SILURIAN TIMES

NEWSLETTER OF
THE INTERNATIONAL SUBCOMMISSION ON SILURIAN STRATIGRAPHY (ISSS)
(INTERNATIONAL COMMISSION ON STRATIGRAPHY, ICS)

No. 25 (*for* 2017)

***Edited by* ZHAN Renbin**

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Silurian Subcommission website: http://silurian.stratigraphy.org

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Cover photo

Group photo of the 4th International Conodont Symposium held in the University of Valencia of Spain during June 25 and June 30, 2017, jointly with the annual symposia of the International Subcommission on Silurian and Devonian Stratigraphy (ISSS and ISDS). The meeting was organized by the Plant and Geology Department of the University of Valencia with Prof. José Ignacio Valenzuela-Ríos as the Chairman. Nearly 100 delegates from over 20 countries and regions gathered together to exchange their most recent research achievements and new ideas under the theme "Progress on Conodont Investigation". Altogether 54 oral presentations were arranged at 8 different sessions covering conodont systematics, biostratigraphy, event stratigraphy, sedimentology, isotope geochemistry, etc. from the Cambrian to the Triassic periods. Particular discussions during the meeting include the conodont evolution before and during the Great Ordovician Biodiversification Event (GOBE), the integrated stratigraphy on Silurian conodonts, graptolites, brachiopods and stable isotope analysis, reaction of conodont evolution on the global environmental events, correlation between the Devonian high resolution biostratigraphy and chronostratigraphy, Carboniferous conodont biostratigraphy and sedimentology, and the Permian-Triassic conodonts.

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SILURIAN TIMES Number 25 (for 2017)

CHAIRMAN'S CORNER

Dear Silurian Colleagues,

Major activity of the ISSS in 2017 was our successful joint meeting with the Pander Society of conodont researchers (4th International Conodont Symposium) and ISDS in Valencia, Spain. The ISSS business meeting held in Valencia focussed on progress achieved by Working Groups studying candidate sections for new GSSPs of the bases of Aeronian, Telychian and Sheinwoodian stages. I wish to thank José Ignazio Valenzuela Ríos, Teresa Liao, Carlos Martínez-Pérez and other members of the organizing committee for organizing and hosting this excellent conference. I would certainly like to extend my thanks to Carlo Corradini, Ladislav Slavík and Thomas Suttner who organized post-conference field trips to the Lower Palaeozoic of the Prague Basin (Czech Republic) and the Carnic Alps (Austria and Italy). It is unfortunate that the conference in Valencia was attended by rather limited number of ISSS members (4 voting and 12 corresponding).

Further progress has been achieved in 2017 by the GSSP working groups:

A working group for the base of the Aeronian Stage has been the most active one. First formal proposal – the Hlásná Třebaň section in the Barrandian area of the Czech Republic was published online in Lethaia (Štorch *et al*., in press). Further work is being continued on two Chinese candidate sections. Bajiaomiao section in Hubei Province, joined by nowadays more promising candidate in Sichuan Province (Yuxian section), are being studied by Fan Junxuan et al. Preliminary report on classic Rheidol Gorge section in Wales, U.K. was presented by Melchin *et al*. (2016) and results of the study of chitinozoan fauna and biostratigraphy were presented by De Weirdt *et al.* (2017). Formal proposal of the Rheidol Gorge as an Aeronian GSSP candidate section is under preparation.

The working group for the base Telychian GSSP is concentrating on two candidate sections: Bajiaomiao section in Hubei Province of China and El Pintado Reservoir section in Seville Province of Spain. Work on the former section is in progress, the latter one was described by Loydell *et al*. (2015), although no formal GSSP proposal has been submitted till now. Work on a supplementary paper devoted to the lower part of the El Pintado reservoir section is in progress.

The least advanced is the work on the new base Sheinwoodian GSSP. The only section studied in detail, the Banwy River section in Wales, was described by Cave and Loydell (1996). Some more chemostratigraphic work is needed and further collecting should be undertaken in the future since the lowest occurrence of zonal index *Cyrtograptus murchisoni* might prove to be slightly lower in the section. Two other Welsh sections with the potential to be a replacement GSSP: the Trannon River section and a track section in the Dyfnant Forest will need a considerable amount of work before we know their potential (see short report by David Loydell below). Some research on a possible candidate section in Shaanxi, China, continues as well.

ISSS voting and corresponding members are sincerely encouraged to participate on IGCP 652—"Reading geologic time in Palaeozoic rocks: the need for an integrated Stratigraphy", which commenced in 2017. Annual project conference will be held in Bremen, Germany in September 12-19. 2018.

I am sure that some voting and corresponding members of the ISSS are going to join 5th International Palaeontological Congress in Paris in July 9-13, 2018.

Next planned highlight of the ISSS activities will be a special session and business meeting at the 3rd International Congress on Stratigraphy to be held in Milano, Italy in July 2-5, 2019.

I would like to encourage members of the Silurian executive and ISSS corresponding members for their suggestions regarding the next, 6th quadri-annual Silurian Symposium which should be held in 2019. Could we attract sufficient number of participants to organize a regular Symposium with excursions? Limited number of Silurian participants at ICOS4 in Valencia, 2017, questioned this option. Could we find volunteers willing to organize Silurian Symposium in a new region with Silurian outcrops less well known to present active ISSS members? Alternatively, our business meeting and special session at STRATI 2019 in Milano will become a major platform for our Silurian agenda. Be sure that your suggestions and official proposals for next ISSS meetings will be much appreciated.

Until 2019, our three respective working groups for the base Aeronian, the base Telychian and the base Sheinwoodian GSSPs should submit more official proposals for potential GSSPs of the respective units. Ogg *et al*. (2016) stated in their Concise Geologic Time Scale that „A majority of international stage boundaries (GSSPs) should be established by 2020 when a major comprehensive update of the Geologic Time Scale should be published in collaboration with Elsevier Publishing. Time has been passing quickly and our Subcommission should follow its own plans. We should be able to vote on proposed new Aeronian and Telychian GSSPs in 2019. Along with current work on the Aeronian, Telychian and Sheinwoodian GSSPs, any advances in the work on other problematic boundaries (Sheinwoodian/Homerian and Homerian/Gorstian) would also be welcome, since the latter working groups should be formed at the supposed 6th International Symposium on the Silurian System in 2019.

It is about time to think about the nominees for the 2nd ISSS Award named in honour of the late Tatiana N. Koren‘. Voting (titular) members of the ISSS are encouraged to submit nominations of a young Silurian researcher (40 years of age or younger). See each edition of the Silurian Times for guidelines since 2014. Please, send your proposal to my e-mail address: storch@gli.cas.cz

Last but not least, I wish to thank vice-chair Carlo Corradini and secretary Renbin Zhan for their collaboration. Renbin‘s hard work on Silurian Times is appreciated in particular.

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Petr Štorch
Chair, International Subcommission on Silurian Stratigraphy

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International Commission on Stratigraphy
Subcommission on Silurian Stratigraphy

ANNUAL REPORT 2017

1. TITLE OF CONSTITUENT BODY and NAME OF REPORTER

Subcommission on Silurian Stratigraphy (ISSS)

Submitted by:

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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

(1) Rationalization of Global chronostratigraphical classification

(2) Intercalibration of fossil biostratigraphies, integrated zonations, and recognition of global datums.

(3) Establishment of magneto- and chemo-stratigraphic scales

(4) Redefinition of stage boundaries and restudy of global boundary stratotype sections

(5) Correlation of Silurian rock successions and events, including marine and non-marine

(6) Application of astronomically tuned cyclostratigraphy integrated with radiometric data and biostratigraphy

3. ORGANISATION - interface with other international projects / groups

Organisation

The ISSS is a Subcommission of the International Commission on Stratigraphy. The Subcommission is organized by an Executive consisting of Chairman, Vice-Chairman and Secretary, who are all Voting Members of the Subcommission. In the Subcommission elected for 2016-2020 there are fifteen other Voting Members. Broad network of Corresponding Members has first of all a responsibility for communication

in both directions between the Subcommission 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 by both email attachment and as a web release.

Website: http://silurian.stratigraphy.org/ contains newsletters, meeting announcements, discussion posting-boards, bibliography of Silurian articles, links to related sites, and other information.

Interface with other international projects / groups

New IGCP project no. 652 "Reading geologic time in Paleozoic sedimentary rocks" submitted by Anne-Christine da Silva received unequivocal support from the ISSS. The Subcommission is convinced that broad application of astronomically tuned cyclostratigraphy, combined with radiometric dating and integrated with high-resolution stratigraphy, will lead to substantial improvement of the existing Paleozoic time scale.

Close collaboration continues to develop with stratigraphically neighbouring subcommissions on Ordovician (ISOS) and Devonian (SDS) stratigraphy, as documented by numerous international conferences organized in conjunction with the two bodies (Conferences in Lund 2013, Kunming 2014, Ghent 2016, Valencia 2017). The meeting in Valencia joined 4th International Conodont Symposium and SDS annual meeting.

Nominated Officers for 2016-2020:

Chair: **Petr Štorch**
Vice-Chair: **Carlo Corradini**
Secretary: **Zhan Renbin**

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

National/regional support has been provided to Valencia conference organizers and individual ISSS members to facilitate their participation at the conference.

5. CHIEF ACCOMPLISHMENTS IN 2017 (including any publications arising from ICS working groups)

(1) Silurian Times No 24 was edited by the secretary, Renbin Zhan, and distributed in March, 2017, posted on the web site for the ISSS, and circulated as an email attachment to all titular, corresponding and interested members of the Subcommission. It contained the reports on previous meetings, announcements of upcoming meetings and publications, and the latest news and recent publications on Silurian research.

(2) The ISSS annual business meeting was held at the 4th International Conodont Symposium (ICOS IV) in Valencia Spain, June 25-30, preceded by pre-conference field trip in Spanish Pyrenees, June 20-25, and followed by post-meeting field trip to the lower and middle Paleozoic of the Barrandian area and the Carnic Alps, July 1-9. Both the meeting and field-trips were very well organized by José Valenzuela-Ríos, and attended by 4 voting and 12 corresponding members of the ISSS. Strong commendations are extended to the organizing committee of this meeting on behalf of the ISSS.

Work continued on the restudy of several potential GSSP candidate sections for the Base of Aeronian (Yuxian section, China; Hlasna Treban section, Czech Republic and Rheidol Gorge section, UK and base of the Telychian (Bajiaomiao section, China and El Pintado Reservoir section, Spain).

(3) Formal proposal for new Aeronian GSSP was submitted from the Czech Republic:

Štorch, P. Manda, Š. Tasáryová, Z. Frýda, J. Chadimová, L. Melchin, M.J. (in press). A proposed new global stratotype for Aeronian Stage of the Silurian System: Hlásná Třebaň section, Czech Republic. *Lethaia* DOI: 11.1111/let. 12250.

(4) Almost all of the research on the Rhuddanian-Aeronian boundary succession at the classic Rheidol Gorge section is now complete and a paper describing the results of this study is in preparation. A preliminary report on the overall results was presented in 2016 (Melchin et al. 2016) and the results of the study of the chitinozoan faunas and biostratigraphy was presented by De Weirdt et al. (2017):

De Weirdt, J. Vandenbroucke, T.R.A. Cocq, J. Russel, C. Davies, J.R. Melchin M.J. Zalasiewicz, J. and Williams, M. 2017. Chitinozoans from the Rheidol Gorge Section, Central Wales, UK: a GSSP replacement candidate for the Rhuddanian/Aeronian boundary. Palaeontological Association Annual Meeting 2017: Programme and Abstracts. Palaeontological Association Annual Meeting, London, United Kingdom.

(5) Final report including biostratigraphical, geochemical and geochronological data on the base of Telychian at Bajiaomiao section, China (Junxuan Fan *et al*.) is in preparation.

6. SUMMARY OF EXPENDITURE IN 2017

Expenditures	0
Total	0

7. SUMMARY OF INCOME IN 2017

Carried forward from 2016	US$ 750
ICS Allocation	US$ 4,500
Total	US$ 5,250

8. BUDGET FROM ICS IN 2017

ICS Allocation	US$ 4,500
Balance(carried forward from 2017)	US$ 5,250

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

Three ISSS groups working on restudy of the base of the Aeronian GSSP, base of the Telychian GSSP and base of the Wenlock GSSP will continue their study of selected candidate sections in Yuxian, China (Junxuan Fan *et al*. Aeronian GSSP); Rheidol Gorge, Wales, UK (Michael Melchin *et al*. Aeronian GSSP); Bajiaomiao, China (Junxuan Fan *et al*. GSSP of the Telychian stage); El Pintado reservoir, Spain (David Loydell *et al*. Telychian GSSP) and Trannon River section Dyfnant Forest track section, Wales (David Loydell *et al*. GSSP of the base of the Wenlock Series). First formal proposal of the Aeronian GSSP candidate section was published online in Lethaia in October 2017 (Štorch *et al*.), with further submissions anticipated for 2018.

Further update of the website for Silurian Subcommission by Mr. Hou Xudong. We gratefully acknowledge the support of the Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences for this work.

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.

10. OBJECTIVES AND WORK PLAN FOR NEXT 4 YEARS (2017-2020)

Principal work will focus on GSSP-related research – restudy of some previously ratified but currently inadequate basal stratotypes. Research on Aeronian and Telychian GSSP candidates will be completed within this time span and new stratotypes will be chosen. We hope to be able to vote on these candidate sections in 2019. Homerian working group will be established. Restudy of the Homerian GSSP will join the program, along with further study on other potential sections suitable for new GSSP of the Wenlock Series.

Application of astronomically tuned cyclostratigraphy integrated with radiometric data and high-resolution biostratigraphy in conjunction with IGCP no 652 “Reading geologic time in Paleozoic sedimentary rocks”.

We will work on further development of databases that would bring together and make available information from all sources associated with the Silurian researchers. One such database, operated by the Nanjing Institute of Geology and Palaeontology (Geobiodiversity Database, GBDB), has been named as the official database of the ICS.

6th International Symposium on the Silurian System will be organized in the frame of 3rd International Congress on Stratigraphy to be held in Milano, Italy, 2-5 July, 2019. Special scientific session will be devoted to GSSP-related research. Vote on new Aeronian and Telychian stratotypes will be principal program point of the the ISSS Business meeting.

11. BUDGET AND ICS COMPONENT REQUESTED FOR 2017

Financial support for GSSP working group members studying potential GSSP candidate sections for the base of Aeronian, Telychian and Wenlock in China, UK, Spain and the Czech Republic.	US$ 4,000

The ISSS is doing pioneering work in the area of restudy of previously ratified GSSPs. Recent work has shown that many of the Silurian GSSPs, all of which were ratified in the mid-1980s, have serious deficiencies in terms of their potential use as benchmarks for high-resolution global correlation. Three working groups are currently engaged in restudy of the base of the Aeronian Stage, base of the Telychian Stage and the base of the Wenlock Series. The funds will be particularly directed at young members of the working group, and members who have no access to other funds for international travel to participate in this research.

Balance forward from 2017	US$ 5,250
Total proposed budget component requested from ICS for 2018	0

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

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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**

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INTERNATIONAL COMMISSION ON STRATIGRAPHY (ICS)

STATUTES 2017

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1. PREAMBLE AND DEFINITIONS

The International Commission on Stratigraphy (ICS) is a permanent commission of the International Union of Geological Sciences (IUGS). The IUGS was founded in Paris on 10 March 1961 and is a member of the International Council of Scientific Unions (ICSU).

The organisational bodies referred to in the statutes are defined as follows:

a. The Executive Committee of ICS comprises two elected officers (Chair, Vice-Chair) and a Secretary General (appointed by the Chair) and two, non-voting, appointed officers (Informatics Officer and Graphics Officer) responsible for the objectives, purpose and daily operation of the commission.

b. Subcommissions of ICS are organisational bodies with specific, long-term scientific tasks and are managed by a chair, a secretary and one or two vice-chairs.

c. The governing and voting body of ICS is the officers of the Executive Committee and the chairs of each of the Subcommissions, and is hereafter named the Voting Commission.

d. *Ad Hoc* Committees of ICS are organisational bodies with a specific short-term, non-scientific task, such as overseeing procedure, nomination, voting regulation, or *ad*

hoc organisation. Such committees normally consist of a chair and two other members, and are appointed by the Executive Committee, or the management team of a Subcommission.

e. Task (or Working) Groups of ICS are organisational bodies for limited, short-term scientific tasks. Each Task Group addresses a single task; for example, one task can be selecting and defining a stratigraphic boundary stratotype, and another task may be consideration of abandonment of an existing stage and selecting a new one. The chair and secretary of a Task Group are selected either by the Executive Committee, or the management team of the relevant Subcommission.

f. The International Geological Congress, hereinafter referred to as IGC, is determined by the IUGS and by the IUGS statutes. IGC is the quadrennial congress of geological scientists sponsored by IUGS, and organised by an autonomous committee established by the host country or countries.

g. The International Congress on Stratigraphy is sponsored by ICS and will be held every four years. Proposals for future Congresses, which are held during the IGC inter-congress period, are invited by the ICS Executive Committee, which also selects the venue from the proposals received at least two years prior to the proposed event.

2. PURPOSE AND OBJECTIVES

ICS is a body of expert stratigraphers founded for the purpose of promoting and coordinating long-term international cooperation and establishing and maintaining standards in stratigraphy.

Its principal objectives are:

(a) the establishment, publication and revision of the ICS International Chronostratigraphic Chart which is the standard, reference global Geological Time Scale to include the ratified Commission decisions,

(b) the compilation and maintenance of a stratigraphic database centre for the global Earth Sciences,

(c) the unification of regional chronostratigraphic nomenclature by organising and documenting stratigraphic units on a global database,

(d) the promotion of education in stratigraphic methods, and the dissemination of stratigraphic knowledge,

(e) the evaluation of new stratigraphic methods and their integration into a multidisciplinary stratigraphy, and

(f) the definition of principles of stratigraphic classification, terminology and procedure and their publication in guides and glossaries.

The scientific activities shall be carried out through projects or meetings arranged in collaboration with IUGS-affiliated organisations, IUGS-joint programmes, non-governmental bodies and inter-governmental bodies.

3. ORGANISATION

ICS is managed by the Executive Committee.

ICS is organised into Subcommissions, which have longer-term scientific goals. In addition, ICS may create short-term *Ad Hoc* Committees and short-term Task Groups

for specific advice and purpose (cf. also 1e and 1f). The chairs of the Subcommissions and the members of the Executive Committee together form the Voting Commission of ICS that votes on the formal decisions.

4. EXECUTIVE COMMITTEE

The voting officers of the Executive Committee shall be the Chair, a Vice-Chair and the Secretary General. The past chair will ordinarily become consultant ex-officio member of the Executive Committee. All officers serve in an individual capacity. The other officers shall serve as advisors to the Chair and assist him/her in the performance of his/her duties. The Chair and Secretary General are responsible for its daily operation, in accordance with these statutes. The ICS Executive Committee appoints two positions of special service to ICS: the Informatics Officer and the Graphics Officer. These appointments are for 4-year terms that coincide with those of the Executive officers and are renewable.

4.1. Chair

The Chair shall be the chief executive officer of ICS. He/she shall be responsible for the management of its activities within the scope of the authority delegated to him/her by IUGS. He/she shall solicit the advice of the Voting Commission, when necessary, for the administration of ICS and consult with it on matters of major policy and scientific programmes either by correspondence or by meetings.

4.2. Vice-Chair

The Vice-Chair shall serve as chair for the remainder of the term of office if the position of chair should become vacant. The Vice-Chair assists the chairperson with his/her regular duties, activities and work, and in particular oversees stratigraphic standardisation.

4.3. Secretary General

The Secretary General is appointed by the chair of the Executive Committee, and shall assist the chair in his/her administrative and scientific work, and keeps the financial account. He/she shall record the minutes of meetings and organises the votes within the Voting Commission.

4.4. Past Chair

The past chair will ordinarily serve as consultant ex-officio member of the Executive Committee for the four-year period following his/her chair period.

4.5. Informatics Officer

The Informatics Officer is appointed by the Executive Committee and shall manage the ICS website and the ICS-linked stratigraphic database and maintain the ICS archives on the ICS website. As appropriate, the Informatics Officer will provide advice and help to subcommissions developing websites. The position is non-voting and is renewable after each 4-year term with approval of the Executive Committee.

4.6. Graphics Officer

The Graphics Officer is appointed by the Executive Committee and shall design the ICS International Chronostratigraphic Chart, updates and translations of the ICS Chart and designs appropriate for a variety of products. The position is non-voting and is renewable after each 4-year term with approval of the Executive Committee.

5. SUBCOMMISSIONS

Subcommissions of ICS are organisational bodies with specific, longer-term scientific tasks such as the standardisation of stratigraphic units, the documentation and communication of major stratigraphic data to the global earth-science community, and international stratigraphic cooperation. Subcommissions organise ballots (cf. section 9) of their voting members to decide critical scientific issues and subsequently inform the ICS Executive Committee of the result.

5.1. Composition

Each Subcommission shall be managed by a chair and a secretary. One or two vice-chairs may also be elected. Subcommissions report to the Executive Committee, and may be terminated if they become inactive or seriously ineffective, as indicated, for example, by lack of submission of annual reports, failure to respond to ICS communications, and/or show no action for longer than one year.

The voting membership of the Subcommission consists of its management team together with up to twenty members, and is referred to as the Voting Subcommission. Up to twenty voting members shall represent regional and methodological diversity in an appropriate manner. Membership may be terminated if a voting member fails to participate for 6 months or more in the work of the subcommission, and/or does not respond during this time to communications from its chair. Membership may also be terminated for conduct judged to be unprofessional by the ICS Executive Committee in consultation with the Subcommission chair or his/her deputy, as judged appropriate (cf. section 10).

Subcommissions may appoint a reasonable number of corresponding members to advise voting members in achieving the assigned scientific tasks, e.g. participating in boundary working groups. The corresponding membership shall reflect regional and methodological diversity in an appropriate manner.

5.2. Officers

The Chair shall be the leader of the Subcommission. He/she is responsible for the execution of agreed-upon scientific goals and the preparation and the contents of annual scientific and financial reports of the Subcommission. In consultation with the voting members of the Subcommission, he/she shall establish work plans and operating budget requests for the following year.

The Vice-Chair shall serve as chair when the position of chair should become vacant.

The Secretary is appointed by the Chair of the Subcommission, and shall assist the chair with scientific and administrative duties, and is responsible for the organisation of votes within the Subcommission.

