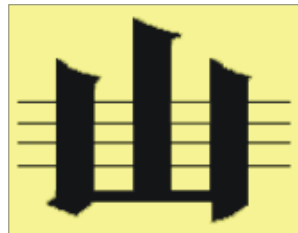


ORDOVICIAN NEWS

SUBCOMMISSION ON ORDOVICIAN STRATIGRAPHY
INTERNATIONAL COMMISSION ON STRATIGRAPHY

Number 27 (2010)

Edited by Ian G. Percival



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Cover photo (taken by Ian Percival):
Participants on the pre-IGCP 503 'Absolutely Final Meeting'
field excursion to Sweden & Norway examining rhythmically-bedded Solvang
Formation exposed on Nakkholmen Island in Oslo Fjord,
August, 2009.

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ORDOVICIAN NEWS Number 27 (2010)

CHAIRMAN'S ADDRESS

A special Golden Jubilee: The Ordovician System formally reaches 50!

As we all know, our system was born out of controversy, being the centre of a bitter territorial fight between Adam Sedgwick and Roderick Murchison during the 19th Century. Charles Lapworth provided a compromise. Writing in 1879, he explained his position thus:

'On this arrangement the Lower Palaeozoic Rocks of Britain stand as follows:

(c) SILURIAN SYSTEM: Strata comprehended between the base of the Old Red Sandstone and that of the Lower Llandovery.

(b) ORDOVICIAN SYSTEM: Strata included between the base of the Lower Llandovery formation and that of the Lower Arenig.

(a) CAMBRIAN SYSTEM: Strata included between the base of the Lower Arenig formation and that of the Harlech Grits.

Every geologist will at last be driven to the same conclusion that Nature has distributed our Lower Palaeozoic Rocks in three subequal systems, and that history, circumstance, and geologic convenience, have so arranged matters that the title here for the central system is the only one possible.'

This compromise was not accepted without criticism and in fact the Ordovician System was only finally ratified during the 21st International Geological Congress held in Copenhagen in 1960. Our system is thus relatively young and there is still much to do.

Research continues apace on the Ordovician, with many new exciting discoveries, many of which are listed in our bibliography. Juan Carlos, Ian and myself have been trying to develop ways in which the Subcommittee can be more relevant to contemporary geology. We have tried to expand the sort of infrastructure that we can help develop outside to the traditional but important themes of stratigraphical classification and definition to embrace current issues involving isotope stratigraphy, palaeogeography and sea-level change. As a first step we have suggested a number of working groups (Harper et al. 2009). There has been a limited but positive response to this approach but we hope in our golden jubilee year we can continue to help move our great system forward in new directions.

David Harper
SOS Chairman

Harper, D.A.T., Gutiérrez-Marco, J.C. and Percival, I.G. 2009. The International Subcommittee on the Ordovician System: towards a new decade and a new agenda. In Harper, D.A.T. and McCorry, M. (eds), Abstracts, Absolutely final meeting of IGCP 503: Ordovician palaeogeography and palaeoclimate. Copenhagen 31st August to 4th September, p. 36.



**International Commission on Stratigraphy
Subcommission on Ordovician Stratigraphy**

ANNUAL REPORT 2009

1. Name of constituent body:

Subcommission on Ordovician Stratigraphy (SOS)

Submitted by:

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2. Overall objectives, and Fit within IUGS science policy:

The Subcommittee promotes international cooperation on all aspects of Ordovician Stratigraphy.

Specific objectives are:

- a. To delimit and subdivide the Ordovician System (and Period) as a part of the overall ICS mission to elaborate the standard global stratigraphic scale. This work aims to establish the boundaries (GSSPs), the correlation of the subdivisions (Stages and Series), the nomenclature of the subdivisions and periodically review the effectiveness and utility of these decisions.
- b. To promote regular international meetings on all aspects of Ordovician geology, especially those devoted to clarifying stratigraphic procedures, nomenclature and methods for use in establishing a unified global time scale and to prepare correlation charts with explanatory notes (the main phase of this latter task is now completed).
- c. To encourage, promote, and support research on all aspects of Ordovician geology worldwide and to provide outlets, *Ordovician News*, international meetings, and a web page, for promoting discussions and reporting results of this research.
- d. To encourage, promote, and support interdisciplinary research on the Ordovician global Earth system, addressing topics that require high-resolution, global correlation.
- d. The ultimate goal of the Subcommittee is to provide a high-resolution geological time scale that will be a critical foundation for interdisciplinary research on the global Earth system during the Ordovician Period. The work is broad based and must include specialists in palaeontology, all subdisciplines of stratigraphy (bio-, litho-, chemo-, and magneto-), sedimentology, geochemistry, and tectonics. With a large network including active participants from more than 25 countries, the Subcommittee thus involves much of the global geological community.

3. Organization

- a. Subcommittee Executive (from August 2008)
Chairman, David A.T. Harper (Denmark)
Vice Chairman Juan Carlos Gutiérrez-Marco (Spain)
Secretary, Ian G. Percival (Australia)
16 other Voting Members
Over 100 Corresponding Members

Subcommittee website: www.ordovician.cn.

Alternative website: <http://seis.natsci.csulb.edu/ISOS> (remains active for facilitating discussion of GSSP proposals, if and when relevant).

The Subcommittee officers and voting members have been agreed for the next term from 2008-2011. Following the Subcommittee's business meeting during the Nanjing conference (2007) a postal ballot confirmed the election of the new Subcommittee officers, and elected a new group of voting members. Details of the procedure and results were included in the report for 2007. The new Subcommittee not only includes a broad national representation and coverage of key fossil groups but also specialists in interdisciplinary fields such as geochemistry and sedimentology.

Titular Members

F.G. Aceñolaza (Argentina)
G.L. Albanesi (Argentina)
A.V. Dronov (Russia)
O. Fatka (Czech Republic)
J.C. Gutiérrez-Marco (Spain)
D.A.T. Harper (Denmark)
O. Hints (Estonia)
Li Jun (China)
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C.E. Mitchell (USA)
A.T. Nielsen (Denmark)
G. Nowlan (Canada)
A.W. Owen (UK)
I.G. Percival (Australia)
L.E. Popov (UK)
M.R. Saltzman (USA)
T. Servais (France)
T. Vandenbroucke (Belgium)
Zhang Yuandong (China).

4. Interfaces with other international projects

IGCP Project 503: Arguably the most sustained rise in marine biodiversity took place during the Ordovician, and the second largest mass extinction event took place close to the end of that Period, coincident with an episode of major climate fluctuation. The results of the very successful IGCP project n° 410 "The Great Ordovician Biodiversification Event" not only included the development of an improved globally-integrated biozonation for graptolites, conodonts and chitinozoans, but also generated biodiversity curves that have been constructed for all Ordovician fossil groups.

Following the work of the numerous regional teams and of the clade teams, that were established for each fossil group in IGCP project n° 410, a new successor project (IGCP project n° 503) was approved in order to develop a better understanding of the environmental changes that influenced the biodiversity trends in the Ordovician and Early Silurian. In this project, the major objectives are thus to attempt to find the possible physical and/or chemical causes (e.g., related to changes in climate, sea level, volcanism, plate movements, extraterrestrial influences, etc.) for the Ordovician biodiversification, the end-Ordovician extinction, and the subsequent Silurian radiation.

5. Chief accomplishments and products in 2009 cycle

a. The next International Symposium on the Ordovician System will take place in Spain during May, 2011. The conference itself and associated business meetings and workshops will be held in the environs of Madrid with field excursions to various

parts of the Iberian Peninsula including the Iberian Chains and northern Portugal. A major post-conference excursion to Morocco will also be offered.

IGCP 503 formally concluded its 5-year program with an International Congress on Palaeozoic Climates in Lille, France during August, 2008. An extension of this successful project was agreed and a further meeting on 'Early Palaeozoic Palaeogeography' was held in Copenhagen during late August and early September 2009.

b. The Subcommittee completed its GSSP research programme in 2008 and all 7 Stage GSSPs were established and approved by the IUGS before the Ordovician Yangtze Conference (June 2007). Bergström, Chen Xu, Gutiérrez-Marco, and Dronov have compiled a new chronostratigraphic classification of the Ordovician System and its relations to the main regional series and stages. The English version has been published in *Lethaia* and the Chinese version was published in the *Journal of Stratigraphy* in China prior to the 33rd IGC in Oslo during August 2008. Discussion, however, at the business meeting in Copenhagen included the wish to routinely evaluate the efficacy of the current stages. A colour reprint of the Global Ordovician Chronostratigraphy (The Ordovician Time Table) chart is still planned dependent on funding and will be distributed to colleagues in different countries if funding permits.

c. *Ordovician News No. 26* was produced and posted on the Subcommittee website and is available for download.

6. Chief problems encountered in 2009

The Subcommittee is planning to publish an Ordovician 'Time Table' following the approval and ratification of all the GSSPs. This was discussed and agreed at the Yangtze conference during June 2007 in Nanjing. The Subcommittee, however, lacks financial support to publish this table although some support has been offered from Chen Xu's research project.

A lack of travel support limited the participation of Voting Members in the 33rd IGC in Oslo during August 2008. In fact only two members were present (Harper and Gutiérrez-Marco) at the ISOS business meeting. This problem was partly rectified during 2009, when the ISOS business meeting associated with IGCP 503 in Copenhagen was well attended by titular and corresponding members together with other interested parties.

7. Summary of expenditure for 2009

TOTAL INCOME (from ICS): DKK 10,800

Support for attendance at 'The absolutely final meeting of IGCP 503, Copenhagen 2009: Early Palaeozoic biogeography and palaeogeography'

(<http://snm.ku.dk/english/IGCP503>). DKK 8,000

Miscellaneous expenses: DKK 2,800

TOTAL EXPENDITURE DKK 10,800

8. Work plan, critical milestones, anticipated results and communications to be achieved next year

The new Subcommittee came into force during the 33rd IGC in Oslo. Plans for the Subcommittee's future work were initially stated as follows.

- a. Will open debate on the formal definition of chronozones within the Ordovician System. This possibility arises from the time-slice concept of Webby (2004) and the finer subdivision of the system presented by Bergström et al. (2008).
- b. Will establish a forum to assess the efficacy and utility of the newly-established international stages.
- c. Will stimulate where relevant the production of revised regional correlation charts on the basis of new regional stratigraphic data and their relationship to the newly-established international stages.
- d. Will open debate on the applicability of non-biologic methods of correlation of Ordovician strata.
- d. Production and internet distribution of *Ordovician News No. 26* in 2009.
- e. Management of Subcommittee website will remain based in Nanjing. Following discussions with the webmaster, Fan Junxuan, the site will be remodelled following the general format of the attractive and effective main ICS site. A number of redundant features will be removed and a number of more relevant additions will appear during the next few months.

