future the ISSS may formally establish a working group on at least one of these boundaries.

4. Proposed division of Příklad Series in Jarovian and Radotinian stages

Ladislav Slavik and others gave a talk on the topic (SC13 - Proposal for the subdivision of Pridoli Series based on stratigraphic markers defined in Central Bohemia), and a paper has already been published. There is a proposal to subdivide the Pridoli series in two stages (Jaronian and Radotinian).

Here too, the ISSS should vote on the proposal. Brad Cramer suggested that the subdivision of Pridoli and the GSSP of base Radotinian can be done at the same time (as one proposal).

Once the proposal is approved by the subcommission, the formal proposal should be sent to the ICS.

5. Potential application of Standard Auxilliary Boundary Stratotypes in the Silurian System

Carlo Corradini informed us that in fall 2022 the ICS introduced the Standard Auxilliary Boundary Stratotypes (SABS), as sections with different lithological characteristics and from different (paleo)geographical regions than the GSSPs. The number of SABS is not limited, but the ICS suggest there use only when necessary. In the Silurian this an interesting option, due to the two main facies (black graptolitic shales and limestones) with different faunal content and environmental settings.

Thijs Vandembroucke suggested that since we have two proposals for the base of the Aeronian, one can be proposed as the GSSP, and the second may stay as SABS.

Carlo Corradini informed us that the dossier for the SABS should be prepared in the same way as that of the GSSPs, but the validation is limited to the subcommission; the ICS is not involved. In any case, first we need stable GSSPs, before we can think about SABS.

6. ISSS website

Bing Huang (ISSS web-person) mentioned the current condition of the new website on GitHub and suggested it should be transferred to the ICS framework after discussion with Petr Štorch. ICS has asked that the website of all subcommissions be set up in the same style. It should be decided what information is needed (e.g., GSSPs, membership, definition of the Silurian System, and goals of the Silurian subcommission).

7. ISSS membership

Subcommission officers (Chair and Vice-Chair) and TMs should be renewed every four years. The officers can serve for two terms, whereas TMs can stay for three terms. However, in case of only a few scientists being available, the terms of service can be extended. Titular Members should be from different countries, and study different topics of research.

The officers and new TMs should be voted for by present TMs, no more than one year before the International Geological Congress. A ballot will be organized soon, as the deadline is August 20th 2023.

The Secretary will be appointed by the Chair and Vice-Chair after their election.

Carlo Corradini informed us that Petr Štorch and David Ray have done a huge job on the list of corresponding members. The current list only includes people who replied at least once in the past three years. This does not mean people who forgot to reply cannot come back, but they should be proposed again to be a corresponding member.

8. Future Silurian meeting

There is the necessity to bring back together the Silurian community. However, the number of Silurian workers is not high, and meeting each year may be too much. Joint meetings with other subcommissions may be an option.

Before the covid, a meeting in Bulgaria was proposed by V. Sachanski. We will ask him if he will organize a meeting for next year.

Other ideas for the near future could include Spain (maybe connected to the Telychian GSSP ceremony, once approved), Argentina, the Carnic Alps (Austria/Italy) or Sweden.



UNESCO Project IGCP-700 Palaeozoic Carbonate Build-ups in South East Asia, Krabi 2023.

Dates: September 25th to 30th 2023.

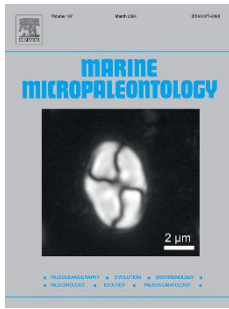
Venue: Blusotel Ao Nag Beach, Krabi, Thailand, with field excursions in Southern Thailand and Northern Malaysia. Hybrid meeting.

Website: Abstracts and program details can be accessed at the following link:
<https://prc846.wixsite.com/igcp700>

Video: <https://www.youtube.com/watch?v=zAiDoVkybmo&t=4s>

Description: This meeting was held in collaboration with IGCP-735 Rocks and the Rise of Ordovician Life. The scientific sessions consisted of a full day of oral and poster presentations. The Silurian was highlighted in several presentations, including those by Muhammad Aqqid Saparin and others (Title: Biostratigraphy and Palaeoenvironment of the Ordovician-Silurian Tanjung Dendang Formation in Langkawi Island, Malaysia), and Stephen Kershaw (Title: Problematic fabrics in carbonate rocks: Lithification of ancient sea floors, how to recognise it). In addition, the field excursions included visiting the Palaeozoic successions from Southern Thailand and Northern Malaysia. For the Northern Malaysia excursion (partly-organised by Muhammad Aqqid Saparin), the group went to Perlis and Langkawi and looked at the Ordovician-Silurian rocks of the Setul Group.

Organisers: Mahasarakham University, Thailand; Department of Mineral Resources, Thailand; Universiti Teknologi Petronas, Malaysia; Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences, China; Seckenberg Research Institute and Natural History Museum, Frankfurt, Germany.



Beyond biostratigraphy: Conodont matters in evolving planetary scenarios

Marine Micropaleontology – Special Issue

Edited by Guillermo Albanesi, Annalisa Ferretti, Xavier Crosta and Ric Jordan

Website: <https://www.sciencedirect.com/journal/marine-micropaleontology/special-issue/10SZGRZB25Z>

Description: A thematic Issue of Marine Micropaleontology, based upon the 5th International Conodont Symposium (ICOS 5) meeting that was reported in *Silurian Times* 30. There are 17 general interest articles, some of which are open access.

Conodont elements are the only mineralized skeletal remains of a soft-bodied, nektonic, extinct early chordate that inhabited ancient oceans for over 300 million years (late Cambrian to Late Triassic). The usefulness of conodonts in biostratigraphical correlation has been well demonstrated, but conodonts have been found to be essential to solve fundamental geological, environmental, evolutionary, and biological problems. The proposed Session seeks to take the concept of conodont animals beyond the simple idea of their utility as biostratigraphical markers in order to explore how conodonts serve, as well as geochemical archives, to reveal changing marine environments and climates, past geographies and biodiversity revolutions, and to enhance our understanding of the biology of these extinct organisms. Topics covered include but are not limited to biodiversity, evolution, geochemistry, paleoecology, paleogeography and paleoclimatology. All geological periods will be considered and we especially encourage a multidisciplinary discussion involving different fields.

Islands in Deep Time

Ancient Landscapes Lost and Found

Markes E. Johnson

Hilltops surrounded by farmland in southern Wisconsin turn out to be the eroded remnants of an ancient archipelago. An island in the Yellow Sea where Korean tourists flock is the peak of a flooded mountain rising from a drowned continental shelf. From a mountaintop shrine to Genghis Khan in Inner Mongolia, the silhouette of a Silurian seascape can be spotted. On the shores of Hudson Bay, where polar bears patrol the Arctic tundra, a close look unveils what was a tropical coastline encrusted with corals nearly 450 million years ago.

The geologist Markes E. Johnson invites readers on a journey through deep time to find the traces of ancient islands. He visits a dozen sites around the globe, looking above and below today's waterlines to uncover how landscapes of the past are preserved in the present. Going back 500 million years to the Cambrian through the Pleistocene 125,000 years ago, this book reconstructs how "paleoislands" appeared under different climatic conditions and environmental constraints. Finding vestiges of prehistoric ecologies, Johnson emphasizes the complexity of island ecosystems and the importance of preserving these significant sites.

Inviting and accessible, this book is a travelogue that takes readers through time as well as space. *Islands in Deep Time* shares the adventure of exploring striking locations across geologic eras and issues a passionate call for their conservation.

MARKES E. JOHNSON is the Charles L. MacMillan Professor of Natural Science Emeritus at Williams College. His most recent book is *Baja California's Coastal Landscapes Revealed: Excursions in Geologic Time and Climate Change* (2021).

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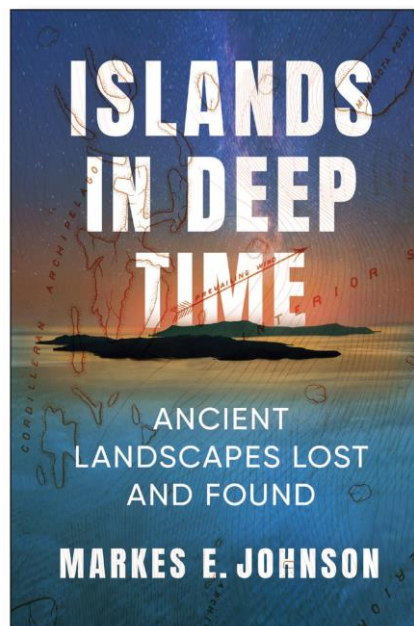
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"Islands in Deep Time is a deep dive into the logic of geology: how vanished land- and seascapes can be conjured back into existence from the raw rock record. All geologists collect old rocks, but Markes Johnson collects entire ancient islands. This book is an exhibit of a dozen particularly fine specimens, which Johnson holds up and rotates so they can be viewed from multiple perspectives."

—Marcia Bjornerud, author of *Geopedia: A Brief Compendium of Geologic Curiosities and Timefulness:*

How Thinking Like a Geologist Can Help Save the World

"Using his lifetime of experience in geology, Johnson illustrates how a landscape can be read as the results of millions of years of geological, biological, and climatological processes. A fascinating and imaginative work."

—Henry Hooghiemstra, emeritus professor
in the Institute for Biodiversity and Ecosystem Dynamics,
University of Amsterdam

"Islands in Deep Time takes readers on hikes to ancient shorelines, featuring possibly the best descriptions and visualizations of field locations I have ever read."

—Gordon Chancellor, coeditor of *Charles Darwin's Notebooks from the Voyage of the Beagle*

ANNOUNCEMENTS OF MEETINGS AND ACTIVITIES IN 2024
SECOND CIRCULAR



“Time-line of Silurian and Devonian environmental and biotic changes”

Joint ISSS-SDS Meeting

Sofia, Bulgaria, 12–17 September 2024

**With the assistance of the University of Mining and
Geology “St. Ivan Rilski” and the Geological Institute,
Bulgarian Academy of Sciences**



**UNIVERSITY OF
MINING AND GEOLOGY
“ST. IVAN RILSKI”**



**GEOLOGICAL
INSTITUTE•BAS**

Joint ISSS-SDS Meeting
“Timeline of Silurian and Devonian environmental and biotic changes”
12–17 September 2024, Sofia, Bulgaria

Indoor Program:

- September 12: Registration depending on the number of participants either at the Earth and Man National Museum (<https://www.earthandman.org/language/en/front/>) or
- at the Museum of Geology and Paleontology at the University of Mining and Geology "St. Ivan Rilski" <https://my.matterport.com/show/?m=xzReiJKtPxQ&sr=-1.39,-1.37&ss=9> followed by welcome party and poster session (18:00–22:00)

September 13–15: Scientific Sessions and separate ISSS and SDS business meetings at the University of Mining and Geology “St. Ivan Rilski” <https://mgu.bg/en/>

Fees:

	Payment of the fee until June 1 st – 2024	Payment of the fee after June 1 st – 2024
Senior researcher	200 €	250 €
Accompanying person	90 €	130 €

The registration fee will include: admission to all sessions, abstract volume, conference program guide, attendance to welcome party, snack and coffee breaks according to the scheduled program, and social events: Mid-conference Trip “Geology in the center of Sofia” and the final gala dinner.

The accompanying person fee includes the attendance to welcome party and the final gala dinner.

Short communication submission:

Submission by June 15 2024. The short communication will be published in *Geologica Balcanica*: up to 6 pages in length and must be formatted according to the journal's requirements <https://www.geologica-balcanica.eu/>. Please use short communication submission form. Short communications sent after June 15 will not be published.

Field Excursions (departure and return to Sofia):

September 16 2024:

ISSS and SDS – Silurian and Devonian in the Svoge Unit

Payment of the fee before June 01, 2024 – 50 €

Payment of the fee after June 01, 2024 – 70 €

(includes travel costs and a small packed lunch)

September 17 2024:

ISSS and SDS – a transect along the Iskar gorge, Western Balkan, with a focus not only on geology but also local history and culture.

Registration before June 01, 2024 – 50 €

Registration after June 01, 2024 – 70 €

(includes travel costs and a small packed lunch)

Payment Methods:

Bank transfer reference - **ISSS-SDS, UMG** *_your last name*

Name of the Bank Account Holder - **University of Mining and Geology “St. Ivan Rilski”, Sofia, Bulgaria**

Bank Name - **Bulgarian National Bank**

IBAN Code - **BG 88BNBG96613100162401**

SWIFT Code - **BIG: BNBGBGSD**

After paying the fees, please send the following form to Valeri Sachanski – valeri.sachanski@mgu.bg and/or v_sachanski@geology.bas.bg
You will receive an email to confirm your registration once payment is settled.

July 1 2024 – Third circular with full program and detailed field trip information.

Joint ISSS-SDS Meeting
“Timeline of Silurian and Devonian environmental and biotic changes”
12–17 September 2024, Sofia, Bulgaria

APPLICATION FOR PARTICIPATION

Name and surname:

Presenting author:

Mark with “X” your participation:

Senior researcher	
Accompanying person	
Field Excursion September 16, 2024	
Field Excursion September 17, 2024	

Do you have more specific dietary requirements?

Field Excursion September 16, 2024:

ISSS and SDS – Silurian and Devonian in the Svoqe Unit

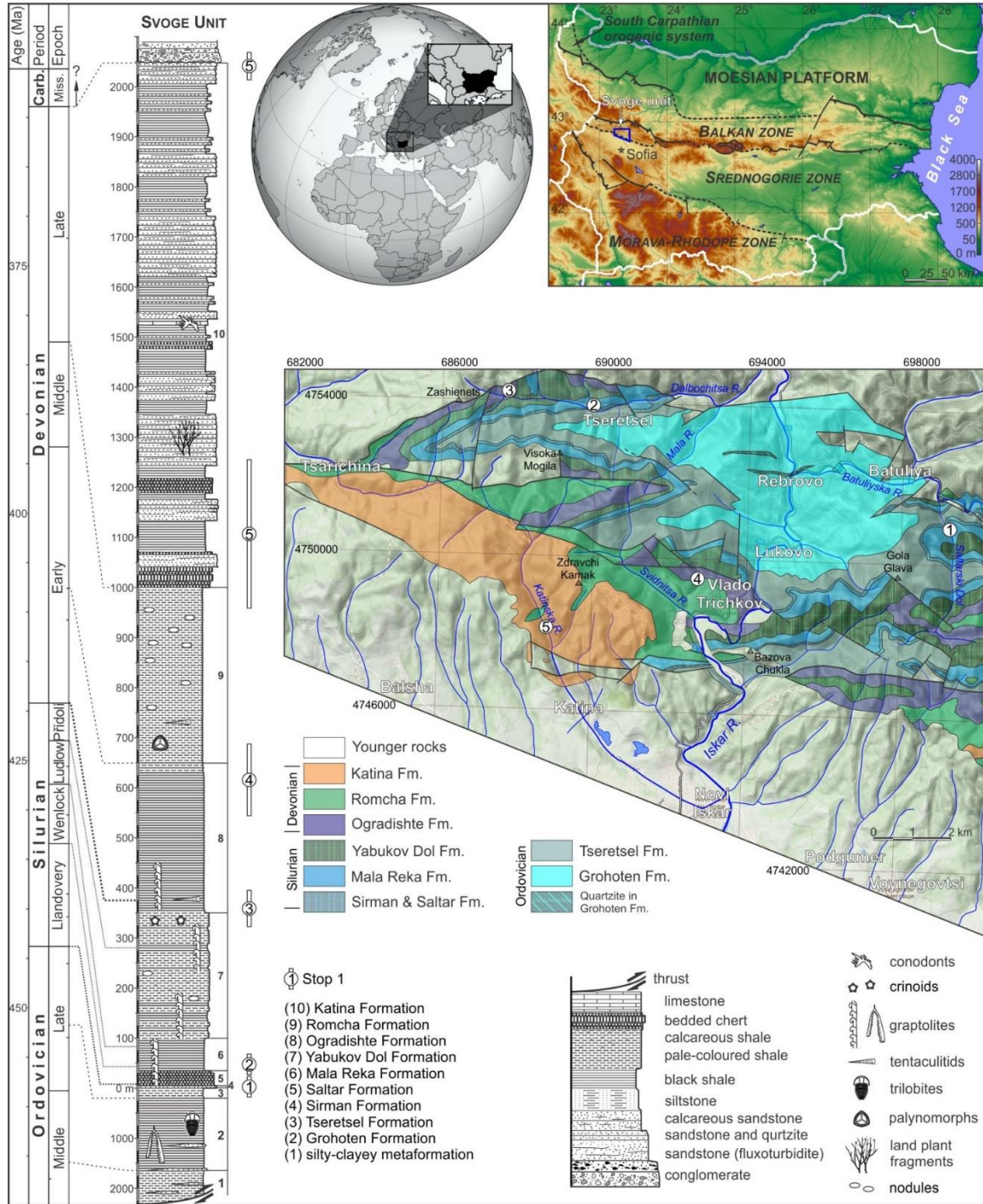


Fig. 1. The Silurian–Devonian sedimentary sequences in the Svoqe Unit and the location of the outcrops intended to be visited.