5.3. Results

The progress and results of subcommissions are annually reviewed by the Executive Committee. The Executive Committee may dissolve a Subcommission upon completion of its entrusted mandate or if the Subcommission is inactive. A Subcommission is considered inactive when it no longer elects executive officers, submits annual reports or no longer responds to communications and ballots from the Executive Committee. The decision on dissolution requires consent from IUGS.

5.4. Other Bodies

Subcommissions may appoint such Task Groups (cf. section 7), regional committees or other *ad hoc* groups, which they consider necessary to fulfill their scientific tasks. These bodies report to the chair of the respective Subcommission.

Subcommissions which are responsible for system or lower ranks of the ICS International Chronostratigraphic Chart shall establish Task (or Working) Groups for the purpose of defining the basal boundaries of component chronostratigraphical/ geochronological units, if such boundaries have not previously been defined. Boundary stratotypes are sought to the level of stages, but not at lower chronostratigraphical ranks.

6. *AD HOC* COMMITTEES

Ad Hoc Committees of ICS are organisational bodies with specific short-term, non-scientific tasks, such as overseeing procedure, nomination, voting regulation, and/or *ad hoc* organisation.

Committees normally consist of a chair and two other members, and are appointed by the Executive Committee, or the management of a Subcommission of ICS.

The organisation of an *Ad Hoc* Committee is related to its tasks, and is subject to approval by the ICS body that appointed it.

7. TASK (or WORKING) GROUPS

Task or Working Groups are organisational bodies for limited, short-term stratigraphic tasks. Task Groups are generally organised under individual Subcommissions, but the Executive Committee also may appoint Task Groups for specific tasks that relate to its activities and responsibilities. Commonly, a Task Group is created for the selection and definition of the lower boundaries of chronostratigraphical/geochronological units. Task Groups may also be created for the purpose of replacing and/or selecting new boundary definitions, stage units or other stratigraphical units. Each Task Group will have a single scientific task.

7.1. Task Groups

Task Groups have a four (4) year task that may be extended for additional four (4) year terms as appropriate, depending on sufficient progress with their entrusted task. If, after the eight (8) year allotted period, there is a need to continue, the task group should be dissolved and then reconvened at the discretion of the Subcommission Chair.

7.2. Officers and Members

Officers of a Task Group are the leader, and where deemed appropriate, a secretary. These officers are selected either by the Executive Committee, or by the management of Subcommissions, depending under which body the Task Group resides, and are expected to behave in the spirit of Section 10.

Task Groups may appoint a reasonable number of members that represent regional and/or methodological diversity in an appropriate manner (nor exceeding 40 members). Membership may be terminated if the member does not respond to communications from its Task Group chair for 6 months.

7.3. Results

The progress and results of Task Groups are annually reviewed by the Subcommission and/or Executive Committee under which they reside. Task Groups may be terminated if they fail to respond to communications from the individual Subcommission or Executive Committee under which they reside.

7.4. Voting

Task Groups organise ballots (cf. section 9) of their voting members to decide critical scientific issues and subsequently inform the Subcommission or Executive Committee under which they reside of the result.

7.5. Terms of Office

Task Groups are automatically dissolved once they have fulfilled their objective, scheduled until the objective is completed, with an expected maximum duration of eight years (cf. section 7.1).

8. ESTABLISHMENT AND DISSOLUTION OF ICS CONSTITUENT BODIES

8.1. Subcommissions

New Subcommissions shall be established when the Executive Committee of ICS is convinced of the necessity, and makes a recommendation for the establishment of a new Subcommission first to the Voting Commission and then to IUGS. When consent is given by the Voting Commission and IUGS, the ICS Executive Committee shall appoint a temporary Subcommission chair and optionally a vice-chair. For subsequent terms of office, elections shall be held within the Subcommission by a quorum of its own voting members. Voting members of a newly formed Subcommission are elected by its officers (cf. section 9.6)

The dissolution of Subcommissions requires the consent of IUGS, based on recommendations by the ICS Executive Committee (cf. sections 5.3 and 10).

8.2. *Ad Hoc* Committees

Ad Hoc Committees may be established and dissolved by decision of the ICS Executive Committee. *Ad Hoc* Committees may be reorganised or regrouped with other ICS bodies by decision of the Voting Commission of ICS.

8.3. Task Groups

Task Groups (cf. section 7) may be established and dissolved by decision of the Executive Committee of ICS and/or the management of Subcommissions under which the Task Group resides.

9. TERMS OF OFFICE, ELECTIONS AND VOTING

9.1. Terms of Office for Officers

The terms of office for the officers of the Executive Committee, the Subcommissions, *Ad Hoc* Committees, and Task Groups shall be the period between two IGCs, normally four (4) years. All officers can be re-elected or re-appointed (Secretary General, Informatics Officer, and Graphics Officer) for one additional term of four (4) years. If circumstances necessitate the term of office to begin in the interval between two IGCs, the period of office will not be extended beyond the second IGC after the officer started in his/her function.

9.2. Terms of Office for Voting Members

The terms of office for the voting members of Subcommissions and Task Groups shall be the period between two IGCs, normally four (4) years, and can be extended for a maximum of two additional four (4) year periods.

9.3. Election of the ICS Executive Committee

Eighteen (18) months prior to the International Geological Congress, the Executive Committee appoints the chair of the Nominating Committee, which shall not include any of the Executive Committee. The chair of the Nominating Committee shall select two (2) additional Nominating Committee members.

The Nominating Committee shall invite proposals from all Subcommissions of ICS of candidates for the positions of Chair and Vice-Chair of the Executive Committee, but the Committee shall not be restricted thereby in its choice of candidates. The Chair and Vice-Chair of the Executive Committee may request re-election for one term beyond their first period of office (cf. section 9.1).

The Nominating Committee shall evaluate the merits of all proposed candidates for each position, taking into consideration their scientific qualification, managerial capability and willingness to serve. The Committee shall nominate to the ICS Chair at least two candidates for each of the two elected positions no later than twelve (12) months prior to the next IGC, bearing in mind geographical and disciplinary diversity in order to ensure that the principal schools of stratigraphic thought are represented in the Executive Committee.

Upon receipt of the Nominating Committee's submission, the Secretary General shall promptly circulate the proposal of nominated candidates to all the members of the Voting Commission for voting and election (cf. also 1c and 9.7).

The election requires approval by IUGS Executive Committee and ratification by the IUGS-IGC Council.

9.4. Election of the managing committee of a Subcommission

A chair and two optional vice-chairs of a Subcommission of ICS are proposed to ICS after appropriate ballot within each Subcommission. From these candidates, the new officers are subsequently elected by the Voting Members of the Commission (cf. section 1c) by ballot to be mailed by the general secretary not later than twelve (12) months prior to the next IGC. A secretary is appointed by the chair following his/her election. All members of the managing committee of Subcommissions are approved and ratified by the ICS Executive Committee.

9.5. Election of the leaders of Task Groups

The leaders (chair and secretary, as required) of a Task Group are proposed by the management team of the Subcommission or the Executive Committee of ICS under which the Task Group resides. Task Group leaders are confirmed by normal voting procedures in the ICS Subcommission or ICS Executive Committee under which they reside.

9.6. Election of the Voting Members of Subcommissions and Task Groups

Voting members of new Subcommissions are elected by its initial executive. New voting members of existing Subcommission are elected by its executive, upon

consultation with existing voting members, and confirmed by the Executive Committee of ICS.

Voting members of Task Groups are elected by its executive, in consultation with existing voting members, and confirmed by the management or executive of the ICS body under which the Task Group resides.

9.7. Voting Procedures in ICS

The members of the Voting Commission (cf. section 1c), Subcommissions and Task Groups make their decisions by vote. For approval, all decisions, including elections, require a sixty percent (60%) majority of delivered votes, provided that a quorum of 60% has been attained. In cases where no quorum is attained the first round, a second round of voting is organised. Elections with more than one candidate will require the winner of a relative majority of less than 60% to pass a second ballot listing only him/herself, where he/she has to receive a 60% confirmation.

Voting shall be conducted by electronic mail (e-mail), giving a deadline of thirty (30) calendar days for the receipt of the votes. Voting Members may vote "yes," "no" or "abstain". Formal meetings of ICS that attain a quorum of 60% can arrange in-session ballots. Integrity of the voting process must be maintained. Discussion must take place and be allowed to run its course before ballots are distributed. Once ballots have been distributed, no voting member shall circulate materials or arguments intended to influence the vote of other voting members. A voting member doing so will have his/her ballot disqualified and will be reprimanded by the appropriate subcommission chair.

10. PROFESSIONAL BEHAVIOUR

It is expected that all voting members and officers of ICS, subcommissions, task groups and *ad hoc* groups will treat others with respect and will maintain the integrity of the voting process when votes are taken. Discussions whether orally or written (e.g. e-mail) can be contentious. Disrespectful and unprofessional comments directed at other individuals are not tolerated. Should they occur, the matter will initially be dealt with by the Subcommission chair or his/her deputy, the chair of the appropriate body is then required to report such incidents to ICS Executive Committee, which after a fair investigation can issue a reprimand or termination of the membership of the guilty party. Violations of the integrity of the voting process (cf. section 9.7) will result in disqualification of the ballot submitted by the violator and a letter of reprimand.

11. RATIFICATIONS

11.1. Ratifications by ICS

The ICS Executive Committee ratifies:

a. Election or appointment of officers (management) in subcommissions.

b. Election or appointment of voting members of subcommissions

11.2. Ratifications by IUGS

IUGS ratifies elections made by the Voting Commission of ICS, including:

a. The nomination of members of the Executive Committee,

b. Stratigraphic standards like GSSPs, formal stratigraphic stage names and units of other ranks,

c. Abolition of and/or establishment of new Subcommissions,

d. The ICS Statutes.

11.3. Ratification by the IUGS-IGC Council

Members of the ICS Executive Committee must also be ratified by the IUGS-IGC Council.

12. MEETINGS

The Executive Committee shall meet at the request of the Chair or of any two other officers of the Executive Committee.

The Voting Commission of ICS shall meet during the International Geological Congress. Additional formal meetings of the Voting Commission may be called by the Chair of ICS with the advice of the Executive Committee. Formal meetings of ICS that attain a quorum of at least 60% can arrange in-session ballots.

All Subcommissions shall endeavor to hold at least one meeting during each International Geological Congress. They are encouraged to organise additional meetings during major international conferences on their field of scientific expertise. Task Groups are also encouraged to have formal meetings during each International Geological Congress, and organise additional meetings during major international conferences on their field of scientific expertise. Formal meetings of Subcommissions and Task Groups that attain a quorum of at least 60% can arrange in-session ballots.

13. ANNUAL REPORTS

13.1. Subcommissions, Task Groups and *Ad Hoc* Committee Reports

The chairs of the Subcommissions shall transmit annual reports to the Secretary General of ICS no later than the first of November of each year. The annual reports shall include an overview of the scientific activities and achievements, together with the statement of operating accounts, for the current year and work plans and anticipated achievements, with the operating budget request, for the following year. In the case of Subcommissions with constituent bodies, these Subcommissions reports shall include the scientific achievements and plans of these bodies.

Chairs of Task Groups and *Ad Hoc* Committees shall transmit annual reports to the chair of the ICS body under which they reside. They are also responsible for including the group’s operating costs in that report and projected budget for the new reporting period.

13.2. Commission Report

The Chair of ICS shall submit a consolidated annual report on behalf of ICS to the IUGS Executive Committee at the time stipulated by that IUGS Executive Committee via its secretariat.

The ICS report shall contain (1) the reports of the individual Subcommissions, Task Groups and *Ad Hoc* Committees, and (2) an executive document that:

a. provides an executive summary report,

b. highlights the scientific achievements of the constituent ICS bodies,

c. communicates all formal decisions taken by the Voting Commission of ICS,

d. reports on administrative matters of ICS,

e. provides a consolidated statement of ICS's operating accounts for the current year, and

f. submits the work plans and recommends a consolidated operating budget request of ICS for the following year.

The ICS annual report shall be made available to the management of all Subcommissions.

14. ICS WEBSITE AS AN OFFICIAL ARCHIVE

The ICS website is the official archive of the ICS International Chronostratigraphic Chart and Table of GSSPs. These are the responsibility of ICS Executive, particularly the Informatics and Graphics officers at direction of the ICS Chair. Documents to be made available on the website include the ICS statutes and official correspondence between the ICS and IUGS EC regarding GSSP and other ratification decisions.

15. GEOBIODIVERSITY DATABASE (GBDB)

Stratigraphic information, including all relevant litho-, bio- and chronostratigraphic data together with any non-biological data, from GSSP proposals submitted to ICS voting members must be entered in the Geobiodiversity Database, in cooperation with, and supported by GBDB staff.

16. ENTRY INTO FORCE AND AMENDMENTS TO STATUTES

These statutes are now in force having been approved by ICS on 24 March 2017 and ratified by the IUGS Executive Committee on 25 April 2017. These statutes are based upon but also significantly revised from those approved by ICS on 28 August 2001, and accepted with minor modifications by IUGS in February 2002, which, in turn, supersede the statutes accepted by IUGS at its annual meeting, 15-18 January 1997.

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REPORTS OF ACTIVITIES IN 2017

1. Report on the Valencia meeting in Spain in June 2017

by José Ignacio Valenzuela-Ríos and Jau-Chyn Liao

During June 25-30, 2017, the 4th International Conodont Symposium "Progress on Conodont Investigation" coinciding with the Fifty Anniversary of the Pander Society, was held in the Burjasot Sciences Campus of the University of Valencia, Spain. Also, two international sub-commissions of stratigraphy (ISSS and ISDS) annual meetings took place in conjunction with ICOS IV. Therefore, the conference brought together three important scientific meetings for the Earth Sciences at the highest international level.

By encouraging attendance of experts from different disciplines, the ICOS IV provided special emphasis in discussing both the current state-of-art in multidisciplinary conodont research and applications and their special role in calibrating the Silurian and Devonian time scale.

The conference started with a pre-conference fieldtrip in the Palaeozoic outcrops of the Spanish Pyrenees guided by Nacho Valenzuela and his team; an intra-conference field trip in the Upper Devonian strata of the Iberian Chains in Tabuenca (leaded by Rodolfo Gozalo and Nacho Valenzuela); a post-conference fieldtrip scheduled in the Prague Synform (by the Czech team leaded by Ladislav Slavik team) and in the Carnic Alps (Italian-Austrian team leaded by Carlo Corradini).

About 100 participants from over 25 countries attended this scientific event. As a result of participant's effort, 85 contributions have been published in the Congress Volume. These contributions range from Cambrian to Triassic, with special emphasis on Silurian and Devonian matters. After the official opening by the Rector of the University of Valencia, the congress started with the Conference given by Prof. Dr. Peter Carls (Braunschweig, Germany) about the "Last six decades of conodonts, problems, and Solutions for late Silurian and Lower Devonian Stratigraphies and Correlations" and closed with the Conference by Dr. Manuel Rigo (Padua, Italy) on a reflection about the causes of conodont extinction. Four keynotes speakers presented reports on the Upper Cambrian to Lower Ordovician conodont research in southern Laurentia (Prof. James F. Miller, Missouri, USA), the Conodont skeletal anatomy and apparatus complexity through time (Prof. Mark A. Purnell, Leicester, UK), the role of conodonts in building standards of reference for expressing the history of Earth (Prof. José Ignacio Valenzuela-Ríos, Valencia, Spain) and on the nature of Permian to Lower Triassic conodont biostratigraphy (Prof. Charles M. Henderson, Calgary, Canada).

The communications were arranged in the following eight sessions: 1) IGCP 653, The rise of conodonts prior to and during the Great Ordovician Biodiversification Event, 2) Silurian Integrated stratigraphy: conodont, graptolites, brachiopods fauna and isotope analysis, 3) Progress on Middle Devonian conodont investigation from 60's to present: High-Resolution Bio-Chronostratigraphy, regional Correlation and Global Event Stratigraphy, 4) Devonian Global Events, environments and time, 5) Carboniferous Conodont Stratigraphy, Sedimentology and Tectonothermal analysis, 6) Permian to Triassic conodonts: Biostratigraphy, Isotopes and Geochemistry, 7) GECkO: Global

Events impacting Conodont Evolution and 8) Recent advances in conodont Palaeobiology. Additionally, three annual business meetings took place during the congress: the *ISSS* and the *Pander Society* (on June 27th) and *SDS* (on June 29th).

In the scheduled program of the Pander Official Dinner, June 29th 2017, two important events took place: the celebration of the 50th Anniversary of the Pander Society and the Pander Medal awards ceremony. The new nominated for their international scientific career on conodont research were: Chenyuang Wang (Nanjing Research Institute, China, 2016), Viktor Maslov and Olga Artyushkova (Ufa Research Institute, Russia, 2016), Michael J. Orchard (Vancouver, GSC, 2017) and Peter W. Carls (Braunschweig, Germany, 2017).

The organizers express gratitude for all participants and the researchers who contribute to the 4 ICOS meeting and also congratulate the new Pander medallists.

Participants during the scientific sessions in front of the main library “Eduard Boscà”, Sciences Campus of Burjasot (University of Valencia)

Participants of the Spanish Pyrenees field trip visiting Devonian successions along the Noguera-Pallaresa river

Participants of the Iberian Range field trip examining Upper Devonian strata in the Tabuenca area

Participants of the Prague Synform field trip visiting the Lochkovian/Pragian boundary GSSP

Participants of the Carnic Alps field trip in the Silurian of the Cellon section

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2. Report on the IGCP Project 653 annual meeting in 2017

by Zhan Renbin and Zhang Yuandong

The annual meeting in 2017 for IGCP Project 653 was held in Yichang China between Oct. 8 and Oct. 19 organized by Zhang Yuandong and his team. The theme of this year's meeting is "Filling the gap between the Cambrian Explosion and the GOBE", and the meeting comprises a three-day indoor meeting (Oct. 9, 10, and 12), an one-day mid-conference field excursion, and a six-day post-conference field excursion. The mid-conference field excursion was arranged to visit both Ordovician GSSP sections (the Dapingian GSSP at Huanghuachang, and the Hirnantian GSSP at Wangjiawan, both sections located north of Yichang within 40 km), and the biggest dam in the world, i.e. the Three Gorges Dam, about 24 km west of Yichang.

The meeting has 65 registered delegates from 12 countries like British, France, Germany, Russia, Estonia, Sweden, Morroco, United States, Australia, South Korea, Viet Nam, and China, amongst which 18 are from outside China, and 20 student representatives. The domestic delegates are from various institutions like Northwest University, Central South University, Peking University, Chinese Academy of Geosciences, Natural Museum of Guangxi, Geologic Survey of Xi'an, Geologic Survey of Wuhan, China University of Petroleum, and Nanjing Institute of Geology and Palaeontology (NIGP), CAS, etc. Three invited speakers were presented at the meeting, and they are Dr. Rudy Lerosey-Aubril from New England University of Australia, Dr. Zhu Maoyan from NIGP China and Dr. Cole Edwards from Appalachia State University of America. Besides, the indoor meeting also has 38 oral presentations and 16 posters dealing with palaeontology of different fossil groups, stratigraphy, sedimentology, geochemistry, palaeogeography, fossil Lagistätten, palaeoecology, Big Data, etc. and the fossil groups include brachiopods, graptolites, trilobites, conodonts, acritarchs, nautiloids, sponges, echinoderms, trace fossils, radiolarias, and some exceptionally well-preserved or problematic fossils. Two specialized workshops were arranged during the indoor meeting and each of them lasted for one hour. The first was on the GBDB database (contents and applications) given by Dr. Fan Junxuan from NIGP China. He also demonstrated some of the analytical and visual functions of the database. The second was given by Dr. Zhu Xuejian dealing with the new discovered late Cambrian fossil lagistätten found from the Jiangshanian (Furongian, upper Cambrian) in Jinxi of western Guangxi Autonomous Region. It is now provisionally called the Guole Biota. All participants had an opportunity to look at those exceptionally well-preserved fossils, such as trilobites, non-trilobite arthropods, brachiopods, graptolites, coelenterates, echinoderms, etc. and discussed their biological affinities and palaeoecological and palaeogeographical implications.

The collection of the extended summaries was formally published by the Zhejiang University Press, and it contains 55 short papers prepared by 125 authors from 12 countries covering a wide scope of contents. It will be distributed to all participants of the meeting and those colleagues and friends who are interested in.

The post-conference field excursion was led by Zhan Renbin and his team, and 32 delegates took part in this trip. During the six-day excursion, all participants visited five classic Cambrian-Ordovician-Silurian sections in western Hubei and northwestern Hunan provinces, such as the Gudongkou (Xingshan, western Hubei) section of Cambrian, Ordovician and lower Silurian, the Xiangshuidong (Liujiachang of Songzi, southwestern Hubei) section of upper Cambrian, Ordovician and lower Silurian, the Wentang (Zhangjiajie, northwestern Hunan) section of upper Cambrian and Ordovician, the Paibi (Huayuan, northwestern Hunan, the GSSP of Paibian and Furongian) section of Cambrian, and the Luoyixi (Guzhang, northwestern Hunan, the GSSP of Guzhangian) section of Cambrian. Prof. Peng Shanchi went to the field and gave detailed

explanations on both GSSPs for us.

Two business meetings were held during the indoor meeting. Because the Ordovician Subcommission has five titular members at the meeting, they had a two-hour business meeting discussing the Dayangcha section proposed by Wang Xiaofeng and Svend Stouge as an Auxillary section for the base of Ordovician, the next Ordovician Symposium in Novosibirsk in 2019, and some other issues. The IGCP 653 had an open meeting introducing the main progress the project had already achieved and discussing those following symposiums and workshops proposed by the project, such as the next annual meeting in Cincinnati State University in 2018, the special session during the next International Palaeontological Congress in Paris in 2018, and some joint activities during the Novosibirsk meeting in 2019 (as the annual meeting of the project). The senior leader of IGCP 653 Thomas Servais also reported the budget of the project from IUGS and UNESCO, and its balance so far.

Group photo during the post-conference field excursion at Wentang, Zhangjiajie, northwestern Hunan Province. Opposite the Lishui River is the nearly complete Ordovician sequence that is mainly composed of carbonate rocks.

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3. Notes on the ISSS business meeting in Valencia

(Information *provided by* Huang Bing, and *sorted out by* Zhan Renbin)

Time and date: 10:00 am~11:00 am, June 27, 2017
Place: Sala D'Actes, University of Valencia, Spain
Chair: Prof. Petr Štorch
Attendees: About 20 Silurian workers and experts including 3 titular members of ISSS (Carlo Coradini, Petr Štorch, Wang Yi)

The roughly one hour business meeting was chaired by Petr Štorch (chair of ISSS) and includes four items on the agenda.