During the business meeting at the final meeting of IGCP 503 the plans were formalized with the agreement to form a number of working groups in the following areas:

1. There may be a requirement to evaluate the efficacy and utility of our stages and stage boundaries. Where appropriate and/or necessary we will have to move to establish some small advisory groups.
2. Clearly the Subcommittee can now move with some confidence towards confirming and establishing finer divisions of Ordovician time. In this respect Bergström et al. (2009: *Lethaia*) have divided our international stages into stage slices based mainly on existing biozones. Finer time slices were also proposed by Webby (2004: *The Great Ordovician Biodiversification Event*, Columbia University Press) and used effectively in developing data for the GOBE. As these time divisions are more widely adopted, it would be useful to confirm their definition and status.
3. Over the last few years we have neglected somewhat the role of the regional groups and the many important regional and diverse stratigraphies that make our system so exciting. A number of the key regional successions were included in the correlation charts provided by Bergström et al. (2009), but there more that require calibration with our new stages. Moreover a few regions such as Baltoscandia and SE Asia were never formally published. This is a priority for our system and work that can involve all our colleagues.
4. Work is now far advanced on a Carbon stable isotope curve for the Ordovician. Consistent results have been already achieved for parts of the column. There are of course other stable isotopes and it will be appropriate and useful to evaluate if we can help develop these curves not least as one of

our nonbiologic means of correlation. There are other nonbiologic techniques that we could also consider.

5. A more difficult area is sea-level or water-depth curves for the period. There have been a number of curves for the Ordovician and many more for particular parts of the period. It would be useful to examine these curves more carefully and the criteria upon which they are based with a move towards developing more standardised curves for the Ordovician.
6. We now have a number of accurate palaeogeographic maps for our period. Not everyone agrees with all the reconstructions and perhaps they never will. But it is possible to engage in cooperation with some of the groups to develop a more standard set of base maps for the period.
7. We already have a number of robust absolute dates for parts of the system but it would be useful to develop more, not least to be able to calibrate the true rates of biological and geological process occurring during the period.
8. We have tended as a group to ignore the economic potential of our system. But, for example in New South Wales, nearly all the gold and copper mines are hosted in Ordovician volcanics of the Macquarie Arc and in China considerable funding is being made available through SINOPEC (the Chinese petroleum company) to support research into Ordovician biostratigraphy.

9. Budget and ICS component for 2010

a. Support for publication of Geological Society Memoir on Early Palaeozoic Biogeography and Geography, arising out of the Copenhagen Conference, edited by Harper and Servais (accepted in principle by the Geological Society). This will be a substantial volume with chapters on the main fossil groups, new interactive palaeogeographic base maps provided by Trond Torsvik (BugPlates), and introductory chapters on nomenclature and terminology. The ICS will be credited as a main sponsor. **5000 USD**

c. Preparation of an Ordovician Time Table, carried over from last year: **1000USD**

d. Support for attendance of ICS workshop in May 2010 in Prague: **2000USD**

e. Support for attendance of SOS workshop in June 2010 in London as part of the IPC3: **2000 USD**

e. Support for production of revised regional correlation charts: **2500 USD**

TOTAL 2010 BUDGET: 12,500USD

REQUESTED FROM ICS: 5000USD

Potential funding sources outside IUGS

The IGCP Project 503, “Ordovician Palaeogeography and Palaeoclimate”, co-funded four meetings (with related field trips) in 2007, including the 10th Ordovician conference China and further relevant meetings in 2008. The project has continued for a final year in 2009 but without funding. This project has in the past provided travel support to a significant number of Ordovician specialists, including voting members of the Subcommittee, allowing for regular meetings at the annual workshops scheduled for the project. A new successor project is planned and if successful will continue to support Ordovician geology.

The State Key Laboratory of Stratigraphy and Palaeobiology, Nanjing Institute of Geology and Palaeontology, Chinese of Academy of Sciences, provides a server for the Subcommittee website.

The Subcommittee officers are also supported by their research projects for some of their activities.

10. Review of chief accomplishments over last eight years (2001-2009)

a. Approval, ratification, and dedication of the Green Point GSSP for the base of the Ordovician System.

b. Approval, ratification, and dedication of the Diabasbrottet and Fågelsång GSSPs for the bases of the upper stage of the Lower Ordovician Series and the Upper Ordovician Series, respectively.

c. Approval, ratification, and dedication of the Black Knob Ridge section, Oklahoma, USA and the Wangjiawan North, Yichang, China GSSPs for the bases of the Katian and Hirnantian stages, respectively.

d. Approval, ratification, and dedication of the Huanghuachang section, Yichang, China for the base of the Dapingian Stage, which coincides with the base of the Middle Ordovician.

e. With publication in 2000 of *A Revised Correlation of Ordovician Rocks in the British Isles*, correlation charts have been completed for Ordovician rocks on virtually all continents.

f. The 9th International Symposium on the Ordovician System held in San Juan, Argentina, in August 2003, in conjunction with the 7th International Graptolite Conference and a Field Meeting of the Subcommittee on Silurian Stratigraphy and publication of 556 page proceedings, 130 participants represented 18 countries, 124 papers were presented in technical sessions.

g. Publication of *Ordovician News* nos. 17-26 and their posting on the Subcommittee's web site.

h. Development of the web site "Ordovician Stratigraphy Discussion Group" to facilitate discussions on selection of the GSSPs. This site has evolved into the Subcommittee's web site and also includes postings of *Ordovician News*.

i. Sponsorship of a technical session and field excursion on the GSSP for the base of the Middle Ordovician Series at the Annual Meeting of the Geological Society of America in November 2000.

j. Sponsorship at the 31st International Geological Congress, Rio de Janeiro, Brazil, 2000, of the symposium "Paleontological, stratigraphical, and paleogeographical relations among South America, Laurentia, Avalonia, and Baltica during the Ordovician."

k. Sponsorship at the 32nd International Geological Congress, Florence, Italy, 2004, of the symposium "The global Ordovician Earth system".

l. Launched GOES (Global Ordovician Earth System) Program to stimulate integrated multi-disciplinary studies of global events (mass extinction, sea-level changes, greenhouse conditions, tectonics) during the Ordovician Period.

m. Sponsorship of a special symposium on the Ordovician System at the Geological Society of America Annual Meeting in 2000, of WOGOGOB 2001 in Copenhagen, and the meeting and field excursion "The Gondwanan Platform in Ordovician times: Climatic, eustatic and geodynamic evolution", in Morocco in February 2001.

- o. Selection of names for 2nd, 3rd, 5th, 6th and 7th stages of the Ordovician System.
- p. Sponsorship of the 2006 IGCP 503 Glasgow meeting on “Changing palaeogeographical and palaeobiogeographical patterns in the Ordovician and Silurian”.
- q. Sponsorship of the 2007 Yangtze Conference (the 10th Ordovician Conference) that was combined with the 3rd Silurian Conference and the IGCP 503 annual meeting in Nanjing. The combined conference was attended by 140 scientists from 24 countries; 66 papers and 22 posters were presented, with publication of these in a Proceedings volume of 566 pages. Two field guides were also printed.
- r. Publication of ‘The new chronostratigraphic classification of the Ordovician System and its relations to major series and stages and to $\delta^{13}\text{C}$ chemostratigraphy’ *Lethaia* 2008.
- s. Support and participation in the following major conferences during 2008: 7th Baltic Stratigraphic Conference, Tallinn, and associated field excursions, May 2008 and ‘Development of Early Paleozoic Biodiversity: The role of biotic and abiotic factors, and event correlation’ Moscow, June 2008 and the subsequent field excursion to the Altai Mountains; 33rd IGC in Oslo during August 2008 and the IGCP 503 ‘International Congress on Palaeozoic Climates’ in Lille, France during August, 2008.
- t. Support, participation and sponsorship of the following major conferences during 2009. NAPC Cincinnati 21-26 June and IGCP 503 Copenhagen 31 August – 4 September.
- u. Agreement in principle to establish a new range of working groups tackling a wide spectrum of areas of Ordovician with a view to developing new products for the community.

REPORT ON IGCP 503 MEETING IN COPENHAGEN, SEPTEMBER 2009

IGCP Project 503 held its ‘absolutely’ final meeting in Copenhagen from September 1-4, preceded by a field excursion to examine some classic geological localities primarily of Ordovician age in Sweden and Norway. The project has been run by six leaders from different countries, who have in turn organised annual meetings held in each of their institutions over the duration of the project (2004-2009).

This final meeting, held in the Geological Museum in the centre of Copenhagen, attracted over 70 registrants from 20 countries, predominantly in Europe (including Britain, and Russia west of the Urals) with two attendees from China and one each from North America and Australia – the relative lack of participation beyond Europe being almost certainly due to the continuing effects of the global economic crisis. Thirty-five scientific talks were presented, with approximately twenty posters displayed during the course of the conference, and a day-long field trip on Thursday September 3. The conference dinner was held in the grand setting of the Tivoli Gardens.

Keynote papers by Torsvik and Cocks outlined the latest palaeogeographic maps being developed for the Ordovician Period, through cooperative work being undertaken by palaeontologists, palaeomagnetists and tectonicists. These maps will serve as the basis for a new book being prepared by a team of international specialists, that will be the lasting legacy of IGCP 503. To be published by the Geological Society of London, as part of its Memoirs series, this volume is intended to revise our understanding of Early Palaeozoic biogeography and palaeogeography. It will summarise all the data generated during the course of IGCP 503, and would update the frequently-cited but now considerably out of date GSL Memoir edited by W.S. McKerrow and C. Scotese that was published in 1990.

At the conclusion of the formal scientific presentations there was an opportunity to hold a Business Meeting of the Subcommittee on the Ordovician System. Useful discussion ensued concerning the scientific directions of the Subcommittee over the next few years, until the next meeting likely to take place at the International Geological Congress being held in Brisbane, Australia in August 2012.

The pre-conference field excursion from August 25-31 first visited the GSSP marking the base of the Floian Stage, at Diabasbrottet in southern Sweden. The next locality was the Kinnekulle region, where the rocks range in age from Middle Cambrian to Middle Ordovician – the latter include the famous *Orthoceras* Limestone, which is quarried for use as dimension stone for building facings and paving stone. The excursion then proceeded to the central part of southern Norway, where several localities in the Mjøsa district were visited, before proceeding to the Oslo region. Here a day was spent examining mainly Middle and Upper Ordovician rocks exposed along the western edge of the Oslo Fjord, with the final day devoted to visiting outcrops on two islands, Nakkholmen and Hovedøya, situated south of Oslo within the fjord. Spectacular exposures of rhythmically-bedded limestone alternating with graptolitic siltstone on these islands, which are protected geological precincts, provide the basis for Arne Nielsen's Ordovician sea-level curves for the Baltoscandian region.

Without the hard work of the meeting organisers including David Harper, Maria Liljeroth, Maureen McCorry, Jan Audun Rasmussen, Arne Nielsen, and Svend Stouge, this absolutely final meeting of IGCP 503 would not have been the great success that it was, marking a fitting end to a highly productive project.