Stop 1

Saltarski Dol site – the Ordovician/Silurian boundary

There were more than 40 sections examined in order to establish a continuous stratigraphic succession in this area. Although based on geological maps for the area, opportunities extend for more than 100 km, until now the only suitable section remains that in the valley of Saltarski Dol near the village of Batuliya (Fig. 1, 2, 3). In most cases, the Ordovician/Silurian boundary interval is covered by diluvium, often the contact is tectonically disturbed and/or dominated by bedded cherts (lydites), from which it is difficult, if not impossible, to extract identifiable graptolites.

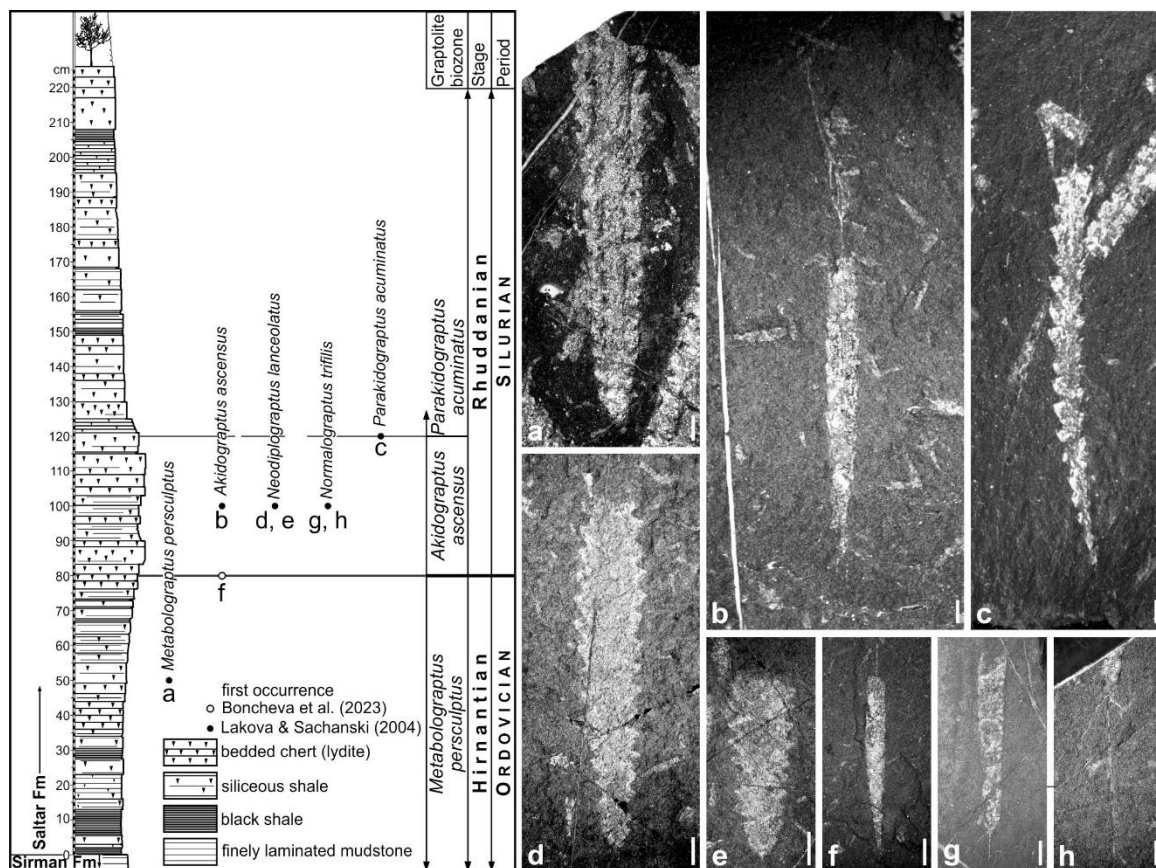


Fig. 2. Lithostratigraphic column of the Ordovician/Silurian boundary sedimentary succession in Saltarski Dol site with first occurrences of some important graptolite species (all scale bars, 1 mm): a – *Metabolograptus persculptus* (Elles and Wood); b, f – *Akidograptus ascensus* Davies; c – *Parakidograptus acuminatus* (Nicholson); d, e – *Neodiplograptus lanceolatus* Štorch and Serpagli, g, h – *Normalograptus trifilis* (Manck).



Fig. 3. The section can be reached by a forest path after about 20 minutes. It's slippery! All other stops during the excursions are located in the immediate vicinity of the bus stop.

Stop 2

Tseretsel site

There are two outcrops in this vicinity, exposed on the right scarp of the forest road from the village of Thompson to the village of Chibaovtsi, which contain well-preserved graptolites. The first reveals a ca 5 m thick random alternation of thin beds of black bedded cherts (lydites), siliceous shales and graptolite-bearing shales (the Saltar Formation). The shales predominate in the lower half of the section (lower Telychian *turriculatus* Biozone Fig. 4b, f), where as bedded cherts prevail in the upper part (lower Telychian *crispus* Biozone). The section outcrop here is overturned, comprising black bedded cherts (lydites) of the Saltar Formation and the graptolitic shales of the Mala Reka Formation. Graptolites occur mainly in the Mala Reka Formation. They are characteristic for the stratigraphical range from the middle Telychian *tullbergi* Biozone up to the Sheinwoodian *riccartonensis* Biozone, and are best preserved within the *spiralis* Biozone (Fig. 4a, c, d, e, g, h).

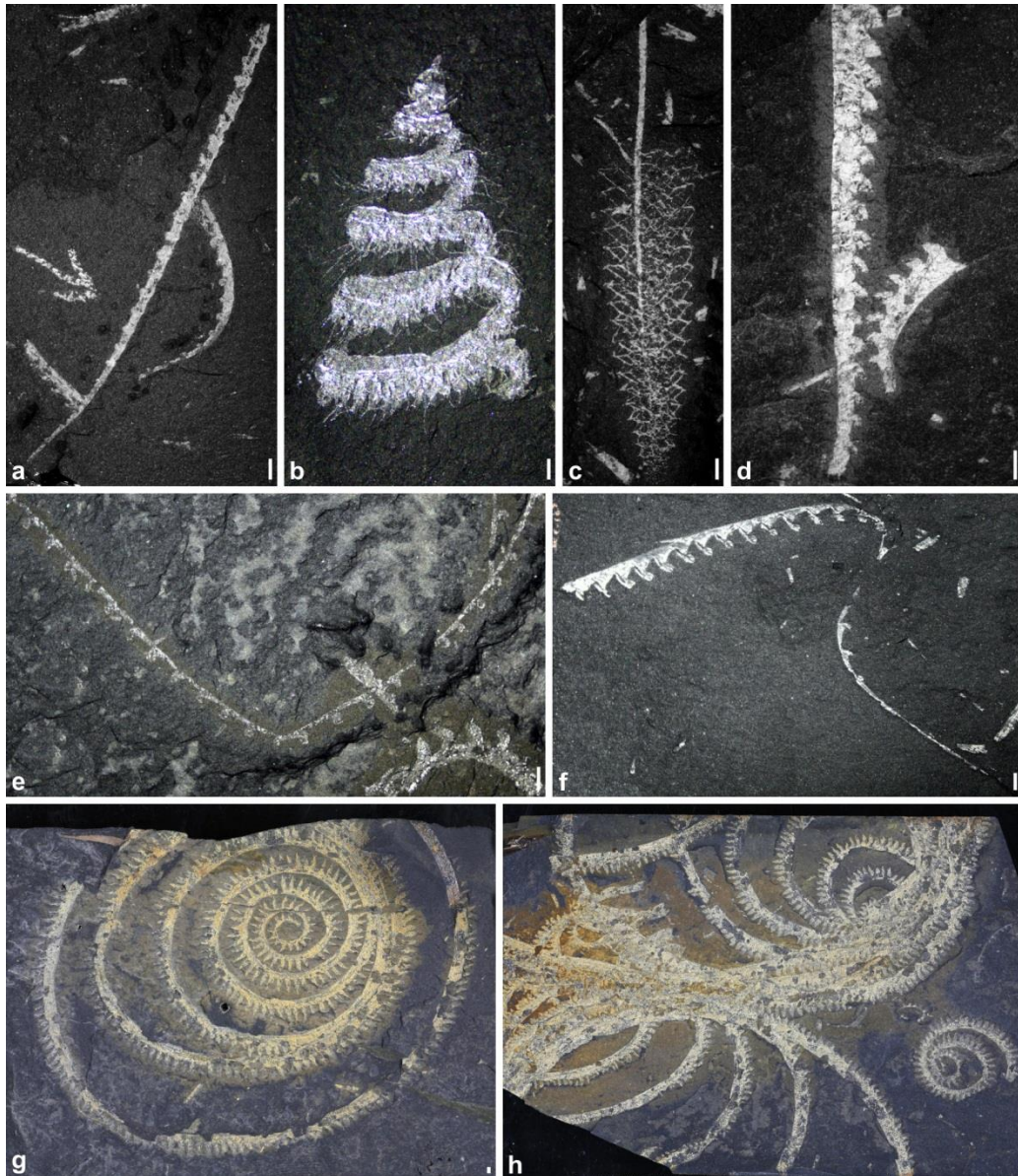


Fig. 4. Graptolites from Tseretsel site (all scale bars in the lower right corner, 1 mm): a – *Streptograptus nodifer* (Törnquist), *spiralis* Biozone; b – *Spirograptus turriculatus* (Barrande), eponymous graptolite biozone; c – specimen found by Hristo Spasov identified by him as *Pseudoretiolites rete* Richter, unknown biozone; d – *Monograptus priodon* (Bronn) to the left and *Stimulograptus vesiculosus* (Perner) to the right, *spiralis* Biozone; e – *Diversograptus globosus* Bouček & Přibyl, *tullbergi* Biozone; f – *Torquigraptus proteus* (Barrande), *turriculatus* Biozone; g, h (specimens and photos Juan Carlos Gutiérrez-Marco) – *Oktavites spiralis* (Geinitz), eponymous graptolite biozone.

Stop 3

The Silurian/Devonian boundary



Thin-bedded black shale from the lower part of Ogradishte Formation west of Tseretsel Village and the position of the Silurian–Devonian boundary.

Stop 4

Devonian – Ogradishte and Romcha formations



Thick-bedded black silty shale (Ogradishte Formation) and their transition into the grey-green shales of the Romcha Formation (on the right), west of Vlado Trichkov Village



A characteristic lithologic feature of the Romcha Formation is the occurrence of lenticular nodules and discrete thin (1–5 cm) discontinuous sandy-clayey layers that mark the normal position of the bedding.

Stop 5

Devonian – Katina Formation



The Katina Formation consists of turbidities and deep-water pelitic sediments. The major lithologic types are sandstones, shales, silicified shales and lydites. Lower pre-flysch and upper flysch successions are distinguished in the section. The base of the former consists of thick-bedded grey-greenish chert and silicified shales.

Field Excursion September 16, 2024:

ISSS and SDS – a transect along the Iskar gorge, Western Balkan

Stop 1

Carboniferous megaflora in the Svoge Unit

Stop 2

Cambrian diabases in the Berkovitsa Unit

Stop 3

Triassic terrigenous and carbonate succession in the Berkovitsa Unit

Stop 4

A historical place for the creation of the modern Bulgarian state and a tasting of Bulgarian yogurt

Stop 5

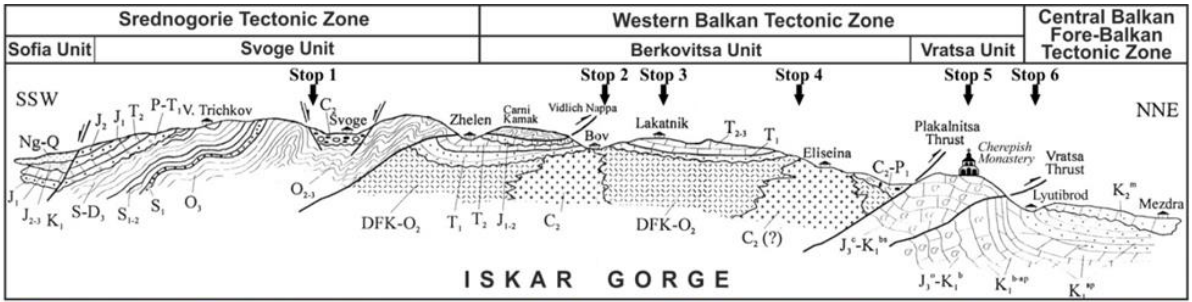
Lower Cretaceous carbonates in the Vratsa Unit and a visit to the Cherepish monastery

Stop 6

The tectonic boundary between Western Balkan Zone and Central Balkan Fore-Balkan Zone and a stop for a photo shoot at the natural landmark “Ritlite”

Stop 7

Upper Cretaceous terrigenous and carbonate sequence in the Vratsa Unit and a visit to the Ledenika Cave



2024 05.17 - 05.20

The 6th International Conference of Palaeogeography

The 6th International Conference of Palaeogeography

Dates: May 17th to 20th 2024

Venue: Nanjing, China

Website: <https://www.isp2022.org/dy/meeting/detail/?id=4>

Description: The International Conference of Palaeogeography (ICP) is a biennial event that aims to foster international academic exchange and interdisciplinary collaboration in palaeogeography and related fields. It also has strategic significance for the prediction and exploration of energy and mineral resources worldwide. Since its inception in 2013, the ICP has been held five times in China, including in Beijing (2013), Beijing (2015), Chengdu (2017), Beijing (2019) and Wuhan (2022). On the recommendation of late Prof. Zeng-zhao FENG, which was agreed by the International Society of Palaeogeography Council, the sixth ICP (ICP6) is to be co-sponsored by the International Society of Palaeogeography, the Palaeontological Society of China, China University of Petroleum (Beijing), Editorial Committee of the Journal of Palaeogeography, and Lithofacies Palaeogeography Committee of the Chinese Society for Mineralogy, Petrology and Geochemistry and will be organized by Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences (NIGPAS), along with some other organizations in China. The ICP6 will take place in Nanjing, China in May, 2024.

Sessions of interest include: T1-3: Palaeoecology and palaeogeography of hypercalcified sponges (Conveners Steven Kershaw and Qijian Li).