I. Search for better GSSPs of some Silurian stages and series

Petr first pointed out that, it is now commonly accepted that those Silurian GSSPs in the United Kingdom are not good at all, i.e. academically problematic with many problems. So, the subcommission decided to restudy some of them, and accordingly some specialized working groups had been established.

1. The base of Aeronian GSSP Working Group is led by Petr himself. Extensive and intensive palaeontological and stratigraphical (particularly biostratigraphical) investigations led to the appearance of some possible candidate sections for this particular boundary. The Shennongjia section in northwestern Hubei Province of Central China is being studied by Fan Junxuan, Mike Melchin and several others including some more titular members like Carl Brett and Axel Munnecke, but the work is still going on and the proposal is yet to come. The Hlasna Treban section in the Prague Basin of Czech Republic is thought to be the most advanced, and a formal proposal has already been submitted to Lethaia that will be published in 2018. The Rheidol Gorge section in Wales of UK is also on the way of investigation with some of the results published, but no formal proposal has been finished and submitted.

2. The base of Telychian GSSP Working Group is led by Michael Melchin, and there are two candidate sections that had already been proposed. The El Pintado Reservoir section in Seville Province of Spain has some research results published by Loydell *et al*. in 2015, but some researchers think this section needs to be restudied from various aspects. The Shennongjia section in northwestern Hubei Province of Central China is actually the same section mentioned above, and the particular study is still going on before a formal proposal could be submitted.

3. The base of Wenlock GSSP Working Group is led by David Loydell that has no new achievements particularly on this recently. The only potential candidate section is the Banwy River section in Wales of UK that is normally very difficult to access. Some of the results of early study had already been published by Loydell and Cave (1996), but it definitely needs further study from various aspects in the near future. More attempts to find other candidate section(s) are really needed and urgent.

II. Sixth Silurian Symposium in 2019

Both titular and corresponding members of the Silurian subcommission are urged to propose or to suggest for the 6th quadri-annual Silurian Symposium to be held in 2019. All suggestions and official proposals for this meeting are much appreciated. And all three working groups, i.e. the base of Aeronian, Telychian and Sheinwoodian (Wenlock) GSSPs are supposed to hand in their final reports on those restudied sections. We hope

to vote on some of the proposed GSSPs in 2019, i.e. within this term of our current executives before the next International Geological Congress. And some less formal workshops associated with some relevant conferences are encouraged and supported to organize in 2018.

Carlo Coradini suggested that the Sixth Silurian Symposium should be held in Milano Italy in July 2019. Once again, Petr urged each working group attached to the subcommission and each research group of any particular country to try their best to finish and publish something on their restudy on any of the GSSPs, and to submit relevant proposals to the Executives of ISSS.

III. General update of the ISSS website

Petr suggests that the webmaster of ISSS should update the list of voting and corresponding members including those details such as affiliation, email and postal addresses, telephone numbers, etc. It is also suggested that all relevant activities with ISSS, particularly any news and information about those Silurian GSSPs working groups should be published in the webpage of the subcommission. Meeting circulars are encouraged to be pasted on to the ISSS webpage.

IV. New ICS Statuses

Petr mentioned that the newly revised ICS Statuses was formally issued in June 2017. It should be distributed to all ISSS voting members as soon as possible, and will be distributed to all Silurian colleagues together with the next Silurian Times to be issued early next year.

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4. Report on the restudy on the base of the Wenlock Series

by David Loydell

It has long been recognised that the existing GSSP for the base of the Wenlock Series at Hughley Brook, Shropshire, England is highly unsatisfactory. Finding a replacement GSSP, however, has proved far from straightforward. Undoubtedly the most useful sections existed in the Czech Republic, with the Velká Ohrada section described by Štorch (1994) being particularly informative, but unfortunately this section is no longer exposed.

In many places research is not really hampered by the absence of a functional GSSP as there is an unconformity between strata of late Telychian age and those demonstrably within the Sheinwoodian. Such an unconformity has been widely recorded, e.g. in the East Baltic (e.g. Loydell *et al.* 2003, 2010), on Bornholm (Loydell *et al.* 2017) and in Spain (Loydell et al. 2009). In many areas therefore we know that the strata that we are studying are of Telychian age or we know that they are of Sheinwoodian age and we also know that there is not a continuous record through the boundary between the two series.

For practical purposes many workers now use the base of the *Cyrtograptus murchisoni* graptolite Biozone as that also of the Wenlock Series. On this basis any proposed replacement GSSP section needs to have good exposure through at the very least the *Cyrtograptus centrifugus* Biozone (which underlies the *murchisoni* Biozone) and obviously through the *murchisoni* Biozone also. Also required is an excellent fossil record, particularly of the two *Cyrtograptus* species.

The Banwy River section, a section representing an outer shelf setting within the Welsh Basin, is probably the best section that has been studied in detail (Loydell and

Cave 1996). It exposes all of the upper Telychian and lower Sheinwoodian graptolite biozones; however, despite extensive collecting (more than 5000 graptolite specimens from the *centrifugus* and *murchisoni* biozones), *Cyrtograptus murchisoni* was found to be uncommon. Thus there must be the possibility (true of course for any section) that should further collecting be undertaken in the future the first appearance of *Cyrtograptus murchisoni* might prove to be slightly lower in the section than recorded by Loydell and Cave (1996), not a situation that would promote stratigraphical stability.

Previously when discussing the Llandovery/Wenlock boundary I have mentioned two other Welsh sections with the potential to be a replacement GSSP: the Trannon River section and a track section in the Dyfnant Forest. Unfortunately the PhD student who was studying these sections was unable to complete the task (not everyone is suited to detailed biostratigraphical studies of graptolites through thick sections of mudstones and/or turbidites). The samples collected (largely by me, and for Trannon with the assistance of Tony Butcher) have been retained and I will commence study of these when time allows. The collections are substantial.

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Štorch, P. 1994. Llandovery-Wenlock boundary beds in the graptolite-rich sequence of the Barrandian area (Bohemia). Journal of the Czech Geological Society, 39, 163–182.

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GUIDELINES FOR THE ISSS AWARD: KOREN' AWARD

Description: This award is intended to recognize and encourage excellence in research related to Silurian stratigraphy and paleontology by younger researchers. It will be presented every four years at the Silurian Symposium.

It is proposed that this award be formally termed the "Koren' Award" in honor of the late Dr. Tatiana Koren' (1935-2010), former Secretary and Vice Chair of the Silurian Subcommission (as well as member of Ordovician and Devonian subcommissions) and a global expert on graptolites who made many lasting contributions to the biostratigraphy of the Silurian System (see Memorial in 2011 in *Silurian Times* (No. 18) and *Ordovician News* (No. 28)).

Selection Procedure: Recipient of this award will be based on nominations from voting (titular) members of the Silurian Subcommission overseen by a committee of three titular members. The nomination will consist of an updated CV, including list of publications relevant to Silurian stratigraphy and letter or letters of recommendation from one or two or several voting members of ISSS. Letters should emphasize the fit of the nominee for the criteria listed below.

The nominations will be reviewed by the committee on awards (presently Carl Brett, Renbin Zhan and Petr Štorch) who will prepare a slate of candidates including brief synoptic biographies that will be voted upon by all titular members. The candidate receiving the largest number of votes will receive the award.

Criteria for selection: The candidate may be chosen from among any paleontologists/stratigraphers who fit the following criteria:

A successful candidate should:

1) be 40 years of age or younger.
2) possess a graduate degree (ideally PhD, although candidates with masters degrees may be considered).
3) have completed at least five years of professional research (PhD studies included).
4) have a substantial record of publication (mostly senior authored) related to Silurian stratigraphy, paleontology, paleobiology, paleobiogeography or paleoceanography, etc. in peer-reviewed journals.
5) be actively contributing to Silurian research at the time of the award.
6) demonstrate an outstanding ability to communicate ideas verbally (as in conference talks) and in writing.
7) be supported by two or more titular members of the Silurian Subcommission.

Besides, the ISSS will avoid awarding two continuous recipients from the same country or state in 8 years.

Certificate and bonus: Each winner of the "Koren' Award" will receive a formal Certificate issued by ISSS with the Chair's signature and $300US as bonus, both of which will be awarded at the closing ceremony of each Silurian Symposium every four years.

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ANNOUNCEMENTS OF SILURIAN RELATED MEETINGS AND ACTIVITIES

International Geoscience Programme Project 653 — Annual Meeting 2018

Trekking Across the GOBE:
From the Cambrian through to the Katian
June 3-7, 2018
Athens, Ohio

Part of the Maysville, Kentucky roadcut: location for the mid-conference field trip

Second Circular

Conference website: https://igcp653athens2018.wordpress.com

Sponsors

Ohio University Department of Geological Sciences
Ohio University Research Office

Ohio University, Athens, Ohio, USA

The annual meeting of the IGCP 653, entitled **"Trekking Across the GOBE: From the Cambrian through to the Katian**" will bring together international experts on all aspects of the late Cambrian through Late Ordovician earth system. The meeting in Athens will include three days of scientific sessions and a full day mid-conference field trip to explore the stratigraphy and paleontology of spectacular Ordovician outcrops.

We look forward to welcoming you to Athens!

Schedule and Deadlines

March 15, 2018	Deadline for registration, abstracts, and payments
April 2018	Distribution of third circular
May 30-June 2, 2018	Pre-conference excursion
June 3, 2018	Arrival, registration, and opening reception in Athens
June 4, 5, 7, 2018	Technical sessions
June 6, 2018	Mid-conference excursion (included in registration)
June 7, 2018	Conference dinner (included in registration)
June 8-9, 2018	Post-conference excursion
September 1, 2018	Deadline submissions to Paleo3 special issue

*Part of Thursday, June 7th will include a special session on Cincinnatian stratigraphy and paleontology to connect the mid-conference and post-conference field trips.

Location

The meeting will be held on the campus of Ohio University. Established in 1804, OHIO is the oldest university within the Northwest Territories of colonial America (https://www.ohio.edu). Located in Athens, a quintessential college town of approximately 30,000 people in the scenic rolling hills of southeastern Ohio, Ohio University offers high-quality undergraduate and graduate education on one of the nation's most picturesque campuses. Geology courses have been offered here since 1826, and today the Department of Geological Sciences (https://www.ohio.edu/cas/geology/) continues a strong tradition in training the next generation of geoscientists. Ohio University is located at the edge of the Appalachian plateau and is surrounded by Pennsylvanian outcrops. However, spectacular outcrops of the Cincinnatian (Katian) strata are less than two hours away. The universities within the state of Ohio have historically strong research foci in Paleozoic paleontology and sedimentary geology, often with a particular emphasis on the Ordovician.

Athens is known for its collegiate, environmentally friendly, and craft brew-loving culture (http://athensohio.com). Residents value diversity, inclusion, and progressive ideals. Weather in June is typically moderate. Average monthly temperatures range from low of about 13° C (56° F) at night to highs near 28° C (82° F) during the day.

Reaching Athens

Athens is located 120 kilometers (75 miles) southeast of the John Glen Columbus International Airport (CMH) (http://flycolumbus.com). Columbus receives flights from all major US gateway airports and airlines daily. GoBus, a regional bus service (http://ridegobus.com), also connects CMH and Athens.

Shuttles will be arranged to transport delegates from Columbus to Athens on June 3rd. Pickup from Cincinnati-Northern Kentucky Airport (CVG) may also be possible pending final field trip arrangements. **Please indicate on the registration from if you plan to use the shuttle service.**

Conference Venue

Technical sessions will be held at Grover Center on Ohio University's campus. This venue includes an atrium that can accommodate group gatherings of all sizes. The Department of Geological Sciences is a four-minute walk away, and requests for access to microscopes or other equipment can be accommodated. If there is a specific type of space that your research group needs for a meeting, please let us know and we can arrange it for you. Complementary Wi-fi access is available throughout Ohio University's campus.

The ice-breaker reception will be held at Jackie O's Brewpub (http://jackieos.com), an award winning local craft brewery only a few minutes walk from campus. The conference dinner will be held at the Dairy Barn Arts Center (http://dairybarn.org), a historic structure, which is now a regional arts venue. Shuttles will be provided for the dinner.

Meals and Accommodations

Lodging is available in university dormitories at a rate of $27 per night for double occupancy. A university meal plan is available at a rate of $9.00 breakfast and $11.00 lunch per day. There is an additional charge of $17 for linen service per person.

The Ohio University Inn (http://www.ouinn.com) is a full service hotel within easy walking distance of the conference venue. Athens is home to a number of other hotels located further from campus, a list is available here: http://athensohio.com/category/where-to-stay/hotels/. There are many restaurants within walking distance of campus.

If you plan to bring a vehicle and park on campus, contact Alycia Stigall (stigall@ohio.edu) in advance of the meeting to arrange a parking pass.

For participants with children, Ohio University hosts an excellent summer camp for children ages 6 through 12 from 8:30 am to 5:30 pm during the conference week (https://www.ohio.edu/recreation/about/camp.cfm). A list of early education majors with approved background checks that babysit can also be made available on request.

https://drive.google.com/open?id=1bh6eytr-vNLi8uJC-VuyIKH-XQEhL_cv&usp=sharing

Registration Fees

Conference Fee

The registration fee for the scientific sessions including opening reception, conference dinner, mid-conference field trip, coffee breaks, program and abstract volume, etc.

Professional participant (by March 15th)	**$250**
Student participant (by March 15th)	**$125**
Late registration (professional/student)	**$300/150**

Accompanying Person Fee **$100**

Includes opening reception, conference dinner, and mid-conference field trip

Meal tickets - Optional (June 4, 5, 7), breakfast and lunch **$20/day**
Meal Tickets - Optional (June 6, 8), breakfast only **$ 9/day**

Lunch is included on the conference field trip

University housing, double occupancy – Optional **$27/day**
Linen packet **$17**

Pre-conference excursion: Great Basin (May 30-June 2) **$675**

Includes transportation in the Great Basin (*participants responsible for their own transportation to/from Salt Lake City, Utah (SLC)*), guidebook, meals, and double occupancy lodging.

Post-conference Excursion: Cincinnati Arch (June 8-9) **$225**

Includes transportation, guidebook, meals and double occupancy lodging for the night of June 8. Excursion begins in Athens and ends in Cincinnati, Ohio.

Payment: The online registration system can be accessed via the conference website: https://commerce.cashnet.com/ohioemkt7. The system accepts all major credit cards. If an alternate arrangement is necessary, contact Alycia Stigall (stigall@ohio.edu)

Cancellation

Refunds of 50% of the conference and excursion fees will be paid if the cancellation is received before May 1st, 2018. No refunds are possible after this date.

Support

IGCP 653 has limited funds available to support students, early career researchers, and participants from developing countries who are presenting research at the conference. Please send a free form application alongside the abstract submission. Note that only participants with presentations will be considered for support.

Abstracts

Abstracts should be submitted igcp653@gmail.com ("*Abstract submission*" in the heading of the e-mail), along with the receipt of the payment of the registration fee. The deadline for abstract submission is March 15th 2018. Detailed instructions and a template for abstracts are available on the conference website.

Presentations

Oral Presentations are limited to 15 minutes. Slides must be prepared in MS PowerPoint (.ppt, .ppx) or Portable Document Format (.pdf). The preferred aspect ratio for PowerPoint slides is 16:9.

Poster Presentations should be prepared in A0 format, preferably in portrait orientation.

Conference Publications

A program and abstracts volume will be available at the meeting and on the meeting website with free access. A thematic issue in "*Palaeogeography, Palaeoclimatology, Palaeoecology*" will be arranged to publish papers presented at the conference. Invitation for papers/call for papers for the special issue of *Palaeo3* is forthcoming.

International participants

Be aware of visa requirements for travel from your home country to the United States and plan ample time for processing of passports. Letters of invitation can be requested from the organizers when necessary. If you are an international student and have any questions regarding your visa status, please consult the office in charge of international students at your university.

The contact between the Maysvillian and Richmondian regional stages, Flemingsburg, KY

Mid-conference Field Trip

A one-day mid-conference field trip will be organized to visit the famous Maysville, Kentucky locality. This roadcut is both vertically and laterally extensive and allows inspection of the Edenian through Richmondian Regional Stages (lower Katian). The units are extensively fossiliferous and range from offshore to nearshore environments.

This excursion is included in attendees' and accompanying person registration fees.

Pre-conference Field Excursion

A five-day pre-conference field trip will be organized to visit classic Cambro-Ordovician sections in the Ibex and House Range areas of Utah. This field trip will provide an overview of Upper Cambrian (pre-GOBE) strata including biotic events and long-term ecological trends through the Lower and Middle Ordovician strata that encompass the primary diversity changes associated with the GOBE. The field trip will start and end at the Salt Lake City airport (SLC). Registration fee is $675 and includes all transportation, meals (except dinners), and lodging for four nights. *Flights to SLC and from SLC to CMH are not included in the registration fee. Flights that depart in the early morning and arrive in CMH by 4:00 pm are encouraged. Vans will be available to transport attendees from CMH to Athens departing at 4:30 pm.*

May 30: Arrive in Salt Lake City and drive ~4 hours to Delta, Utah, stopping at several points along the way to discuss the geological setting and history of the eastern Basin and Range Province.

May 31: We will examine exposures in the spectacular cliffs of the northern House Range. We will focus on Middle and Late Cambrian shallow-water carbonates of the Great American Carbonate Bank and Lagerstätte preserved in mudstones of the House Embayment (Wheeler, Marjum and Weeks Formations). We will return to Delta in the evening.

June 1: We will focus on classic Lower and Middle Ordovician sections in the Ibex area (southern House Range and Confusion range). We will discuss the onset of the GOBE and its relationship to biomere-like extinction events in the Early Ordovician, and examine ecological changes during the late Floian-Dapingian. We will then drive west to Ely, Nevada, crossing several ranges and Basin and Range National Park.

June 2: We will drive south to Upper Cambrian and Ordovician exposures in the southern Egan Range (Sawmill Canyon and Shingle Pass), and discuss the regional pattern of environmental and ecological changes during the GOBE. We will return to Salt Lake City in the evening.

June 3: Fly to Ohio. *Flights to SLC and from SLC to CMH are not included in the registration fee. Flights that depart in the early morning and arrive in CMH by 4:00 pm are encouraged. Vans will be available to transport attendees from CMH to Athens departing at 4:30 pm.*

Post-conference Field Excursion

This two-day trip will provide an overview of classic, highly fossiliferous Katian age (~453 to 444 MA, Mohawkian-Cincinnatian) strata along the eastern and southwestern parts of the Cincinnati Arch. Trip will be divided into two broad themes corresponding to the Cincinnatian and Mohawkian parts of the succession.

June 8: A distal to proximal (N-S) facies transect of Cincinnatian sequences. Starting at Athens, Ohio, this trip will proceed southward through rural scenery of Maysville, Flemingsburg, Owingsville, and Winchester, Kentucky, along the east side of the Arch covering an offshore to peritidal facies transect; overnight in Winchester, Kentucky.

June 9: A survey of Sandbian-lower Katian facies, sequence stratigraphy and paleontology/paleoecology. Trip will commence with spectacular new cuts near Winchester and proceed northwest through the beautiful Bluegrass Region of Lexington and Frankfort ending in Owenton. In a series of stops the full exposed succession from Sandbian age peritidal facies through the entire lower Katian Lexington Formation and lower part of the Edenian Kope Formation.

Trip will conclude at the Cincinnati-Northern Kentucky airport (CVG). One vehicle will return to Athens. Participants who fly in are encouraged to arrange flight departures from CVG and to book a room for the night of Saturday June 9th near the airport. Registration fee is $225 and includes guidebook, transportation, meals, and one night's hotel.

Organizing Committee

Alycia Stigall (Chair), Ohio University, USA
Carlton Brett (Field Trip Co-Chair), University of Cincinnati, USA
Seth Finnegan (Field Trip Co-Chair), University of California, Berkeley, USA
Chris Aucoin, University of Cincinnati, USA
Rebecca Freeman, University of Kentucky, USA
Robert Gaines, Pomona College, USA
Kyle Hartshorn, Dry Dredgers, USA
Daniel Hembree, Ohio University, USA
Sara Pruss, Smith College, USA
Matthew Saltzman, Ohio State University, USA
Allison Young, University of Cincinnati, USA

IGCP 653 Co-leaders

Thomas SERVAIS (Chair, Lille, France)
David A.T. HARPER (Durham, UK)
Olga T. OBUT (Novosibirsk, Russia)
Christian M.Ø. RASMUSSEN (Copenhagen, Denmark)
Alycia L. STIGALL (Athens, Ohio, USA)
ZHANG Yuandong (Nanjing, China)

Contact

Please direct questions to Dr. Alycia Stigall (stigall@ohio.edu)

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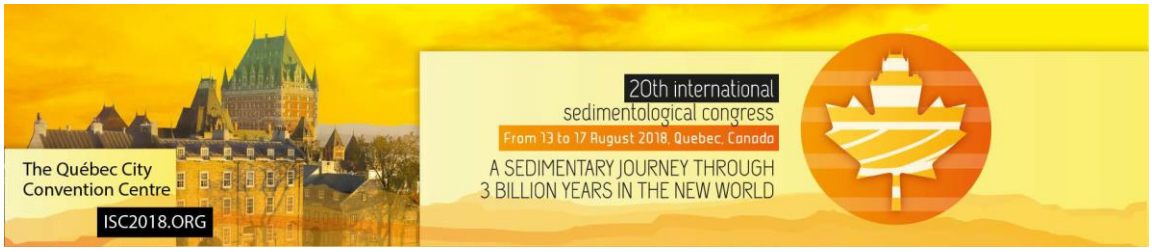
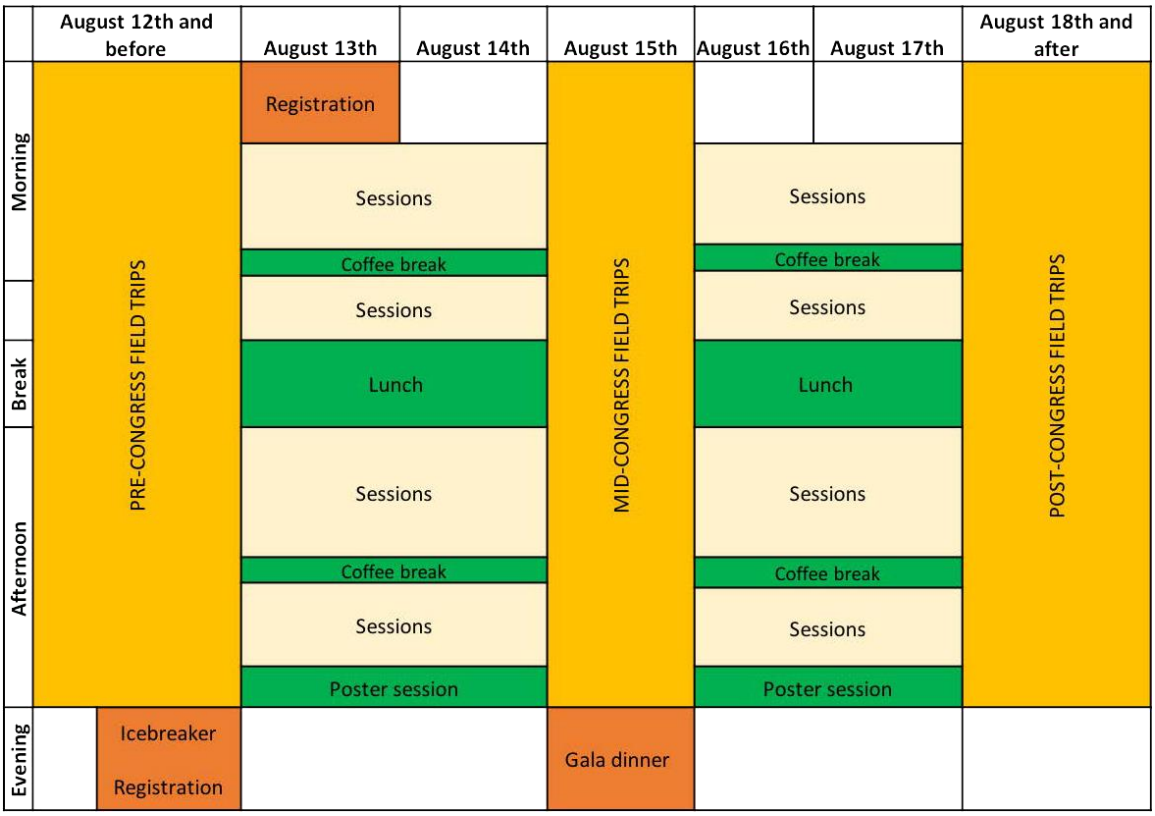
The 20th International Sedimentological Congress (ISC)



This is the first circular for the 20th International Sedimentological Congress (ISC) to be held from August 13 to 17, 2018 in Quebec City. The five-day-long event will offer 6 parallel oral sessions in addition to short oral presentations and posters.