Ian Percival (Australia)

MEMORIAL NOTICES

ALFREDO JOSÉ CUERDA (1920-2009)



Professor Cuerva, distinguished regional geologist and paleontologist died on July 3rd in Buenos Aires. His name and his long professional career were associated mainly with the early Paleozoic of Argentina and Bolivia and with the Department of Geology of the Museum of La Plata, where he was working productively until the last days of 2005. Alfredo Cuerva was widely acknowledged as the leading expert on the Ordovician-Silurian geology, paleontology and stratigraphy of the Argentine Precordillera. His original and review papers on the Ordovician and Silurian of Argentina, remains important source of information on general aspects of the Lower Paleozoic geology of this vast country, while his numerous publications on graptolites represent the contribution and seminal works to the our current knowledge of the pre-Andean geology. Alfredo Cuerva also made important contributions to studies of various aspects of the Ordovician – Silurian boundary and was a first class field geologist and was happy to share his knowledge with younger generations of Argentinian geologists. Alfredo was a friend, advisor, and source of wide experience with particular reference to the Ordovician System. Alfredo was Emeritus Professor of Historical Geology at the University of La Plata, Dean of the Department of Geology of the Museum of La Plata, Member of the Academy of Buenos Aires and Honorary Member of the Geological and Paleontological Argentine Associations.

Carlos Cingolani
University of La Plata-CONICET
Argentina

MAURITS LINDSTRÖM (1932-2009)

Professor Maurits Lindström, an internationally widely known expert on many aspects of Ordovician geology, passed away on November 14, 2009 after a several months long battle with cancer. Maurits was born in Stockholm, Sweden in 1932 and was associated with Lund University from about 1950 to 1967 when he became Professor and Head of the Geology Department at Phillip-Universität in Marburg, Germany. He stayed there to 1984, when he became Professor and Head of the Geology Department at Stockholm University. He remained in this position until his retirement in 1997, when he had occupied the demanding and time-consuming position as Department Head in Germany and Sweden for a period of 30 years. In view of his heavy administrative and teaching duties, the large volume, high quality, and wide-ranging scope of his published research is truly amazing. Although suffering of failing health during the last few months, he continued active research and writing up to the last days of his life. For a summary of his career and a virtually complete list of his more than 120 publications, including several books, see Bergström et al. (2007).

Maurits' expertise covered an exceptionally wide range of geological subject areas from paleontology to stratigraphy to structural geology to sedimentology. He was also an international authority on lower Paleozoic meteorite craters. He possessed extraordinary powers of observation in the field and a brilliant mind. He also had an unusual facility for languages and spoke and wrote several languages fluently. Most of his publications are in English, some in German or Swedish, and a few in French. Although topically and geographically wide-ranging, much of his research was centered on the Ordovician of Baltoscandia, also during the years he spent in Germany.

After having started geologic research already as a high school student, Maurits published his first paper, which is a still cited study of Katian stratigraphy and faunas in the geologically well-known Fågelsång area east of Lund, at the age of 21. This was followed by two conodont papers, one of which is the classical study of Lower Ordovician conodonts from south-central Sweden, which established him as an international conodont expert. This well-documented study still remains a basic reference for anyone working with Ordovician conodonts. However, he also carried out very comprehensive tectonic studies in the Caledonides in the early-middle 1950s, which resulted in a series of publications, including his Ph.D. dissertation, which he published in 1958 at age 26. He continued vigorous conodont research from the 1960's to the 1980s, and his book "Conodonts" (1964), which was illustrated by his own elegant drawings, is not only a comprehensive summary of the knowledge of the group at that time but also, it contains many new ideas. Many of his other investigations during the 1960s to the 1980s dealt with Lower Paleozoic sedimentological problems and resulted in more than 20 papers, several of which are now regarded as classics. Maurits' research during the last 20 years of his life, the results of which were published in some 30 articles, was centered on various aspects of meteorite craters, especially in Baltoscandia, and he became well known internationally also in that field.

Maurits was an excellent teacher, who enjoyed illustrating his lectures with artistic multicolored drawings on the blackboard. He was always full of ideas and provided much assistance to his research students. His great scientific imagination often led to unorthodox but logical and illuminating interpretations. He enjoyed fieldwork and much of his published work is based on field observations. Personally,

he tended to be rather low-keyed rather than dominating at international conferences, but in the right company, he was easy-going and had a good sense of humor. He was always willing to present, in a friendly way, his opinions in scientific matters to colleagues and students. As is also illustrated by his co-authored textbooks, he had an unrivalled knowledge about diverse aspects of Baltoscandian Ordovician geology. He will be sorely missed by his many friends and co-workers round the world, and it is safe to conclude that the many important advances in geological knowledge that resulted from his work during more than half a century will be of lasting value far into the future.

Reference

Bergström, S.M., Bergström, J., Kumpulainen, R., Ormö, J., and Sturkell, E., 2007. Maurits Lindström---A renaissance geoscientist. GFF, v. 129, pp. 65-69.

STIG M. BERGSTRÖM

Maurits Lindström at the Lockne crater during the WOGOB meeting in August 2007 (photo courtesy of David Harper).



FORTHCOMING CONFERENCES

X Argentinean Congress of Paleontology and Biostratigraphy VII Latin American Congress of Paleontology

20-24 September 2010 - La Plata - Argentina
<http://www.congresospaleo2010.fcnym.unlp.edu.ar>

We invite you to attend the “**2° Symposium on Biostratigraphy and Events of the Lower Paleozoic**”, which will be held within the frame of the “X Argentinean Congress of Paleontology and Biostratigraphy, and VII Latin American Congress of Paleontology” in La Plata City, from 20-24 September, 2010.

The early Paleozoic was a critical period for the diversification of life on the planet Earth. The Cambrian explosion of life, the great Ordovician biodiversification event, the massive extinction that occurred at the end of the Ordovician, and the appearance of terrestrial plants in the Silurian, represent landmarks in the history of life. Biostratigraphic-based studies on a regional or global scale, and their relationships with geological events for this critical interval in the history of the Earth, will be of special interest for the symposium. The contributions (full papers) will be published in English in *Geologica Acta* (<http://www.geologica-acta.com>).

Abstracts deadline: May 30, 2010.

Conveners: Dra. Gladys Ortega gortega@arnet.com.ar and Dr. Guillermo L. Albanesi galbanes@com.uncor.edu (CONICET - Universidad Nacional de Córdoba).

International Conodont Symposium, Argentina, 2013

Following the decision by the majority of attending colleagues in Calgary, Canada, during the past International Conodont Symposium (ICOS, July 2009), the next ICOS will be held in Argentina, in July, 2013. In this provisional announcement we propose Mendoza City as the venue for the scientific sessions, and San Juan and Salta cities as headquarters for the pre- and post-symposium field trips to the Precordillera and the Eastern Cordillera, respectively. An intra-symposium field trip to the Mendoza Precordillera is foreseen as well.

Guillermo Albanesi, on behalf of the organizing committee.
Córdoba, Argentina.

54th Annual Meeting of the Palaeontological Association 17-20 December 2010

This meeting will be held at Ghent University in Belgium, and is being organised by members of the departments of Geology of the universities of Ghent and Lille. It will include a thematical symposium (on biological proxies in climate modelling on 17 Dec. 2010), two full days of scientific sessions (18 & 19 Dec. 2010) and a field trip (20 Dec. 2010). The conference will take place at two of Ghent University's conference venues, right in the historical city centre of Ghent. For more information and registration, please go to the Palaeontological Association website <http://www.palass.org> or e-mail Thijs.Vandenbroucke@univ-lille1.fr



11th International Symposium on the Ordovician System

Alcalá de Henares (Madrid), Spain

May 9 – 13, 2011

FIRST CIRCULAR

&

CALL FOR PAPERS

We are delighted to invite you to attend the **Eleventh International Symposium on the Ordovician System**, to be held from Monday, May 9th to Friday 13th, 2011, in the city of Alcalá de Henares (Spain). Alcalá de Henares is a remarkable and celebrated city, located approximately 30 km northeast of Madrid and only 14 km from the International Airport of Madrid-Barajas. Its Historic Quarter is today one of the most beautiful and best Renaissance and Baroque urban centres preserved in Europe, and was declared a World Heritage Site by UNESCO in 1998. Alcalá was an important city for the so-called Three Cultures, where Christians, Jews and Muslims have lived peacefully together for centuries. It has a university founded in 1499 by the Cardinal Cisneros, editor of the first polyglot Bible. Alcalá, birthplace of Cervantes, author of “Don Quixote”, is the capital for culture and tourism of the Madrid region. Besides the great historical value of the city, one of its advantages is that the congress and accommodation facilities will be close together.

The selection of Spain for this Symposium is a good opportunity to learn about the geology of the Iberian Peninsula, which comprises the most extensive outcrops of Ordovician rocks in Europe. These are representatives of a special high-palaeolatitudinal domain related to the southern polar margin of Gondwana, and this is also the first time that the region is the focus for an official Symposium of the Ordovician Subcommittee.

We apologize for the delay in the appearance of this First Circular, due to the severe global economic crisis (now partly stabilized) which has affected Spain and Portugal in the last couple of years, as well as some logistical problems concerning the post-Symposium field trip to the Moroccan Anti-Atlas which regrettably has led to its cancellation.

Organizing Committee

Chairman:

- Juan Carlos Gutiérrez-Marco, Spanish Research Council, Madrid.

Executive Secretary:

- Isabel Rábano, Geological Survey of Spain and SEDPGYM, Madrid.

Members:

- Amelia Calonge, University of Alcalá de Henares, Spain.

- Diego García-Bellido, Spanish Research Council, Madrid.

- Andrea Jiménez-Sánchez, University of Zaragoza, Spain.

- Luis Mansilla Plaza, University of Castilla-La Mancha and SEDPGYM, Almadén, Spain.

- José M. Piçarra, National Laboratory of Energy and Geology, Beja, Portugal.

- Artur A. Sá, University of Trás-os-Montes e Alto Douro, Vila Real, Portugal.

- Enrique Villas, University of Zaragoza, Spain.

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- Instituto Geológico y Minero de España (IGME – Geological Survey of Spain).

- Consejo Superior de Investigaciones Científicas (CSIC – Spanish Research Council).

- Sociedad Española para la Defensa del Patrimonio Geológico y Minero (SEDPGYM – Spanish Society for the Preservation of the Geological and Mining Heritage), Spain.

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- Universidad Complutense de Madrid, Spain.

- Universidad de Trás-os-Montes e Alto Douro, Vila Real, Portugal.

- Universidad de Zaragoza, Spain.

- Ministerio de Ciencia e Innovación (Spanish Ministry of Science and Innovation).

- City Council of Alcalá de Henares, Spain.

- City Council of Arouca, Portugal.

- Arouca European and Global Geopark, Portugal.

- Laboratorio Nacional de Energia e Geologia (LNEG – National Laboratory of Energy and Geology, formerly Portuguese Geological Survey), Portugal.

- Fundación Almadén Francisco Javier de Villegas, Spain.

- Cabañeros National Park, Spanish Ministry of Environment.