Important dates:

Abstract/Paper Submission: March 15th 2024

Early-Bird Price Payment Deadline: March 15th 2024

Normal Payment Deadline: May 16th 2024



XI Baltic Stratigraphical Conference

Dates: August 19th to 21st 2024 (Scientific Sessions); August 22nd to 25th 2024 (Field Trip)

Venue: Tartu, Estonia

Website: <https://stratigraafia.info/11bsc/>

Description: The 10th Baltic Stratigraphical Conference took place in Chęciny, Poland, in 2017. A plan was drafted to hold the next meeting in St. Petersburg in 2021, but this was disrupted by the COVID-19 pandemic and then by Russia's aggression war on Ukraine. However, the need for a regional geological conference – which also covers discussions of regional stratigraphy – has not disappeared in the Baltic region. Estonia, the following country in the sequence of conference locations, will organise the 11th Baltic Stratigraphical Conference in Tartu in August 2024. The conference will be followed by a geological excursion to the main geological sites in central and western Estonia.

Like in the case of previous Baltic stratigraphical conferences, this meeting is not restricted to stratigraphy, but contributions on a broad range of regionally relevant geological topics are welcome. Special sessions and workshops may also be organised depending on the interest of the participants. We try to keep the meeting simple and affordable, especially for students and senior colleagues.

Important dates:

Deadline for registration, payment, abstracts and short papers: May 1st 2024

Arrival to Tartu, Ice-breaker: August 18th 2024

Scientific Sessions, mid-conference field trip, and conference dinner: August 19th to 21st 2024

Field trip to central, western and northern Estonia, with focus on Ordovician-Silurian carbonate deposition; starts from Tartu, ends in Tallinn: August 22nd to 25th 2024



The 10th European Ostracodologists' Meeting (EOM10)

Dates: September 16th to 23rd 2024

Venue: Catania, Sicily, Italy

Website: <https://eom10.units.it/>

Description: The 10th European Ostracodologists' Meeting (EOM10) will take place from 16th to 23rd September 2024 in Catania, Sicily. EOM10 is organised by the Italian ostracodologists and hosted by the Department of Biological, Geological and Environmental Sciences of Catania University (Corso Italia 55). Early-bird registration is currently open and will close on 30th May 2024 (<https://eom10.units.it/registration>). The same date is also the deadline for field-trip registration and payment. The mid-conference field trip will bring participants to the protected oasis of Fiumefreddo and to Calatabiano. A post-conference field trip will be organised from 21st to 23rd September and it will include, among other places of scientific and cultural interest, a guided tour of Mount Etna.

Presentations about the Silurian ostracods are expected.

Important dates:

Deadline for Early-bird registration, field-trip registration, and payment: May 30th 2024

Obituary: Zhou Zhiyi (1939-2022)

It is with great sadness that we report the passing away of Professor Zhou Zhiyi on December 29th 2022 at the age of 83, after long suffering from Parkinsonism. He was a trilobite palaeontologist and geologist with a high national and international reputation.



Zhou Zhiyi was born in Shanghai and was educated locally. He obtained his BSc in Palaeontology at the Nanjing University. Then he became a graduate student studying Ordovician trilobites in the Nanjing Institute of Geology and Palaeontology, the Chinese Academy of Sciences. Afterwards, he joined the institute, where he devoted his whole research life.

In brief, Zhou Zhiyi worked on Cambrian trilobites and stratigraphy in Central and Southwest China in mid 1960s – mid 1970s; on the stratigraphy of the Cambrian-Ordovician boundary in North China and south Northeast China and related trilobites in mid 1970s – mid 1980s; on Ordovician trilobites, stratigraphy and tectonics in Northwest China in 1986 – 1997; on Ordovician trilobite biofacies in South China in 1998 – 2002; and on the revision of Chinese trilobite genera in 2006 – 2009.

Zhou Zhiyi was an energetic and passionate trilobite palaeontologist, publishing more than 170 important monographs and papers, and his enthusiasm inspired all those who worked closely with him. He collaborated with almost every Chinese expert on Ordovician trilobites, and

published joint papers in English, thereby helping Chinese trilobite research to spread worldwide.

Zhou Zhiyi collaborated with trilobite experts from many countries as well. During 1983.03 – 1985.06, he went to the UK as a visiting scholar at the Natural History Museum (London) with R. A. Fortey and R. P. Tripp, at the University of Wales with W. T. Dean and at the University of Cambridge with H. B. Whittington, respectively. During 1993.03-09, he spent a half year as a visiting scholar in Australia, at the University of Sydney with B. D. Webby and at the Western Australian Museum with K. J. McNamara, respectively. His rigorous attitude towards trilobite research and humorous attitude towards life resulted in a long-term friendship with these experts.

Zhou Zhiyi made a significant contribution to Ordovician trilobite systematics and the geology evolution in Tarim, Xinjiang, China. He and his colleagues went to Xinjiang several times to do detailed field investigations and collected abundant Ordovician trilobite specimens from the succession. He described the trilobites and comprehensively debated the synonyms, which provided a substantial basis for future research. As editor-in-chief, he and his colleagues published several monographs on the geologic evolution in Northwest China, which greatly enhanced our understanding of the geology of this area.

He made a high-resolution analysis for the first time of the Ordovician trilobite faunal zones in South China, and subsequently discussed the environmental changes and the pattern of trilobite macroevolution. This research acted as an exemplar for younger generations of trilobite workers. His monograph (with Richard A. Fortey) on Ordovician trilobites from North and Northeast China is of the most value among the few publications on the Ordovician trilobites in this area. His work on Ordovician stratigraphy in Tangshan, Hebei Province, China, was selected as a case study in a classic university stratigraphy textbook. The monograph “*Trilobite Record of China*” (2008) critically revised all the trilobite genera occurring in the Palaeozoic rocks of China, providing the most complete and consistent dataset available for Chinese trilobites, and is the definitive handbook for all those palaeontologist and geologist interested in Chinese trilobites.

Unfortunately, Zhou Zhiyi got Parkinsonism shortly after his retirement in 2009 and his health progressively deteriorated. But he continued working on the taxonomy of Chinese Ordovician trilobites until Parkinsonism halted his beloved trilobite research in 2018. He published 2 monographs and 10 papers during this time.

Zhou Zhiyi’s contribution to science won him high recognition. He was awarded the Prize of Ho Leung Ho Lee Foundation in 2009; the 3rd Prize of National Natural Science in 1987; the 2nd Prize of Science and Technology Progress of the CAS in 1988; the 1st Prize of National Natural Science of the CAS in 1992; the 3rd Prize of National Natural Science of the CAS in 1999; the 3rd Prize of Science and Technology Progress of the Jiangsu Province in 2003; the 1st Prize of Science and Technology Progress of the Jiangsu Province in 2009.

By Yuan Wenwei and Zhang Yunbai (NIGPAS)

Obituary: Juozas Paškevičius (1924-2023)

Prof. habil. Dr. Juozas Paškevičius passed away on Sunday 26th March 2023. He is known and will be remembered as a researcher of Ordovician and Silurian stratigraphy, palaeogeography of Lithuania and adjacent countries. His interests were systematics, biostratigraphy, ecology and evolution of graptolite and brachiopod faunas. Juozas Paškevičius started working at the Department of Geology and Mineralogy of Vilnius University in 1953 and was the head of the department (1973–1991). He is an author of more than a hundred scientific articles, monographs and other books and the main organizer of an international graptolite conference (Graptolites in the Earth History) at Vilnius University in 1988. He was still active, often visited the department, took care of his garden, and drove the car until his death.



J. Paškevičius in his office at the Department of Geology and Mineralogy of Vilnius University 2004.

The graptolite community will certainly miss him for his numerous contributions on graptolites during his long life. He is the author of a number of genus and species level graptolite taxa as can be seen in his latest overview of the Ordovician and Silurian graptolites of Lithuania, in which he provided a very useful overview of the current knowledge of these graptolite faunas for the international graptolite community.

P.S. If you never met him, you may find him online talking about graptolite research and other things:

<https://www.lrt.lt/mediateka/irasas/2000125699/pradek-nuo-saves-prof-juozas-paskevicius-gyvenima-paskyres-geologijai-isejes-i-pensija-pradejo-rasyti-knygas>

By Sigitas Radzevičius and Jörg Maletz

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Obituary: Tarmo Kiipli (1951–2023)

On November 19th 2023, Estonian geologists and friends of the Ordovician and Silurian systems lost a good colleague and productive scientist, Tarmo Kiipli.



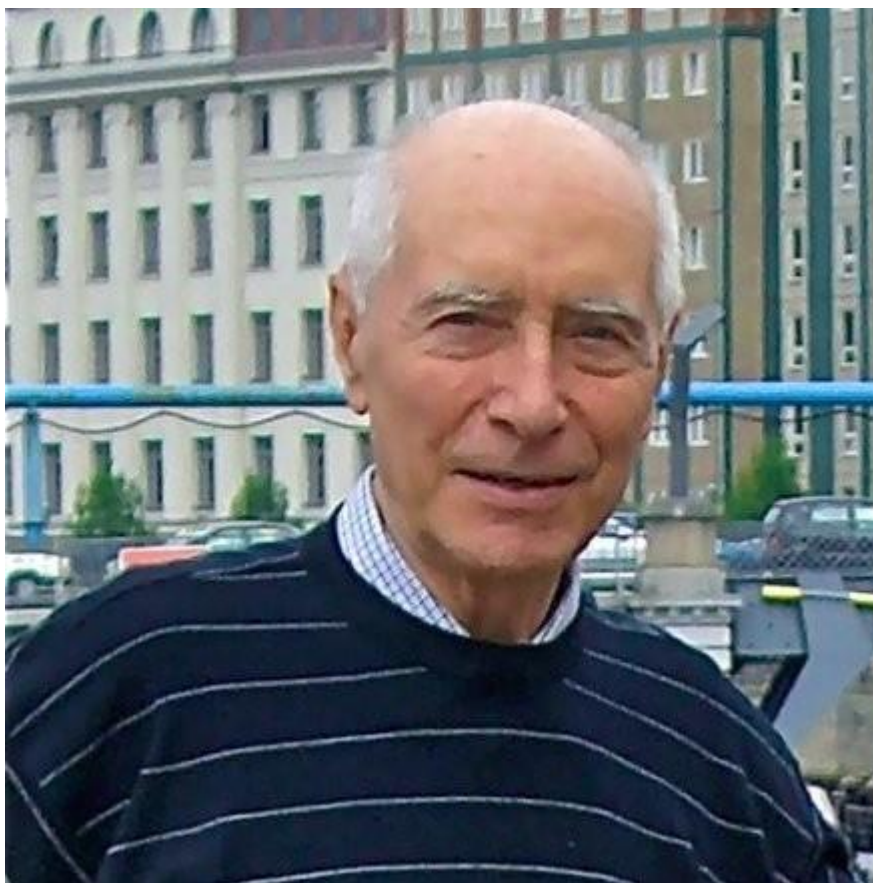
After finishing geology studies at the University of Tartu in 1975, Tarmo worked on various topics at the Estonian Academy of Sciences, Geological Survey of Estonia, and Tallinn University of Technology. He was involved in marine geology, environmental geochemistry and economic geology, but his main scientific interests were always related to Ordovician-Silurian geochemistry, paleoenvironments and traces of volcanism within the Baltoscandian sedimentary succession. Tarmo studied dolomitisation processes of Estonian bedrocks and co-authored some of the pioneering works on stable carbon isotopes in the Baltic region. However, since the late 1990s, his main passion were the K-bentonites. The series of more than 70 publications on volcanism and Baltic Ordovician and Silurian K-bentonites continued until his last paper in 2022. He used geochemical and mineralogical fingerprinting of individual ash layers based on pyroclastic sanidine, as well as trace elements. Additionally, he created a system for referring to individual bentonite layers that had not been given formal names. Tarmo's research also contributed to a better understanding of the diagenesis of volcanic ash in marine settings as well as reconstructing environmental conditions in different parts of the Ordovician-Silurian Baltic paleobasin. The bentonite-based chronostratigraphic framework has helped to improve the regional correlations and cross-check biostratigraphic data, and the invaluable bentonite geochemistry database and sample collection continue to serve researchers today. The complete list of Tarmo Kiipli's publications can be found online at <https://kirjandus.geoloogia.info/en/library/118>

During his career, Tarmo supervised many undergraduate theses and several PhD projects and was also a valued teacher for geology and mining students at Tallinn University of Technology. I was lucky to publish my first scientific paper together with Tarmo Kiipli in 1997, discussing the mineralogy and micropalaeontology of the Ordovician Kinnekulle K-bentonite in a unique subsurface outcrop in the outskirts of Tallinn that we had explored together a year earlier. Since then, I have known Tarmo as an open-minded scientist, always seeking answers and fascinated by Earth's history. His contributions to Ordovician and Silurian research will remain important in Estonia and beyond.

By Olle Hints, together with colleagues from Estonia

Obituary: Enrico (Giulio) Serpagli (1936–2023)

Enrico “Giulio” Serpagli died 29th December 2023, aged 87. He was an outstanding palaeontologist, who devoted a substantial part of his professional life to marine faunas and biostratigraphy of the Ordovician to Lower Devonian world.



Enrico was born in 1936 in Borgo Val di Taro, Parma, in the Apennine mountains of northern Italy. And just on those mountains he asked to be buried. His interest in geology led him to university studies in Modena where he graduated in Geology in 1960. In 1962 he was appointed Assistant Professor at the Institute of Palaeontology of the University of Modena. In 1975 he achieved a full-professor status in Palaeontology at the University of Turin and, two years later, he became Professor of Palaeontology at the University of Modena. Upon the retirement of Eugenia Montanaro Gallitelli in 1977, Serpagli was elected to the directorship of the Institute of Palaeontology and remained in this office, with some breaks, until 1995. Under his guide the Institute developed as one of the most active palaeontological research centers in Italy and also gained a considerable international reputation. A large assemblage of Lower Palaeozoic faunas (conodonts, cephalopods, graptolites, bivalves, brachiopods, trilobites, echinoderms, ostracodes, etc.) was at the same time deposited in the collections of the Institute of Modena, thanks to a fruitful collaboration of Enrico Serpagli with major specialists of the diverse fossil groups.

In the early years of his career, Enrico Serpagli mainly focused on the Cenozoic of the northern Apennines, but already in 1965 he underwent some research training on conodonts in the laboratory of M. Lindström, University of Lund. A postdoctoral stay at the Department of Geology, Ohio State University in Columbus, Ohio (1971-1972), with Walter Sweet and Stig

Bergström, represented another milestone that influenced further scientific specialization of the young micropalaeontologist. Since then, early Palaeozoic conodonts became his principal field of research.

Enrico Serpagli is the author or co-author of over 140 publications, mostly related to various Ordovician to Lower Devonian topics. The last one, regarding ichnology, was published in 2023 in the Proceedings of the National Academy of Sciences (PNAS). A list of those related to Silurian is provided below. In 1965 he published his first report on Late Ordovician and Silurian conodonts of the Carnic Alps and, in 1967, the first paper on Silurian conodonts from southern Sardinia. In the seventies he approached systematic conodont research. Since then, he worked, for the most part, on conodont taxonomy and biostratigraphy though some of his papers, largely those co-authored with students and fellow workers, were devoted also to nautiloid cephalopods, graptolites, bivalves, conularids, scolecodonts, algae, ostracodes, problematics and ichnofossils. His extensive collaboration with universities and research institutions in Italy, and abroad (*e.g.*, Argentina, Germany, Spain, Ireland, United Kingdom, Czech Republic) gave the Modena research team working on the Silurian System of Sardinia an international dimension. Enrico was an enthusiastic field course leader, and he led many field-excursions in Sardinia with major Silurian scientists. In 1998 Serpagli organised the Seventh European Conodont Symposium (ECOS VII) in Italy and successful pre-symposium excursion across the Palaeozoic formations of southern Sardinia.

Throughout his career Enrico Serpagli was a conscientious and well-liked teacher. He took great care in the preparation and delivery of his lectures, and prepared a text on paleontology that has been for a long time the reference for many graduate students.

For many years, Enrico Serpagli was the Editor of the *Bollettino della Società Paleontologica Italiana*. He managed the journal's transformation to an increasingly internationally respected, multidisciplinary journal. In 1990 he became a titular member of the International Subcommittee on Silurian Stratigraphy.