The Congress will include mid-conference field trips, an exhibition, Early Career Scientists events as well as short courses and workshops. It will be possible for groups, institutions and companies to organize others activities during the conference, such as association meetings and working groups.

We are planning to offer a total of +/-10 field trips in North America, as follows:

- PRE-Congress: Several 5 to 7-day long trips and several 2 to 3-day long trips.
- MID-Congress: 5 to 6 single day trips.
- POST-Congress: Several 5 to 7-day long trips and several 2 to 3-day long trips.

A preliminary list of field trips is available at isc2018.org/field-trips

Local Organizing Committee

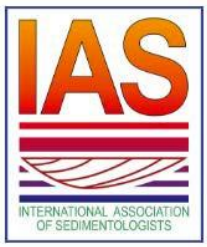
- Pierre Francus, INRS-ETE, Québec (Chair)
- Denis Lavoie, Geological Survey of Canada, Québec (Vice-Chair)
- Patrick Lajeunesse, Université Laval and INRS-ETE
- Fritz Neuweiler, Université Laval
- Michel Malo, INRS-ETE, Québec
- Stéphanie Larmagnat, Geological Survey of Canada, Québec
- Alexandre Normandeau, Geological Survey of Canada, Dartmouth

General scientific themes

General theme 1. **The carbonate depositional system** General theme 2. **The clastic depositional system** General theme 3. **Paleo-environments & Paleo-climates** General theme 4. **Sedimentary Processes**
General theme 5. **Sources & Sinks**
General theme 6. **Applied sedimentology**

Call for sessions: isc2018.org/call-sessions

Call for workshop/shot courses: isc2018.org/call-workshops Call for field trips: isc2018.org/field-trips



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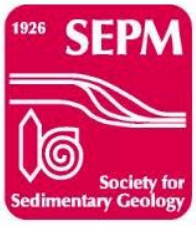

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ISC2018 Secretariat - Conferium Logistic Services
Email: info@isc2018.org
Tel.: 1 800 618-8182

ISC_2018

Quebec City welcomes the 20th International Sedimentological Congress (ISC) to be held from 13 to 17 August 2018. A series of pre- and post-meeting field trips will be organized in several places of Canada and the USA including 6-day long field trip on Anticosti Island (see below for details)

Field trip POST Congress

FT POST 1. The Stratigraphic Record of the End-Ordovician Mass Extinction on a Storm-Dominated Carbonate Ramp, Anticosti Island, Eastern Canada

Chute Vauréal (Photo: ©René Bourque)

Carbonate sedimentary rocks like those superbly exposed on Anticosti Island in the Gulf of St-Lawrence are, if correctly ordered and interpreted, an inventory of considerable information for helping decipher the cause-and-effect relationships within the ocean-atmosphere-biosphere system in the deep geological time. The Upper Ordovician to lower Silurian Anticosti succession consists of approximately 900 m of undeformed fossil-rich limestone and minor siliciclastic rocks that were deposited on a storm-dominated tropical carbonate ramp. Thick, lithologically repetitive successions like those in Anticosti Island, however, present a challenge to a stratigrapher attempting high-resolution correlation of such units even at a regional scale. By integrating sequence sedimentology with species-based biostratigraphic packages and chemostratigraphic profiles, we are now able to produce high-resolution stratigraphic models and to provide insight into the End-Ordovician mass extinction.

Field trip leader(s): André Desrochers (University of Ottawa, Canada)

Number of participants (Min/Max): 12 to 16

Departure/Return: Québec City

Duration: 6 days

Date: August 18th to 23rd, 2018

Cost: $1975 CAD (includes charter plane Quebec City-Anticosti Island, cozy accommodation, all meals, transportation by 4X4 vehicles, field guidebooks)

Note: Funding is available to offset the cost of the field trip for young researchers (PhD, PDF); please contact the field trip leader directly.

Quebec City welcomes the 20th International Sedimentological Congress (ISC) to be held from 13 to 17 August 2018. A series of pre- and post-meeting field trips will be organized in several places of Canada and the USA including 6-day long field trip on Anticosti Island (see below for details)

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8th IBC
Milan, Italy, 2018

8th INTERNATIONAL BRACHIOPOD CONGRESS

Brachiopods in a changing planet: from the past to the future

Milano, 11-14 September 2018
www.8brachiopodcongress.com

Milano, 15 December 2017

ON behalf of the Organising Committee, we are pleased to invite scientists from around the world interested in fossil and living brachiopods and related topics to the *8th International Brachiopod Congress: Brachiopods in a changing planet: from the past to the future*.

The Congress will take place between the 11th and 14th of September 2018 in Milano, Italy, in the prestigious venue of Università degli Studi, via Festa del Perdono 7, Milano, just a few steps from the famous Duomo Cathedral.

The quality of accommodation and tourist attractions of the City of Milano and the excellent transportation links with most Italian and European towns will make this event very appealing to an international audience. The Congress is expected to attract about 200 participants from universities and research institutes from around the world.

Participants will come to discover the past, latest and future developments of brachiopod research. They will also come to experience the fantastic nature and profound culture of Italy, a safe and beautiful country, renowned by the words of famous poets and artists. From the Roman naturalist and philosopher Pliny the Elder: "*This is Italy sacred to the Gods*", to Samuel Johnson, English essayist: "*A man who has not been in Italy, is always conscious of an inferiority, from his not having seen what it is expected a man should see*", to Mark Twain, American writer: "*The Creator made Italy by designs from Michelangelo"*.

Within the 3-day meeting, participants will have the opportunity to present their latest results in stimulating and vibrant sessions, discuss at length and be deeply involved in the brachiopod world. The topics of the Congress will include all aspects of the study of brachiopods, from systematics and evolution to biostratigraphy, palaeoecology, palaeobiogeography, biomineralization and geochemistry, to the biology of extant brachiopods.

In addition to scientific oral and poster sessions, and three prestigious plenary lectures, the Congress will be preceded and followed by wonderful field excursions (two in Italy: Dolomites and Sicily, one in the UK and one in Spain). A pleasant interlude will be offered by two Mid-Congress excursions only a short distance from Milano.

In order to promote cultural exchange and scientific development of young people, European and non-European graduate students will be able to participate on particularly favourable terms.

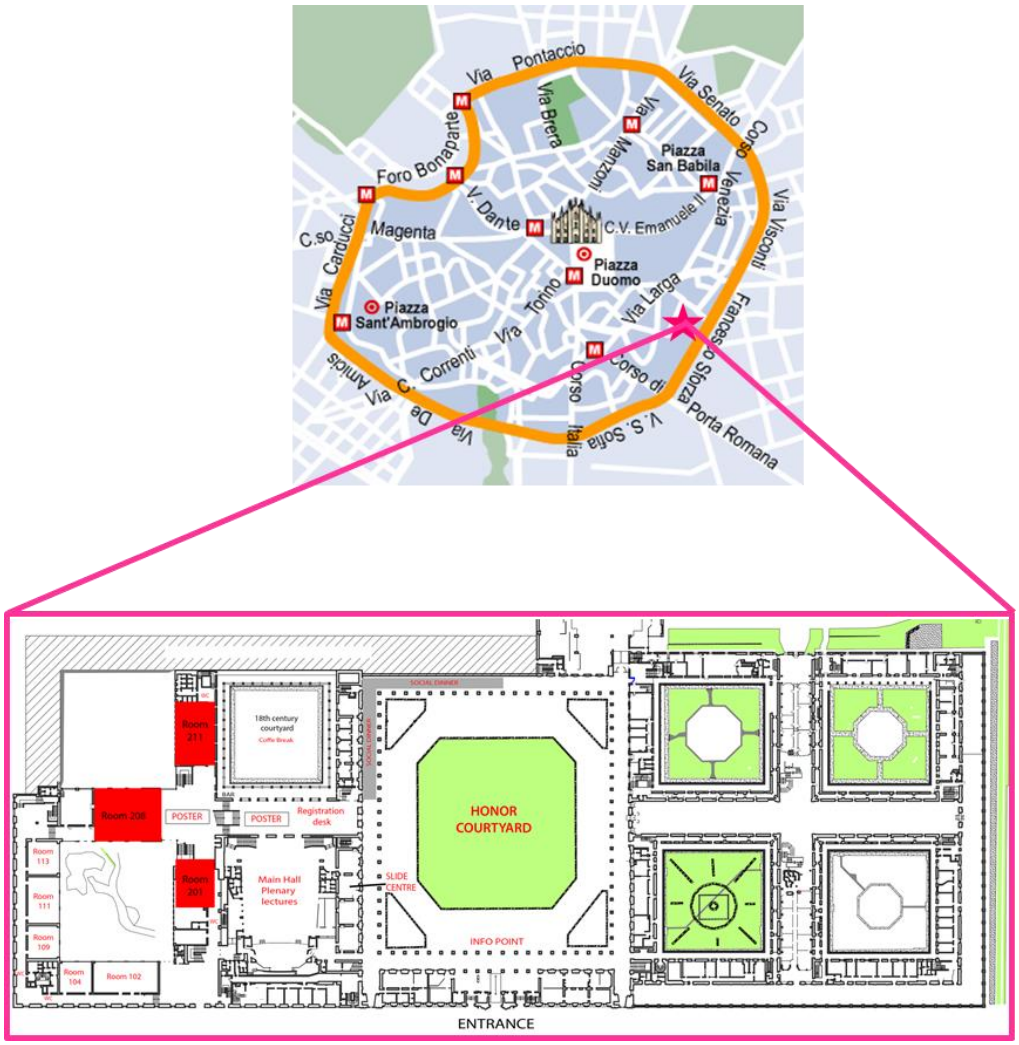
We thank you in advance for your attention and hope to welcome many of you to Italy in September 2018.

The General Chairs of the Congress
Lucia Angiolini and Renato Posenato

VENUE

The venue for the Congress is the Università degli Studi di Milano (www.unimi.it/ENG/), Via Festa del Perdono 7, located in the old "Ca' Granda" (literally "the Big House"). It is a striking historical complex in the heart of the city, just a few steps from the famous Piazza del Duomo, and easily reached by public transportation. The University's main campus, designed in the 15th century by Tuscan architect Filarete consists of historically and artistically the most significant buildings in the City of Milano.

Wi-Fi will be available during the Congress, but an EDUROAM account is required. Therefore, you are asked to check in advance if your institution provides EDUROAM access.



Map of the Congress headquarter's at the Università degli Studi di Milano. The entrance is on Via Festa del Perdono. Congress exhibits and meetings will be held in the Main Hall and in the 18th century courtyard.

GENERAL CHAIRS

Lucia Angiolini, *Università di Milano, Italy*
Renato Posenato, *Università di Ferrara, Italy*

ORGANIZING COMMITTEE

Chair: Gaia Crippa, *Università di Milano, Italy*
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Facheng Ye, *Università di Milano, Italy*

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Fernando Garcia Joral, *Complutense University of Madrid, Spain*
Carsten Lüter, *Museum für Naturkunde, Berlin, Germany*
Alberto Pérez-Huerta, *University of Alabama, United States*
Renato Posenato, *Università di Ferrara, Italy*
Shuzhong Shen, *Nanjing Institute of Geology and Palaeontology, China*

Congress website: http://www.8brachiopodcongress.com/index.html
E-mail: 8brachcongress@unimi.it

KEY DATES

31 January 2018
Deadline for registration on the website http://www.8brachiopodcongress.com/registration.html

31 January 2018
Deadline for PhD, graduate and undergraduate students to apply for funds to attend the conference

30 April 2018
Deadline for early payment of the Congress fee and the field excursion fees

30 April 2018
Deadline for abstract submission

30 June 2018
Deadline for late payment of the Congress fee

30 June 2018
Third circular available

31 January 2019
Deadline for manuscript submission to the proceedings volume

CONGRESS MAIN PROGRAM

<table>
<tr><th>September 6-9th</th><th>Monday September 10th</th><th>Tuesday September 11th</th><th>Wednesday September 12th</th><th>Thursday September 13th</th><th>Friday September 14th</th><th>September 15-18th</th></tr>
<tr><td rowspan="3">Pre-Congress excursions</td><td rowspan="3">Registration

Ice Breaker Party</td><td>Registration

Opening ceremony

Plenary session 1

Scientific sessions</td><td>Plenary session 2

Scientific sessions</td><td rowspan="3">Free day

or

Mid-Congress excursions</td><td>Plenary session 3

Scientific sessions</td><td rowspan="3">Post-Congress excursions</td></tr>
<tr><td>Scientific sessions</td><td>Scientific sessions</td><td>Scientific sessions</td></tr>
<tr><td>Poster
Wine and Cheese</td><td>Concert

Gala Dinner</td><td></td></tr>
</table>

SCIENTIFIC SESSIONS

The six scientific sessions will include keynote talks, volunteered talks and poster presentations on all aspects of the study of brachiopods, from systematics and evolution to biostratigraphy, palaeoecology, palaeobiogeography, geochemistry, biomineralization and the biology of extant brachiopods.

If possible, parallel sessions will be avoided to enhance multi- and interdisciplinary exchange of ideas between researchers involved in different aspects of brachiopod research.

Plenary Session

1. Uwe Brand (Brock University, Canada), *Modern brachiopods: superheroes of archives*
2. Elizabeth Harper (University of Cambridge, UK), *Living brachiopods: hanging on or fit for a modern world?*
3. Lars Holmer (Uppsala University, Sweden), *Brachiopod phylogeny in the Cambrian*

S1. Systematics and evolution

Convenors: S. Carlson (University of California, Davis, U.S.A.), F. Alvarez (Universidad de Oviedo, Spain), J. Jin (Western University, Canada)

Description: Determining brachiopod evolutionary pattern and process is a goal that we

all share. Systematic biology and evolutionary palaeobiology – and the construction of taxonomies and phylogenies – provide the foundation for our investigations. Which data do we use – morphology, ontogeny, molecular sequences, genomics, stratigraphy, biogeography, others? Which methods are most appropriate for analyzing those data? How do we interpret the results? The current classification allows us to communicate with one another about groups of brachiopods recognizable by patterns of size and shape, over time and space. Understanding the history and structure of this classification enables us to test hypotheses about character homology and patterns of character change over geological time, and determine how closely the classification reflects patterns of phylogenetic relationship based on the evolutionary process of common ancestry. In this session, we will explore some of the many answers to questions regarding evolutionary pattern and process, at all scales of time and space, from populations to phyla.

S2. Taphonomy and Palaeoecology

Convenors: A. Pérez-Huerta (University of Alabama, U.S.A.), A. Tomašových (Slovak Academy of Sciences, Bratislava, Slovakia)

Description: Brachiopods are one of the most successful groups of marine invertebrates throughout the Phanerozoic. Despite their abundance and diversity in the fossil record, there are numerous gaps in our understanding of their palaeoecology and palaeobiogeography. Although ecological and functional analyses of extant brachiopods provide useful insights into functional morphology of extinct brachiopods, this perspective can be limited by ecological breadth of present-day brachiopod species pool. There is still limited information about the mode of life of extinct brachiopods, interactions with other benthic organisms, their distribution along environmental gradients, and their response to past environmental changes, which can be important in palaeontological and sedimentological studies involving brachiopod faunas. The recent discovery of exceptional preservation of faunas across the Phanerozoic, in addition to the use of new analytical techniques and computer simulations, provides a new insight into the subject. In this session, we welcome scientific contributions that help expand our understanding of brachiopod taphonomy, palaeoecology, and palaeobiogeography, including analyses of spatial and temporal variability in abundance, size, and diversity of brachiopod communities, while completing our overall knowledge of the phylum.

S3. Ecosystems in time and space

Convenors: D.A.T. Harper (Durham University, United Kingdom)

Description: Brachiopods have been major and important players in ancient marine ecosystems since the start of the Cambrian. Brachiopods have dominated all manner of proximal to distal shelf marine facies, explored the deep sea and spread across all the World's latitudes, to varying degrees, throughout the entire Phanerozoic. The early history of the group, within the Cambrian Evolutionary Fauna, is spectacular, with many new morphologies adapted already to a wide range of environments and ecological niches. The Great Ordovician Biodiversification established the phylum as a dominant part of the Palaeozoic Evolutionary Fauna and although severely attenuated during the end Permian extinction events, all three subphyla remained regionally important within the Modern Evolutionary Fauna. This symposium explores the participation of the phylum in ecosystems through time and across changing environments and provinces during the

Phanerozoic, focusing on brachiopod palaeoecology and palaeobiogeography.

S4. Mass extinctions and recovery

Convenors: S. Shen (Nanjing Institute of Geology and Palaeontology, China), A. Baliński (Polish Academy of Science, Warsaw, Poland), F. Garcia Joral (Complutense University of Madrid, Spain)

Description: Mass extinctions are biological events causing widespread and dramatic decrease in biodiversity on Earth. Such events are identified by sharp changes in diversity and abundance of organisms. At least five big mass extinctions have been well recognized during the Phanerozoic. Brachiopods are one of the most diverse benthic groups during the Phanerozoic. They suffered severe loss during the *"Big Five".* In addition to the five mass extinctions, there are numerous moderate and minor events as well which significantly affected brachiopods and other associated organisms. How did those events happen? What are their extinction patterns? Why did some become extinct and some others not? Proposed extinction hypotheses include bolide impact, massive volcanisms, overturn of stratified oceans and poisoning of shelf waters, and short- and long-term climate changes (both warming and cooling) and drop in sea level. In addition, how did brachiopods survive the extinction and adapt in response to the environmental change? What were the patterns of recovery following devastating extinction events? All topics related to these questions are warmly welcome in this session.

S.5 Biologic mineralization of natural functional materials and archives of geochemical proxies

Convenors: E. Griesshaber (Ludwig-Maximilians-Universität München, Germany), A. Eisenhauer (GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany)

Description: Biological hard tissue formation does not occur from supersaturated aqueous solutions, but from crystallization under well-defined cellular control. Biologic mineralization is an assembly process of self-organization at various scales, from the molecular to the macro-scale. Mineral formation starts with the segregation of amorphous precursors. A subsequent ordered and oriented growth process produces mesocrystals, and arrays of mesocrystals form the final skeleton/shell. Cell produced macro-molecules transform amorphous aggregates into crystalline phases, and they regulate the onset, growth and cessation of crystallization. They are also responsible for the ability of biological systems to respond and adapt to environmental change.

The Phanerozoic Eon marks the beginning of biomineralized tissue formation, archives that provide information on environment, evolution, land-ocean interaction and climate change. Knowledge of these events is gained from trace element and isotopic compositions obtained from skeletons of past and present organisms. However, environmental and climate changes can only be understood when fine details are fully assessed, a task dependent on a profound understanding of the sampled material. Species dependent vital effects, time and pressure dependent physical and chemical alterations overprint original signals, and time series of trace element and isotope records become difficult to interpret. Thus, the understanding of pathways and processes of biological hard tissue formation and of stages of hard tissue alteration is of fundamental importance.

This session invites contributions addressing studies of both biomineralization of fossil and modern brachiopods and new developments and findings on geochemical proxies of

the brachiopod archive for the reconstruction of past and present oceans and climate dynamics.

S.6 Modern brachiopods

Convenors: A. Bitner (Polish Academy of Science, Warsaw, Poland), M. Cusack (University of Stirling, United Kingdom), C. Lüter (Museum für Naturkunde, Berlin, Germany)

Description: Only some 400 species of Brachiopoda representing five major clades within the phylum are found in today's oceans. Despite this diminished diversity in comparison to what is known from the fossil record, modern brachiopods provide an indispensable resource of biological data for evolutionary research. First and foremost this applies to all DNA/RNA based methods, but also includes evolutionary developmental biology studies ("evo-devo"), eco-physiological studies, and detailed morphological examination of soft tissues with histological and/or electron microscopic techniques. Additionally, living brachiopods can be used to calibrate deep time reconstructions of abiotic environmental parameters (see e.g. Session S5). Looking at modern brachiopods from different methodological angles, this session aims to highlight the importance of biological phenomena and processes to understand the evolution of the whole phylum.