Presentations and Topics

Oral and poster presentations are planned on the following topics:

1. Global chronostratigraphy, stage subdivisions and the development of global chronozones
2. Regional chronostratigraphic schemes
3. Ordovician climate and chemostratigraphy
4. Sea-level or water-depth curves for the Ordovician
5. Palaeogeographic base maps and plate tectonics
6. Palaeobiogeographical provinces in the Ordovician

7. Ordovician palaeontology and biostratigraphy
8. Ordovician magmatism
9. Ordovician and related petroleum systems
10. Sedimentology and sequence stratigraphy of Ordovician basins
11. Geological heritage and dissemination of the world Ordovician geosites (SEDPGYM session)
12. Open session

Participation is open to all persons interested in one or more of these broad topics, and we particularly encourage the participation of young scientists.

The oral technical sessions will consist of talks scheduled for 15 minutes inclusive of questions, that will be arranged in parallel sessions on May 9th to 11th (Monday to Wednesday) in two almost adjacent buildings belonging to the University and the City Council of Alcalá de Henares, respectively. Posters will be displayed during Tuesday 10th and Wednesday 11th.

Preliminary Program

May 3rd–8th: *Pre-Symposium field trip.* Ordovician of Portugal. Departing from Madrid and ending in Alcalá de Henares. Co-leaders: A.A. Sá, J.M. Piçarra, N. Vaz & J.C. Gutiérrez-Marco.

May 9th: Registration, opening, introduction and first day of technical sessions at the University and City Council. Ice-breaker party in the evening.

May 10th: Second day of technical sessions followed by a walking tour through the city.

May 11th: Third day of technical sessions, closing ceremony and conference dinner.

May 12th–13th: *Symposium field trip* (covered by the registration fee). Ordovician stratigraphy and palaeontology of the Ciudad Real province, starting and ending in Alcalá de Henares. Co-leaders: J.C. Gutiérrez-Marco, L. Mansilla Plaza, I. Rábano & D. García-Bellido.

May 14th–17th: *Post-Symposium field trip.* Ordovician of the Iberian Range (NE Spain). Starting and ending in Alcalá de Henares. Co-leaders: E. Villas, E. Vennin, A. Jiménez-Sánchez, J.J. Álvaro & J.C. Gutiérrez-Marco.

Field Excursions

Pre-Symposium field trip. **May 3rd–8th.** Ordovician of Portugal. Co-leaders: A. Sá, J.M. Piçarra, N. Vaz & J.C. Gutiérrez-Marco. Price: 850 Euro (the fee covers all meals, accommodation –in shared double rooms– and transportation during the excursion). This field trip is restricted to a maximum of 50 participants.

This pre-Symposium field trip is planned to visit important Ordovician localities in central and northern Portugal, ending in NW Spain on the last day.

Starting from Madrid, an evening trip by coach will carry participants to the Amêndoa-Mação syncline, where the following day (Wednesday 4th) outcrops and fossil localities ranging from the Floian to the Hirnantian will be visited, including shallow water sandstones and shales, ooidal ironstones and glaciomarine diamictites. The next day (Thursday 5th) will be entirely devoted to the study of the classic Ordovician sections of Buçaco syncline (Rio Ceira, Favaçal, Ferradosa), known since the middle of the 19th Century, that represent the most complete Ordovician sedimentary record in Portugal, and includes 14 formations of Early (Sarnelha and Armorican Quartzite), Mid (Brejo Fundeiro, Monte da Sombadeira, Fonte da Horta and Cabril) and Late (Carregueira, Louredo, Porto de Santa Ana, Ferradosa, Ribeira do Braçal, Ribeira Cimeira, Casal Carvalhal and Vale da Ursa) Ordovician ages. On Friday 6th, the excursion will move to the Arouca Geopark, where Darriwilian slates of the Valongo Formation have been quarried for decades providing some of the world's largest trilobites in the famous "Valério's quarry" and geosite museum. Also in the Geopark, older strata of the Santa Justa Formation will be visited, with the interesting occurrences of typical trace fossils (*Cruziana* ichnofacies), as well as other Palaeozoic attractions. After visiting the famous wine caves in the monumental city of Oporto in the late evening, the activities for the last day in Portugal (Saturday 7th) will be centred on the Valongo anticline, with classic sections through the Santa Justa (Armorican Quartzite), Valongo and Sobrido formations, the last of which exposes spectacular outcrops of Hirnantian glaciomarine diamictites. In the late evening of the same day, the excursion will move to NW Spain for the last night. In the morning of Sunday 8th and before leaving for Madrid, the participants will have the opportunity to study an Ordovician-Silurian section located in the Sil river canyon. Its most prominent features is the large thickness (over 200 m) of a single unit of Katian limestones contemporaneous with the Boda Event, and the famous Homeric locality of Salas de la Ribera, bearing graptolite synrhabdosomes.

Departure by bus from Madrid at 2:00 pm on Tuesday 3rd May from the Spanish Geological Survey (23, Rios Rosas Street: metro stop *Rios Rosas*, on Line 1, exit "Rios Rosas impares"). Return to Alcalá de Henares in time for the meeting, on the evening of Sunday 8th May.

Symposium field trip. May 12th–13th. Ordovician stratigraphy and palaeontology of the Ciudad Real province. Co-leaders: J.C. Gutiérrez-Marco, L. Mansilla Plaza, I. Rábano & D. García-Bellido. Beginning and end of the excursion in Alcalá de Henares. Transportation, meals and accommodation for one night –in shared double rooms– are covered by the registration fee of 11th ISOS.

The excursion will demonstrate the Ordovician stratigraphy and palaeontology characteristic of the southern part of the Central Iberian Zone, which strongly recalls some of the places already visited in Portugal during the pre-Symposium field trip. On the first day a Lower Ordovician succession will be studied in the Estena river section within the Cabañeros National Park, including the Toledanian Unconformity above Lower Cambrian rocks, and a thick development of sandstones of Floian age, representative of the Armorican quartzite Group. Outstanding ichnological sites with the giant horizontal burrows –which serve as the logo for the Symposium, and a large slab covered with *Cruziana* are of particular interest. In the early evening, participants will be able to collect abundant fossils from lower Oretanian (mid-Darriwilian) shales near Navas de Estena. From the Toledo Mountains the excursion will move to the

Almadén region (2½ hour bus ride), for dinner and accommodation. Almadén is home to the most famous mercury mine in the world, which dates back more than 2,200 years and accounts for one third of the cumulative world mercury production. The first Spanish School of Mines was opened here in 1777, and from this mining district the first stratigraphic and palaeontological studies on the Ordovician of Spain were initiated in 1855 with collaboration from the famous authors Casiano de Prado, Édouard de Verneuil and Joachim Barrande. The programme for the second day will start with a visit to the Almadén Mining Park, including the underground mine, where Cinnabar and native Hg stratabound orebodies are distributed throughout the Criadero Quartzite, one of the most distinctive Palaeozoic formations of the Iberian Massif which spans the Ordovician-Silurian boundary. From Almadén the excursion will move on to the Campo de Calatrava region, with the opportunity to collect fossils in diverse localities within Darriwilian shales and Katian sandstones and limestones.

Post-Symposium field trip. May 14th–16th. Ordovician of the Iberian Range (NE Spain). Co-leaders: E. Villas, E. Vennin, A. Jiménez-Sánchez, J.J. Álvaro & J.C. Gutiérrez-Marco. Price: 290 Euro (the fee covers all meals, 2 nights accommodation – in shared double rooms–, and transportation during the excursion, but not the accommodation for May 16th). The field trip is restricted to a minimum of 12 and a maximum of 50 participants.

This post-Symposium field trip will visit important Ordovician localities in the Iberian Range, both in its Castilian and Aragonian ranges. On Saturday 14th some Middle and Upper Ordovician formations of the Sierra Menera, Nevera and Tremedal inliers of Guadalajara and Teruel will be visited, focusing the study on the development of Late Ordovician sedimentation affected by global events (Boda warming and Hirnantian glaciation) and in part, by active synsedimentary tectonics. The Ordovician-Silurian transition and Llandovery graptolitic shales will also be examined. On Sunday 15th, the excursion moves to the Eastern Iberian Chain in Aragón, in order to make a detailed study of the entire Upper Ordovician sequence near Fombuena and Luesma. Very fossiliferous late Sandbian ironstones, as well as late Katian carbonate sedimentation –with strong lateral facies changes– will be sampled and their facies analyzed in detail, also with regard to the Hirnantian glaciation. Planned activities for Monday 16th will focus on some of the Lower Ordovician formations pre-dating the Armorican Quartzite in the Western Iberian Chain, visiting some fossil localities of Tremadocian and Floian ages. Dinner and accommodation will be in Albarracín and Daroca, both historic towns and very picturesque, with Moorish and medieval walls.

Departure from Alcalá de Henares to Albarracín in the early morning of May 14th; return to Alcalá de Henares (or to Madrid if it is decided by the participants) in the late evening of May 16th.

Publication of Meeting Contributions

A refereed proceedings volume will be edited by Juan Carlos Gutiérrez-Marco Diego García-Bellido and Isabel Rábano in a monographic series of the Geological Survey of Spain (*Cuadernos del Museo Geominero*) and presented at the time of the Conference together with the rest of the registration package. Instead of short or extended abstracts, participants are encouraged to send short papers with text up to 4

pages long (DINA-4 size) and with no more than 3 B&W figures, one of which may be a plate. Detailed guidelines for authors will be available in the Second Circular and in the Symposium's web page. No papers will be accepted from authors not attending the Symposium. In the case of multi-authored papers, at least one author must be formally registered for the meeting.

All the papers accepted by the scientific committee and published in the Symposium volume, will be freely accessible through the Geological Survey of Spain's web page. As an example of the availability of the publication series to be used for the ISOS book, please see the papers from the last Trilobite Conference held in Spain, at www.igme.es/trilo08/archivos/TRILOBITE.pdf

Accommodation

Participants are expected to book their own accommodation in Alcalá de Henares or Madrid. Rooms will not be booked through the registration. Please book your rooms as soon as possible after receiving the Second Circular; a selection of hotels and hostels in the Historic Quarter, near the conference locations, as well as additional accommodation options outside the historical center, will be available on the Conference's web site by December 15th. Actual prices for a double room in Alcalá de Henares range between 40-60 Euro per night, considerably cheaper than in Madrid city. A special rate for accommodation will be negotiated by the City Council of Alcalá de Henares to participants of ISOS.

Travel

Travel from Madrid city is provided by train with departures every 7 minutes. The train station and the various available hotels are all within walking distance of the Historic Quarter, where the meeting will take place.

Direct travel from the airport to Alcalá de Henares is not yet available by train, but special fares with local taxis are being negotiated. At present, the best public transport from Madrid-Barajas Airport to Alcalá includes travelling to Madrid's Atocha-Renfe Train Station by bus or subway (there are connections by Metro Lines 8, 6 and 1), and later catching the local train to Alcalá de Henares (45 min).

Accompanying persons

The Tourist Office in Alcalá de Henares will provide a special programme for accompanying persons for either 24 or 48 hours, visiting the main museums and monuments of this World Heritage City. The city of Madrid is also very accessible, with its commercial and historic center (Puerta del Sol) only 45 minutes away by train. Accompanying people need not register for the Symposium, but if they want to attend the Symposium dinner or any of the Symposium field trips, they will need to make reservations and pay the respective fees for those events.