Since 2006 Enrico Serpagli retired from his full-time teaching and research duties, and acquired more time for his long-time passion for photography to accompany his continuing palaeontological investigations. He became a respected artistic photographer, and several public exhibitions of his sensitive artistic photographs were organized in various Italian cities. In 2007 a book of art photographs *Il senso dell'Ordine* (Sense of Order) came to light.

Enrico Serpagli was a world authority on conodont biostratigraphy and taxonomy. For conodont people, his monographs represent true milestones. In all his papers it is greatly appreciated the exactness of the scientific presentation of the facts and of the problems, and the solidity of the conclusions. In addition, he has been celebrated and respected for his great professionalism and usual kind ways. He provided as well a substantial contribution to the present, advanced state of knowledge on Silurian sedimentary successions and fossil faunas of Sardinia.

He leaves behind a large academic family in addition to his wife Giovanna, their children Federica and Paolo, their partners and his seven grandchildren, to all of whom he was devoted. His loss is felt keenly by all.

By Carlo Corradini, Annalisa Ferretti and Petr Štorch

Silurian taxa established by Enrico Serpagli

Genus *Walliserodus* Serpagli, 1967 - conodont

Metarmenoceras? meneghini Serpagli & Gnoli, 1977 - cephalopod

Galtoceras? sardous Serpagli & Gnoli, 1977 - cephalopod

Family Normalograptidae Storch & Serpagli, 1993

Neodiplograptus lanceolatus Storch & Serpagli, 1993 - graptolite

Sudburigraptus cortoghianensis (Storch & Serpagli, 1993) - graptolite

Streptograptus loydelli Storch & Serpagli, 1993- graptolite

Saetograptus jaegeri Rickards, Holland & Serpagli, 1995- graptolite

Kockelella maennicki Serpagli & Corradini, 1998 - conodont

Kockelella variabilis ichnusae Serpagli & Corradini, 1998- conodont

Kockelella ortus sardoa Serpagli & Corradini, 1999- conodont

Eurytholia bohémica Ferretti, Serpagli & Štorch, 2006 - problematica

Fossil taxa dedicated to Enrico Serpagli

Genus *Serpaglioceras* Gnoli & Serventi, 2008 – cephalopod, Silurian

Xenascus serpaglii (D. Corradini, 1973) – dinocyst, Cretaceous

Panderodus serpaglii Burrett, 1978 – conodont, Ordovician

Juanognathus serpaglii Stouge, 1984 – conodont, Ordovician

Polygnathus serpaglii Corradini, 1998 – conodont, Devonian

Sphaerochitina serpaglii Pittau, 2000 – chitinozoan, Silurian

Dedzetina serpaglii Villas et al., 2002 - brachiopod, Ordovician

Reticuloplectograptus serpaglii Kozłowska, Bates & Piras 2010 – graptolite, Silurian

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Rimma Sobolevskaya (1929–2023)

We regret to announce that the graptolite specialist Rimma Sobolevskaya passed away on June 1st 2023, at the age of 94 years.

SILURIAN RESEARCH 2023
NEWS FROM THE MEMBERS

(in alphabetical order)

Fernando Alvarez

Departamento de Geología, Universidad de Oviedo, Oviedo, Spain.

E-mail: fernando@geol.uniovi.es

My research activities continue and I am hoping that this year will result in new publications.

Alyssa M. Bancroft

Iowa Geological Survey, IIHR – Hydrosience & Engineering, University of Iowa, 123 North Capitol Street, 300 Trowbridge Hall, Iowa City, Iowa USA 52242

Tel.: +1(231)881-0533; Email: alyssa-bancroft@uiowa.edu

In 2023 I have been mapping Silurian strata in Iowa (Iowa Geological Survey) associated with USGS STATEMAP Projects. Working with undergraduate and graduate students in the Department of Earth and Environmental Sciences (University of Iowa) on a variety of chronostratigraphic projects, some related to the Silurian. Furthermore, I have also had the pleasure of working with graduate students at other institutions on the Silurian.

Publication: (Stolfus *et al.* 2023)

Chris Barnes

School of Earth and Ocean Sciences, University of Victoria, P.O. Box 1700, STN CSC, Victoria, BC V8W 2Y2, Canada.

Tel: +12509208382; E-mail: crbarnes@uvic.ca

Chris Barnes is slowly completing Silurian conodont paleontology / stratigraphy / isotope geochemistry research. The main current projects being: a) Ordovician and Silurian conodont biostratigraphy, bioevents, eustasy, and thermal maturation (with Shunxin Zhang); and b) Early Silurian microvertebrate assemblages from the Cape Phillips Formation, Sheills Peninsula, Devon Island, Nunavut, Canada (with Susan Turner (Queensland Museum) and David Sprague (Calgary)).

James E. Barrick

Department of Geosciences, Texas Tech University, Lubbock TX 79409-1053, USA.

Tel: +806 441-9185; E-mail: jim.barrick@ttu.edu

I am still working on some Silurian conodont faunas from the Southern Midcontinent USA.

Carlton E. Brett

Department of Geosciences, University of Cincinnati, Cincinnati, OH 45221-0013. USA.

Tel: 001 513 556-4556; Fax: 001 513 556-6931; E-mail: carlton.brett@uc.edu

Although I was heavily involved in research on the Devonian of New York associated with the SDS meeting in summer 2023, my students and I have continued substantial research in the Ordovician-Silurian boundary strata of eastern North America.

Research on Ordovician-Silurian Boundary Sequence and Chemostratigraphy:

PhD student, Cole Farnam and I published a detailed review and update of the upper Hirnantian Whirlpool-Manitoulin succession in Ontario, Canada (Farnam and Brett 2024). We provide substantial new isotopic evidence supporting the results of Bergström et al. (2011, Canadian Journal of Earth Sciences) that the Whirlpool Sandstone and correlative Manitoulin Formation are latest Hirnantian to earliest Rhuddanian in age. In addition, we document and correlate a series of three unconformities in the upper Hirnantian and Rhuddanian and discuss implications for stratigraphic sequences and relative sea level.

We are now completing two papers on the Ordovician-Silurian boundary transition in eastern North America and on a new stratigraphic lentil and exceptionally preserved late Hirnantian fauna (“Centerville Lagerstätte”) from a newly discovered site in southern Indiana. We are collaborating with Dr. Jin Jisuo, (University of Western Ontario), who is describing the brachiopods, and Dr. Robert Elias (University of Manitoba) who is studying the rugose corals. We also intend to work with the discoverer of this fossiliferous locality, Mr. Lincoln Shoemaker, on a new very well-preserved echinoderm fauna including at least four species of crinoids, as well as ophiuroids and an asteroid. The faunal assemblage is completely different from immediately underlying Cincinnati (uppermost Katian) and similar to the Edgewood and early Silurian faunas, which persist upward for some 5 million years.

We have documented additional localities, which support the hypothesis that these units are preserved in a Hirnantian paleovalley in a limited region of eastern Indiana. In addition, a thin succession at one locality provides evidence for preservation of the lowstand to initial transgressive deposits associated with initial filling of the paleovalley in response to initial sea level rise in post-glacial latest Hirnantian (but still within the falling limb of the HICE carbon isotopic excursion). Hence, this unique occurrence will provide important insights into the post-extinction recovery in this critical interval immediately following the second phase of the Late Ordovician mass extinction (LOME). These studies form the basis of a dissertation by Cole Farnam to be completed in spring 2024.

The same outcrop sections also have provided important new details on the Ordovician-Silurian boundary interval (Belfast Member) and lowest Silurian Rhuddanian Brassfield Formation through Aeronian miss-named “Golden Brassfield” Formation (actually Aeronian Age and correlative with Oldham of Kentucky), which overlies a major regional unconformity that locally cuts out the Brassfield, Belfast, and “Centerville” intervals. We find the three latest Ordovician to Llandovery unconformities to be correlative throughout the Cincinnati Arch region and beyond; these appear to be coextensive with sequence boundaries previously established in the Appalachian Basin in New York, Ontario and Pennsylvania (Brett et al. 1997; NY State Museum Bulletin; Brett and Ray, 2005, Australia National Museum Victoria Bulletin). Thus, our research is again providing insights into the regional relative and probable eustatic sea level events.

Publications: (Brett 2023; Scott *et al.* 2023; Farnam and Brett 2024)

Frank R. Brunton

Ontario Geological Survey, Ministry of Mines, Sudbury, Ontario, Canada, P3B 6B5, Canada. Adjunct, Dept of Earth Sciences, Western University, Biological & Geological Sciences Building, 1151 Richmond St. N., London, Ontario, Canada N6A 5B7.

Tel.: +1 705 920 3775; E-mail: frank.brunton@ontario.ca; fbrunton@uwo.ca

I have largely focused on Cambrian and Ordovician during the past few years, but I am wrapping up a large joint-project with the Geological Survey of Canada to compile porosity and permeability data from the Lockport Group dolostones in the deeper subsurface of SW Ontario. I have worked with Dr Shuo Sun to write up this data over the past three years (Sun *et al.* 2023a, b). We have a second large report that is undergoing final edits/corrections, which will likely come out in early 2024. In addition, I am compiling data on Salina Group salt deposits and caverns to assess the viability of storing hydrogen and compressed air in bedded salts in southwestern Ontario.

Publications: (Sun *et al.* 2023a, b)

Carole J. Burrow

Geosciences, Queensland Museum, 122 Gerler Rd, Hendra 4011, Qld, Australia.

Tel.: 61 7 33916626; E-mail: carole.burrow@gmail.com

2023 saw publication of a long-term project on fossil fish microremains collected by Mike Murphy from the Silurian-Devonian boundary beds of the marine sequence in the Roberts Mountains Formation, exposed in the Birch Creek II section, Nevada (Burrow et al. 2023). We consider this productive, continuous late Silurian to earliest Devonian section ranging from the Přidolí into the Lochkovian is probably the most informative section, vertebrate-wise, known outside the Baltic region.

Publication: (Burrow *et al.* 2023)

Zhongyang Chen

Department of Micropalaeontology, Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences (CAS), 39 East Beijing Road, Nanjing 210008, China.

Tel: +86-25-83284304; E-mail: zychen@nigpas.ac.cn

I have been working on the Silurian conodonts and stratigraphy. In 2023, I completed a review on the Silurian stratigraphy, biotas and palaeogeographical evolution of the Qinghai-Tibetan Plateau and its surrounding areas. This review is written in Chinese and English and will be published by Science China Earth Sciences. Besides, I went to Lille to attend the strati 2023 in July and gave an oral presentation entitled “Silurian conodonts from western Yunnan and southern Xizang (Tibet), China” (<https://strati2023.sciencesconf.org/455910/document>).

Publication: (Chen *et al.* 2023c)

Carlo Corradini

Dipartimento di Matematica e Geoscienze - Università di Trieste, Via Weiss 2 - 34128 Trieste, Italy.

Tel.: +39 040 5582033; E-mail: ccorradini@units.it

My work on Silurian conodonts and biostratigraphy continues. Most of the researches were devoted to the Carnic Alps, where I am investigating the Pre-Variscan Sequence (Upper Ordovician-lower Carboniferous). Studies on Silurian and Lower Devonian mainly focus on "Orthoceras limestones" and calcareous levels within black shales sequences, both studying new sections and updating data from classical localities. Among other researches, studies on astrochronology (with M. Arts and others; see The imprint of Astronomical cycles in the Ludlow part of the type-Silurian Cellon section in the Carnic Alps, Austria, p. 294-295. https://strati2023.sciencesconf.org/data/pages/book_strati2023_en_vd.pdf) and on trace fossils (with A. Baucon and others) of the Cellon section, and on an abundant and diverse microfauna from the Llandovery of Monte Cocco area are in progress. A review of the sections in the La Valute area was published.

Taxonomical studies on late Silurian conodonts are in progress (with M.G. Corrigan). The possible relationships between the conodont genus *Pseudooneotodus* and the problematic *Eurytolia* has been investigated (with A. Ferretti and others). The study of conodonts from two sections in Turkey is in progress (with F. Luppold and others; see Pridoli conodont and ostracod biostratigraphy from Hazro, SE Anatolia, Turkey p.307-308. https://strati2023.sciencesconf.org/data/pages/book_strati2023_en_vd.pdf).

Publications: (Corradini and Simonetto 2023; Corradini *et al.* 2023a, b; Ferretti *et al.* 2023)

Maria G. Corriga

Dipartimento di Matematica e Geoscienze - Università di Trieste, Via Weiss 2 - 34128 Trieste, Italy.

E-mail: corrigamariagiovanna@gmail.com

I am working on conodont taxonomy and biostratigraphy across the Silurian-Devonian boundary mainly in the Carnic Alps and other North Gondwana regions. In the Carnic Alps, researches mainly focus on the Silurian and Lower Devonian in various sectors of the chain. In Sardinia a revision of the conodont fauna of the classical Mason Porcus section is in progress. A project on the Silurian of Tuscany has just started (with C. Corradini, A. Spina and others).

At STRATI 2023 I contributed to a presentation titled “Pridoli conodont and ostracod biostratigraphy from Hazro, SE Anatolia, Turkey” p. 307-308 (https://strati2023.sciencesconf.org/data/pages/book_strati2023_en_vd.pdf).

Publications: (Corradini *et al.* 2023a, b)

Bradley (Brad) D. Cramer

Department of Earth and Environmental Sciences, 115 Trowbridge Hall, University of Iowa, Iowa City, Iowa 52242, USA.

E-mail: bradley-cramer@uiowa.edu

Work continues on a range of Silurian projects including new radioisotopic dates from the Altajme drill core, a new proposal was just submitted to support research on a new drill core from Gotland in collaboration with Mikael Calner (Lund), and new chemostratigraphic data from the Altajme drill core is also being generated. During 2023, the sulfur isotope data from the Altajme drill core was published (Stolfus *et al.* 2023), and a paper modelling the Phanerozoic evolution of atmospheric oxygen was also produced (Mills *et al.* 2023). Hopefully several of these projects will be submitted during 2024!

Publications: (Mills *et al.* 2023; Stolfus *et al.* 2023)

G. Susana de la Puente

CITAAC, CONICET – CIGPat, Departamento de Geología y Petróleo, Facultad de Ingeniería, Universidad Nacional del Comahue, Buenos Aires 1400, Q8300IBX Neuquén, Argentina.

E-mail: sudelapuente@gmail.com / susana.delapuente@comahue-conicet.gob.ar

I continue to work on chitinozoans and stratigraphy of Paleozoic basins from Argentina, including the northwest of Argentina (Central Andean Basin), Precordillera, Patagonia and

Tandilia regions, in collaboration with paleontologists and sedimentologists. In this period, results on Ordovician-early Silurian chitinozoans from the Central Andean Basin have been published. I have advised two undergraduate students, and started with two PhD students on palynological topics. I was in charge of organizing the postgraduate courses on Palynofacies, which was taught by specialists Marcelo Martinez and Daniela Olivera (Argentine), and Ichnofacies, which was taught by specialists Mariano Arregui, Diego Muñoz, Mariano Verde and collaborators (Argentine and Uruguay), for the Doctorate in Geosciences (Doctorado en Geociencias) at the university.

Publication (de la Puente and Astini 2023)

Annalisa Ferretti

Dipartimento di Scienze Chimiche e Geologiche, Università degli Studi di Modena e Reggio Emilia, via Campi 103, 41125 Modena, Italy.

E-mail: ferretti@unimore.it

My Silurian research continues to be focused on the biosedimentology and paleoecology mostly of the Austrian Carnic Alps.