MID-CONGRESS EXCURSIONS

More detailed information about Mid-Congress excursions is available at: http://www.8brachiopodcongress.com/field-trips.html

ME1) Survey of the collections of Museo Civico di Storia Naturale di Milano and of Dipartimento di Scienze della Terra "A. Desio" (only through early request).

ME2) Lower Pleistocene Arda River marine succession (Northern Italy)

This Mid-Congress excursion will lead you to a Pleistocene marine succession in the wonderful natural landscape of the Arda River in western Emilia, northern Italy. The excursion will be complemented by the visit to the geological and palaeontological museum in the medieval town of Castell'Arquato. Participants will enjoy scientific and historical sites and, of course, very good Italian food.

BRIEF ITINERARY

Stop 1 From Milano we will drive to Castell'Arquato, where the Lower Pleistocene Arda River succession crops out. The section, deposited in a shallow water environment during phases of advance of fan deltas, is very rich in fossils: mollusks, brachiopods (mainly *Terebratula scillae* and *Aphelesia bipartita*), corals, echinoderms. We will see several fossiliferous marine beds deposited in progressively shallower water and colder climate, culminating with continental conglomerates and biota.

Lunch in a typical restaurant in the picturesque medieval town of Castell'Arquato

Stop 2 Visit the geological and palaeontological museum 'G. Cortesi' in Castell'Arquato, a medieval town which has maintained its appearance as it was in the early 10th century.

ORGANIZERS

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Fabrizio Felletti *Università di Milano*
Mattia Marini *Università di Milano*
Gianluca Raineri *Parco Regionale dello Stirone e del Piacenziano*

EXCURSION FEE AND DEADLINES

January 31st, 2018: pre-registration on the website

April 30th, 2018: **payment of 100 euro**. Guide book, museum tickets, typical lunch and travel from Milano to Castell'Arquato and return are included in the fieldtrip fee.

NUMBER OF PARTICIPANTS

15– 25 participants

Fossiliferous bed with articulated specimens of *Glycymeris insubrica*

The medieval town of Castell'Arquato

Fossiliferous bed of the Arda River Section

ME3) Grigna Mountains Triassic marine successions

This mid-congress excursion will allow you to see the transgressive carbonate succession of the Grigna Mountains. Participants will be able to see the *Tetractinella* and *Piarorhynchella* beds of the Northern Grigna Mountain and have spectacular views of the Southern Alps and Lake Como.

BRIEF ITINERARY

From Milano, the bus will drive to Lecco and thereafter to the village of Pasturo in Valsassina. Participants will be taken by off-road vehicles up to Pialeral locality, where they will walk to the section along an easy path.

Stop 1 A 40 minute walk leads to the section; along the way we will admire the Middle Triassic carbonate platform of the Grigna Mountains. The section shows, bottom to top, several brachiopod beds, dominated by *Tetractinella trigonella* with rarer small *Mentzelia mentzeli*. The deepening of the environment is testified by the overlying marly limestones interbedded with dark laminated marlstones. *Piarorhynchella trinodosi* is spread throughout the section. The top of the succession is represented by ash layers of the Buchenstein Formation.

Back to Pialeral and typical mountain refuge lunch at Rifugio Antonietta.

Stop 2 At 5 minute walk from the road, we will visit a small outcrop of the brachiopod beds with *Tetractinella*, *Mentzelia*, and rare *Decurtella.*

ORGANIZERS

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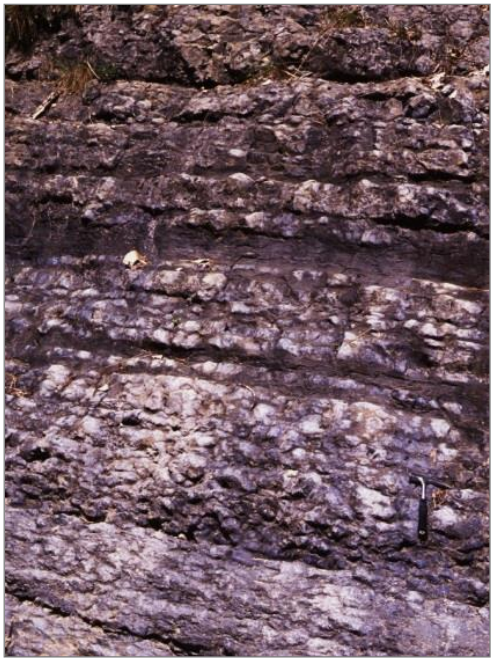
EXCURSION FEE AND DEADLINES

January 31st, 2018: pre-registration on the website

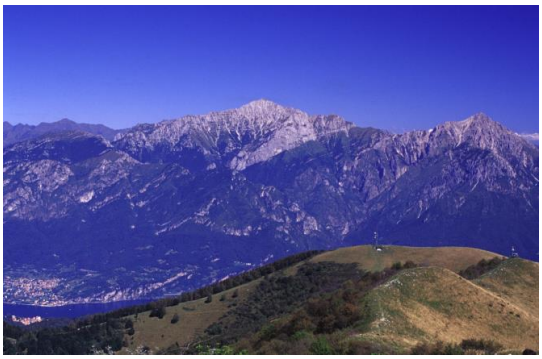
April 30th, 2018: **payment of 100 euro**. Guide book, typical lunch and travel from Milano to Grigna Mountain and return are included in the fieldtrip fee.

NUMBER OF PARTICIPANTS

15– 20 participants



Brachiopod beds



Grigna Mountain

PRE- AND POST-CONGRESS FIELD EXCURSIONS

More detailed information about all Pre- and Post-Congress excursions is available at http://www.8brachiopodcongress.com/field-trips.html

E1) Palaeozoic and Mesozoic Brachiopods of East Spain

This is a 4-day-excursion to visit several localities in Central-East Spain. We will see successions that record the drift of the Gondwana Mediterranean margin from subpolar latitudes to subtropical ones during the early Palaeozoic. We will also be able to compare NW European and Mediterranean Jurassic brachiopod assemblages, and to observe the extinction and recovery of brachiopods across the Early Toarcian Oceanic Anoxic Event. We will also have the opportunity to visit some places of great historical and heritage values, such as Molina de Aragón, Daroca, Albarracín or Teruel; the latter is regarded as the "*town of Mudéjar*" (Moorish-influenced architecture), a UNESCO World Heritage Site.

DATES AND BRIEF ITINERARY

Pre-Congress excursion: 6-9 September 2018

Day 1 *September 6th* Participants will be picked up from the Madrid City Centre and airport and driven to Molina de Aragón (Central Iberian Range) to visit a key locality with rich assemblages of Lower Jurassic brachiopods of the NW-European province. Overnight at Daroca.

Day 2 *September 7th* Visit to Ordovician-Devonian outcrops with brachiopods in the Eastern Iberian Chain. The assemblages change from orthid-dominated during the Ordovician to spiriferid-strophomenid dominated during the early Devonian. Overnight at Teruel. Dinner not included in the fee.

Day 3 *September 8th* Visit of Lower and Upper Jurassic assemblages of brachiopods close to the village of Albarracín and in the Jiloca Valley. Overnight at Segorbe.

Day 4 *September 9th* Drive to Crevillente. Visit of rich Lower Jurassic brachiopod assemblages of the Mediterranean Province in the Eastern Subbetic Range. Afternoon: end of the field-trip in Alicante.

ORGANIZERS

Fernando García Joral *Universidad Complutense de Madrid* fgjoral@ucm.es
Enrique Villas *Universidad de Zaragoza*
José Francisco Baeza-Carratalá *Universidad de Alicante*

EXCURSION FEE AND DEADLINES

January 31st, 2018: pre-registration on the website

April 30th, 2018: **payment of 580 euro in double room, 700 euro in single room**.

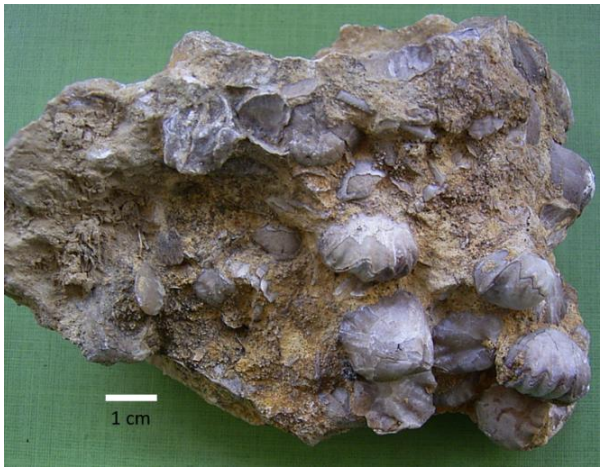
Excursion fee will include a guide book, transportation by bus, accommodation and breakfast for three nights, all mid-day meals and dinners of the first and third days (Thursday 6th and Saturday 8th).

Only a limited number of single rooms is available. So please specify in advance if you need a single room.

NUMBER OF PARTICIPANTS
10–25 participants

Lower Jurassic outcropping in Jiloca valley

External mould of a dorsal valve of *Nicolella actoniae*, an orthid characteristic of the upper Katian (Upper Ordovician)



Rock fragment with *Soaresirhynchia bouchardi* from the Lower Toarcian of the Iberian Range

E2) Southern Alps (Italy): Upper Permian to Middle Triassic brachiopod beds of the Dolomites

This is a 4-day-excursion to visit some key-sections of the Dolomites recording the last Palaeozoic marine assemblages, including the large-sized shells of *Comelicania* species (Bellerophon Formation) and the Lower Triassic disaster taxa that survived the end-Permian mass extinction (Lingulids beds, Werfen Formation). Museum collections with rhynchonelliform brachiopods recording the Middle Triassic recovery of stenotopic marine organisms will be also observed.

DATES AND BRIEF ITINERARY

Post-Congress excursion: 15-18 September 2018

Day 1 *September 15th* Departure from Milano to Trento in the morning. Visit to the MUSE (Museum of Natural History of Trento) and the Geological Museum of the Dolomites (Predazzo), where rich Middle Triassic brachiopod collections are housed. Excursion presentation, and observation and discussion of collections of Upper Permian to Middle Triassic brachiopods from the Dolomites. Overnight stay in the Dolomites (Fiemme Valley).

Day 2 *September 16th* The Tesero and Bulla sections (Bellerophon and Werfen Fms, Changhsingian, Upper Permian – Induan, Lower Triassic): the effects of end-Permian mass extinction on the marine biota (e.g. *Orbicoelia* and lingulid beds of Werfen Formation). Overnight stay in the Dolomites (Badia Valley).

Day 3 *September 17th* The Sass de Putia succession (Bellerophon Fm. Changhsingian, Upper Permian) representing the very last moment of Palaeozoic life (*Comelicania* and *Ombonia* beds); visit to the Museum of Castel de Tor (Val Badia). Overnight stay in the Dolomites (Badia Valley).

Day 4 *September 18th* Visit to the Similaun Man Mummy (Holocene, Bolzano Museum). Departure from Bolzano to Milano in the afternoon (scheduled arrival in Milano at about 7:00 p.m.)

ORGANIZERS

Renato Posenato *Università di Ferrara* renato.posenato@unife.it
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Lucia Angiolini *Università di Milano*
Davide Bassi *Università di Ferrara*
Michele Morsilli *Università di Ferrara*
Massimo Bernardi *Muse, Trento*
Simonetta Cirilli *Università di Perugia*
Roberto Rettori *Università di Perugia*
Amalia Spina *Università di Perugia*
Maria Cristina Perri *Università di Bologna*
Herwig Prinoth *Museum Ladin Castel de Tor, Bolzano*

EXCURSION FEE AND DEADLINES

January 31st, 2018: pre-registration on the website.

April 30th, 2018: **payment of 850 euro in double room, 950 euro in single room**. Guide book, museum tickets, travel from Milano to Dolomites and return, meals and hotel accommodation in double rooms are included in the field-trip fee.

Only a limited number of single rooms is available. So please specify in advance if you need a single room.

NUMBER OF PARTICIPANTS

15– 25 participants

Specimen of *Comelicania megalotis*

Sass de Putia

E3) United Kingdom: Palaeozoic brachiopods of England and the Welsh Borderlands

This is a four-day-excursion to visit some key and historically-important geological sections in England and the Welsh Borderlands. It includes the spectacular *Gigantoproductus* beds of exceptionally-large brachiopods that colonized the Palaeotethys shores during the Mississippian together with reef brachiopods associated with Carboniferous mud-mounds and the abundant and diverse brachiopod faunas of the classic Upper Ordovician and Silurian successions of the Shropshire region, dominated by orthides and strophomenides, within the Anglo-Welsh province.

DATES AND BRIEF ITINERARY

Post-Congress excursion: 15-18 September 2018

Day 1 *September 15th* Departure from London Stansted (to be reached from Milano by plane). Participants should book their own flight; they are free to write to sales@eravelservice.com for quotes and booking. Drive to Derbyshire. Panoramic view of the Derbyshire Palaeozoic succession and reef-knoll. Overnight stay in Buxton.

Day 2 *September 16th* Visit to Ricklow, Once-a-Week and Brick quarries, where the inner to middle ramp facies of the Eyam Limestone overlie the mud mounds of the Monsal Dale Limestone and contain spectacular *Gigantoproductus* assemblages. Overnight stay in Buxton.

Day 3 *September 17th* Drive to Shropshire. Visit classic localities within the Upper Ordovician (Caradoc) and the lower Silurian (Llandovery) exposed in and adjacent to the Onny Valley, containing rich brachiopod faunas. Discussion of their historical context in the battle for the 'middle ground' between Roderick Murchison (Silurian) and Adam Sedgwick (Cambrian). Overnight stay in Much Wenlock.

Day 4 *September 18th* Visit to Soudley Quarry (Caradoc), and The Iron Bridge (the World's first major cast-iron bridge), near Coalbrookdale, together with quarries in the Wenlock limestone on Benthall Edge (with well-preserved brachiopod faunas) and possibly Ippikins Rock (reef and talus slopes). Departure from Shropshire to London Stansted in the afternoon (scheduled arrival late afternoon).

ORGANIZERS

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Lucia Angiolini *Università di Milano* lucia.angiolini@unimi.it
Giovanna Della Porta *Università di Milano*
Vanessa Banks *British Geological Survey*
Michael Stephenson *British Geological Survey*

EXCURSION FEE AND DEADLINES

January 31st, 2018: deadline for pre-registration on the website.

April 30th, 2018: **payment of 700 euro**.

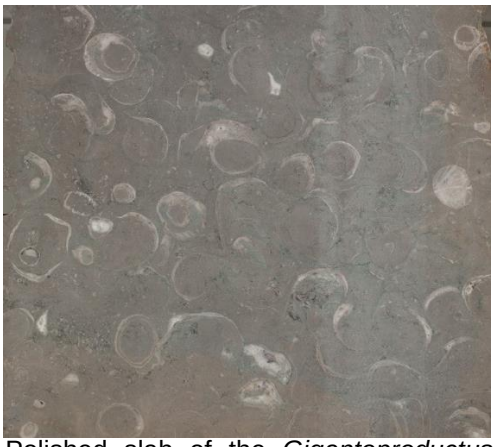
Guide book, travel from London Stansted to Derbyshire and Shropshire and return, all meals and hotel accommodation in single rooms are included in the field-trip fee. Please specify in advance if you need a double room.

Please note that, the flight from Milano to London Stansted is not included in the fee

and should be organized individually. The average cost of a return flight Milano-London Stansted starts from 80 Euros. You can book it yourself online from many European airlines or ask for a quote to the travel agency ERAVEL (http://www.eravelservice.com/; sales@eravelservice.com).

NUMBER OF PARTICIPANTS
15– 20 participants

Mississippian Eyam Limestone and *Gigantoproductus* bed at Brick Quarry.



Polished slab of the *Gigantoproductus* bed at Once-a-week Quarry.

Acton Scott Church

E4) Sicily (Italy): Jurassic to Pleistocene brachiopod beds of Sicily

This is a 4-day excursion to visit Lower Jurassic to Pleistocene sections where the most important brachiopod assemblages of Sicily have been collected. These successions crop out along the north-eastern side of Sicily across different landscapes with beautiful sea views. In addition, this excursion offers the possibility to visit the Gemmellaro brachiopod collection stored in the homonym museum in Palermo; the excursion will end with an exciting ascent of the Mount Etna volcano.

DATES AND BRIEF ITINERARY

Post-Congress excursion: 15-18 September 2018

Day 1 *September 15th* Departure to Altavilla Milicia (Palermo) and visit of Pliocene-Pleistocene succession with shell beds of molluscs and brachiopods. Visit to the G.G. Gemmellaro Museum of Palermo University where the rich Upper

Permian to Upper Jurassic brachiopod collections of Gemmellaro are kept; among them is the famous collection from the Permian of the "Valle del Sosio". Guided tour of the Royal Palace of Palermo and the Palatine Chapel – UNESCO World Heritage Site. Free dinner. Overnight stay in Palermo.

Day 2 *September 16th* Departure to Monte Kumeta, which offers an example of the complex synsedimentary dynamics along a stepped pelagic escarpment adjacent to a structural high, with Pliensbachian brachiopod associations. In the afternoon, departure to Cefalù to visit the historic centre. The town is a major tourist attraction in the region and the cathedral has been declared a World Heritage Site by UNESCO. Dinner and overnight stay near Cefalù.

Day 3 *September 17th* Departure to Capo Milazzo (Messina) where Upper Miocene (upper Tortonian) to Holocene successions crop out and from which many taxa established by Philippi, Costa and Seguenza (*Sphenarina, Terebratula, Terebratulina*) originate. At Capo Milazzo, brachiopods are included in the so called "yellow calcareous marls" (YCM) deposited in bathyal settings during the early Pleistocene. In the afternoon visit the La Montagna outcrop near Messina. Dinner and overnight stay at Nicolosi (Catania).

Day 4 *September 18th* Visit of Mount Etna, one of the largest active volcano in the Mediterranean region and Europe, reaching an elevation of 3.350 m a.s.l. Etnean magmas show peculiar petrologic and geochemical features, related to very complex structural settings. In the afternoon a visit of Taormina, one of the most important international tourist centre of Sicily, known for its natural landscapes, marine beauty and its historical monuments; in the evening arrival at Catania and end of the field trip.

ORGANIZERS

Carolina D'Arpa *G.G. Gemmellaro Museum, Palermo* carolina.darpa@unipa.it
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Antonietta Rosso *Università di Catania*
Mauro Agate *Università di Palermo*
Carolina Di Patti *G.G. Gemmellaro Museum, Palermo*
Rossana Sanfilippo *Università di Catania*
Giovanni Surdi *G.G. Gemmellaro Museum, Palermo*
Agostina Vertino *Università di Milano-Bicocca*
Emma Taddei Ruggiero *Università di Napoli*

EXCURSION FEE AND DEADLINES

January 31st, 2018: deadline for pre-registration on the website.

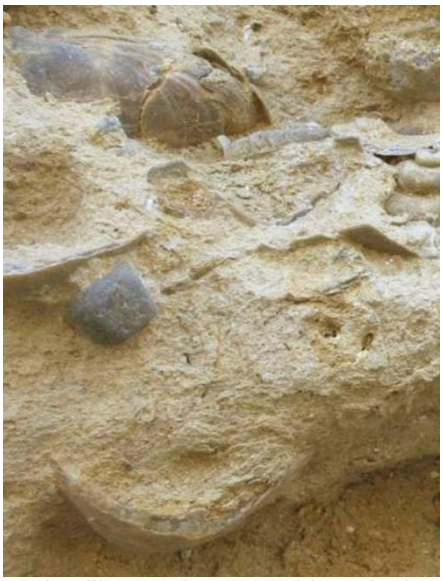
April 30th, 2018: **payment of 730 euro in double room, 820 euro in single room**.

Guide book, travel from Palermo to Catania during the excursion, meals and hotel accommodation in double/single rooms are included in the field-trip fee, except for the dinners of 15th in Palermo and 18th in Catania. Please specify in advance if you need a double or a single room.

Please note that, the flight from Milano to Palermo is not included in the fee and should

be organized individually. The average cost of a flight Milano-Palermo starts from 40 Euros. You can book it yourself online from many European airlines or ask for a quote to the travel agency ERAVEL (http://www.eravelservice.com/; sales@eravelservice.com).

NUMBER OF PARTICIPANTS
18– 27 participants



Altavilla section. Brachiopods in sandstone.

Capo Milazzo peninsula

Altavilla section

CONGRESS REGISTRATION FEE

Registration fee includes: ice breaker party, admission to scientific sessions, lunches (3 days), morning and afternoon continuous coffee breaks (3 days), poster wine and cheese (1 day), conference satchel, a small gift and the memory stick with abstracts.

	Early Registration Before 30 April 2018	**Late Registration 30 April - 30 June 2018**
Formal participant	400 €	550 €
Student *	250 €	400 €
Accompanying person	200 €	300 €

* PhD's, graduate and undergraduate students

GALA DINNER

The Gala dinner will take place in the Honor Courtyard, and it costs 62 €.

FIELD EXCURSION FEES

	Place	Fees
ME1	Milano Museum Collections	- -
ME2	Arda River Section	100 €
ME3	Grigna Mountain	100 €
E1	Spain	580/700 € *
E2	Southern Alps	850/950 € *
E3	UK	700 €
E4	Sicily	730/820 € *

* Double/Single room

ACCOMMODATION

Information about how to find accommodation in Milano is available on the Congress website at http://www.8brachiopodcongress.com/accommodation.html. If you need help in booking a hotel, please contact sales@eravelservice.com.

PAYMENTS

Payments can be made in three different ways:

1) International bank transfer. Bank details:
   Name of the beneficiary: **Calligaro Pamela Marzia**
   IBAN: **IT40Z0760101600000027022268**
   BIC/SWIFT: **BPPIITRRXXX**
   Reason for payment: **IBC Milano + Name of the participant**
2) PayPal
   Please send an e-mail to sales@eravelservice.com to receive the link for the payment. This payment method is subject to an increase of 5% of the fees.
3) Credit card
   Payment with credit card may be available in the next weeks. Please check updates on http://www.8brachiopodcongress.com/registration-fees.html

The receipt of the payment should be sent to 8brachcongress@unimi.it ("*Congress fee*" in the heading of the e-mail).

INSURANCE

The conference organizers cannot accept liability for personal accidents or loss of, or damage to private property of participants, either during or indirectly arising from the 8th International Brachiopod Congress. Participants are advised to take out their own personal

health and travel insurance for their trip and for their participation at excursions and field trips.

Personal health and travel insurance can also be obtained through sales@eravelservice.com.