Expected weather

The dates selected in late spring are ideal for Alcalá de Henares, when fair weather and daily temperatures ranging from 20 to 28°C (lows between 10-15°C) are typical. Such conditions will probably also apply to the field trip destinations as well.

Letters of Invitation/Visa help

Those participants requiring an official invitation letter for visa purposes, or requests for funding to the appropriate bodies, must write to the organizers indicating their name, passport number, title, sex, length of stay in Spain, nationality, affiliation and current postal address. The letter will be mailed once registration and abstract acceptance have been confirmed.

Registration Fees

1. General participants: 250 Euro (290 Euro after February 1st, 2011).
Student participants: 200 Euro (240 Euro after February 1st, 2011).
The registration fee covers the costs of publication, conference bag, coffee breaks, symposium excursion (full accommodation and meals) and social activities.
2. Conference dinner (May 11th, 2011): 50 Euro.
3. Pre-Symposium field trip (May 3rd–8th): 850 Euro (the fee covers all meals, 5 nights of accommodation, and transportation during the excursion, but not the first day's lunch or dinner and accommodation for May 8th).
4. Symposium field trip (May 12th–13th): included in the regular registration fee for formal and student participants; 160 Euro for accompanying persons.
5. Post-Symposium field trip (May 14th–16th): 290 Euro (the fee covers all meals, 2 nights of accommodation, and transportation during the excursion, but not the dinner and accommodation for May 16th)

Conference dinner and all field trips are also available for accompanying people at the prices indicated (2–5).

Payment of fees must be made by International Money Transfer before February 1st, 2011. Later payments –and on-site registration– will be increased by 40 Euro per item, including field trips but excluding the conference dinner.

Please send payments (including any possible bank charges at the receiving end) to the following account:

Account name: SEDPGYM (if possible with mention of “isos11”)

Account number: 3025-0006-21-1433240078

Bank: Caja de Ingenieros; Carranza 5, 28004 Madrid.

IBAN code: ES76 3025 0006 2114 3324 0078

SWIFT/BIC code: CDENESBB

Remember:

- 1.- Payment of registration fees should also include fees for field trips and the conference dinners for accompanying persons.
- 2.- Graduate and PhD students have to provide documentation of their position (e.g., PDF file of the university identity card; letter from the supervisor or other appropriate proof) with their request for a special discounted student fee.

3.- Add up all your registration costs (registration fee, conference dinner and field trips, where applicable) and also include the cost of all bank charges for the money transfer. The entire amount should be sent as a single money transfer. We should receive the full cost of your registration without deduction of bank charges, which are your responsibility.

4.- Do not forget to send an e-mail message with your bank name, date of transaction and amount of the transfer to <isos11@igme.es>.

Important:

After February 1st 2011, the registration fee and field-trip fees will each increase by 40 Euro. Places on the pre- and post-Symposium field trips for both formal participants and accompanying persons will be allocated in strict order of receipt of payment of field trip and registration fees.

Deadlines

Distribution of the Second Circular with hotel information: 15th December, 2010

Short papers or abstracts submission: 1st February, 2011

Payment of registration fees: 1st February, 2011.

Submission of corrected manuscripts for publication: 1st April, 2011.

Distribution of Third Circular: 15th March, 2011

Contact

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We look forward to seeing you in the Iberian Peninsula

Please, fill in and return the following pre-registration form

Questionnaire for 11th ISOS, 2011

If you are interested in attending the Symposium, please complete the following questionnaire, and return it by e-mail or fax to the Secretary of the meeting. You will receive the Second Circular with more details by December 15th, 2010.

Conference Secretary

Isabel Rábano
Museo Geominero
Instituto Geológico y Minero de España
Ríos Rosas 23, E-28003 Madrid, Spain
isos11@igme.es
Phone: 34-91-3495819
Fax: 34-91-3495830

Family Name:

Title:

First Name:

Institution:

Address:

City, ZIP code:

Country:

Fax (country code) + number: ()

E-Mail:

I will be attending the meeting: Yes Probably

Accompanying persons (if any):

I intend to give (number) Oral presentation(s) Poster(s)

Symposium topic(s), number(s):

With the preliminary title(s):

I am interested in the field excursions: Pre-meeting Post-meeting

Date

Signature

RECENT PUBLICATIONS OF INTEREST

Laurie, J.R., Brock, G.A. & Paterson, J.R., 2009. Cambro-Ordovician Studies III. *Memoirs of the Association of Australasian Palaeontologists* 37, 716p.

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The Westergård specimens of the early Middle Cambrian agnostoid *Pentagnostus praecurrens* (Westergård, 1936)

John R. Laurie

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Paterson, J.R. & Laurie, J.R., 2006. Cambro-Ordovician Studies II. *Memoir of the Association of Australasian Palaeontologists* 32, 422p.

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Gregory D. Edgecombe & Barry D. Webby

Zhou Zhiyi and Zhen Yongyi (eds) 2008. Trilobite Record of China. Beijing: Science Press. 402pp. ISBN 978-7-03-022175-9

This volume deals with 1677 trilobite genera that occur in the Palaeozoic rocks of China. After critical revision, 1317 of these are regarded as valid. All the valid forms are listed with reference to their familial assignments, and chronostratigraphical and geological settings. Based on the updated data of their temporal and spatial distribution, the Cambrian and Ordovician biogeography of China is reviewed. Furthermore, the familial and generic biodiversity changes through 46 Palaeozoic stages and 71 Cambro-Ordovician time intervals (defined by biozones) in China are depicted, and the fundamental trends in the history of trilobite diversification and macroevolution through the Palaeozoic of China are revealed. The book provides the most complete and consistent data set available for trilobite records in China, and in the words of Professor Jim Jago (University of South Australia) is a 'must have' book for anyone who works on trilobites, particularly of Cambrian and Ordovician age.

COMMENT

Bio- and chemostratigraphical correlation of the lowermost Hirnantian revisited

The topic as noted above continues to be debated. Our team submitted a paper (see reference below) about the Hirnantian in Latvia from which we took some shortened excerpts as follows. We will not include a list of references, as all those are easily found in previous numbers of Ordovician News.

The stratigraphical framework for this paper relies on the views summarised by Kaljo et al. (2008). In some recent publications (Melchin 2008; Fan et al. 2009), a rather different correlation between the Porkuni Stage and the Hirnantian has been proposed. These authors suggested that the *S. taugourdeaui* Biozone, and hence the Porkuni Stage, corresponds only to the upper Hirnantian (*Normalograptus persculptus* Biozone), whereas the *Belonechitina gamachiana* Biozone is correlated with the lower Hirnantian (*N. extraordinarius* Biozone). However, several facts disagree with such interpretation:

(1) The Hirnantian carbon isotope excursion (HICE) in the stratotype section of the Hirnantian Stage (Chen et al. 2006), supplemented with Katian data from the Honghuayuan section (Zhang et al. 2009), fits well with that in the Baltic area (Ainsaar et al. in press and references therein). There is a fundamental change in the carbon isotope trend (both $\delta^{13}\text{C}_{\text{carb}}$ and $\delta^{13}\text{C}_{\text{org}}$ data) at the Katian-Hirnantian boundary (Brenchley et al. 2003; Finney et al. 1999; Melchin & Holmden 2006; Zhang et al. 2009). The pre-Hirnantian part of the curve is rather smooth with two minor excursions in the Baltic Pirgu Stage (Kaljo et al. 2007) and Richmondian of the Cincinnati Area (Bergström et al. 2007), and is even smoother in Anticosti (Long 1993). The Hirnantian part, corresponding to the HICE, is marked by much higher values and considerable variation that reflect strong environmental perturbations. This difference can serve as an efficient chemostratigraphic marker for the Katian-Hirnantian and as well as the Pirgu-Porkuni boundary.

(2) Graptolites found together with *S. taugourdeaui* from the upper Lousy Cove Member of the Ellis Bay Formation in Anticosti were recently re-examined by J. Riva (Achab et al. in press). He did not recognize any specific late Hirnantian graptolite species there, which indicates that the *S. taugourdeaui* Biozone in Anticosti may well be of early Hirnantian age. This is in good agreement with chemostratigraphic and brachiopod data as advocated by Kaljo et al., (2008).

(3) The zonal chitinozoan *Belonechitina gamachiana* co-occurs in the uppermost Pirgu Taučionys Formation (Kaljo & Hints 1996; Paškevičius 2000) with the *Holorhynchus* brachiopod fauna (Nõlvak et al. 1989; Brenchley et al. 1997), which, in turn, is shown to be late Katian in age (Rong & Harper 1988; Sutcliffe et al. 2001; Rong et al. 2004; Koren & Sobolevskaya 2008; Suzuki et al. 2009). Moreover, the *B. gamachiana* Biozone in the Baltic area, as well as in Anticosti, is characterized by low values of the carbon isotope curve, predating the HICE.

Reference

Hints, L., Hints, O., Kaljo, D., Kiipli, T., Männik, P., Nõlvak, J. & Pärnaste, H. (in press). Hirnantian (latest Ordovician) bio- and chemostratigraphy of the Stirnas-18 core, western Latvia. *Estonian Journal of Earth Sciences*.

Linda Hints & Dimitri Kaljo

ORDOVICIAN RESEARCH REPORTS

Guillermo Albanesi (Argentina) is continuing studies on Lower Paleozoic conodont faunas from west and northwest Argentine basins. A new research project on conodont biostratigraphy and palaeothermometry from the Ordovician System of the northwestern basins of Argentina will be developed during the next three years by our working group. Two PhD students under my supervision, F. Zeballo and G. Voldman, will defend their theses in 2010. I am participating with colleagues from universities in Argentina and other countries in joint projects on diverse topics of historical geology from the Lower Palaeozoic of South America, including conodont biostratigraphy, sequence stratigraphy, events, and paleothermometry.

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Richard J. Aldridge (UK) continues to work on the Soom Shale Lagerstätte, Upper Ordovician, South Africa. Several papers have been published over the last year, on scolecodonts (Whittle et al.), a lobopodan (Whittle et al.), chitinozoans (Vandenbroucke et al.) and brachiopods (Bassett et al.), and a manuscript on the sedimentology is under revision. A manuscript on new conodont apparatuses from the Soom Shale is in an advanced stage of preparation.

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J. Javier Álvaro (Spain) is working in two main Ordovician topics: (i) the Cambrian-Ordovician transition in the newly discovered mixed (carbonate-siliciclastic) substrates of the Iberian Peninsula and Montagne Noire (France), and (ii) the effects of the Hirnantian glaciation in the demise of the Katian carbonate productivity. Future research will be focused on the replacement of benthic communities, mainly related to microbial activity, in both time spans.

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Aicha Achab, Esther Asselin, André Desrochers, Claude Farley and John Riva (Canada): During the past year the main topic of research was the Ellis Bay Formation of Anticosti Island, a reference section documenting the environmental changes that took place at the end of the Ordovician. A GSA Bulletin paper (in press) proposes a new east-west correlation for the Upper Ordovician Ellis Bay Formation. A comparison of chitinozoan and chemostratigraphic data with those of other coeval successions suggests that the Hirnantian Isotopic Carbon Excursion (HICE) on Anticosti begins in the upper *crickmayi* chitinozoan Zone (= *D. anceps* graptolite Zone), just below the base of the Hirnantian Stage, reaches a first peak (~2 ‰) followed by a lesser second peak (~1 ‰) in the *gamachiana* chitinozoan Zone (= *N. extraordinarius* Biozone), and a third, more important one (~4-5‰), in the Laframboise Member, which has been tentatively correlated to the lower *N. persculptus* Biozone.