Ferretti *et al.* (2023) examine possible similarities between the conodont genus *Pseudooneotodus* (Drygant, 1974), widely distributed from the Middle Ordovician to the Early Devonian throughout the world, and *Eurytholia* (Sutton et al., 2001), an *incertae sedis* genus of enigmatic plates with a phosphate composition and a similar stratigraphic distribution. Through an investigation that combines the use of optical and electron microscopy (including focused ion beam scanning electron microscopy), X-ray microdiffraction, and trace element (HFSE) analysis by mass spectrometry, differences between these fossil groups were observed and compared with data resulting from typical conodonts (*Dapsilodus obliquicostatus*, *Panderodus unicostatus* and *Wurmiella excavata*) recovered from the same samples.

The same analytical protocol was applied by Malferrari et al. (2024) to investigate the Rare Earth Element (REE) and other High-Field-Strength Element (HFSE) composition of euhedral crystals formed on the surface of conodont elements compared with that of crystal-free surfaces in order to decipher any possible relation to fossilization/diagenesis. The experimental results indicated a substantial contribution of diagenetic imprinting for all the analyzed material, although more evident on euhedral crystals that are significantly enriched in middle and, subordinately, in heavy REE with respect to smooth surfaces, supporting the hypothesis that the neoformed euhedral crystals grew also by depleting the pristine bioapatite of the conodont elements. Nevertheless, the occurrence of two types of apatite cannot be ruled out: euhedral crystals as neoformed products of diagenetic processes and smooth surfaces as remains of the pristine conodont bioapatite after diagenesis.

Publications: (Ferretti *et al.* 2023; Malferrari *et al.* 2024)

Mansoureh Ghobadi Pour

Department of Geology, Faculty of Sciences, Golestan University, Gorgan 49138-15739, Iran;
Department of Natural Sciences, National Museum Cardiff, Cathays Park, Cardiff, CF19 2NP,
UK.

E-mail: mghobadipour@yahoo.co.uk

I continue my work on the Aeronian trilobites and Ludlow – Pridoli brachiopod faunas of east-central Iran (Tabas region) in cooperation with Robert Owens, Leonid Popov and Vachik Hairapetian.

Publications: (Ghobadi Pour and Popov 2023; Ghobadi Pour *et al.* 2023)

Jessica Carolina Gómez

CIGEOBIO-INGEO, CCT-SAN JUAN, Ignacio de la Roza Avenue and Meglioli Street, 5400 Rivadavia, San Juan, Argentina.

Tel.: 54 358 4014175; E-mail: jcgomez@conicet.gov.ar ; jessicagomez21@gmail.com

In 2023, I investigated the Ordovician-Silurian Transition in San Juan Precordillera, Argentina. Now, I'm conducting a post-doctoral project studying palinostratigraphy and palinofacial in the same area with CONICET, under the guidance of Mercedes di Pasquo (CICYTTP –CONICET, ENTRE RÍOS-UADER) and Jimena Trotteyn (CIGEOBIO-CONICET, San Juan-UNSJ). Our objective is to identify floristic changes during the Hirnantian-Llandovery succession and establish a Biostratigraphic scheme. We'll also compare palynomorph associations and correlate them with the biostratigraphic schemes of the Precordillera.

I've worked on projects related to the Ordovician-Silurian boundary. One was directed by Silvio Peralta in Argentina (High-Resolution Stratigraphy and Events in the Ordovician-Silurian Transition of San Juan Precordillera, Argentina: Correlations and Significance in the Evolution of the Western Margin of Gondwana. Part 2) and the other by Alcides Sial in Brazil (Ni and Hg Isotope Chemostratigraphy as Proxies for Coeval Volcanism in the Cretaceous-Paleogene, Permian-Triassic and Ordovician-Silurian Transitions). Our findings will contribute to the reconstruction of Gondwana's paleogeography, paleoenvironment, and paleobiogeography.

In 2023 we published an analysis of the timeline of events in the Ordovician-Silurian (Hirnantian-early Llandovery) Transition based on stratigraphic relationships, diagnostic deposits, sedimentary, paleobiologic, and isotope data.

Publications: (Gómez *et al.* 2023, In press)

Volodymyr Grytsenko

National Natural History Museum NAS of Ukraine, 15 Bogdan Khmelnytsky str., Kyiv, Ukraine.

Tel.: +38 066-317- 45-13; E-mail: favosites@ukr.net

In 2023 I have been busy with a revision of my collections of Cnidarians (near 6000 thin sections and a huge number of samples) from outcrops and cores of boreholes.

We have been unable to undertake any academic meetings related to the Silurian System in 2023, because of the war (there is a danger of rocket explosions over all our country). There were some explosions near Kyiv University (Main building and other places, for example, in the campus and some buildings of departments on the outskirts of the city) and not far from the National Natural History Museum NAS, resulting in damaged windows. Similarly, because of the war we have no plans for meetings in 2024.

We expect to organize (after the war) a field excursion to the Podillian Silurian succession. This will take place along the Dniester River banks and in association with some National Reserves: “Podolian Tovtry”, “Kanyon of Dniester River” and “Khotynsky”. On these territories are notable outcrops of Silurian and Lower Devonian successions, and a Parastratotype of the S/D boundary.

Publication: (Grytsenko and Rudenko 2023; Tsegelnyk and Grytsenko 2023)

Juan Carlos Gutiérrez-Marco

Instituto de Geociencias (CSIC-UCM) and Departamento GEODESPAL, Facultad de Ciencias Geológicas, José Antonio Novais 12-pl 2, 28040 Madrid, Spain.

E-mail: jcgrapto@ucm.es

My Silurian research continues to be focused on the graptolite biostratigraphy in different zones of the Iberian Massif (a general paper on the Spanish part of the southern Central Iberian Zone is in preparation with Saturnino Lorenzo), and also on diverse collaborations with other specialists (Vincent Perrier, ostracods; Paolo Serventi, cephalopods; Samuel Zamora, crinoids) in order to describe some other Spanish faunas.

During 2023, with David K. Loydell (Portsmouth), Petr Štorch (Prague) and Jíří Frýda (Prague) we have completed the formal proposal of El Pintado 1 section for a replacement Global Stratotype Section and Point (GSSP) of the Telychian Stage, in an internal report to the SSS of 22 pp., which finally was approved by the ICS-IUGS in January 2024.

Publications: (Loydell *et al.* 2023; Perrier *et al.* 2023; Zamora and Gutiérrez-Marco 2023)

Bing Huang

Key Laboratory of Palaeobiology and Petroleum Stratigraphy, Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences, Nanjing 210008, China.

Tel.: +86 25 83282189; E-mail: bhuang@nigpas.ac.cn or dr_huang@163.com

In 2023, I conducted four field excursions across both South and North China, focusing primarily on lower Silurian strata. Throughout these excursions, I amassed a substantial collection of brachiopod fossils, particularly specimens from Yunnan, South China. This collection serves as a valuable supplement to the information about biotic recovery after the LOME acquisition last year. Additionally, I actively participated in academic conferences, including the 4th ICS Congress in Lilli and the 2nd APC (Asian Palaeontological Congress) in Tokyo. At these events, I delivered presentations that showed my newly published paper.

Throughout the year, my research efforts on Silurian brachiopods continued in collaboration with both my students and international colleagues. A manuscript detailing the fauna discovered in Yunnan, South China, has been submitted, with the revision also recently submitted. Another collaborative project focusing on brachiopods from the Oslo region is currently under revision.

In my role as the deputy editor-in-chief, I managed and reviewed many manuscripts for *Acta Palaeontologica Sinica*. I also reviewed five manuscripts for various international journals. As the web manager of ISSS, I have updated every page on the website. This includes the new Silurian Time Scale, details about the subcommission elected, news and meetings, as well as the updated corresponding member list and newly published materials.

This year, I took charge of a post-graduate course alongside two colleagues, dedicating at least two months to preparing 12 class hours of lessons. Under my guidance, my student Chen Di successfully graduated and obtained a Ph.D., securing employment in an oil company. Lastly, I am deeply honored to have received the Koren' Award from the ISSS. This recognition serves as a motivating force, inspiring me to redouble my efforts and contribute more to the study of Silurian.

Publications: (Chen *et al.* 2023b; Huang 2023; Huang *et al.* 2023; Rong and Huang 2023; Song *et al.* 2023)

Emilia Jarochovska

Department of Earth Sciences, Utrecht University, Vening Meineszgebouw A, room 3.62, Winthontlaan 30C, 3526 KV Utrecht, The Netherlands.

E-mail: e.b.jarochovska@uu.nl

I have continued my research (with David Ray and others) into the transgression of the Midland Platform (UK) during Telychian and Sheinwoodian times. Here we have established a regional sequence stratigraphic framework, and have been attempting to establish the absolute magnitude of relative and eustatic sea-level change (via analysis of paleo-shorelines,

sedimentology, and benthic assemblages). It is hope that this research will be published in 2024.

Markes E. Johnson

Department of Geosciences, Williams College, Wachenheim Science Center, 18 Hoxey Street, Williamstown, MA 01267, USA.

Tel.: +1 413 597 2329; E-mail: mjohnson@williams.edu

During 2023, my research has focused upon the completion of a new book titled *Islands in Deep Time - Ancient Landscapes Lost and Found* (Columbia University Press, New York, 312 p. ISBN 978-0-231-21219-9 (paperback)). Chapters 2 to 5 cover paleoislands of Cambrian, Ordovician, Silurian, and Devonian age that are described as "fossil" monadnocks. The first chapter covers the iconic Mount Monadnock that stands as the geographical term for erosion-resistant "monadnocks" all around the world. Like Mount Monadnock, itself, many of the Paleozoic "islands" are formed by quartzite, but surrounded by sedimentary rocks. The Silurian chapter reviews the story of "Bater Island" in China's Inner Mongolia, described earlier in several papers co-authored with Prof. Rong Jia-yu and his colleagues.

In addition, field work was conducted in the Oslo region of southern Norway in July on Ordovician-Silurian strata in support of B. Gudveig Baarli's ongoing study of brachiopods.

Publication: (Johnson 2023)

Stephen Kershaw

Retired but with an honorary position at Brunel University, UK (please contact me by e-mail).

E-mail: Stephen.kershaw@brunel.ac.uk

During 2023 I have:

Contributed to study on carbon-isotope stratigraphy in Rhuddanian to Aeronian strata in South China, led by Shenyang Yu, Qufu University, Shandong.

Visited Gotland in August-September 2023 for focussed projects on stromatoporoids in unusual environments, with specific focus on the Tofta Formation (lower Wenlock) and uppermost Halla Formation (upper Wenlock), with Juwan Jeon. Stromatoporoids in these two formations formed in marginal marine environment, but knowledge of their taxa, growth forms and palaeontology are underdeveloped. So the aim is to develop a deeper understanding of these assemblages to better aid analysis of controls of growth and distribution of stromatoporoids in general.

Developed a study on extinctions in stromatoporoids as a review work with Juwan Jeon, currently in press in *Earth-Science Reviews*, for 2024. This study addresses stromatoporoid-grade sponges through geological time, from earliest appearance in Early-to-Mid Ordovician,

through to the present day. The study emphasises the non-phyletic nature of the stromatoporoid skeleton that has likely continued through Earth history via iterative evolution of the stromatoporoid-grade architecture. The study also compares stromatoporoids with other hypercalcified sponge grades in geological time. Stromatoporoids formed highly abundant faunas when conditions were optimal, and they were subject to extinction processes, yet the mechanism of hypercalcification to produce stromatoporoids repeated itself through history. A key point is that the traditional view that Palaeozoic stromatoporoids died out at the end of the Devonian period is an oversimplification of a more complex relationship with the Earth's environments and changes.

Publications: (Kershaw 2023a, b; Kershaw and Jeon 2023, 2024; Yao *et al.* 2023; Yu *et al.* 2024)

Anna Kozłowska

Institute of Paleobiology PAS, ul. Twarda 51/55, 00-818 Warszawa, Poland.

E-mail: akd@twarda.pan.pl

I have been continuing my research on evolution, phylogeny and construction of tubaria of the retiolitids based on isolated material from Poland and the Arctic Canada.

Publications: (Bates *et al.* 2023a, b; Skompski *et al.* 2023)

Philippe Legrand

"Tauzia" 216 cours Général de Gaulle, 33170 Gradignan, France.

Tel: +(0)556893324; E-mail: legrandblain@wanadoo.fr

I continue to study the graptolites of Oued In Djerane (Algerian Sahara) and surrounding areas.

Qi-jian Li

State Key Laboratory of Palaeobiology and Stratigraphy. Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences, Beijing East Road No.39, 210008 Nanjing, P.R. China.

Tel.: +86-25-83282283; E-mail: qijianli@hotmail.com / qjli@nigpas.ac.cn

Qi-jian Li primarily focuses on Palaeozoic reefs and hypercalcified sponges, such as calathids, stromatoporoids, and sphinctozoans. In 2023, I continued my research in sedimentology and paleoecology, particularly on Ordovician-Silurian reefs. In addition to collaborating with colleagues in Nanjing, I am currently engaged in studying Early Silurian reefs in South China

with Mikołaj Zapalski, Juwan Jeon, and Andrej Ernst. I am also continuing collaborations centered on quantitative paleoecological analyses of reefs during the Ordovician-Silurian transition with several colleagues. As a member of the advisory board of the Geobiodiversity Database (GBDB), I have been working closely with Na Lin on enhancing various functions of occurrence data. Towards the end of 2023, we published a case study in the Geological Magazine to show the utility of the occurrence data available in the GBDB. Please feel free to reach out to me if you have any problems in accessing the data from the GBDB.

Publications: (Deng *et al.* 2023; Na *et al.* 2023; Yu *et al.* 2024)

Steve LoDuca

Department of Geography and Geology. Eastern Michigan University, Ypsilanti, MI 48197, USA.

E-mail: sloduca@emich.edu

Work continues on the taxonomy, phylogeny, paleoecology, and taphonomy of early Paleozoic macroalgae, including description of the first material of *Palmatophycus* to be recovered from the Silurian of Michigan. In addition, a project to determine whether compression fossils of early Paleozoic macroalgae might preserve some remnants of the original biomolecules, particularly steranes, is now underway, with preliminary results expected very soon.

Publications: (De Clerck and LoDuca 2024; LoDuca 2024)

David K. Loydell

School of the Environment, Geography and Geosciences, University of Portsmouth, Burnaby Road, Portsmouth, PO1 3QL, UK.

Tel.: +44 (0)2392842698; E-mail: david.loydell@port.ac.uk

Completion of the formal proposal for the El Pintado section to become the replacement GSSP for the base of the Telychian was completed and submitted, initially to the Titular Members of the Silurian Subcommittee. Following a positive reception of the proposal, ratification by the IUGS followed, in January 2024.

I have now retired from my teaching role, so, once many years of accumulated teaching and research samples, literature, etc. have been cleared from my office and the final Master's theses, etc. marked, graptolite research can hopefully resume to a greater extent than has proved possible in recent years.

My involvement in several geochemical projects (primarily providing samples, stratigraphical and palaeoenvironmental context) continues.

Publication: (Haxen *et al.* 2023; Loydell *et al.* 2023; Maletz and Loydell 2023)

Jörg Maletz

Freie Universität Berlin, Institut für Geologische Wissenschaften, Malteser Str. 74-100, Haus C, Raum 005, D-12249 Berlin, Germany.

Tel.: + 49 30 838 70 678; E-mail: yorge@zedat.fu-berlin.de

Jörg Maletz is still working on Late Cambrian to Silurian graptolites worldwide. He is working with Chuanshang Wang and Xiaofeng Wang on Llandovery (Silurian) successions, graptolite biostratigraphy and taxonomy mainly in Hubei Province, but also in other regions of South China. A project covering the tubarium construction of the Silurian Retiolitidae has been finished recently and included a number of publications.

The new "Graptolite Treatise" was published in autumn 2023, now called the Hemichordata Treatise, covering also the extant members of the Hemichordata (Enteropneusta, Pterobranchia) in more details than before. It offers a detailed overview also on the Silurian graptolite faunas and their biostratigraphic and taxonomic interpretation. Works on Cambrian to Ordovician graptolite faunas are not listed here.