CANCELLATION AND REFUNDS

The registration fee for the Congress will not be refunded except for cancellations in cases of force majeure. Registration fee will only be refunded if the notice of cancellation is received before June 30th, 2018 and the fee will be refunded in part. The requested refund (50% registration fee originally paid) will be sent to the registrant after the Congress. After June 30th, 2018, no refund will be possible even if the participant does not attend the Congress.

CONGRESS ABSTRACTS

Abstracts will have to be submitted to 8brachcongress@unimi.it ("*Abstract submission*" in the heading of the e-mail), along with the receipt of the payment of the registration fee. The deadline for abstract submission is 30th April 2018.

Detailed instructions for abstracts, talks and posters are given in the Congress website (http://www.8brachiopodcongress.com/guidelines.html). English will be the official language of the meeting and excursions. Collected abstracts will be available on memory sticks to all participants and will be published in a supplementary issue to *Permophiles*, the Subcommission on Permian Stratigraphy (SPS) Newsletter.

CONGRESS PROCEEDINGS

We plan to publish the Congress proceedings in the open access ISI journal *Rivista Italiana di Paleontologia e Stratigrafia* (http://riviste.unimi.it/index.php/RIPS/index).

FUNDS TO ATTEND THE CONGRESS

The organizing committee will be able to provide financial support for PhD, graduate and undergraduate students who lack funds to attend the Congress. The deadline for applying for support is 31st January 2018. All applications will be considered by a panel of experts, and decisions will be announced by the end of March 2018. Most awards are likely to cover only part of the total cost (field excursion costs will not be covered).

The applicants should be registered on the Congress website (deadline 31st January) and they should send (to 8brachcongress@unimi.it; "*Funds application*" in the heading of the e-mail) the following documents:

- A letter from their University documenting if they are PhD, Graduate or undergraduate students;
- A detailed personal CV including education, research and working experiences, and list of publications (if applicable);
- A personal statement.

INVITATION AND VISA

A formal letter of invitation for the International Brachiopod Congress to help to acquire visas or funding is available on request. This letter does not imply any financial obligation on the part of the Congress organizers.

Participants who require a support letter for visa application are invited to contact the organizing committee (8brachcongress@unimi.it; "Letter of invitation" in the heading of the e-mail). Please note for security purposes, letters of invitation can only be sent to individuals registered for the Congress.

You are responsible for all travel arrangements, including procurement of visas, if necessary, and acquisition of sufficient local currency for your stay. Travelers are advised to apply for a visa as early as possible. It is imperative that you allow adequate time to process your paperwork.

Please visit the website of Italian Ministry of Foreign Affairs and International Cooperation at http://www.esteri.it/mae/en/ministero/servizi/sportello_info/domandefrequenti/sezione_visti_entrare_in_italia.html

If you are student and have any questions regarding your visa status, please consult the office in charge of international students at your university.

EXPERIENCE BRACHIOPODS AND DISCOVER ITALY

Travel packages to explore Milano and the natural beauty and history of Italy are available at http://www.eravelservice.com/

As mentioned in the introduction, Italy is a safe country known for its beautiful seas, sublime Alps, solemn monuments and immortal memories: a country of glory and beauty, and yours to discover.

PATRONAGE & SPONSORSHIPS

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SILURIAN RESEARCH 2017: NEWS FROM THE MEMBERS

(*in alphabetical order*)

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Anna ANTOSHKINA (Russia). I am actively working on Upper Ordovician and Silurian bioevents and palaeogeography. I am also interested in sequence stratigraphy and evolution of sedimentary basins. In September 2017 a project — Upper Silurian Lau Event in the northern part of the western Urals, the Chernyshev and Chernov swells in stratigraphic sequences ended. I am also participating together with my young colleagues Lyubov' Shmeleva and Evgeniy Ponomarenko in project — Ordovician-Silurian boundary – on the northern Urals and Hirnantian strata exposed on the northern and subpolar Urals concentrating our research on sequence stratigraphy, sedimentology, and palaeogeography. A complex study on the significance and nature of ooids, concretions in some Ordovician and Silurian sequences of the western Urals have revealed a distinct signal of microbial activity, and the results published.

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Gudveig BAARLI (USA). In 2017, my partner, Markes Johnson, and I continued work on the Ordovician-Silurian boundary sections in the Oslo Region, Norway. Fieldwork in the Oslo Region in 2017 was primarily on Hirnantian strata and hurricane patterns. I also continue work on the spire-bearers of the brachiopod fauna in the Solvik Formation of the Oslo Region that spans the uppermost Hirnantian through the Aeronian. The atrypids and athyridids are exceptionally diverse in this formation and parts of the boundary fauna show transitional evolutionary forms.

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Chris BARNES (Canada). I am continuing Silurian conodont palaeontology, stratigraphy, isotope geochemistry research. The main current projects are: a) Silurian palaeotemperature record determined from SHRIMP oxygen isotope measurements from conodonts (with Julie Trotter (UWA) and Ian Williams (ANU)); and b) Ordovician and Silurian conodont biostratigraphy, bioevents, eustasy, and thermal maturation from the Canadian part of Laurentia.

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Juan Luis BENEDETTO (Argentina). I am working on the brachiopod faunas from the Hirnantian-Rhuddanian boundary at the Precordillera basin of western Argentina (Cuyania terrane) in order to shed more light on the end-Ordovician mass extinction in Gondwana. This study includes the taxonomic revision of taxa published many years ago as well as the description of some new forms. This project, which is being carried out in collaboration with the PhD student Florencia Leone, also focuses on the subsequent recovery during the early Silurian and the emergence of the Afro-South American Realm. This analysis is based on the rich brachiopods faunas from the La Chilca and Los Espejos formations of west-central Argentina. Particular interest is being devoted to the phyletic lineage starting with *Anabaia* in the early Llandovery and culminating with *Clarkeia* in the Wenlock-Pridoli. A main tool for unravelling the evolutionary relationship of the Silurian rhynchonellides from South American Gondwana is the study of the ontogeny of *Clarkeia* and the closely related genus *Harringtonina*.

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Alain BLIECK (France). I did not work a lot on Silurian vertebrates in 2017. However, two of my published papers about the Old Red Sandstone (with DKE Elliott) and about the GEBE (Great Eodevonian Biodiversification Event) do concern also Silurian vertebrates and assemblages. Their concerns are taxonomy, systematics, evolution, biostratigraphy, palaeoecology, palaeobiogeography (palaeochronology), palaeobiology, and geobiology. In fact there is a single long-term great biodiversification event that begins in the Ediacaran and goes on up to the Early Devonian. It concerns the Cambrian explosion, the GOBE (Great Ordovician Biodiversification Event) and the GEBE. A paper

and oral communications are in progress on this thematic issue and will be presented further in later Silurian Times.

RST 2018 : https://rst2018-lille.sciencesconf.org
IPC 5: https://ipc5.sciencesconf.org
APF annual congress: http://www.assopaleo.fr
Geologica Belgica international congress: http://www.geologicabelgica.be

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http://eep.univ-lille.fr/perso-Alain-Blieck
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Oskar BREMER (Sweden). In October 2017, I defended my PhD thesis entitled "Silurian vertebrates of Gotland (Sweden) and the Baltic Basin", which was supervised by Henning Blom, Per E. Ahlberg and Tiiu Märss. In this project, I presented new occurrences of Silurian vertebrates from Gotland, as well as reviewed and revised previous reports. This was done in conjunction with investigations about the stratigraphy and depositional environments of the Gotland strata, performed together with Emilia Jarochowska from Universität Erlangen-Nürnberg (Germany), in order to better understand environmental preferences among early vertebrates. As part of comparing Gotland to other areas of the Baltic Basin, I described vertebrate faunas from upper Silurian outcrops in the Holy Cross Mountains (Poland) in collaboration with Grzegorz Niedźwiedzki, Wojciech Kozłowski, and Marek Dec. I also collaborated on a project focused on describing the histology of acanthodian fin spines from the Silurian of southern Sweden using synchrotron data together with Anna Jerve, Sophie Sanchez, and Per E. Ahlberg.

I am now doing a postdoc at Uppsala University where I will investigate the three-dimensional histology of osteostracans using synchrotron microtomography data. The goal of this project is to get a better understanding of the structural diversity of hard tissues within the group, and subsequently how this relates to other early vertebrates.

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Carlton BRETT (USA). In 2017, I continued working with several colleagues on Silurian sequence, chemo- and event stratigraphy and palaeoecology of southern Laurentia and comparisons with other regions. Research is divided into about three project areas.

A) Research on Silurian sequence and chemostratigraphy: Ohio, Indiana, Kentucky, and Tennesee (collaborations with Ohio and Indiana Geological Surveys)

This year my efforts were largely focused on aspects of Silurian stratigraphy in Ohio. I am working with the Ohio Geological Survey, particularly Dr. Chris Waid, to extend these correlations into the subsurface. We have had workshops aimed at integrating gamma ray profiles with drill core data on unit boundaries and this proved successful at high resolution. I have also sampled several somewhat enigmatic intervals for both C isotopes and conodonts that are being studied by Dr. Mark Kleffner (Ohio State University, Lima). Our objectives include regional correlation of Silurian sequences across all parts of Ohio and bridging into adjacent states in the Appalachian, Michigan, and Illinois basins and Nashville Dome. We also hope to standardize terminology and make Ohio a key reference area for Silurian studies.

Indiana, Kentucky: I continued work on linking surface and subsurface stratigraphy in the Ordovician and Silurian of Indiana and Kentucky, working with Dr. Patrick McLaughlin of the Indiana Geological Survey. I intend to log more drill cores and outcrops against gamma ray profiles generated for these wells and/or neighboring area. In addition, I will collaborate with both the Ohio and Indiana Geological surveys in presenting a post-meeting field conference for the Annual Meeting of Geological Society of America based in Indianapolis in November, 2018 that will feature recent findings on Upper Ordovician and Silurian from spectacular new highway cuts on US 31E south of Mount Washington, KY.

West Virginia, Virginia: I am also working with Dr. Brad Cramer and PhD student Stephan Oborny (University of Iowa) on stratigraphy of the Upper Silurian (Ludlow-Pridoli) of the Appalachian Basin; this research is funded by an American Chemical Society, Petroleum Research Fund (PRF) grant, on which I am a collaborator. This year we measured and sampled spectacular new highway cuts in West Virginia and Virginia. We also measured in detail a major drill core from Franklin Furnace, OH. In the next couple of years, we intend to produce a synthesis on sequence and chemostratigraphy of these higher Silurian beds in the subsurface of southern Ohio, and into spectacular new outcrops in West Virginia, Maryland and Pennsylvania, and to tie sequences into those in the classic Salina Group of New York State, and elsewhere. I have also continued to work with former student, Dr. Matt Vrazo on depositional environments and taphonomy of Silurian eurypterids in these strata.

B) Silurian sequences and echinoderm faunas

Dr. James Thomka (former student, now at University of Akron, OH) and I have continued working on the detailed sequence and cycle stratigraphy, taphonomy, palaeoecology (especially of echinoderms) and palaeoenvironments of the early Wenlock interval in Indiana, Kentucky, and Tennessee. We are presently working on two manuscripts dealing with Silurian crinoid columnals and their parasitic borings.

C) Volatility in the Silurian-Devonian

I have continued investigating the relative "volatility" (i.e. the degree of environmental and biotic change per unit time) of stage-level time slices in the Ordovician through Devonian. New absolute dates for the stages have led to surprising and counterintuitive results. Dr. Pat McLaughlin (Indiana Geological Survey), Dr. Poul Emsbo

(US Geological Survey Denver) and I continued to pursue detailed studies that are leading to an important new synthesis that will help to shed light on critical processes in Earth and life history.

In 2017, I was also made a Corresponding Member of the Senckenberg Institute, Frankfurt, Germany, and was elected as the Chair of the North American Commission on Stratigraphic Nomenclature.

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Carole BURROW (Australia). A paper was finally published (Turner *et al*. 2017) on the Silurian-Early Devonian microvertebrates of the Welsh Borderland, for a special proceedings volume of the Geological Society centred on presentations on the AngloWelsh Old Red Sandstone given at the Brecon meeting in 2014. The Newman *et al*. (2017) paper in the same volume, giving a preliminary description of the late Silurian-Early Devonian macrovertebrates, was also published, in hard copy with pagination. Sue and I also have a paper in press on a new microvertebrate assemblage from the latest Silurian of Maine, USA (Turner and Burrow in press). My paper revising the Mid-Palaeozoic vertebrate assemblage described by Priem (1911) from Laundos, Portugal, originally considered to be late Silurian, was also published (Burrow 2017). We are still waiting for contributions from co-authors in our manuscript on late Silurian vertebrates from the Pendock-1A borehole of Western Australia.

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Mikael CALNER (Sweden). Still fairly much work in the Ordovician, but some progress was made also in the Silurian. I am collaborating with Brad Cramer on the extensive Altajme core that we recovered from Gotland a few years ago that penetrates more or less the entire Wenlock. I spent a few days with Brad in Iowa City in 2017 to understand the stratigraphy of the core and its carbon isotope record and this project progress nicely. Apart from this I finally published data accumulated several years ago to build a continuous carbon isotope stratigraphy for the Lau Event on Gotland, very useful for correlation of this event between different continents. For 2018 I hope to publish a carbon isotope stratigraphy for the post-Ireviken Event interval on Gotland and its relation to the

rise and demise of a carbonate platform system that followed after the Early Sheinwoodian Isotope Carbon Excursion (ESCIE).

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Yves CANDELA (UK). In 2017, I continued working on the machaeridian fauna from the Silurian North Esk Inlier of the Pentland Hills, Scotland. This project continued from work I undertook a couple of years ago on Archie Lamont's machaeridian collection and descriptions published in his 1978 paper (Pentlandian miscellany: Mollusca, Trilobita, etc. *Scottish Journal of Science*, 1, 245–302). I used newly collected material, alongside specimens in the palaeobiology collections of the National Museums Scotland including those collected by Archie Lamont.

In addition to this, I worked with David Harper (Durham, UK) on the revision of the brachiopod taxa described in Lamont (1978).

I am also involved in a project on the diversification of the Bothriocidaroida (Echinodermata) with Laura Cotton and David Bottjer, and led by Jeffrey Thompson.

Re-elected co-editor of the Monographs of the Palaeontographical Society during the Society's AGM (19th April 2017).

Dealing with the Silurian, I am currently working with Joe Botting on the description of a new and unique taxon of fossil sponge from the Wether Law Linn Formation in the Pentland Hills. I am also working on a synoptic revision the faunas described by Archie Lamont in his 1978 article. As part of my curatorial duties, I am curating the collection of fossils (mainly Ordovician and Silurian, from Britain and Europe) bequeathed to the National Museums Scotland after Archie Lamont's death; this project will aim to make this collection accessible at last, for study.

In parallel, I am still working with Ordovician brachiopods, and am currently undertaking a project with David Harper on the brachiopod faunas from the Fezouata Lagerstätte.

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Robin COCKS (UK). Another full year, starting in January with formal publication of the palaeogeography book with Trond Torsvik and the submission of my 'Llandovery brachiopods of England and Wales' monograph to the Palaeontographical Society. The latter has been refereed and accepted and will be published (41 plates and much text) late in 2018. I visited Trond Torsvik (then on sabbatical in Berlin) to complete a short palaeogeographical review paper, which has just been published in the *Geological Magazine*. I also went to visit Trond in Oslo in October to plan more work and attend a short conference to celebrate his 60th birthday. Leonid Popov, here on sabbatical from Iran during 2017, visited me in London three times and substantial papers on a fauna from Kazakhstan and another on the Early Ordovician brachiopods of South Wales are well under way. A global review of Telychian brachiopod genera with Rong Jiayu (Nanjing) is nearly complete. The Palaeontological Association Christmas meeting was at Imperial College, only 300 yards from my office in London.

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Paul COPPER (Canada). I am doing collaborations with Dr. Jisuo Jin on the Ordovician and Silurian stratigraphy and brachiopods. Materials we are working on are mainly from Anticosti Island, where we had spent tens of years doing field work and collected thousands of well-preserved specimens.

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Carlo CORRADINI (Italy). The work on Silurian conodonts and biostratigraphy continues. Last year most of the researches were devoted to the Carnic Alps, where I am investigating the Silurian and Lower Devonian *Orthoceras* limestones and calcareous levels within black shales sequences, both studying new sections and updating data from classical localities. The revision of the stratigraphy (chrono-, litho- and bio-) of the Rauchkofel Boden section, a classical section exposing rocks from Katian to Pragian (with M.G. Corriga, A. Ferretti and H.P. Schönlaub) was published. The taxonomic and biostratigraphic study of the conodont fauna from several sections from Ludlow to Lochkovian is in progress (with M.G. Corriga), and a paper on conodonts across the Silurian-Devonian boundary will be submitted soon.

The organization of the field trip connected with the ICOS4-ISSS-ISDS forced to

restudy several classical exposures: updated data were published in various contributions in the guidebook. Researches in the Carnic Alps include also geological and palaeontological investigation (with L. Simonetto, M. Pondrelli, T.J. Suttner and others).

In Sardinia I'm studying calcareous sections (with M.G. Corriga) and black shales outcrops. A conodont fauna from the San Juan Precordillera (Argentina) is under study (with M.J. Gomez, A. Mestre and S. Heredia).

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Brad CRAMER (USA). Our working group of students and colleagues continue to work on the Silurian System throughout the US and around the world. Recently, we published a series of manuscripts on the conodont biostratigraphy and geochemistry of the Llandovery of the US Midcontinent as well as a new re-evaluation of the S-D boundary date from the 'Kalkberg' Bentonite. We also recently submitted two new manuscripts, one of revisions to the Bainbridge Group in the Illinois Basin and the other on the Sequence Stratigraphy of the Mulde Interval. The Bainbridge paper includes the first publication of the carbon isotope data and the biostratigraphic range charts for conodonts and graptolites from the Schlamer #1 Drill Core. Additional work also continues on the >350m-long core we took from Gotland a few years ago. The carbonate carbon isotope data has now been completed and we are working on sample processing for other chemistry at the moment. My former students and post-docs are all either working in their new jobs or are currently interviewing for positions. Alyssa Bancroft is now at the Indiana Geological Survey; Chris Waid and Erika Danielsen are both at the Ohio Geological Survey. Neo McAdams is currently interviewing for tenure-track faculty positions. Stephan Oborny is working on his PhD and is on track to graduate in Spring 2019.

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André DESROCHERS (Canada). I am working on Upper Ordovician to lower Silurian strata from the Anticosti Basin in eastern Canada. My research program focuses on high-resolution stratigraphic studies integrating carbonate sedimentology, sequence stratigraphy, biostratigraphy, and chemostratigraphy. Two current MSc projects (Marili Vincent-Couture, and Matthew Braun) are examining different stratigraphic segments of the Anticosti succession. A number of collaborative projects are also in progress including:

i) testing global anoxia an alternative cause for the Hirnantian mass extinction (with Julie De Weirdt and Thijs Vanderbrouke), ii) time-series analyses derived from high-resolution stable isotope data of the Upper Ordovician Anticosti succession (with Matthias Sinnesael and Thijs Vanderbrouke), and iii) various biostratigraphic studies across the O/S boundary on Anticosti Island (chitinozoans with Aicha Achab, Esther Asselin, and Thijs Vandenbroucke; ostracods with Tonu Meidla).

Anticosti Island was recently placed on the Canada's Tentative List for World Heritage Sites on the basis of its outstanding record of fossil life through the upper Ordovician and lower Silurian time interval. This time period represents a milestone event in the history of the Earth, the first global mass extinction of animal life. The local and provincial governments are planning to build an interpretation centre with accommodation facilities available for visiting geoscientists in the near future.

Other current research projects include: i) the significance of widespread transgressive oolitic limestones preserved at the basin margin of the Yangtze Platform in South China (with Guangxu Wang and Renbin Zhan) and ii) the multi-order stratigraphic record of the classic lower Cambrian sandstones and limestones in the South Labrador (with Jean-François Ghienne).

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Annalisa FERRETTI (Italy). My Silurian research continues to be focused on the biosedimentology and palaeoecology of the Austrian Carnic Alps. A cooperation project (with P. McLaughlin and P. Emsbo) on the study of Silurian ironstones in the US, centered on the comparison with coeval occurrences in the Carnic Alps, is still running. An integrated study on modern iron ooids from Panarea (Sicily) has just started.

A Thematic Issue exploring the significance of fossils in modern chronostratigraphy, 150 years after the death of Albert Oppel (Balini, Ferretti, Finney and Monechi, eds, Lethaia) has been released.

An updated conodont biostratigraphy of the Rauchkofel Boden Section, a classical reference section for the Carnic Alps, is presented (Schönlaub *et al.*). Twenty-five conodont Zones are documented, spanning from the Katian (Upper Ordovician) to the Pragian (Lower Devonian), following the latest developments in conodont taxonomy and biostratigraphy, as well as in chronostratigraphy, and the recent introduction of a new lithostratigraphic outline of the Carnic Alps.

Peculiar apatite overgrowths observed on the oral surface of Late Ordovician conodonts from the Vaux Limestone exposed in Normandy have been described (Ferretti *et al.*). Results do involve conodonts of all other time frames.

A review of geological evidences, including several Silurian ones, highlights a set of properties that make traces and ichnofabrics important for the search of potential extraterrestrial life: trace fossils preserve the activity of soft-bodied organisms; biogenic structures are resilient to processes that obliterate other biosignatures; traces are very visible biosignatures; traces indicate environment and behaviour; traces can be universal biosignatures, i.e. biosignatures ideally suited for detecting any type of life. A model of organism-substrate interactions beyond Earth is proposed by Baucon et al. Expected extraterrestrial traces are those that manifest behaviours that allow to maintain homeostasis: excavations, meandering traces and biodeposition structures.

Finally, I am actually co-guest editing with Alyssa Bancroft and John Repetski a Special Issue of *Palaeogeography, Palaeoclimatology, Palaeoecology* focusing on "GECkO: Global Events impacting COnodont evolution". The GECkO Issue will seek to take the concept of conodont animals beyond the simple idea that their primary utility is to serve as biostratigraphic markers and geochemical archives and to again begin looking at their temporal complexity and their potential to reflect events that occurred at a global scale. Several Silurian papers are scheduled.