André Desrochers heads a second paper (in press) in [Palaeogeography, Palaeoclimatology, Palaeoecology](#) dealing with the sedimentology and sequence stratigraphy of the Ellis Bay Formation. Five biostratigraphically well constrained TR sequences are recognized within the Ellis Bay Formation, as well as two discrete glacial periods, the last of which records a high magnitude sea level change corresponding to the development of large ice sheets on Gondwana.

Howard Armstrong (UK) reports that work continues on various high latitude (North Africa and Arabia) records of Ordovician glaciation and deglaciation. Our current focus is on pre-Hirnantian cooling and Silurian glacial advances. This work is sponsored by StatoilHydro and ENI. Collaborative research with Mark Williams and Thijs Vandenbroucke on graptolite and chitinozoan palaeobiogeography in the Ordovician is now finding its way into the literature. Both graptolites and chitinozoa are shown to be sea surface temperature sensitive and can be used to reconstruct proxy climate maps. Maps for the Hirnantian will be out soon.

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William Ausich (USA) is working on Ordovician-Silurian crinoids both globally and specifically. This was a major episode of change in crinoids faunas, including an mass extinction at the O-S boundary. Specific on-going projects are the systematics of Ordovician and Silurian crinoids from Anticosti Island, Quebec (expected publication date 2010), the “Lilliput” response of crinoids through this extinction, and a summary paper discussing the demise of Ordovician crinoids and the recovery of Silurian crinoids. With Brad Deline, William Ausich is also working on the Early Ordovician origination of the Crinoidea and on morphological disparity of Ordovician and Silurian crinoids.

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Chris Barnes (Canada) reports that work with Shunxin Zhang (Geological Survey of Canada) continues using my extensive conodont database to relate conodont biostratigraphy, biofacies and biogeography to the pattern of eustasy and tectonism that affected northern Laurentia in the early Paleozoic. A current study involves Late Ordovician conodonts from southern Ontario (with Shunxin Zhang and Glen Tarrant). The geochemistry of conodonts is being pursued further in collaboration with Julie Trotter (University of Western Australia).

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Denis Bates (UK) continues work on the ultrastructure of graptolites.

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Jeff Bauer (USA) is working on conodonts from subsurface samples in the Arkoma Basin, Oklahoma.

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Stig M. Bergström (USA). During 2009, I completed some projects and started a few new ones, most of which deal with conodont and graptolite biostratigraphy and $d^{13}C$ chemostratigraphy in northern Europe, east Asia, and North America. I am also involved with Steve Leslie in a study of the genus *Amorphognathus* and another one, with Anita Löfgren, of the genus *Pygodus*. Among about 10 papers in press or review is a comprehensive study with Chen Xu and others on the Katian graptolite and conodont faunas of the Yangtze Platform. I am looking forward to seeing the Finney and Berry Ordovician volume finally in print in which I am involved in three papers.

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Alain Blicek (France) is still working on early vertebrates from the Ordovician to the Devonian, and sporadically the Lower Carboniferous. Various groups of agnathan vertebrates such as thelodonts or pteraspidomorphs have their first fossilised representatives in the Ordovician, and make their first abundant adaptive radiation in the Silurian, after the Talimaa's Gap (sensu Turner et al. 2004 in Webby B.D. et al. (eds) *The Great Ordovician Biodiversification Event*, Columbia University Press, chapter 30). The chapter on palaeobiogeography of Early Palaeozoic vertebrates of the volume "Lower Palaeozoic Palaeobiogeography and Palaeogeography" to be edited by Servais, T. & Harper, D.A.T., and published as a *Geol. Soc. London Memoir*, will be co-authored with Z. Zigaite (Vilnius, Lithuania). I am also involved in a collaborative work with seven other palaeontologists (S. Turner, C.J. Burrow, H.-P. Schultze, C.B. Rexroad, P. Bultynck, G.S. Nowlan and W.-E. Reif [deceased]), either as vertebrate or conodont experts, in order to give a revised series of arguments against the "conodonts are vertebrates" theory of the British School (R.J. Aldridge, P. Donoghue, M. Purnell, M.P. Smith et al.). Conodonts (known from the Upper Cambrian to the Triassic) are neither vertebrates nor craniates, and have to be considered as basal chordates at the best, but even this hypothesis is perhaps not pertinent. The latter study is in press in *Geodiversitas* (MNHN, Paris); a shorter, more interpretative version will be proposed to *Episodes* (IUGS).

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Carlton E. Brett (USA). In the first half of 2009 my time was devoted almost entirely to the North American Paleontological Convention (NAPC), held at the University of Cincinnati campus and in the field. (And, yes, I got to play Charles Darwin and disperse copies of his great book for the opening ceremonies!). I was in charge of organizing the 10 associated field trips and was involved in leading pre-, mid- and post-meeting trips on Ordovician, Silurian and Devonian (respectively). The pre-meeting field trip, convened by Patrick McLaughlin (Wisconsin Geological Survey), Ben Dattilo (Indiana-Purdue University, Fort Wayne, Indiana), featured two days of examination of outcrops of Upper Ordovician (Katian) strata in northern Kentucky. Despite sweltering heat, we were able to visit all intended sections, including the Mohawkian (Tyrone Formation and Lexington Limestone) near Frankfort, KY and the Cincinnati (Kope, Fairview, Grant Lake and Bull Fork formations) strata along and adjacent to the AA Highway from Cincinnati to near Maysville, Kentucky. A mid-meeting trip on June 24, with Patrick McLaughlin (CM of Silurian Subcommittee) and Mike DeSantis (University of Cincinnati) examined the Silurian and Devonian of the Falls of the Ohio area in northern Kentucky and Indiana. We examined a spectacular new section of the Upper Ordovician Richmond Group with a classic stratigraphic sequence near Buckner, KY, an Ordovician-Silurian unconformity, as well as Silurian-Devonian sections near Louisville, Kentucky.

I also spent some time examining and measuring stratigraphic sequences in the Bromide Formation in central Oklahoma and in southern Virginia, in conjunction with Steve Westrop (University of Oklahoma), Lisa Amati (State University of New York at Potsdam) and students, for an NSF-sponsored project on foreland basin development and biotic change in Late Ordovician trilobite faunas of eastern North America. With UC masters students Nathan Marshall and Thomas Schramm, I am continuing to pursue detailed sequence stratigraphy and sedimentology of the Upper Ordovician Cincinnati Series rocks in the Tri-states area of northern Kentucky, southern Indiana and Ohio.

In September I helped in running a field conference for the Canadian Paleontological Conference organized by Frank Brunton (Ontario Geological Survey, Sudbury, Ontario) in Tobermory, and Manitoulin Island, Ontario. During our time at Sudbury, Ontario we were able to thoroughly sample a drill core through the Upper Ordovician and Silurian of the southern Bruce Peninsula, which Tom Algeo (University of Cincinnati), Mike Brookfield (Guelph, Ontario) and I hope to use for developing high-resolution C and Sr isotopic curves through this critical interval of climate change and mass extinction/recovery. Graduate student Nathan Marshall spent a good deal of the summer at the USGS lab in Denver, Colorado, learning techniques of mass spectrometry and running the C-isotopes on many of our samples. We have just obtained data and have generated several new carbon isotopic profiles that will provide significant insight into correlations in eastern North America.

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Elena Bukolova (Russia) is a PhD student working on Ordovician graptolites from the Gorny Altay (south of West Siberia).

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Yves Candela (UK) continues working on Ordovician brachiopods, although most of my time and sanity is dedicated to the Royal Museum Project, which involves the redevelopment of the Victorian building known as the Royal Museum. However, two collaborative works have led to the acceptance of two papers, at the moment 'in press'. Firstly, Thomas Hansen (University of Copenhagen) and I have described brachiopod faunas from the upper Darriwilian Elnes Formation, Norway, which includes the description of a new genus named in honour of the late Bjørn Wandås, geologist and fossil collector who contributed extensively to the knowledge of the Middle Ordovician of the Oslo Region. Secondly David Harper (Geological Museum, Copenhagen) and I have described lower Katian brachiopod faunas from the Kirkcolm Formation in two localities in the Northern Belt of the Southern Uplands of Scotland. This work also described a new genus of plectambonitoid brachiopod. I am also pursuing work on plectambonitoid brachiopods.

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Marcelo G. Carrera (Argentina) is actively working on the evolutionary history of lower Paleozoic sponges and the taxonomy, paleoecology and paleobiogeographic significance of the bryozoan fauna of the Argentine Precordillera. A paper on Darriwilian bryozoans from the San Juan Formation (Ordovician), Argentine Precordillera is in press (*Ameghiniana*).

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Carlos Alberto Cingolani (Argentina): During the last year my research (with PhD students and coworkers) has been focused on provenance and tectono-stratigraphic evolution on the Ordovician and Silurian units of the Argentine Precordillera (Cuyania) Terrane, Frontal Cordillera and Sierra de la Ventana (Argentina). Petrography, geochemistry, isotope geology and geochronology on detrital minerals are the main tools used for provenance analysis in well documented stratigraphic sequences. Research topics are:

- a. *Upper Ordovician from San Rafael Block, Mendoza, as a part of the Precordillera terrane*, on the Ponón Trehué Formation (Middle to Upper Ordovician), silico-carbonate platform immature sediments, which are in contact with the Grenvillian-age basement, we carried out some geochemical and isotopic data. The provenance permits characterization of the basement of the Precordillera terrane enabling comparison to other areas. A paper was submitted (Abre et al., *Gondwana Research*).
- b. *Ordovician-Silurian of the Argentine Precordillera (San Juan Province)*. A preliminary paper was presented at the Argentine Geological Congress (Jujuy) on the Provenance of Ordovician to Silurian clastic sequences of the Cuyania Terrane and its geotectonic implications. A complete paper is in progress.
- c. *Upper Ordovician of the Northern part of Precordillera terrane*. The first isotopic U-Pb ages on detrital zircons from the siliciclastic Río Bonete Formation were obtained. Mafic rocks were intercalated within the sedimentary sequence. The northern extensions of the outcrops are along the Potrerillos creek, where the unit is intruded by Carboniferous granitoids. The main peaks of detrital zircon ages are: 440 Ma (boundary between Ordovician and Silurian) and 1100 Ma (Mesoproterozoic or Grenvillian-age). Paula Frigerio as a postgraduate student still continues to work in this area. A paper is in progress.
- d. *Frontal Cordillera of Mendoza Province*, where a folded sedimentary unit known as Las Lagunitas Formation, is exposed. In the upper part of the sequence, the sandstones show intercalations of laminated black shales bearing regularly preserved graptolites from the *Climacograptus bicornis* Biozone. The research was focused on provenance sedimentary analysis.
- e. *Ordovician K-bentonites*. A new PhD thesis at the University of La Plata (Andrea Bidone) was started on the Ordovician K-b from the Precordillera Terrane (Argentina). Isotopic studies are the main focus of this thesis.
- f. *Sierra de la Ventana (Buenos Aires province) Ordovician-Silurian sequences*. In order to establish the source rocks for the Ordovician to Silurian basin and also to constrain the maximum sedimentation age, U-Pb geochronological studies have been carried out on detrital zircons.