Publications: (Maletz 2023a, b, c, d)

Peep Männik

Institute of geology, Tallinn University of Technology, Ehitajate tee 5, 19086 Tallinn, Estonia.

Tel.: +372 588 450 82; E-mail: peep.mannik@ttu.ee

Starting from the beginning of 2023, my studies are mainly related to the Ordovician - 5-year project PRG1701: "From Greenhouse to Icehouse: Reconstructing Ordovician Climate Transitions and Biotic Response in Baltica" financed by Estonian Research Council.

Publications: (Hints *et al.* 2023b; Männik and Nõlvak 2023)

Neo McAdams

Department of Geosciences, Texas Tech University, 1200 Memorial Circle Science 125, Lubbock, TX 79409-1053, USA.

Tel.: 1-806-834-4789; E-mail: neo.mcadams@ttu.edu

In 2023 I have been involved in the preparation of papers on conodont-carbon isotope biogeostratigraphy of the outgoing base Telychian GSSP at Cefn Cerig (coauthors Bradley D. Cramer, Jeremy R. Davies, Peep Männik, Alyssa M. Bancroft), and a revised conodont biostratigraphy of the Wink Fm. (Wristen Group, Permian Basin, Texas, USA) with Jim Barrick and student coauthors. In addition, I have been supervising the MS thesis of Wilmar Andres de la Hoz on establishing a modern chronostratigraphic framework and correlation for

the Silurian of the Permian Basin (Fusselman Fm. and lower Wristen Group) using conodont biostratigraphy, carbon isotope and pXRF chemostratigraphy, and sequence stratigraphy (see de la Hoz and McAdams. 2023. First approach to a sequence stratigraphic framework of the Silurian of the Permian Basin: integration of well logs and bio-chemostratigraphic data. <https://gsa.confex.com/gsa/2023AM/webprogram/Paper395413.html>).

Alexander (Sandy) D. McCracken

Geological Survey of Canada, Calgary, Canada.

E-mail: sandy.mccracken@NRCan-RNCan.gc.ca ; admccrac@gmail.com

I am periodically working on good Ordovician-Silurian collections from Hudson Bay and Moose River basins, and Arctic Islands. I retired from the GSC in September 2017 and I work from my home in Nanaimo, BC. I am a part-time volunteer with the GSC Calgary office, having moved my microscope and some samples with me. This could be my last year of volunteering. I am not in contact with the Calgary office very often, and so may be a bit slow to respond to emails to my GSC address. Regular mail does not get forwarded so please send only emails or email attachments.

Tõnu Meidla

Department of Geology, Institute of Earth Sciences and Ecology, University of Tartu, 14A, Ravila Str., Tartu 50411, Estonia.

Tel.: +372 514 4504; E-mail: tonu.meidla@ut.ee

I am teaching several courses related to historical geology and palaeontology at the University of Tartu, Estonia, and continue working on several aspects related to the Silurian System: regional stratigraphy, stable isotopes, and events (see Gul, Ainsaar and Meidla 2023. High resolution carbon and oxygen isotopes of the Early Ordovician-Late Silurian of the Baltica: Implications for palaeoenvironmental changes and palaeotemperature trends. <https://gsa.confex.com/gsa/2023AM/webprogram/Paper389596.html>). I have also several projects in progress on ostracod taxonomy, distribution, and biostratigraphy in the Silurian. We are continuing an integrated study of Lithuanian and Latvian core sections in cooperation with S. Radzevičius, A. Spiridonov and S. Rinkevičiūtė. Together with O. Hints and P. Männik, I have an overview paper on the Silurian stratigraphy of Estonia in progress.

Publications: (Hints *et al.* 2023a, b, c; Meidla 2023; Meidla and Männik 2023; Meidla *et al.* 2023a, b, c; Radzevičius *et al.* 2023)

Michael Melchin

St. Francis Xavier University, Antigonish, Nova Scotia, Canada B2G 2W5.

Tel.: 1-902-870-3834; E-mail: mmelchin@stfx.ca

In my retirement I am currently working on several projects related to graptolite biostratigraphy and biodiversity, as well as chemostratigraphy through the Late Ordovician and Early Silurian, particularly in North America, China, and Europe, collaborating with Zongyuan Sun, Junxuan Fan, Charles Mitchell, Chris Holmden, Gordon Love, and others. I am collaborating with Erik Sperling on Ordovician to Lower Devonian graptolite biostratigraphy and chemostratigraphy in Alaska, and Arctic Canada. I am also working with Petr Štorch and others on several projects related to morphologic and phylogenetic analyses of early Silurian graptolites. However, my main retirement projects relate to describing the many collections of graptolites that are in my lab that have not yet been fully described.

Publications: (Melchin *et al.* 2023; Sun *et al.* 2023c; Zimmt *et al.* 2023)

Ana Mestre

Laboratorio de Micropaleontología, CIGEOBIO-IIM-Facultad de Ingeniería-UNSJ, Libertador San Martín 1109, San Juan-CP 5400, Argentina.

E-mail: amestre@unsj.edu.ar

I am particularly interested in studying the stratigraphy, conodont biostratigraphy and evolution of the Precordilleran Silurian basin.

Maria José Gómez, Susana Heredia and I have been developing the Silurian-Early Devonian conodont biostratigraphy from the Los Espejos Formation in the Argentine Precordillera. Currently, we are developing several specific papers related to conodont biostratigraphy and paleogeographical links of the Silurian conodonts of the Precordillera.

I have collaborated on a multi-year project about the high-resolution comparative biostratigraphic analysis of different groups of paleozoic fossils, from the northwest and the Precordillera of Argentina, which is developed in collaboration with Blanca Toro and Claudia Rubinstein. Also, I have cooperated in a project about the minerals of the clay group of the Ordovician-Silurian sedimentary succession from the Precordillera, which is developed in collaboration with Susana Heredia, Juan Pablo Milana, Daniel Poiré, Estefania Asurmendi, and Josefina Carlorosi.

Currently, Estefania Asurmendi and I are working with a student on a thesis that focuses on sedimentary analysis of the Los Espejos Formation, the preliminary results of which have been presented at XVIII Reunión Argentina de Sedimentología - IX Congreso Latinoamericano de Sedimentología (Asurmendi *et al.*, 2023. Barras de marea: Formación Los Espejos (Silurico-Devónico), Precordillera Central, San Juan, Argentina. p 147:

http://sedici.unlp.edu.ar/bitstream/handle/10915/160055/Documento_completo.pdf-PDFA.pdf?sequence=1&isAllowed=y).

José Manuel Piçarra d'Almeida

LNEG - (Laboratório Nacional de Energia e Geologia / Portuguese Geological Survey).
Unidade de Geologia, Hidrogeologia e Geologia Costeira. Ap. 14, 7601-909 Aljustrel,
Portugal.

Tel.: 00 351 210924672; E-mail: jose.picarra@lneg.pt

I am retired, but still collaborating with the LNEG (Portuguese Geological Survey).

Leonid Popov

Department of Natural Sciences, National Museum Cardiff, Cathays Park, Cardiff, CF10 3NP,
UK.

E-mail: lepbarry@yahoo.co.uk

My ongoing Silurian studies are focused mainly on the brachiopod faunas of Kazakhstan and Iran. Research on the Ludlow – Pridoli? rhynchonelliform brachiopod faunas from central Iran carried out in cooperation with Mansoureh Ghobadi Pour and Vachik Hairapetian is now almost completed and may be submitted for publication in a few months.

Publications: (Ghobadi Pour and Popov 2023; Ghobadi Pour *et al.* 2023; Popov *et al.* 2023)

Sigitas Radzevičius

Department of Geology and Mineralogy, Institute of Geoscience, Vilnius University, M.K.
Čiurlionio 21/27, LT-03101, Lithuania.

E-mail: sigitas.radzevicius@gf.vu.lt

I am working on the taxonomy, stratigraphic distribution, diversity, disparity, and phylogeny of Silurian graptolites. Most of my research is concentrated on the construction of higher resolution Silurian time scales by means of integrated (bio-, chemo-, cyclo-) stratigraphy. I'm integrating stratigraphic models, taxonomic data, geochemical, and geophysical proxies in order to understand the drivers of Silurian global extinction and turnover events. We are continuing research on Silurian integrated stratigraphy of Bardo Mountains and Holly Cross Mountains in cooperation with P. Raczyński (Wrocław) and W. Trela (Kielce). Together with T. Želvys (Vilnius University), I work on integrated stratigraphy (bio and chemo) of Wenlock in Lithuania.

Publications: (Grendaitė *et al.* 2023; Hints *et al.* 2023b; Radzevičius *et al.* 2023)

David Ray

Honorary position at the University of Birmingham, UK (please contact me by e-mail).

E-mail: daveray01@yahoo.com

During 2023, my research on the Silurian was focused upon the Telychian and Sheinwoodian of the Midland Platform, UK. Firstly, I have been collaborating with Alan Thomas, Ken Ratcliffe and Jane Veevers to complete a study of the late Llandovery Coralliferous Formation of SW Wales. A notable feature of this study is the identification of a marked paleotopography, which is transgressed during the late Telychian, and thereby provides an estimate of the magnitude of sea level rise. This study has now been submitted for review, and hopefully publication (Veevers, S.J., Ray, D.C., Ratcliffe, K.T. and Thomas, A.T. The application of chemostratigraphy and proximal trends to the Silurian Coralliferous Formation of SW Wales; rhythmical sedimentation during the transgression of a palaeo-shoreline). Secondly, I have continued my research (with Emilia Jarochowska and others) into the wider transgression of the Midland Platform during Telychian and Sheinwoodian times. Here we have established a regional sequence stratigraphic framework, and have been attempting to establish the absolute magnitude of relative and eustatic sea-level change (via analysis of paleo-shorelines, sedimentology, and benthic assemblages). Lastly, I contributed to a talk at the Lille Strati 2023 conference (Simmons, M., Ray, D., Davies, A., and Van Buchem, F. 2023. Building a pragmatic Phanerozoic eustatic sea-level curve from the rock record. <https://strati2023.sciencesconf.org/452161/document>).

Jiayu Rong

Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences, 39 East Beijing Road, Nanjing 210008, China.

Tel.: 086-025-83282169; E-mail: jyrong@nigpas.ac.cn

Most recently, I and my colleagues from NIGP and IVPP, Chinese Academy of Sciences published a paper of revised ages of famous Silurian units (Tangchiawu, Kangshan and Jukeng formations) in the eastern part of South China based on a comprehensive analysis of fossil evidence from chitinozoans, fishes, arcritarchs, brachiopods, trilobites, and a few others. These units have been reassigned to upper Aeronian to lower Telychian, not upper Silurian as previously thought. Based on field investigation and research of a great number of sections in the Yangtze Region, we carried out a stratigraphy study focusing on biostratigraphy, aimed at revealing temporal and spatial distribution of late Silurian rocks and their geological significance.

Publications: (Chen *et al.* 2023a; Huang *et al.* 2023; Rong *et al.* 2023; Rong and Huang 2023; Wang *et al.* 2023f)

Valeri Sachanski

University of Mining and Geology “St. Ivan Rilski”, Sofia, Bulgaria, and Geological Institute, Bulgarian Academy of Sciences, Sofia, Bulgaria.

E-mail: valeri.sachanski@mgu.bg; v_sachanski@geology.bas.bg

I am working on Ordovician–Devonian stratigraphy of Bulgaria and Turkey and especially on Silurian–Lower Devonian graptolite biostratigraphy (Sachanski et al. 2023; also see Ivanova et al. 2023. Bulgarian-Turkish joint research on Paleozoic and Mesozoic paleontology, stratigraphy and palaeogeodynamics of Turkey: contributions of the Bulgarian team. 24th Paleontology-Stratigraphy Workshop with International Participation. <https://paleontoloji.org/wp-content/uploads/2023/10/24-pcg-program-son.pdf>). In the past year, we publish our research related to the Palaeozoic (Silurian–Devonian) cherts from the Balkan Terrane, western Bulgaria (Boncheva et al. 2023), as well as those related to the first palaeozoic phyllocarid crustaceans and pterygotid eurypterids in Serbia (Radonjić and Sachanski 2023).

Publications: (Boncheva *et al.* 2023; Radonjić and Sachanski 2023; Sachanski *et al.* 2023)

Muhammad Aqqid Saparin

Geosciences Department, Universiti Teknologi PETRONAS, 32610 Seri Iskandar, Perak, Malaysia.

Tel.: +60192661474; E-mail: otakuclubrkidz@hotmail.com

I have just finished my PhD studies on a research project titled “High-resolution graptolite biostratigraphy and palaeoenvironment reconstruction of the Ordovician-Silurian basin of Northwestern Domain Peninsular Malaysia”. The results from the research recognised eight graptolite biozones for the Tanjung Dendang Formation in Pulau Langgun, Langkawi, spanning from the Hirnantian to the Aeronian age. Throughout the Silurian, the palaeoenvironment in Northwest Domain Peninsular Malaysia fluctuated between medium to low productivity, an anoxic to a more dysoxic condition and somewhat higher siliciclastic input. The study has thus furthered our understanding of the Ordovician-Silurian strata in this part of Southeast Asia. I joined several meetings to talk about my research in the year 2023, including the 2nd Asian Palaeontological Congress (talk titled: Basin history and associated macroevolutionary events during the Ordovician-Silurian transition in the Northwestern Domain of Peninsular Malaysia), the UNESCO Project IGCP-700 (talk titled: Biostratigraphy and Palaeoenvironment of the Ordovician-Silurian Tanjung Dendang Formation in Langkawi Island, Malaysia. <https://prc846.wixsite.com/igcp700/abstract-krabi-2023>) and Pal(a)eo EaRly Career Seminar (talk titled: Graptolites research in Southeast Asia; from its uses in biostratigraphy to the paleoenvironment and thermal maturities studies. Online talk video: <https://www.youtube.com/watch?v=iB-vqHHHst4>). I am currently transitioning into the next stage of my academic career but I am excited to do more future studies on the Ordovician-Silurian graptolites, especially from the Southeast and East Asian regions.

Publications: (Saparin and Ismail 2023; Saparin *et al.* 2023)

Thomas Servais

UMR 8198 Evo-Eco-Paleo CNRS-University of Lille. Cité Scientifique, F-59655 Villeneuve d'Ascq, France.

Tel.: + 33 3 20 33 72 20; E-mail: thomas.servais@univ-lille.fr

Thomas Servais continues work on the early Palaeozoic marine and terrestrial radiations. The main focus is on the Ordovician (as chair of the Ordovician Subcommittee from 2020-2024 and reelected chair from 2024-2028), but research covers the entire Palaeozoic, including the Silurian. Studies on the biodiversity dynamics of early land plants were co-published with Elliott Capel who finished his PhD in late 2022, and was post-doc in our research team during 2023, resulting in two publications (Capel *et al.* 2023a, b). We currently work on the spatial distribution of the middle Palaeozoic (Silurian to Devonian) phytoplankton, in the frame of the PhD project of Eiver Manzano. Several papers published in 2023 focused on the Ordovician, but cover the entire Cambrian to Silurian radiation (Servais *et al.* 2023a, b). We organized at Lille also the international congress STRATI2023, the major meeting of the ICS, including sessions of the Silurian subcommittee (a symposium and a subcommittee meeting taking place on July 12th). The congress STRATI was attended by over 280 participants.

Publications: (Capel *et al.* 2023a, b; Servais *et al.* 2023a, b)

David Siveter

School of Geography, Geology & the Environment, University of Leicester, Leicester LE17RH, UK.

Tel.: 0116-2523933 / 0116-2231031; E-mail: djs@leicester.ac.uk

Silurian research has concentrated on aspects of the Herefordshire Lagerstätte and ostracods from the UK and central and south-east Asia.

Publications: (Briggs *et al.* 2023; Siveter *et al.* 2023)

Ladislav Slavík

Institute of Geology of the Czech Academy of Sciences. Rozvojová 269, Praha 6, CZ-165 00, Czech Republic.