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Mansoureh GHOBADI POUR (Iran). I continue my work on various aspects of biostratigraphy, lithostratigraphy, palaeontology and biofacies of the Silurian System with a special attention to Iran. There is a good progress in the study of the Silurian trilobites and brachiopods from Central Iran and Iranian Kopet-Dagh. An updated review of the Silurian of Central Iran was recently published in *Acta Geologica Polonica*. The paper was finished in cooperation with Vachik Hairapetian, Leonid Popov, Peep Männik and Giles Miller. A small Lochkovian brachiopod fauna from eastern Central Pamirs was published in the *Journal of Asian Earth Sciences*. In previous reports it was dated as Silurian. This study was completed in cooperation with Tatiana Modzalevskaya, Leonid Popov and Michail Dufour.

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William B. Harrison, III (Professor Emeritus and Director)
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Luke HAUSER (UK). I continue the work towards completing my PhD. I am now editing and writing up chapters. The title has been changed to 'The Downton Bone Bed (upper Silurian) of the Welsh Borders'. This new title reflects a change in direction that the study has taken. I am also adding sections to my thesis such as comparison with the Ludlow and Temeside Bone Beds as well as looking at producing a synthesis on Silurian vertebrates, their distribution, preservation, etc. This of course could be a separate PhD in itself, so will be a brief overview putting the Downton Bone Bed and the Welsh Borders into context. I have also been in discussions with my third supervisor, Dr. Tiiu Märss, on working on a paper on British cyathaspidid heterostracans.

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Kathleen HISTON (Italy). I continue my studies on Silurian cephalopods, sea-level changes, oceanic cycles and biotic response in the Ordovician-Silurian of the Carnic Alps and other localities in relation to the use of the migrational pathways of pelagic faunas as a tool for timing of open seaways and microterrane position along the North Gondwana margin. Investigation of Silurian nautiloid biozones for biostratigraphic correlation is ongoing.

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David HOLLOWAY (Australia). I am continuing updating a manuscript on Silurian trilobites (Illaenina, Odontopleurida and Lichida) from the St Clair Limestone of northern Arkansas.

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HUANG Bing (China). I am mainly working on the project led by myself from the National Natural Science Foundation of China recently, and two papers were formally published in 2017. One is about regional stratigraphy of early-middle Telychian, and another is about the ecology of brachiopods across the Ordovician-Silurian boundary which was submitted last year. A two-volume monograph <Phanerozoic Brachiopod Genera of China> edited by Prof. Rong Jiayu and other colleagues was published in December 2017. I made some contributions mainly for two chapters of this book, i.e. the

chapters dealing with Ordovician and Silurian brachiopods of China respectively. Last year, I was also continuing my international collaboration, and a new study about palaeobiogeography and ecology of brachiopods after the end Ordovician mass extinction has been finished and published online now. Being the supervisor of a MSc student, I gave some instruction and help to his study and the preparation of his thesis. The student and I also submitted a paper about the numerical study on a brachiopod population from upper Silurian of South China, which is in press now.

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Markes JOHNSON (USA). With regard to the progress on studies with B. Gudveig Baarli on the nature of the Ordovician-Silurian transition in the Oslo region, our review publication under the senior authorship of Johan Fredric Bockelie (deceased, November 2016) was published in the *Norwegian Journal of Geology* in August 2017 (see bibliography). We continued fieldwork in the Oslo region in August 2017 and subsequently completed a follow-up paper on the effect of Late Ordovician hurricanes across the palaeocontinent of Baltica, which has now been accepted for publication in 2018. I have begun work on a new book manuscript under the working title "Islands Lost and Found in Deep Time." The book will include chapters on the Ordovician-Silurian transition in Churchill, Manitoba (Canada), as well as Ludlovian relationships from the north-central part of Inner Monglia (China).

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Dimitri KALJO (Estonia). I continued in a slow manner studies on the Ordovician and Silurian bio- and chemostratigraphy of Baltica as a part time emeritus member at the institute and as the editor-in-chief of the *Estonian Journal of Earth Sciences*.

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Steve KERSHAW (UK). Work continues on Silurian stromatoporoids, collecting samples aiming for a comprehensive study on UK Silurian stromatoporoids, hopefully to be finished in 2018.

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Tarmo KIIPLI (Estonia). In 2017, we continued our work on Ordovician and Silurian sedimentology and geochemistry, and had finished and published two papers dealing with Ordovician and Silurian materials.

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Anna KOZŁOWSKA (Poland). I have been continuing my research, together with my colleagues: Alf Lenz, Denis Bates, Jörg Maletz, Jan Zalasiewicz and Sigitas Radzevičius, on evolution, relationships and construction of tubaria of one of the most complicated graptolites, the retiolitids. Project of recovery of graptolites after *lundgreni* event is being continued. I am also involved in the Treatise chapter project about retiolitids which is nearly finished.

Recently, together with my colleagues, I have been working on *Gothograptus* species, reconstruction of its tubarium, phylogeny and significance for retiolitids evolution. New material and new species come from Poland, Lithuania and Germany.

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Petr KRAFT (Czech Republic). To be honest, I do not work in the Silurian much usually, so I have very little to contribute to the Silurian Times. However, a paper of a topic suitable for the Silurian Times that is dealing with the Silurian plant had been published in 2017. I started to study this as confused with a dendroid graptolite.

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Kyi-Pyar-Aung (Myanmar). I am now working on the Palaeozoic stratigraphy of

Myanmar. My current research is mainly on the biostratigraphy of Permo-Carboniferous units of Kayah, Karen and Mon States. I am studying the fauna across the Ordovician-Silurian boundary with Professors Rong Jiayu, Zhan Renbin (NIGPAS) and David Loydell (UK). I also continue to work on Silurian stratigraphy and graptolites from Myanmar together with David Loydell, and we have already published a paper together.

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LI Qijian (China). I am mainly working on Ordovician-Silurian reefs and hypercalcified sponges (e.g. calathids, stromatoporoids and sphinctozoans). In 2017, I continued my systematic and palaeoecological work on calathids. Apart from the materials from South China and Tarim, I carried out a new project with Dr. Masatoshi Sone, targeting the Ordovician reefs in Malaysia. Moreover, I am now working on some early Silurian reefs of South China, in collaboration with Prof. Axel Munnecke, Dr. Stephen Kershaw and Dr. Andrej Ernst. I also continue my collaborations with several colleagues on quantitative palaeoecological analyses of reefs during the Ordovician-Silurian transition.

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Steve LODUCA (USA). I continue to work on Early Palaeozoic macroalgae, including those from the Silurian. In 2017, a large database on Early Paleozoic macroalgae was completed and an associated overview paper was published. A study focusing on the effects of the end Ordovician mass extinction event on macroalgae is currently underway.

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David LOYDELL (UK). I am currently working on a wide variety of projects, some largely graptolitic, others combining biostratigraphy with carbon isotope and other geochemical data. Teaching and marking (and an evolutionary radiation of bureaucracy), etc. seem to occupy an ever-increasing amount of my time.

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Peep MÄNNIK (Estonia). I am actively working on evolution, taxonomy and palaeoecology of conodonts, conodont-based high-resolution stratigraphy, bioevents and palaeogeography. I am also interested in sequence stratigraphy, palaeoclimatology and evolution of sedimentary basins. Joint studies together with colleagues from Estonia, Germany, Poland, Iran, Japan, Russia, Sweden, U.K. and USA on evolution and high-resolution stratigraphy of the Early Palaeozoic faunas and sedimentary basins on different palaeocontinents are going on. Conodont-based palaeoclimatological studies (Upper Ordovician–Silurian) are in progress.

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Tiiu MÄRSS (Estonia). Last year I studied the collected but not yet described Silurian cyathaspidid heterostracans housed in the geological museums in Tallinn and Tartu. The specimens originate from the East Baltic, Timan Region, Novaya and Severnaya Zemlya archipelagoes, and the Central and Southern Urals. This work is continuing this year.

Last July, I was able to attend the 14th International Symposium on Early/Lower Vertebrates organised by the Institute of Geology of Warsaw University and Polish Geological Institute. My thanks for that possibility go to Henning Blom, Uppsala, and Michal Ginter, Warsaw. I gave there two poster presentations based on the results of my studies on recent fishes (with Mark Wilson, and Estonian ichthyologists) and Silurian fishes.

My co-supervised PhD student Oskar Bremer, Uppsala University, successfully defended his thesis "Silurian vertebrates of Gotland (Sweden) and the Baltic Basin" on October 6, 2017, and was awarded the degree of Doctor of Philosophy.

Studies on both the Silurian and recent fishes will go on in 2018. With Luke Hauser, a PhD student of the University of Portsmouth, UK, we have planned to re-describe the Silurian cyathaspidids of Britain. Joint research projects with the Uppsala University palaeoichthyologists continue. One is to revise the vertebrate distribution on Gotland and Saaremaa islands. Also, the manuscript on vertebrate microremains of the Central Urals need to be finished and published in the near future.

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Alexander (Sandy) McCRACKEN (Canada). I am periodically working on good Ordovician-Silurian collections from Hudson Bay and Moose River basins, Ontario and Manitoba. I retired in September 2017, and am a part-time volunteer with the GSC Calgary office. I work at my Victoria home (not in the GSC Sidney office), having moved my microscope and samples with me. I am in contact with the Calgary office weekly, and so may be a bit slow to respond to emails.

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Tõnu MEIDLA (Estonia). I am working on different aspects of stratigraphy, fauna and stable isotopes in the Silurian (including the lower boundary interval) of the Baltic States

(together with L. Ainsaar, O. Tinn, L. Lang, K. Truuver, V. Perrier, S. Radzevičius) and the Ordovician-Silurian boundary on Anticosti Island (together with A. Desrochers, Z. Taha, V. Perrier, M. Williams, D. Siveter).

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Michael MELCHIN (Canada). 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, Europe, and China. I am collaborating with Charles Mitchell, David Sheets, Junxuan Fan and others on quantitative stratigraphic global correlation of Late Ordovician–early Silurian strata, including GSSPs. I am also collaborating with Petr Štorch, Junxuan Fan, Xu Chen, Jan Zalasiewicz, Thijs Vandenbroucke and others on the study of potential GSSP candidate sections for the base of the Aeronian Stage in Bohemia, Wales and China, and with Junxuan Fan and Xu Chen on a GSSP candidate section for the base of the Telychian in China. I am working on a project with Dan Goldman, Chuck Mitchell, Junxuan Fan and others on quantitative graptolite biogeography. I am collaborating with Erik Sperling, Justin Strauss, and Tiffani Fraser on Ordovician to Lower Devonian graptolite biostratigraphy and chemostratigraphy in northern Yukon. I am also working in several projects related to morphologic and phylogenetic analyses of early Silurian graptolites.

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Giles MILLER (UK). I continue to work on Silurian conodonts mainly with Peep Männik and Vachik Hairapetian. This year we published a review paper on the Silurian of Iran that includes details of all the recent conodont work we have done in the region. There are a few other faunas to be worked up and we hope to tackle those in the next years.

I have also started work on conodont faunas I collected from the Ludfordian-Gorstian boundary stratotype section some years ago. Samples are prepared and picked and I am starting to make faunal slides from each of the 12 samples I have crossing this boundary.

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Tatiana MODZALEVSKAYA (Russia). I continue to work on the Silurian-Lower Devonian brachiopods and stratigraphy in thematic projects connected with analysis of regional scales of Eurasian Russian regions.

The new projects of electronic reference book-determinant on guide forms of Silurian fossil faunas will be continued this year.

My manuscript on Upper Ordovician and Silurian brachiopods from Kotel'ny Island (Novosibirsk Islands, Arctic Russia) will be published at the end of 2018 year.

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Axel MUNNECKE (Germany). Besides the work on Ordovician, Permian and even Mesozoic rocks, we have continued working on Silurian conodonts. Our focus lies in (a) the development across the Mulde Event, and (b) the diversity of conodonts and its change in hypersaline settings, both projects are led by Emilia Jarochowska. At the moment I am working together with Qijian Li, Andrej Ernst and other colleagues on a peculiar Telychian reef from South China. In addition, together with a young graduate student, we started a new PhD project dealing with the response of sessile benthic organisms (e.g. bryozoans) to the Silurian isotopic/climatic events.

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Silvio PERALTA (Argentina). Currently I´m working on the Early Palaeozoic, Cambrian to Devonian, in Western Argentina Precordillera, focusing mainly on its stratigraphy, palaeobiology (graptolites and trace fossils), sedimentology and tectonic basin evolution. In concern to the Silurian, several publications have emerged, dealing with the stratigraphy, sedimentology and basin evolution.

As an important aspect of our research, southward facies changes of the Silurian deposits have been analyzed, and as a result, the Tambolar structural arch is to be responsable for the tectonic evolution of the Silurian basin in the Precordillera Geological Province, and the Precordillera (Cuyania Terrane)

The much more important questions for us, was the defense of a PhD thesis by Dr. María Estela Pereyra, in which I was involved as the supervisor. The tittle of the thesis is: Estratigrafía y Estructura del Silúrico de la Sierra de La Dehesa, Precordillera Central, San Juan, Argentina" and it was finished in November 22, 2017.

The main activities in concern with the Silurian include:

Intensify the work on the Tambolar structural arch at Central Precordillera of San Juan Province (Argentina), in order to establish its influence and control in the tectonic evolution of the Silurian basin in the Precordillera.

Start to work on the Hirnantian-Rhuddanian boundary considering essentially sedimentologic, palaeobiologic and istope features, together with my colleague from Venezuela Jessica Gómez Sánchez (scholarship from National Council of Scientific and Technical Research of Argentina (CONICET, Argentina), and with Professor Alcides Sial from Federal University of Recife, Brazil.

Work on the Silurian and Devonian regional stratigraphy of the Precordillera, mainly in the Central Precordillera, together with my PhD student María E. Pereyra, in order to provide new information to estrablish a more precise correlation chart.

One more thing I would like to mention here that, if young people are taken into consideration, many people who have worked on the same geological interval would think this matter irrelevant, because ALWAYS new data, new information, new discoveries will be coming out.

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Ian PERCIVAL (Australia). I increased my research on Silurian matters considerably last year (though overall Ordovician studies still dominated). A synthesis of Lower Palaeozoic palaeontological correlations through south-central New South Wales (published in *Proceedings of the Linnean Society of NSW*) incorporated documentation by Yongyi Zhen of some Silurian conodonts from this region. A substantial systematic study of Wenlock brachiopods from southeastern New South Wales, co-authored with Des Strusz (Canberra), was submitted to *Australasian Palaeontological Memoirs* and revised after favourable reviews. I enjoyed further productive collaboration with Guangxu Wang

(Nanjing) who visited me in Sydney in September, resulting in finalisation of two manuscripts on the Hirnantian to the earliest Silurian interval in South China. However, no significant progress was made towards completion of the manuscript mentioned in my report last year on the palaeoecology of a late Llandovery deep-water fauna from the Cotton Formation in central NSW – this is definitely a priority for 2018.

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Teresa PODHALAŃSKA (Poland). Together with my group, I am working on the Ordovician and Silurian prospective black shale formations to locate the areas and stratigraphic horizons of the unconventional hydrocarbon resources in Poland. It is a continuous program of recognition, investigation and evaluation of the potential prospective hydrocarbon zones in the Lower Palaeozoic shales.

The result of the first stage of the program is to map the prospective zones in Lower Palaeozoic and regional correlations between different boreholes.

I am also working on the Silurian biostratigraphy based on graptolites, chronostratigraphy and lithostratigraphy in Poland.

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Leonid POPOV (UK). Recently I am involved in the monographic studies of the Silurian brachiopods from Nuratau and Turkestan ranges in collaboration with Irina Kim (Geological Survey of Uzbekistan). There is a considerable progress in the study of the Silurian brachiopod fauna from Derenjal Mountains (in cooperation with Mansoureh Ghobadi Pour and Vachik Hairapetian) and Kerman region (in cooperation with Shahin Zaman). Together with Vachik Hairapetian, Mansoureh Ghobadi Pour, Peep Männik and Giles Miller, I have finished and published a review paper on the Silurian of Iran in 2017.

Another paper completed is dedicated to the Early Palaeozoic palaeogeography of Kazakh terranes with a special attention to the biogeography of the Katian brachiopods. Data presented in the paper have also important implication for understanding geological history of Kazakh terranes in the Silurian. A long standing paper on the ontogeny of the orthotetide brachiopod *Coolinia* in cooperation with M.G. Bassett has been also finally published.

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Sigitas RADZEVIČIUS (Lithuania). I am working on Silurian graptolites from Lithuania and the Holy Cross Mountains. In addition, I am working on several projects: 1) Upper Homerian lundgreni extinction; 2) the Ludlow graptolites biostratigraphy and biodiversity; 3) the phylogeny of the Wenlock and Ludlow monograptids; 4) partly on the Silurian cyclostratigraphy.

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David RAY (UK). My research activities over the past year have focused upon the Wenlock Series of the Midland Platform (England and Wales). In particular collaboration with Charlotte Fry and others (Fry *et al*., 2017) has established the details of the Homerian carbon isotope excursion within graptolitic successions along Wenlock Edge and at Ludlow. Important outcomes from this work are the revision of the Homerian graptolite zonation and the identification of the Homerian carbon isotope excursion within a section immediately below the Gorstian GSSP. Within the Malvern and Dudley areas collaboration Emilia Jarochowska and others has focused upon conodont diversity and stratigraphic bias within the Much Wenlock Limestone Formation. Details of sedimentology and the Homerian carbon isotope excursion have also been established and are currently being written-up. Ongoing collaboration with Helen Hughes, Emilia Jarochowska, Anna Claussen and others is focused on the Dolyhir Limestone and relates to stratigraphy, sedimentology and faunas (trilobites, conodonts and bryozoans). In addition ongoing collaboration with Helen Hughes and Alan Thomas is focused upon the trilobite record from the Lower Hill Farm Borehole (Wenlock Edge). These projects aim to further refine regional stratigraphy.

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RONG Jiayu (China). I have been studying the *Hirnantia* Fauna in Northern Shan States of Myanmar together with Zhan Renbin, Huang Bing and Chen Di, and found more than

20 genera from the Burmese material that was collected by us in January 2017. This work will be finished in 2018. Meanwhile, I am also working, together with Zhan Renbin, on the Darriwilian brachiopods of northern Myanmar, and together with Huang Bing, on the Hirnantian brachiopods of southwestern Yunnan (northern extension of Sibumasu palaeoplate). The systematic palaeontology of these faunas will be presented and the diagnostic aspect of the *Hirnantia* brachiopod fauna of Sibumasu (including Myanmar, Thailand and western Yunnan) will be discussed in detail. The palaeoecological and palaeogeographical significance of the Middle Ordovician *Saucrorthis* fauna will be further investigated.

A manuscript that was submitted to Science China Earth Sciences (Rong J Y, Wei X, Zhan R B and Wang Y) is the first time to document the trilobite *Mucronaspis* (*Songxites*) *wuningensis* and the brachiopod *Paromalomena-Aegiromenella* Assemblage (Hirnantian, uppermost Ordovician) in northwestern Hunan, S China. They belong to the *Hirnantia* fauna but lived in a relatively deeper water environment (corresponding to BA 4-5) with a low diversity. Assuming that the depositional rate was constant, the duration of the shelly fauna might be only 12 thousand years according to the thickness of the underlying Wufeng Formation and the absolute age values of those relevant graptolitic biozones. It indicates that the global perturbation during the crisis should be much shorter than previously thought, and its influence on deep water regime should be significantly shorter than that on shallow water regime.

The monograph <Phanerozoic Brachiopod Genera of China> has been published in late December, 2017. It consists of two volumes with nine geochronological divisions from the Cambrian to Cretaceous and provides a comprehensive revision and taxonomic update of all 757 genera that are based on their type species from China established before 2016. Diagnoses, comparisons (or remarks), assigned species and temporal and spatial distributions of almost all genera are thoroughly reviewed, and faunal successions and palaeobiogeography of each geologic period are presented.

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Claudia Viviana RUBINSTEIN (Argentina). We have a small but active working group of palynologists on acritarchs, miospores and chitinozoans from the Lower and Middle Palaeozoic of north and central western Argentina, Bolivia and Brazil. The members of the group include Cristian Solano (working on Ordovician and now preparing his PhD thesis) and Victoria García Muro (a newly hired researcher), both of them are under the supervision of Claudia V. Rubinstein. A new PhD student is about to join us!

Specifically related to the Silurian, during the 2017, Rubinstein and García Muro finished the last paper related to Victoria's PhD, concerning the diversity and abundance of the Silurian palynomorphs from the Precordillera Argentina, San Juan Province.

Besides, Rubinstein and García Muro are working with Philippe Steemans in the second year of a project "Origin and evolution of the early land plants in Argentina (Middle Ordovician - Devonian), through the palynological record, and comparison with

other Gondwanan palynological assemblages", founded by the CONICET and FNRS. During the first year of the project (2017), two exchange trips were arranged and two more will take place during 2018.

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Valeri SACHANSKI (Bulgaria). Since 2013, I continue teaching students at the University of Mining and Geology "St. Ivan Rilski", Sofia, Bulgaria. Teaching takes most of my time. I am also working on Ordovician–Devonian stratigraphy of Bulgaria and Turkey, and especially on Silurian–Lower Devonian graptolite biostratigraphy. In the past year, I published my studies related to the Aeronian/Telychian boundary in Bulgaria, as well as those related to the first fossil eurypterids (sea scorpions) discovered in Bulgaria.

After an anonymous poll among students, I was nominated as the best teacher in 2017 at the University of Mining and Geology "St. Ivan Rilski" (see the photo below).

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Paul SELDEN (USA). Again, I have not been doing anything in the past year which is really Silurian related, but the following papers might have a little relevance. Mostly I have been working higher up the column (Mesozoic and Cenozoic), or in the Cambrian! However, I did attend the International Trilobite Meeting in Estonia last year, wonderfully hosted by Helje Pärnaste. I was delighted to be able to go on the post-congress excursion

to see Silurian limestones bearing eurypterid remains on the islands including Saaremaa. I worked on these specimens for my PhD thesis, but have never previously been able to visit the delightful localities.

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Lawrence SHERWIN (Australia). I have remained affiliated with the Geological Survey as an Honorary Research Associate. Still in progress is the taxonomic work on early Silurian graptolites from Goulburn - Bungonia and Parkes. A joint project on the geology of the Captains Flat District in southeastern New South Wales, which includes a considerable thickness of Silurian sediments and volcanics, and was completed several years ago but published in 2017.

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Andrew SIMPSON (Australia). During 2017, I had made gradual progress on two main Silurian conodont projects. One is the development of a manuscript on Silurian faunas from the Boree Creek area of New South Wales, Australia in collaboration with colleagues. This has also prompted a smaller seperate study on *Pterospathodus* faunas based on the work of Peter Mollow, a former colleague from the Macquarie University MUCEP group. A second manuscript is also under development on the Silurian conodonts of the Jack Formation in northern Queensland.