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Robin Cocks (UK) has had a busy year, with (as well as two more face operations) a review paper with Trond Torsvik on the Palaeozoic of Laurentia submitted to *Earth-*

Science Reviews, and there is further work in progress on papers with Trond on the Palaeozoic of Africa and Arabia, as well as on Lower Palaeozoic global palaeogeography for the “Green Book” successor edited by Dave Harper. He submitted a short summary paper on Cambrian to Silurian correlation with Richard Fortey and Adrian Rushton, to be published by the *Geological Magazine* early in 2010, but the paper is already on line (see publications). He also submitted a paper, now accepted by *Palaeontology*, on Caradoc (Sandbian and Lower Katian) strophomenid and plectambonitacean brachiopods from Wales and the Welsh Borderland. Work is also in progress with Leonid Popov on Katian and Hirnantian brachiopods from the Chingiz Range of Kazakhstan.

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Roger Cooper (New Zealand) is working on updating the Ordovician and Silurian Global Geochronological Scales jointly with Peter Sadler, Mike Melchin and Brad Cramer, for a new edition of the Cambridge University press Time scale book (ed. Gradstein, Smith, Ogg). All international Ordovician stages now have GSSPs and formal definitions. The updated calibration will be based on the CONOP composite and use radiometric ages adjusted by Mark Schmitz and Mike Villeneuve to standardise for inter-lab procedural differences, decay constants and standards. A few new dates are available and some previously used are abandoned. The new edition will include a web version with description of GSSPs. A chapter on the ecology of graptolites for the revised Treatise on Graptolites (C. Mitchell and M. Melchin editors) is in first draught stage and involves several specialists from around the world. With Yong Yi Zhen, Ian Percival, Tony Wright and John Simes, two papers describing a well-preserved fauna of conodonts, lingulate brachiopods and a single trilobite, from the Ordovician of Northwest Nelson (Thompson Creek) have been published in the *AAP Memoir* series. Evidence for a higher extinction probability for graptolites living at depth in the water column, as opposed to the surface water zone, is in press (*Paleobiology*, jointly with Peter Sadler).

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Paul Copper (Canada and France) retired to France since 2005, but is still active and working on Ordovician strata, particularly those from Anticosti, E Canada e.g. Late Ordovician reefs, monographs in progress on the Order Atrypda, and Order Athyridida, and their transect across the O/S boundary. There are no Spiriferida in the

Ordovician of Anticosti, with the first genera appearing in the following sequence including *Striispirifer* (Aeronian), *Eospirifer* (early Telychian), and *Cyrtia* (late Telychian).

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Helena Couto (Portugal) is working on the study of Palaeozoic stratigraphy, palaeontology and gold-antimony mineralizations in Baixo-Douro area (North Portugal). These studies aim to define prospecting guides for metals and to contribute a better knowledge of the Palaeozoic stratigraphy. Detailed studies were and are being developed on the Cambro-Ordovician transition, Lower Ordovician volcano-sedimentary layers, ironstones and black layers bearing volcanogenic prints with organic matter, hydrocarbures, fossil algæ and bryozoa (that exert a control of gold mineralization) and on the Upper Ordovician deposits related to the Late Ordovician glaciation. The Hot Cathodoluminescence equipment (Geology Centre, University of Porto) promises to be an important tool in these studies.

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Aurélien Delabroye (France) is finishing a PhD thesis at Lille (France) on acritarch dynamics across the Ordovician-Silurian boundary under the supervision of Marco Vecoli and Thomas Servais (CNRS, University of Lille 1, France). The public defence of the thesis will be scheduled for early 2010.

This year, analyses of literature dealing with Late Ordovician (Hirnantian) sections worldwide coupled with personal investigations on acritarchs from this period (Anticosti, Estonia, Argentina) allowed me to clarify some aspects of Late Ordovician global event stratigraphy (e.g., problems of correlations between low latitude carbonate-platforms and peri-Gondwana glacial regions).

Finally, the achievement of taxonomical work on Late Ordovician-early Silurian acritarchs from Estonia (Pirgu, Porkuni, Juuru) and Anticosti (Gamachian, Rhuddanian) allowed me to better apprehend the phytoplankton dynamics across the O/S boundary at low latitudes and to compare these with those observed in North Gondwana. The results are either already published or currently in final preparation.

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Andrei Dronov (Russia) is working on comparative analysis of facies evolution, biotic events and sea-level changes on the Russian and Siberian platforms during the Ordovician. I am also working on the Ordovician ichnofossils and ichnofacies from both platforms (together with Radek Mikuláš and Richard Bromley). In June 2010 we are organizing the IV International Workshop on Ichnotaxonomy with field excursion on the Ordovician ichnofossils of St. Petersburg region.

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Bob Elias (Canada). Boo-Young Bae (Gwacheon National Science Museum, Korea), Dong-Jin Lee (Andong National University, Korea), and I are continuing our paleobiologic studies of tabulate chain-corals from the Ordovician of Manitoba. Ordovician coralline fossils from China are being studied by Ning Sun (Andong National University, Korea), together with Dong-Jin, me, and Xiangdong Wang (Nanjing Institute of Geology and Paleontology, China). I, along with Graham Young (adjunct professor), welcome inquiries and applications from students interested in graduate studies at University of Manitoba. M.Sc. and Ph.D. projects are available on Ordovician corals, paleoecology, and stratigraphy [see umanitoba.ca/geoscience/people/faculty/elias/elias.html]. Lori Stewart is writing a M.Sc. thesis on the stratigraphy, paleoenvironments, and paleoecology of a fascinating Upper Ordovician section in the Williston Basin outcrop belt of Manitoba. Matt Demski is doing a B.Sc. thesis on the only two known exposures of the Ordovician-Silurian boundary in the same outcrop belt. Together, these are the first studies of the uppermost Ordovician and O-S boundary in this region to integrate isotopic data with litho- and biostratigraphy (including conodont analyses by Godfrey Nowlan, Geological Survey of Canada).

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Mats E. Eriksson (Sweden): My research still largely focuses on various aspects on jawed polychaetes and their most common fossil remains, namely the scolecodonts. I have several ongoing projects together with Olle Hints (Tallinn) and we just finished a paper on Ordovician polychaeturids that will soon appear in *Acta Palaeontologica Polonica*. Together with Åsa Frisk (Uppsala) I completed and submitted a paper on polychaetes from the post-impact event succession of the Kukrusean Tvären crater, Sweden. During the last year I have been deeply involved in a project on Darriwilian faunal dynamics and their links to extraterrestrial influx. This project is headed by Birger Schmitz (Lund) and involves several colleagues and PhD students from Sweden and abroad. A couple of papers related to these issues have been submitted during 2009.

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David Evans (UK) is currently completing the revision of the manuscript for the monograph on the Lower Ordovician cephalopods of the Durness Limestone (northwest Scotland) which should be published some time next year. Research and revision carried out with Björn Kröger (Museum Für Naturkunde, Humboldt Universität Berlin) on the Early Ordovician cephalopod assemblages from the Montagne Noire (southern France) described by Thoral is now complete and a manuscript has been submitted. Members of the Orthocerida are now known to occur in late Tremadocian horizons where they exhibit morphologies that suggest adaptation to deep-water and pelagic environments. The remainder of the assemblage is characteristic of high latitude Gondwana, but shows affinities with both northwest Australia and the Central Andean Basin of Argentina. I am also describing with Mansoureh Ghobadi Pour (University of Gorgan, Iran) and Leonid Popov (National Museum of Wales) some Darriwilian, Katian and Hirnantian cephalopod assemblages from east central Iran and the Zagros Mountains. Work continues on the Upper Ordovician cephalopods of northern England, and the Builth and Llandrindod Inlier, central Wales, but goes slowly at present.

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Feng, Hongzhen (China). In the past year, I and my colleagues concentrated on the palaeontology and biostratigraphy of Early Ordovician graptolites from the Jiangnan Slope in South China. On the basis of these studies, we have turned since this year to the early evolutionary radiation of graptoloids and its palaeoceanographic background in South China, a project of three years (2010-2012) supported by the Natural Science Foundation of China (NSFC).

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Annalisa Ferretti (Italy): My Ordovician research continues to be concentrated on conodont faunas from South Europe. I am involved (with Kathleen Histon, Patrick McLaughlin and Carlton Brett) in leading the Symposium "*Time-Specific Facies: The Colour and Texture of Biotic Events*" at the next Third International Palaeontological Congress (IPC3) in London 2010. Distinct signals, such as rock colour, represent evidence of changing scenarios that appear to reflect a recurrent pattern of biotic response to similar eustatic/climatic/geographic changes perceived to be of global extent. The symposium aims to bring together apparently unrelated diverse lines of investigation in order to define and compare through a long time slice colour markers of global events in an attempt to explore their potential for high resolution stratigraphy and for unravelling complex environment-organism interactions and the coupled sedimentary-fossil record. Keynote speakers will be Anthony Hallam (University of Birmingham, UK) and Eberhard Schindler (Forschungsinstitut Senckenberg und Naturmuseum, Germany). More information at <http://www.prg.unimore.it/ipc>.

I recently co-edited (with Alessandra Negri, Phil Meyers, and Thomas Wagner) a Special Issue of *Palaeogeography, Palaeoclimatology, Palaeoecology* concerning "Organic carbon rich sediments through the Phanerozoic: Processes, Progress and Perspectives".

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Mansoureh Ghobadi Pour (Iran) is currently working on the Ordovician trilobites and associated faunas from northern Iran and Central Asia as well as general trilobite

taxonomy, biostratigraphy, paleobiogeography and biofacies. My ongoing research projects include studies of the lower to middle Ordovician trilobites from the eastern Alborz Mountains in northern Iran and upper Ordovician trilobite and associated fauna from Zagros Mountains, southern Iran and Late Ordovician (Sandbian to early Katian) raphiophorid trilobite associations of Central Kazakhstan.

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M. Cemal Goncuoglu (Turkey) is actively working on the stratigraphy of the Ordovician successions of SE Anatolia, Taurides and the Istanbul-Zonguldak terranes in Turkey.

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Juan Carlos Gutiérrez-Marco (Spain): During 2009, I have continued working with my Portuguese colleague Artur Sá on the Ordovician fossils of the Arouca Geopark (northern Portugal), which was finally incorporated to the European and Global Geoparks networks. I have also worked on the Ordovician geology of the Cabañeros National Park (central Spain), where we have discovered Lower Ordovician trace fossils (reaching more than 11 m long and up to 30 cm wide) made by some kind of giant worms. Non-paleontological activities focused in the study of the first European paleovalleys related with the Late Ordovician glaciation in Spain, which are tunnel valleys, rather demonstrative that the North African Hirnantian ice cap reached Europe. A Ph.D. thesis on the Middle Ordovician brachiopods from the southern Central Iberian Zone has been presented by J. Reyes (now in Mérida, Venezuela) in the Zaragoza University (May 22, 2009), and co-directed with E. Villas. A first joint paper with the description of the orthid brachiopods is currently in press in *Acta Palaeontologica Polonica*.