Tel.: +420 233087247; E-mail: slavik@gli.cas.cz

In 2023 continued activities concentrated on Mid-Palaeozoic global correlation and late Silurian - early Devonian conodont biostratigraphy. A comprehensive paper proposing the subdivision of the Přídolí Series has been finally published. The official proposal for the Přídolí Series subdivision is still in preparation. Conodont faunas from sections of Wenlock age in the Prague Synform were evaluated.

Publication: (Manda *et al.* 2023)

Amalia Spina

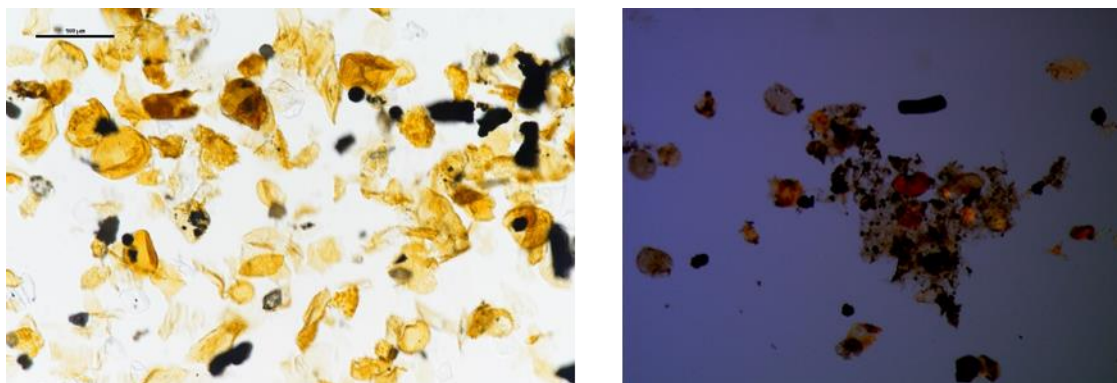
Department of Physics and Geology, University of Perugia, Italy.

Tel.: +390755852659; E-mail: amalia.spina@unipg.it

During 2023, I studied, within a Ministry of University project, the microfloristic content from the Palaeozoic basement of the Elba Island (Tuscan Archipelago, Italy). Among the results covering the Ordovician-Permian time interval, I recognized a palynological assemblage of Llandovery age from two lithostratigraphic units (Porfiroidi e Scisti Porfirici Formation and Scisti di Capo D'Arco Formation), whose age was strongly debated in the geological literature because they are barren in terms of a biomineralized fossil content.

Provisional title of the paper: Chronostratigraphic review of the Palaeozoic units cropping out in the Elba Island (Italy): a passe-partout for the Northern Apennine geological interpretation. By Spina A., Brogi A., Capezzuoli E., Liotta D., Zucchi M.

Another study was focused on continental and marine organic matter variations, and on miospore biodiversity, within a Ludlow-Lochkovian succession in the Ghadamis Basin (MG-1 borehole, Southern Tunisia). In this work, we used the thermal maturity of organic matter (by optical methods such as Palynomorph Darkness Index and UV-Fluorescence; Images below) to discern the recycled, reworked and in situ palynoelements. The results will be presented at the next ISSS meeting in Sofia.



Images: Microscope images of palynofacies from MG-1 borehole; transmitted light (left) and UV-fluorescence (right).

Petr Štorch

Department of Palaeobiology and Stratigraphy, Institute of Geology of the Academy of Sciences of the Czech Republic, Rozvojová 269, Prague, CZ 165 00, Czech Republic.

Tel.: +420-233-087-261; Email: storch@gli.cas.cz

Studies related to Aeronian and Telychian GSSP replacement candidate sections have been concluded through formal proposals for new stratotype sections at Hlásná Třebaň, Czechia and El Pintado-1, Spain. Both GSSPs were ratified by the IUGS in January 2024. A three-year project focused on the biostratigraphy and faunal dynamics of Silurian pelagic biota in the Prague Basin resulted in a comprehensive study on graptolite biostratigraphy and biodiversity dynamics in the Silurian System of the Prague Synform (Štorch 2023). A review paper “Graptolites in biostratigraphy: the primary tool for subdivision and correlation of Ordovician, Silurian, and Lower Devonian offshore marine succession”, prepared in collaboration with David Loydell, Mike Melchin, and Dan Goldman, is currently in print as part of a thematic issue of Newsletters on Stratigraphy devoted to biostratigraphy. Collaboration with Štěpán Manda, Josep Roqué Bernal, Zongyuan Sun, Mike Melchin, and David Loydell continued within the framework of several informal projects related to Silurian graptolites and stratigraphy. Zuzana Strossová continued her PhD project on lower Telychian graptolites and high-resolution stratigraphy under my supervision and submitted a paper devoted to the taxonomy of the genus *Parapetalolithus* in the light of astogeny and intraspecific variability.

Publications: (Loydell *et al.* 2023; Manda *et al.* 2023; Štorch 2023)

Zongyuan Sun

Chengdu University of Technology, Chengdu 610059, China.

Tel.: +8618502511567; E-mail: sunzongyuan19@cdut.edu.cn

During 2023 I have published the following paper, related to the Silurian System, as the first author (Sun *et al.* 2023c).

Publication: (Sun *et al.* 2023c)

Petra Tonarová

Czech Geological Survey, Geologická 6, 152 00 Prague 5, Czech Republic.

E-mail: petra.tonarova@geology.cz

I am working mainly on Lower Paleozoic scolecodonts. Last year, we studied Sheinwoodian and Ludfordian scolecodonts and accompanying microfossils in the Prague Basin. We also continue the study of scolecodonts from the Lower Silurian in Estonia. Papers are in progress and hopefully will be submitted in 2024.

Thijs R. A. Vandenbroucke

Ghent University, Dept. of Geology (WE13), Krijgslaan 281 / S8, 9000 Ghent, Belgium.

Tel.: +32 (0)9 264 45 15; E-mail: Thijs.Vandenbroucke@UGent.be

Website: www.earthweb.UGent.be; Instagram: @palaeo_UGent

Thijs Vandenbroucke remains interested in reconstructing the Silurian palaeoclimate and palaeo-environment. Tim De Backer is finalizing his PhD research project with me at UGent focussing on the geochemistry and palynology of selected sections of the upper Silurian and Devonian in N. America and Sweden. Carolina Klock continues her PhD project focussing on the palynology of the Silurian Valgu and Mulde events, using material from the USA Midwest, Anticosti and Gotland. Iris Vancoppenolle continues her PhD project focussing on the palynology of the Ireviken event, with a focus on Gotland and the USA. Nick Van Faals joined the lab to pursue a PhD project on chitinozoan ecology and will partly be working on Silurian sections. Himadri Haldar just started his PhD project with us and will focus on stable carbon isotope geochemistry in the Ordovician and Silurian. These are projects in collaboration with Poul Emsbo (USGS), Patrick McLaughlin (Illinois Geol. Survey), Mikael Calner (ULund), Appy Sluijs (Utrecht), Alyssa Bancroft (UIowa), Mark Williams (ULeicester), Jean-François Ghienne (UStrasbourg) and André Desrochers (UOttawa). Mathilde Bon is a joint PhD student between UGent and ULille, co-supervised by Kevin Lepot, and investigates the organic geochemistry of, amongst others, Silurian palynomorphs. MSc student Fien Jonckheere is studying the palynology through the early and late Aeronian events on Anticosti. The other members of the lab, including PhD student Cristiana Esteves, Joana Rosin, Synnove Saugen and Julie De Weirdt, and MSc students Kaatje Peirs and Lena Lardinois are pursuing projects that are not specifically focussed on the Silurian.

Publication: (Melchin *et al.* 2023)

Jacques Verniers

Ghent University, Krijgslaan 281 building S8, BE-9000 Ghent, Belgium.

E-mail: jacques.verniers@ugent.be

In 2023 Jan Mortier's Ph.D. (2014) was submitted for publication in the *Memoirs of the Geological Survey of Belgium* (Mortier, J., Vanmeirhaeghe, J., et al. Stratigraphy and biostratigraphy with chitinozoans of the uppermost Ordovician and Silurian of the Condroz Inlier). This includes an extensive study on the uppermost Ordovician and Silurian of many sections, plus their chitinozoans, in the Belgian Condroz Inlier. This manuscript has been reviewed and updated; we are awaiting the proofs.

In addition, I have prepared three manuscripts for *Geologica Belgica* (articles requested for the Van den Broeck Medal). These manuscripts are:

Verniers, J., Van Grootel, G., et al. A new biostratigraphy with chitinozoans for the Silurian of Belgium.

Verniers, J., Herbosch, A., et al. A review on the Silurian of Belgium 23 years after the previous synthesis (Verniers et al 2002).

Verniers J. and Herbosch, A. The Silurian formations in Belgium anno 2024 (for the NCS).

Lastly, I gave a talk at the Lille Strati 2023 conference (Verniers, J., Mortier, J., Vanmeirhaeghe, J., Van Grootel, G. and Herbosch, A. 2023. Review of the Silurian in Belgium. Abstract: <https://strati2023.sciencesconf.org/458296/document>).

Olev Vinn

Institute of Ecology and Earth Sciences, University of Tartu, Ravila 14 A, 50411 Tartu, Estonia.

E-mail: olev.vinn@ut.ee

I have been working on the evolution of symbiosis, predation, bioerosion and encrustation in the Silurian. I am also working on the palaeontology of problematic calcareous tubeworms from the Palaeozoic (e.g. cornulitids, tentaculitids, microconchids, Sphenothallus etc.) and evolution of tubeworm biomineralization. My other research interests include trace fossils of the Silurian of Estonia and beyond.

Publications: (Chaubey *et al.* 2023; Vinn *et al.* 2023a, b, c, d)

Guangxu Wang

State Key Laboratory of Palaeobiology and Stratigraphy. Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences (CAS), 39 East Beijing Road, Nanjing 210008, China.

Tel: +86-25-83282129; E-mail: gxwang@nigpas.ac.cn

A paper regarding the Ordovician-Silurian boundary stratigraphy in the western Yangtze region was formally published with colleagues from NIGPAS, and a monograph on a revision of Late Ordovician-early Silurian cystiphyllid rugose corals is still in preparation.

Publication: (Wang *et al.* 2023a)

Yi Wang

Nanjing Institute of Geology and Palaeontology, CAS, China. 39, East Beijing Road, Nanjing, Jiangsu, China.

Tel: 86-25-83282146; E-mail: yiwang@nigpas.ac.cn

This past year, I have focused on two Silurian projects. The first is investigating a terrestrial and marine sedimentary model of the Silurian to Carboniferous, and establishing the process of palaeogeographic evolution. The second project concerns the studies of late Silurian strata and land plants in South China.

Next year, together with many colleagues, I will be mainly paying attention to studies on the correlation of Silurian and Devonian in South China, and the Ordovician-Silurian plants (including microfossils) in China.

Publications: (Chen *et al.* 2023c; Rong *et al.* 2023; Wang *et al.* 2023 c, d, e, f; Zhang *et al.* 2023a, c; Zhang and Wang 2023; Zong *et al.* 2023; Liu *et al.* 2024)

Rongchang Wu

Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences, No. 39 East Beijing Road, Nanjing, 210008, China.

Tel: +862583282106/+8613675134003; E-mail: rcwu@nigpas.ac.cn

Rongchang Wu is working on Silurian stratigraphy and conodonts. His research is mainly focused on Silurian bio-chemostratigraphy, conodont biodiversification, and Silurian palaeoclimate. Currently, he is collaborating with Prof. Mikael Calner in Lund for investigating early Silurian events (Late Aeronian, Valgu etc) on the basis of material from China and Sweden.

Seth A. Young

Department of Earth, Ocean, & Atmospheric Science, Florida State University, Tallahassee, FL 32306-4520, USA.

Tel: +18506442703; E-mail: sayoung2@fsu.edu

Seth A. Young continues working on environmental and climatic reconstructions in the early Paleozoic, that include marine oxygen levels at both local and global scales from late Cambrian, Ordovician, and Silurian stratigraphic successions. Current and ongoing projects are focused on intervals just prior to, during, and after the Ordovician Radiation of marine life and the Late Ordovician Mass Extinction (LOME); and throughout multiple intervals of biotic extinction and recovery within the Silurian. This work continues in multiple basins from around the globe including: the Great Basin (Nevada, USA), Appalachian Basin (Tennessee, USA),

USA Midcontinent (Tennessee), Sweden, Estonia, Latvia, and Czech Republic. These various projects in the early to middle Silurian are ongoing collaborations with Jeremy Owens (Florida State University), Mats Eriksson (Lund University), Anders Lindskog (Lund University), Emma Hammerlund (Lund University), David Loydell (University of Portsmouth), Olle Hints (Tallinn University of Technology), Dimitri Kaljo (Tallinn University of Technology), Tõnu Martma (Tallinn University of Technology), Paula Noble (University of Nevada), and Jiri Fryda (Czech Geological Survey). In the last year Seth and his research group published four papers and one book chapter all pertaining to the Ordovician System, and graduate students presented posters and or oral presentations on Silurian topics at the annual Geological Society of America meeting in Pittsburgh, PA:

Bowman, C, Allman, L, Fryda, J, Kozik, N, Owens, J, Young, SA. Constraining Reducing Conditions In The Prague Basin During The Late Silurian Lau/Kozlowskii Extinction Event. Geological Society of America Abstracts with Programs Vol. 55, No. 6 doi: 10.1130/abs/2023AM-392842

Evenson, N, Young, SA, Eriksson, ME, Ahlberg, P, Hints, O, Martma, T, Owens, J. Insights Into The Global Redox State Of The Early Silurian Oceans From New Thallium Isotope Records Within Baltica. Geological Society of America Abstracts with Programs Vol. 55, No. 6 doi: 10.1130/abs/2023AM-394635

Maaleki, M, Young, SA, Lindskog, A, Kaljo, D, Hints, O, Martma, T, Noble, P, Owens, J. Assessing Global Marine Redox Changes During The Mid-Silurian Mulde/Lundgreni Extinction Event. Geological Society of America Abstracts with Programs Vol. 55, No. 6 doi: 10.1130/abs/2023AM-396179

Currently, Seth is supervising three PhD students with various projects focused on multi-lithology and multi-proxy approaches– including paleoenvironmental reconstructions of marine settings in the recovery to reradiation intervals in the early Silurian after the LOME and projects focused on the two major intervals of marine extinction and recovery in the Wenlock. While there were no publications from Seth's group related to the Silurian system in 2023, there are a number of Silurian manuscripts in prep to in press stages currently.

Publications: (Stolfus *et al.* 2023; Allman *et al.* 2024)

Yuandong Zhang

Nanjing Institute of Geology and Palaeontology. 39 East Beijing Road, Nanjing 210008, China.

Tel.: 0086-25-83282145; Fax: 0086-25-83357026, 83282140; E-mail: ydzhang@nigpas.ac.cn

Yuandong Zhang is continuously working on:

(1) Systematic palaeontology and biostratigraphy of the late Katian to Rhuddanian sponges and graptolites (Anji Biota) in Anji, Northwestern Zhejiang Province, SE China. This work has been financially supported by President's International Fellowship Initiatives program (PIFI) and a grant from NSF of China (2018-2021). Recently, the work has been financially supported by a new grant from Ministry of Science and Technology of China (2023-2028), which aims

to address the faunal turnovers and their potential triggers during the Ordovician-Silurian transition. This work has been jointly carried out with Drs. Joseph Botting and Lucy Muir from UK, and will be implemented further through cooperations with international colleagues including Olle Hint from Estonia and Zhen Yong Yi from Australia.

(2) Systematic palaeontology of Silurian (Telychian, Ludlow and Pridoli) graptolites from limited outcrops around Junggar Basin, Xinjiang, northwestern China, together with Chen Xu and some other Chinese colleagues from NIGPAS and China University of Geosciences (Wuhan). A palaeontological study of some graptolites from the basin has turned out as a manuscript for *Journal of Paleontology* in early 2023, which will be re-submitted in early 2024 after peer reviews. A palaeontological study of the Silurian (Telychian) graptolites from Xainza area, Tibet, based on specimens collected in the summer of 2021, during a 4-week excursion to Tibet, is ongoing.