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Colin SPROAT (Canada). I haven't really done much Silurian research other than my undergraduate thesis, but I have finished the last of my work on my PhD project on the Late Ordovician brachiopods of North America. I have also submitted a paper on a new species of the late Katian brachiopod *Altaethyrella*, part of a palaeogeographically significant fauna that we are beginning to describe from the Kuruktag Platform on the edge of the Tarim Basin in Northwest China.

In 2017, I had formally received my PhD degree. I also applied for and fortunately got some financial support (a kind of scholarship): the President's International Fellowship Initiative of the Chinese Academy of Sciences with a duration from January 2018 to December 2019.

Concerning my postdoc project, I am now planning to expand my research from Xinjiang to Qinghai, Gansu, and Ningxia provinces, Northwest China, all with the occurrence of the brachiopod *Altaethyrella* fauna after consulting with my collaborator, Prof. Zhan Renbin from NIGP.

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Petr ŠTORCH (Czech Republic). The work focused on re-evaluation and subsequent replacement of the Aeronian GSSP was being continued in 2017. Paper which described the Hlásná Třebaň section as a proposed candidate for GSSP of the Aeronian Stage was published online in *Lethaia*. Printed paper will apear in 2018. Work on rich graptolite

fauna from the Ordovician-Silurian boundary strata of Spanish Pyrenees, conducted in collaboration with J. Roqué-Bernal and J. C. Gutiérrez-Marco, has been completed and submitted for publication in *Geological Magazine*. Slightly delayed systematic revision of the zonal index graptolite *Demirastrites triangulatus* and related early Aeronian taxa, carried out in collaboration with Mike J. Melchin, will be completed during my James Chair visiting professorship in Antigonish later this year. Together with the PhD student Sun Zongyuan from NIGP, a detailed comparative study has been performed on early Aeronian rastritids and petalolithids from Czechia (and Europe) and China with a view to test worldwide palaeobiogeographical distribution of the involved taxa. Further progress was made in the multi-proxy study of the Homerian succession exposed in Kosov Quarry which preserved detailed anatomy of the mid-Homerian biotic crisis (*Lundgreni* or Mulde Event). A paper co-authored with Š. Manda, J. Frýda, L. Slavík and Z. Tasáryová is in preparation. Since 2017, I am involved in a project funded by Czech Science Foundation and focused on potential chronostratigraphical subdivision of the Pridolí Series.

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Desmond STRUSZ (Australia). The study with Ian Percival on the Wenlock brachiopod fauna from the Quidong area near Delegate in southern New South Wales is to appear in a "Silurian-Devonian Studies" Memoir of the Association of Australasian Palaeontologists in 2018. That done, I tackled material of similar age from Bredbo, between Canberra and Cooma. Not much new - most interesting is a probable *Rhynchotrema*, but too few and poorly preserved specimens from only one locality, so left in open nomenclature. The resulting paper appeared at the end of 2017 (it can be downloaded from the Linnean Society of NSW web site https://openjournals.library.sydney.edu.au/index.php/LIN/index). Tying up some loose ends, this year I will be looking to see if there are any new taxa in the extensive Geoscience Australia collections from the Canberra Formation, and also having another look at a few residuals from my doctoral thesis on the Devonian Garra Formation in central-west New South Wales. I will continue to hold a Research Associate position with the Australian Museum in Sydney, and am still affiliated with the Australian National University in Canberra.

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John TALENT (Australia). The Macquarie Earth Sciences palaeontology group

continued researching conodonts from two target areas. Mathieson *et al*. (2016) were happy to see publication of late Silurian (as well as Early Devonian) conodont data from outcrops in the Darling Basin in far western New South Wales. A complementing manuscript, dealing with conodonts from bores in the Darling Basin, is in an advanced state of preparation. It is focussed especially on conodonts from the 'McKinnon's limestone' and from the Ivanhoe bore. It includes much valuable sedimentary data from Patrick Conaghan. Andrew Simpson is looking into the Late Ordovician–early Silurian conodonts from India obtained from copious sampling by John Talent and the late Rajendra Goel in 1971.

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TANG Peng (China). I have been working on chitinozoans and stratigraphy of the latest Ordovician and Silurian in South China. My colleagues and I continued to investigate sections of the topmost Ordovician and lower Silurian in western Yangtze Region, China. A paper dealing with the Upper Ordovician Daduhe Formation in western Yangtze Region was published in 2017. The most exciting work last year was the discovery of the Ludlow strata in the Upper Yangtze Region, China. Nematophyte fossils have been found at several sections of that area. More work on Silurian chitinozoans and stratigraphic correlation in South China will be carried out in 2018.

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Alan THOMAS (UK). I was collaborating with Helen Hughes and David Ray on a further study of the Lower Hill Farm Borehole in the Wenlock type area. Abundant trilobite remains occur, particularly in the Apedale Member of the Coalbrookdale Formation, which enable a number of subassociations to be distinguished within the previously established *Dalmanites–Raphiophorus* Association. We aim to integrate changes in the trilobite faunas with variations that occur in the carbon isotope data and sea-level variations inferred from the sequence stratigraphy.

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Oive TINN (Estonia). I am actively working on the Kalana Lagerstätte (Aeronian, Silurian) in Estonia, aiming to describe its biological diversity and palaeoenvironment. Together with PhD student Viirika Mastik, we have been focussing on algal fossils mostly, with Tiiu Märss on the fish fossils from Kalana, and with Liisa Lang, Kalle Kirsimäe and Leho Ainsaar on unraveling the taphonomy of the locality.

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Thijs VANDENBROUCKE (Belgium). I remain interested in reconstructing the Silurian palaeoclimate and palaeoenvironment. Julie De Weirdt continues her PhD research project with me at UGent, focussing on geochemistry and palynology of the Upper Ordovician - lower Silurian in N. America (in collaboration with Poul Emsbo, USGS, Patrick McLaughlin, Indiana Geologic Survey and André Desrochers, UOttawa). I also continue to co-supervise Matthias Sinnesael, who works on a PhD project with Philippe Claeys at the VUB (Belgium) on astronomical forcing during the Late Ordovician, but who is also interested in the Silurian. Other students who have joined the team focusing on the Devonian (Tim De Backer, PhD) or the Ordovician (Charlotte De Boodt, Pjotr Meyvisch, Yared De Waele, MSc and Cecile-Marie Lissens, Ba). Other ongoing projects in the Silurian include an almost written-up chitinozoan biostratigraphy of the Rheidol Gorge section in Wales, similar work on other sections in the Welsh Basin (e.g. the type Llandovery, with Jeremy Davies, BGS, and co-workers), and integrated stratigraphic work in the midcontinent and eastern USA. With an international team coordinated by Mark Williams (University of Leicester, UK) and funded by the Leverhulme Trust, we have been re-investigating the Early Palaeozoic strata of Japan, and our results will soon be published in a special issue of Island Arc.

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Jacques VERNIERS (Belgium). In 2017, only one publication on the Silurian-Devonian transition came out, to which I collaborated from a distance.

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Olev VINN (Estonia). I am working on the palaeontology of problematic calcareous tubeworms from the Palaeozoic (e.g. cornulitids, tentaculitids, microconchids etc.) and evolution of tubeworm biomineralization. My interest is also on the evolution of symbiosis, predation, bioerosion and biofouling in the Silurian of Baltica and beyond. Currently my research also includes the trace fossils of the Silurian of Estonia.

In 2017, I won the Estonian State Science Prize in Geo-Bio Sciences for the research carried out during past four years under the title: "Biomineralization and palaeoecology of Phanerozoic invertebrates"

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WANG Chuanshang (China). I'm working on the graptolites with Jörg Maletz from Germany, Prof. Wang Xiaofeng and other young colleagues from my institute. We focus on the materials from the drill cores in Yichang area, Hubei Province, China, at the interval from the Wufeng Formation of Upper Ordovician to the lower part of the Lungmachi Formation of lower Silurian. A gap was recognized in two reference wells for the shale gas in Yichang area, respectively. We'll continue to work on the graptolite taxonomy, biozonation and correlation from the Late Ordovician to the early Silurian in Yichang area in 2018. One of my colleagues, Prof. Chen Xiaohong, will continue to study the chitinozoan from the Upper Ordovician to the early Slurian in Yichang area. He has made some important achievements in 2017 on the biostratigraphy and macroevolution of chitinozoans.

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WANG Guangxu (China). In 2017, I continued working on stratigraphy and bioevents across the Ordovician-Silurian transition in South China, where superb record of glacioeustatic sea-level fluctuations and benthic faunal turnover has been confirmed in recent years. Some of these results have already been published. Besides, I am also working on systematic palaeontology of amplexoid rugose corals from lower Silurian (Llandovery) of South China.

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WANG Wenhui (China). Most of my research in 2017 was related to the Ordovician-Silurian boundary projects. In early 2017, a joint field excursion concerning the biostratigraphy and ecostratigraphy of areas on the southwestern margin of the Upper Yangtze Platform, China was carried out together with some of my colleagues from the Nanjing Institute of Geology and Palaeontology (NIGP). I was in charge of the graptolitic studies within the joint project during that trip. At one section, the Qianjin section in Ganluo, Sichuan Province, planktic graptolites were found in association with typical benthic dendroids at some graptolite horizons, a case important for interpreting the palaeoecological environment. I have now studied the complete graptolitic succession and tried to understand the palaeoecology of the Ordovician-Silurian boundary formations using graptolite depth zonation. I gave a talk about this work at the annual meeting of IGCP 653 held in Yichang, China last October. My research interest also includes studies of Ordovician and Silurian palynology. I have published a paper using quantative methods in the classification of certain Ordovician acritarchs. One of my MSc students, Deng Qiaoyan, is now working on melanosclerites, a special kind of Palaeozoic microfossil. She documented several new melanosclerites found in China in her recent publication. Zhao Ran, another MSc student of mine, is now studying the systematics of several end Ordovician pyritized graptolites using Micro-CT.

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WANG Xiaofeng (China). In 2017, our research group conducted two projects. First, together with Jörg Maletz, we concentrated on the Late Ordovician to the lower Silurian black shales and its correlation with the graptolite biozones between exposed sections and drillcore samples on the basis of the past long-term study in the Yangtze Gorges and the Shennongjia area, western Hubei. Another thing we did in 2017 was to organize the Dayangcha International Workshop on the Cambrian-Ordovician Boundary, China and its related field excursion between September 20–25, 2017, Changchun, NE China, with the help from Svend Stouge, Jörg Maletz, Wang Chuanshang, Yan Chunbo etc. More than 40 colleagues from several countries in the world gather together to discuss and exchange their geological, geochemical and palaeontological discoveries relevant to the Cambrian-Ordovician boundary. The subsequent post conference excursion offers an

opportunity to visit the classic Xiaoyangqiao section near Dayangcha, and to investigate the feasibility of re-defining a set of criteria for the subdivision and correlation of the Cambrian-Ordovician boundary in China and the world.

Grop photo of all colleagues including local officers attending the workshop in front of a monument for the protection of the Xiaoyangqiao Cambrian-Ordovician boundary section, Dayangcha.

Opening ceremony of the Dayangcha International Workshop on the Cambrian-Ordovician Boundary.

Inspecting the Xiaoyangqiao Cambrian-Ordovician boundary section of Dayangcha.

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ZHAN Renbin (China). Recently, I am working on the major biotic events and their dynamics happened in Ordovician and Silurian, i.e. the Great Ordovician Biodiversification Event (GOBE) and the end-Ordovician mass extinction and the survival and recovery afterwards. Together with some of my colleagues at NIGP and abroad, I have some new progresses achieved in the study of the earliest Silurian shelly faunas from South China, such as brachiopods (with Huang Bing), trilobites (with Wei Xin), and corals (with Wang Guangxu and Ian Percival). Continuous working on it for nearly thirty years, we have finished a huge monograph <Phanerozoic Brachiopod Genera of China>, which was formally published by Science Press (Beijing) in December 2017 and contains two volumes, 9 chapters and 1096 pages. Being one of the associate editors-in-chief, I am in charge of the chapter Ordovician, coauthored the chapter Silurian as well as some of the work dealing with the entire monograph.

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ZHANG Yuandong (China). I am continuously working on: **(1)** Systematic palaeontology and biostratigraphy of the late Katian to Rhuddanian graptolites in the Anji area, northwestern Zhejiang Province, SE China. In the area, a complete graptolite succession has been revealed based on a big collection obtained in the past years, including the *Dicellograptus complexus*, the *Paraorthograptus pacificus*, the *Metabolograptus extraordinarius*, the *Metabolograptus persculptus*, the *Akidograptus ascensus*, and the *Parakidograptus acuminatus* biozones. This succession has been ratified by the National Committee on Stratigraphy of China as a reference standard for the Lower Yangtze Region. A highly diverse (over 75 species), deep-water sponge-dominated community of latest Hirnantian age has been recovered, shading lights on the survival dynamics after the end-Ordovician mass extinction. This work is jointly carried out with Dr. Joseph Botting and Dr. Lucy Muir from UK. **(2)** Geological characteristics of typified black shales in China. This has been the main task of a project supported by the Chinese Academy of Sciences (2014-2018) and one of the recently launched National Science and Technology Major Projects (2017-2019). As scheduled by the projects, over 5000 m long drill cores of the most potential gas shale in China have been accumulated in the past years. In 2017, four wells, i.e. the Jiache-1 (early Cambrian), the Huangge-1, the Shuanghe-1, and the Yijie-1 (upper Cambrian to lower Silurian) were drilled and continuous cores of the targeted intervals have been obtained for multi-disciplinary investigation. The cores are opened to global scientists for study and sampling, and from which some samples have been collected for geochemical and microfacies analysis. Those who are interested in this work or aim at some other related approaches, please contact the project leader (Zhang Yuandong).

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ZHAO Wenjin (China). In 2017, I focused on the Silurian-Devonian vertebrate palaeontology, and relative stratigraphy. The main achievements this year can be represented by (1) the discovery of the late Silurian osteichthyan *Sparalepis tingi*, the second known Silurian bony fish with an unambiguously associated dermal pelvic girdle, (2) the further study of a large lobe-finned fish *Hongyu chowi* from the Zhongning Formation, and (3) the subdivision and correlation of the Silurian fish-bearing strata in northwestern Hunan, China.

In addition, I went to Chęciny (Poland) to attend the 14th International Symposium on Early Vertebrates/Lower Vertebrates held in July 3-8, 2017, and gave a talk on "The subdivision and correlation of the Silurian fish-bearing strata in northwestern Hunan, China". I conducted the field work both in Yunnan and Sichuan provinces in South China during August and November 2017 respectively, supported by the Special Grant for Fossil Excavation and Preparation from the Chinese Academy of Sciences and the National Natural Science Foundation of China. Some new important and interesting fossil fishes have been found and collected from the upper Ludlow and Lower Devonian during my excursions, and also some new progress on the Silurian-Devonian stratigraphic subdivision and correlation in South China has been achieved.

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ZHEN Yongyi (Australia). I am working on the Silurian and Devonian conodonts from New South Wales and their biostratigraphy, while my major interest is still in the Ordovician. In 2017, together with Ian Percival, I had documented a few Silurian faunas from the southern Tableland region of New South Wales.

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RECENT PUBLICATIONS ON THE SILURIAN RESEARCH

[Note that a few publications are of 2016 or even earlier that were not included in previous Silurian Times, and some papers are dealing with Ordovician topics by members of ISSS. There are also a few papers in the list that are in press or online publication.]

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Education: PhD (2014) in Geology from the Vilnius University, Lithuania

Present position: Associate Professor and the Head of the Department of Geology and Mineralogy at the Vilnius University, Senior researcher at the Nature Research Centre (Vilnius, Lithuania).

Research interests: Interested in the challenges of temporal taxonomic turnover, environmental structuring of taxonomic, functional and trophic diversity, as well as abundance trends and fluctuations of the Silurian biota and especially conodonts. Have a strong interest in the macroevolutionary and more generally hierarchical evolutionary and ecological theory. Working on the theory and methods for recognition and characterization of spatially distributed biotic and oceanographic disturbances. Researching on the role of periodic astronomical factors (e.g. Milankovitch and Solar cycles) in drivig Earth's system's change in the Silurian (and more recently in the Holocene). In order to reach these goals I'm employing, and developing thechniques which are based on the statistics theory, spectral analysis, and the dynamical systems theory. Happy to collaborate with any person or group of persons who are interested with any of the presented, and related but unmentioned, topics.

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NEW BOOK INTRODUCTION

<<Phanerozoic Brachiopod Genera of China>>

edited by Rong Jiayu, Jin Yugan, Shen Shuzhong and Zhan Renbin
published by Science Press (Beijing) in December 2017

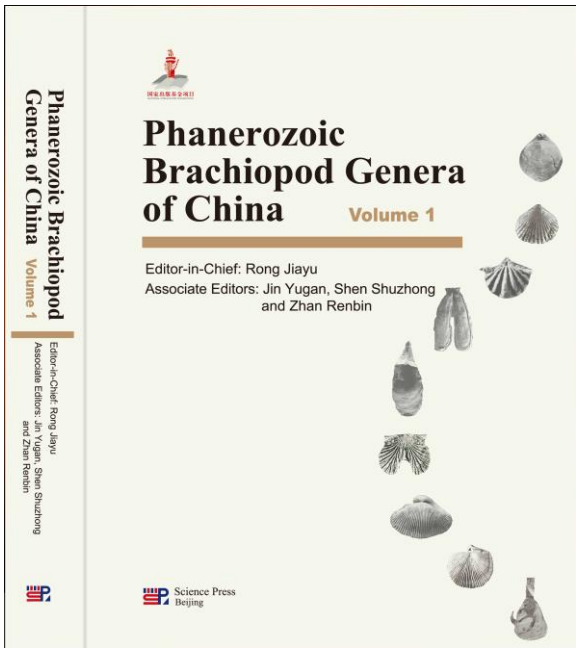
Between 1883 and 2016, there were 757 brachiopod genera covering the entire Palaeozoic and Mesozoic that had been named formally or informally based on materials from China. Quite a few of these genera are problematic and need to be revised under modern theory and brachiopod taxonomic framework. In 1986, the late Prof. Jin Yugan initiated a project from the National Natural Science Foundation of China to deal with this issue, which was fully stopped owing to various causes between 1995 and 2008 when Prof. Jin passed away from liver cancer in 2006 leaving this work far from finish. In late 2008, Prof. Rong Jiayu organized a new group of brachiopodologists dominated by young and middle aged experts from several domestic and oversea institutions and universities to continue this systematic engineering. After about 10 years' arduous investigation and research by the group, a new milestone on the Chinese and international brachiopod study has been established—the accomplishment of such huge work.

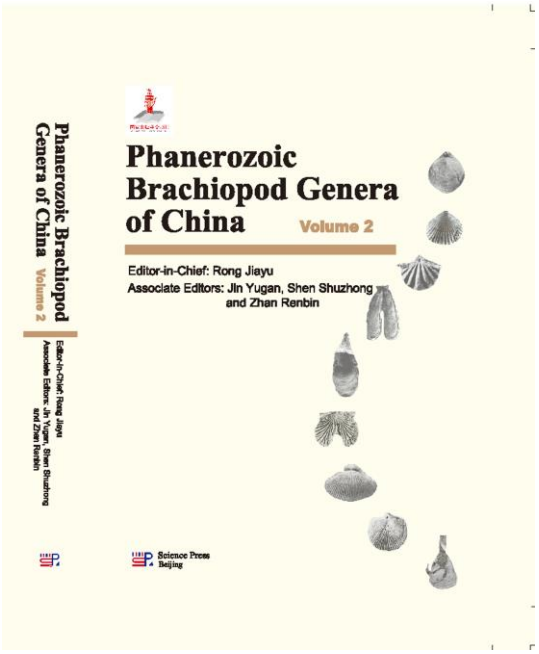
Almost all relevant type specimens, both within and outside China, have been checked and restudied, and all relevant references, both formally and informally published or even unpublished in several languages, have been consulted and checked carefully. The 757 brachiopod genera have been thoroughly revised, and 452 are treated as valid while 80 *nomina dubia*, 24 *nomina nudia*, 20 *nomina nulla*, 7 *nomina ventila*, and 18 are excluded from brachiopods. The temporal distribution of these genera is quite interesting and meaningful: the Permian the most (208 genera) and the Jurassic the fewest (12 genera), and all 88 Triassic genera were established after 1960. The geographic distribution of these genera in China is also very unique: mainly in Guizhou and Zhejiang provinces, slightly fewer in Xizang (Tibet) and Guangxi autonomous regions, while completely absent in some provinces and municipalities such as Beijing, Shanghai, Tianjing, and Hainan Province. The taxonomic distribution of these genera is substantially different from one period to another, e.g. mainly orthoids and strophomenoids in Ordovician, productoids in Permian, and rhynchonelloids in Triassic.

Each revised genus includes these items such as type species, etymology, diagnosis, remarks, species assigned, range and distribution, and its systematic treatment has been clearly stated and discussed in detail. In order for the readers to get a general and complete view on the brachiopod macroevolution in China, a detailed introduction is provided in front of the individual periods summarizing all brachiopods documented from the Palaeozoic and Mesozoic rocks in China, and their macroevolution particularly during some of those major biotic events. The research history, the age and geographic distributions, and the faunal replacement of brachiopods are reviewed and the possible triggers of these phenomena are discussed and even some unknown interesting stories are introduced.

<<Phanerozoic Brachiopod Genera of China>> is a classic systematic monograph, and also a professional reference book suitable not only for brachiopod experts but also for students for their palaeontological learning and graduate studies. Because of its systematic

reliability and the completeness of relevant data, it could serve as a dictionary for both professional and non-professional use, particularly for the regional and global multidisciplinary analyses.





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ADVERTISEMENT FOR AN OLD BOOK

by Petr Štorch

I have got six copies of an old monograph on cyrtograptid graptolites by B. Bouček (bilingual Czech and German edition).

Bouček, B. 1933. Monografie svrchnosilurských graptolitů z čeledi Cyrtograptidae. Monographie der obersilurischen Graptoliten aus der familie Cyrtograptidae. Práce Geologicko-paleontologického ústavu Karlovy university v Praze za r. 1933, 1, 84 pp., 7 pls.

If any graptolite workers miss this book, please let me know by email (storch@gli.cas.cz). I will be happy to send you a copy.

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