(3) Organization of the Sixth International Conference of Palaeogeography (May 17–20, 2024, Nanjing, China), as Secretary General. The meeting will focus on theme “Life Evolution, Palaeogeography, and Resources”, together with four pre- and post-conference field trips on strata and fossils of Neoproterozoic to Cenozoic in South China and North China, including marine and terrestrial facies. Those who are interested in participating in the meeting, please access the webpage (<https://www.isp2022.org/en/conferences/>) for more information, or contact Dr. Zhang Yuandong (ydzhang@nigpas.ac.cn).

Publications: (Chen *et al.* 2023c; Wu *et al.* 2023; Zhen *et al.* 2023)

Wenjin Zhao

Institute of Vertebrate Paleontology and Paleoanthropology (IVPP), Chinese Academy of Sciences (CAS). 142 Xi-Zhi-Men-Wai Street, Beijing 100044, China.

Tel.: +86 10 88369290; E-mail: zhaowenjin@ivpp.ac.cn

Over the past year, my Silurian research has been focused on the Silurian vertebrate paleontology and relative stratigraphy, supported by the National Natural Science Foundation of China and the Strategic Priority Research Program of the Chinese Academy of Sciences. Together with my colleagues in IVPP, CAS, two new jawless galeaspid fishes from the Telychian (Llandovery, Silurian) in Jiangxi and Hunan provinces of South China were described (Shan *et al.* 2023a; Zhang *et al.* 2023b). *Dayongaspis colubra* of Dayongaspidae from the Xiushan Formation in Hunan Province revealed more galeaspid plesiomorphic characters than the type species *D. hunanensis* by its larger-sized headshield, tiny and dense granular tubercles, and triangular-shaped inner cornual processes. *Jiangxialepis jiujiangensis* of Shuyuidae from the Qingshui Formation in Jiangxi Province differs from the type species *J. retrospectina* from Wuhan, Hubei Province in its sharp and posteriorly positioned median dorsal spine and narrow spine-shaped inner cornual processes. How did jawed vertebrates originate and rise? The new discovery and detailed studies of the early Silurian jawed vertebrates from China in recent years provided key data to pursue the answer, which convinced us that the origination and rise of the jawed vertebrates are intimately linked to Earth’s environmental changes (Zhu *et al.* 2023a, b). In addition, the Silurian stratigraphy and biogeography in the Yangtze region, South China have been studied utilizing an integrated litho-, chemo-, and bio-

stratigraphic approach (Shan *et al.* 2023b; Wang *et al.* 2023b, f). For example, based on the detailed study of a new Silurian Tunping Section in the Shiqian area of northeastern Guizhou Province, the age of the oldest sharks (i.e., *Qianodus* and *Fanjingshania*) found from the middle part of the Rongxi Formation is early Telychian; three distinct positive excursions of $\delta^{13}\text{C}_{\text{carb}}$ values are recognized and can be well correlated to the Early Aeronian Event, Late Aeronian Event and Valgu Event in the global composite curve, and the changes of sedimentary environments in the Shiqian area are obviously controlled by the paleogeographic background, the uplifts and falls of the region, sea-level fluctuations, and paleoclimate changes (Wang *et al.* 2023f).

Publications: (Shan *et al.* 2023a, b; Wang *et al.* 2023b, f; Zhang *et al.* 2023b; Zhu *et al.* 2023a, b)

RECENT PUBLICATIONS

Please note some papers are dealing with Ordovician and Devonian topics by members of ISSS. There are also a few papers in the list that are in press or online.

- Allman, L.J., Bowman, C.N., Frýda, J., Kozik, N.P., Owens, J.D. and Young, S.A. 2024. Constraining reducing conditions in the Prague Basin during the late Silurian Lau/Kozłowski extinction event. *Journal of the Geological Society*, **181**, jgs2023-108, <https://doi.org/10.1144/jgs2023-108>.
- Bates, D.E.B., Kirk, N.H. and Kozłowska, A. 2023a. Morphology and reconstruction of the retiolitines: Silurian graptolites of the Paraplectograptus lineage (Graptolithina). *Comptes Rendus Palevol*, **22**, 45–57, <https://doi.org/10.5852/cr-palevol2023v22a4>.
- Bates, D.E.B., Beli, E., et al. 2023b. Treatise on Invertebrate Paleontology, Part V, Hemichordata, Second Revision, Including Enteropneusta, Pterobranchia (Graptolithina). *The University of Kansas, Paleontological Institute, Lawrence, Kansas, U.S.A.*, 1–548.
- Boncheva, I., Andreeva, P., Sachanski, V., Yaneva, M. and Georgiev, S. 2023. Palaeozoic (Silurian–Devonian) cherts from the Balkan Terrane, western Bulgaria: geochemistry, biostratigraphy and depositional settings. *Palaeobiodiversity and Palaeoenvironments*, **103**, 711–731, <https://doi.org/10.1007/s12549-023-00578-y>.
- Brett, C.E. 2023. The upper Ordovician – Devonian and Pleistocene geologic history of the Niagara Frontier (informally published; to be formally published as a special issue of the *Bulletins of American Paleontology*). *International Commission on Stratigraphy, Subcommittee on Devonian Stratigraphy Meeting, Geneseo, New York. Guidebook for Field trip 2.*, 1–131.
- Briggs, D.E.G., Siveter, D.J., Siveter, D.J., Sutton, M.D., Legg, D. and Lamsdell, J.C. 2023. A vicissicaudatan arthropod from the Silurian Herefordshire Lagerstätte, UK. *Royal Society Open Science*, **10**, 230661, <https://doi.org/10.1098/rsos.230661>.
- Burrow, C.J., Murphy, M. and Turner, S. 2023. Late Silurian to earliest Devonian vertebrate biostratigraphy of the Birch Creek II section, Roberts Mountains, Nevada, U.S.A. *PaleoBios*, **40**, 1–32, <https://doi.org/10.5070/P940454153>.
- Capel, E., Cleal, C.J., Servais, T. and Cascales-Miñana, B. 2023a. New insights into Silurian–Devonian palaeophytogeography. *Palaeogeography, Palaeoclimatology, Palaeoecology*, **613**, 111393, <https://doi.org/10.1016/j.palaeo.2023.111393>.
- Capel, E., Monnet, C., Cleal, C.J., Xue, J., Servais, T. and Cascales-Miñana, B. 2023b. The effect of geological biases on our perception of early land plant radiation. *Palaentology*, **66**, e12644, <https://doi.org/10.1111/pala.12644>.
- Chaubey, R.S., Singh, B.P., Vinn, O., Bhargava, O.N., Prasad, S.K. and Sati, M. 2023. Integrated lithofacies, microfacies and sequence stratigraphic framework of the Takche Formation (Ordovician–Early Silurian), Pin Valley, Spiti Himalaya, India.

- Neues Jahrbuch für Geologie und Paläontologie - Abhandlungen*, **307**, 51–64,
<https://doi.org/10.1127/njgpa/2023/1112>.
- Chen, D., Huang, B. and Rong, J. 2023a. Distribution of the Silurian brachiopod genus *Atrypoides*, and its first report in the Chejiaba Formation (upper Ludlow), Guangyuan, South China. *Journal of Paleontology*, **97**, 76–89,
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- Chen, D., Huang, B. and Candela, Y. 2023b. Evolutionary trends in trimerellid brachiopods. *Palaeogeography, Palaeoclimatology, Palaeoecology*, **617**, 111472,
<https://doi.org/10.1016/j.palaeo.2023.111472>.
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- Corradini, C. and Simonetto, L. 2023. The stratigraphy of the Pre-Variscan Sequence of the Carnic Alps in the papers by Michele Gortani and Vinassa de Regny. In: Corradini, C. and Muscio, G. (eds). *Geology and Palaeontology of Friuli and adjacent areas. Museo Friulano di Storia Naturale, Udine.*, 13-16.
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<https://doi.org/10.57614/GORT20380410.2023.45.2>.
- Corradini, C., Pondrelli, C. and Corriga, M.G. 2023b. The Geotrail “Luca Simonetto” at Cason di Lanza Pass (Carnic Alps, Italy). In: Corradini, C. and Muscio, G. (eds). *Geology and Palaeontology of Friuli and adjacent areas. Museo Friulano di Storia Naturale, Udine.*, 69-75.
https://www.researchgate.net/publication/373301913_The_Geotrail_Luca_Simonetto_at_Cason_di_Lanza_Pass_Carnic_Alps_Italy.
- De Clerck, O. and LoDuca, S.T. 2024. Algal evolution: A touch of brown in a Paleozoic sea of greens and reds. *Current Biology*, **34**, 150–152,
<https://doi.org/10.1016/j.cub.2024.01.028>.
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<https://doi.org/10.1016/j.geobios.2023.04.004>.
- Deng, X.J., Li, Q.J., et al. 2023. Bioaccumulation of the Silurian Hanchiatien Formation in the off-shoal region of the Upper Yangtze Epicontinental Sea, South China Block (in Chinese with English abstract). *Acta Micropalaeontologica Sinica*, **40**, 33–42.

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- Ghobadi Pour, M., Popov, L.E., et al. 2023. The Ordovician of Central Asia (Kyrgyzstan, Uzbekistan and Tajikistan). *Geological Society, London, Special Publications*, **533**, 313–344, <https://doi.org/10.1144/SP533-2022-52>.
- Gómez, J.C., Peralta, S.H., Sial, A.N. and di Pasquo, M.M. 2023. Timeline of events in the Ordovician–Silurian Transition of the Precordillera (Argentina): Paleoenvironmental, paleoclimatic and paleobiologic implications. *Journal of South American Earth Sciences*, **131**, 104630, <https://doi.org/10.1016/j.jsames.2023.104630>.
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- Huang, B. 2023. A brief discussion on paleontology research in the context of big data (in Chinese with English abstract). *Acta Palaeontologica Sinica*, **62**, <https://doi.org/10.19800/j.cnki.aps.2023035>.
- Huang, B., Chen, D., Harper, D.A.T. and Rong, J. 2023. Did the Late Ordovician mass extinction event trigger the earliest evolution of ‘strophodontoid’ brachiopods? *Palaeontology*, **66**, e12642, <https://doi.org/10.1111/pala.12642>.
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- Kershaw, S. 2023b. The Slite marl, Silurian of Gotland, Sweden: an atlas of microfacies and their lithification. *figshare*, 1-91. <https://figshare.com/account/articles/24415645> (Some researchers have reported a problem with the Figshare link, but this can be solved by going online to Figshare.com, then search within Figshare for that file. If it does not work, please contact me directly and I will send you the file by a file transfer).
- Kershaw, S. and Jeon, J. 2023. Stromatoporoids and extinctions. *EarthArXiv*, 1–41, <https://doi.org/10.31223/X5CQ4K>.
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List of Corresponding Members

Please contact David Ray (ISSS secretary – daveray01@yahoo.com) to report errors and omissions.

Fernando Alvarez. Email: fernando@geol.uniovi.es

B. Gudveig Baarli. Email: gbaarli@williams.edu

Chris Barnes. Email: crbarnes@uvic.ca

James E. Barrick. Email: jim.barrick@ttu.edu

Frank R. Brunton. Email: frank.brunton@ontario.ca

Carole J. Burrow. Email: carole.burrow@gmail.com

Xu Chen. Email: xuchen@nigpas.ac.cn

Zhongyang Chen. Email: zychen@nigpas.ac.cn

Maria G. Corrigan. Email: corrigamariagiovanna@gmail.com

G. Susana de la Puente. Email: susana.delapuate@comahue-conicet.gob.ar or sudelapuate@gmail.com

André Desrochers. Email: andre.desrochers@uottawa.ca

Rein Einasto. Email: reinasto34@gmail.com

Annalisa Ferretti. Email: ferretti@unimore.it

Mansoureh Ghobadi Pour. Email: mghobadipour@yahoo.co.uk

Jessica Carolina Gómez. Email: jessicagomez21@gmail.com

Volodymyr Grytsenko. Email: favosites@ukr.net

Juan Carlos Gutiérrez-Marco. Email: jcgrapto@ucm.es

Olle Hints. Email: olle.hints@taltech.ee

Kathleen Histon. Email: hiscat@interfree.it

Emilia Jarochovska. Email: e.b.jarochovska@uu.nl or emilia.j@gmail.com

Markes E. Johnson. Email: mjohnson@williams.edu

Dimitri Kaljo. Email: dimitri.kaljo@taltech.ee

Stephen Kershaw. Email: Stephen.kershaw@brunel.ac.uk

Philippe Legrand. Email: legrandblain@wanadoo.fr

Qi-jian Li. Email: qijianli@hotmail.com or qjli@nigpas.ac.cn

Steve LoDuca. Email: sloduca@emich.edu

Jörg Maletz. Email: yorge@zedat.fu-berlin.de
Peep Männik. Email: peep.mannik@ttu.ee
Tiiu Märss. Email: Tiiu.Marss@ttu.ee
Neo E. B. McAdams. Email: neo.mcadams@ttu.edu
Christopher M. McCauley. Email: christopher.mccauley@mavs.uta.edu
Alexander (Sandy) D. McCracken. Email: sandy.mccracken@canada.ca
Anna McGairy. Email: am1220@leicester.ac.uk
Ana Mestre. Email: amestre@unsj.edu.ar
Giles Miller. Email: G.Miller@nhm.ac.uk
Stephan Oborny. Email: obornys@ku.edu
John S. Peel. Email: john.peel@pal.uu.se
Silvio Peralta. Email: speralta@unsj-cuim.edu.ar
Ian Percival. Email: ianpercival1952@gmail.com
Vincent Perrier. Email: vincent.perrier@univ-lyon1.fr
José Manuel Piçarra d'Almeida. Email: jose.picarra@Ineg.pt
Leonid Popov. Email: lepbarry@yahoo.co.uk
Sigitas Radzevičius. Email: sigitas.radzevicius@gf.vu.lt
Jiayu Rong. Email: jyrong@nigpas.ac.cn
Mike Rosenbaum. Email: m.rosenbaum@nhm.ac.uk or mike.rosenbaum@ntu.ac.uk
Valeri Sachanski. Email: v_sachanski@geology.bas.bg or valeri.sachanski@mgu.bg
Muhammad Aqqid bin Saparin. Email: otakuclubrkdz@hotmail.com
Thomas Servais. Email: thomas.servais@univ-lille.fr
David Siveter. Email: djs@leicester.ac.uk
Derek Siveter. Email: derek.siveter@oum.ox.ac.uk
Ladislav Slavík. Email: slavik@gli.cas.cz
Amalia Spina. Email: amalia.spina@unipg.it
Andrej Spiridonov. Email: andrej.spiridonov@gf.vu.lt
Zongyuan Sun. Email: sunzongyuan19@cdut.edu.cn
Alan Thomas. Email: a.t.thomas@bham.ac.uk
Petra Tonarová. Email: petra.tonarova@geology.cz

Susan Turner. Email: paleodeadfish@yahoo.com
Jacques Verniers. Email: jacques.verniers@ugent.be
Olev Vinn. Email: olev.vinn@ut.ee
Guangxu Wang. Email: gxwang@nigpas.ac.cn
Xiaofeng Wang. Email: ycwangxiaofeng@163.com
Rongchang Wu. Email: rcwu@nigpas.ac.cn
Seth A. Young. Email: sayoung2@fsu.edu
Wenwei Yuan. Email: ww yuan@nigpas.ac.cn
Renbin Zhan. Email: rbzhan@nigpas.ac.cn
Yuandong Zhang. Email: yd zhang@nigpas.ac.cn
Wenjin Zhoa. Email: zhaowenjin@ivpp.ac.cn