Expected achievements for 2010, besides the preparation for the next Ordovician Symposium (Spain, May 2011), will involve continued direction of two Ph.D. students, as well as continued Ordovician cooperation with Portugal and South America. A new official project (2009-2012) ensures our research activities in the Ordovician rocks of the Cabañeros National Park, this time also oriented to promote their geodiversity, geosites and geotourism. With E. Villas, I am involved in a second project dealing with the paleobiogeography and correlation of the Ordovician of northern South America.

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Thomas Hansen (Denmark) has largely moved away from Ordovician research in favour of Mesozoic and Cenozoic fossils, but his recently-published monograph on trilobites from the Elnes Formation may be of interest for the Ordovician community.

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Jesper Hansen (Norway) continues research on taxonomy, biostratigraphy and ecology of the Cambrian and Ordovician brachiopods from the Svalbard archipelago, with special focus on the Lower and Middle Ordovician fauna in NE Spitsbergen. This fauna includes more than 50 species of which many are new to science. The study is based on collections housed at museums and on new material collected during a joint international scientific expedition in 2008. The work is in collaboration with Lars E. Holmer (Sweden).

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David A.T. Harper (Denmark). Research continues on Ordovician stratigraphy and faunas in Scotland (with Yves Candela, Euan Clarkson and Alan Owen), Ireland (with Matthew Parkes, George Sevastopulo and Svend Stouge), Greenland (with Jan Audun Rasmussen, Christian Mac Ørum Rasmussen, Jin Jisuo and Svend Stouge), western Russia (with Christian Mac Ørum Rasmussen and Arne Thorshøj Nielsen) and the greater Himalayan region (with Nigel Hughes and Lars Holmer). Work continues with Rong Jia-yu, Chen Xu, Zhan Ren-bin and Huang Bing on refining events during the late Ordovician and early Silurian in South China, a critical area for the understanding of the Hirnantian Substage, the late Ordovician extinctions and early Silurian recovery. A new project has been developed with Fredrik Terfelt and his colleagues in

Lund on the changeover between the Cambrian and Paleozoic evolutionary faunas particularly in Scandinavia and a further new project with Emma Hammarlund and Don Canfield (University of Southern Denmark) on geochemical changes around the Ordovician – Silurian boundary. Further additions to PAST by Øyvind Hammer have continued to enhance the popularity of this free software package for palaeontologists (*PAST - PAleontological STatistics Software. Version 1.89* is available at <http://folk.uio.no/ohammer/past>).

The success of the Ordovician IGCP (503) ‘Ordovician palaeogeography and palaeoclimate’ continues; newsletters are available (<http://sarv.gi.ee/igcp503/>). Within the frame of the project Harper and Servais have assembled a group of specialists to investigate the relationships biogeography and palaeogeography in the Early Palaeozoic. Some of the results were presented last year in Copenhagen (see below) and will form the basis for a Geological Society of London Memoir to be published in 2011. Although final meeting of the project was held in Lille (August 23-31: see <http://www.igcp503.org/pdfs/Lille2.pdf>) the absolutely final meeting was held in Copenhagen in early September 2009 (see <http://www.igcp503.org>). The focus was Early Palaeozoic Biogeography and Palaeogeography but the conference included all aspects of Lower Palaeozoic, especially Ordovician, geology. Some 60 delegates enjoyed the hospitality of Copenhagen including a midweek excursion to the classic K/T section at Stevns Klint and a banquet in Tivoli Gardens. In addition two special issues of *Palaeo*³ are currently in press devoted to the project (on palaeoecological aspects of the Early Palaeozoic, edited by Servais and Owen, and climate and sea-level changes, edited by Munnecke, Calner and Harper).

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Susana Heredia (Argentina) is working on Ordovician conodonts from Precordillera and Cordillera Oriental (Eastern Cordillera). The main interest is the biostratigraphy of San Juan/Las Aguaditas Formations but other issue such as the true nature of the CAI in the Precordillera is currently under study. The taxonomy of *Trapezognathus*, *Eoplacognathus* and *Histiodella* in Argentina is matter of great interest. The stratigraphy of Los Azules, Gualcamayo, and Las Aguaditas Formations is under revision (with Ana Mestre and Matilde Beresi). Galina Nestell, Ana Mestre and Susana Heredia documented the first Ordovician foraminifera from South America, with additional material being studied from new localities from the Precordillera. Graduate students under my supervision (or shared supervision) are working on Ph.D subjects with great success: Ana Mestre is finishing her thesis, Josefina Carlorosi is working hard with taxonomy and Cecilia Rodriguez has every section surveyed and the sedimentological studies are done.

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Linda Hints (Estonia) continues working on the Ordovician biostratigraphy and Ordovician brachiopods of Baltica. The main topic is the revision of the Hirnantian brachiopod fauna. Some results about the Hirnantian brachiopods will be soon published in the *Estonian Journal of Earth Sciences*.

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Olle Hints (Estonia) is continuing studies on Ordovician-Silurian microfossils. Together with Mats E. Eriksson (Lund) I finished two smaller projects on Baltic Ordovician scolecodonts, and several others are on the way. A more general contribution is a review paper on the biogeography of Ordovician and Silurian jawed polychaetes to be published in Geological Society of London Memoirs. Together with Thomas Servais, Marco Vecoli and Aurelien Delabroye (Lille), and Jaak Nõlvak (Tallinn) we completed a summary on biodiversification of Ordovician microphytoplankton in Baltica (paper in press). Jointly with several colleagues from Tallinn I have been also working on Darriwilian chitinozoans and Hirnantian microfossils and stable isotopes from Baltic sections (two papers currently in press).

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Dimitri Kaljo (Estonia) continues working on the Ordovician and Silurian bio- and chemostratigraphy of Baltica and elsewhere for comparison. Some team projects reported previously are still in progress, but some results about the Ordovician chemostratigraphy will be soon published in *Palaeo*³ and *Estonian J. of Earth Sciences* (see also Comment, this issue of *Ordovician News*).

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Petr Kraft (Czech Republic) started a project on the upper Katian fauna from the Prague Basin together with several colleagues. I focused on assembling graptolites housed in some institutes and collecting new material for this project. Because of several large construction sites in the southwest part of the Prague Basin I spent lot of time in the field to obtain quite interesting material from Lower Ordovician. I also studied part of Bouček's collection housed in the Czech Geological Survey.

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Jiří Kříž (Czech Republic) is already retired and now works for the Czech Geological Survey just 50% of the time. I continued with the transfer of my Lower Paleozoic Bivalvia collection from Bohemia and Europe to the Czech Geological Survey collections. In 2009 transfer of more than 17,000 specimens together with detailed database (just 3,600 specimens in 2009) was realized. Together with Marika Steinova from the Czech Geological Survey I studied Uppermost Ordovician (late Hirnantian) bivalves from the Prague Basin.

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Björn Kröger (Germany) currently is concentrating on the Ordovician expansion of cephalopod life habit and habitat. A revision of the Tremadocian–Floian cephalopods of the Montagne Noir was recently submitted together with David Evans. An article together with Jan Ove Ebbestad, and Annette Högström on mass

occurrences of Hirnantian cephalopods of the Siljan District (Sweden), is close to completion. I am especially interested in the phylogenetic pathway of orthoconic cephalopods such as the Orthocerida, Lituitida, Pseudorthocerida and Dissidocerida. Future projects will include descriptions and ecological analysis of Late Ordovician cephalopod faunas from the Baltoscandian Boda and Vasalemma reefs. My cephalopod research aims for a better understanding of the dynamics of the Ordovician Radiation. I actively cooperate with Bertrand Lefebvre (Lyon, France), David Evans (Peterborough, UK), Ed Landing (Albany, New York, USA), Jan Ove Ebbestad (Uppsala, Sweden), Mare Isakar (Tartu, Estonia), Thomas Servais (Lille, France), and Zhang Yunbai (Nanjing, China).

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Philippe Legrand (France) is studying some Ordovician graptolites of Algerian Sahara.

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Steve Leslie (USA) is working on integrating Ordovician conodont biostratigraphy with graptolite biostratigraphy, event stratigraphy, and chemostratigraphy. In particular I am working with dark shale sequences and conodonts on bedding planes. I am looking for and finding natural assemblages that should help resolve ideas regarding the position of elements in the apparatus, and the function of elements. I am also involved with examining isotope changes throughout the Ordovician in C, Sr, Nd, and O systems. A goal of this work is to examine changes that occur within these systems and relate them to tectonic, climatic, and oceanic changes that occurred prior to and during the transition from and greenhouse to icehouse world during the Middle and Late Ordovician.

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Li Jun (China) visited Lille at the end of August and beginning of September 2009 to work with Thomas Servais and Yan Kui, and participated in The Absolutely Final Meeting of IGCP 503 in Copenhagen and the pre-conference excursion.

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Anita Löfgren (Sweden) is continuing work on Ordovician conodonts, mainly with biostratigraphical aspects and in Baltoscandia. In this, I co-operate with several colleagues abroad.

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Peep Männik (Estonia) is actively working on evolution, taxonomy and palaeoecology of conodonts, conodont-based high-resolution stratigraphy, bioevents and palaeogeography. I am also interested in sequence stratigraphy and evolution of sedimentary basins. In Estonia, I am busy with three projects: “Upper Ordovician–Lower Silurian conodont biostratigraphy in stratigraphic sequences”, “Ordovician–Silurian boundary in the Baltic area” and “Ordovician and Silurian biodiversity in Baltica: evolution and impact of the changing environment”. Also, joint studies together with colleagues from Estonia, Germany, Russia, Sweden, U.K. and USA on evolution and high-resolution stratigraphy of the Early Palaeozoic sedimentary basins on Baltica and Siberia palaeocontinents are going on.

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Alexander (Sandy) D. McCracken (Canada) continues to work on Middle to Upper Ordovician, Silurian and Devonian and conodonts from various locations in Canada.

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Radek Mikulas (Czech Republic) is working on ichnotaxonomy and environmental interpretations of trace fossils from the Baltic Region and the Siberian Shield (together with Andrei Dronov).

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Tatiana L. Modzalevskaya (Russia) is actively working on a project involving Ordovician and Silurian Palaeogeography of the East European Platform based on biogeography. Recent studies of numerous cores in the Kaliningrad and Pskov districts, Moscow Syncline, the lower part of the Volga Basin (Volgograd District) and Cis-Caspian Syncline resulted in elaboration of new lithostratigraphic charts for Silurian deposits. More precise dating of formations was done using graptolites, brachiopods and other faunal groups. The continuous succession of Ordovician-Silurian deposits (*Normalograptus persculptus* – *Parakidograptus* interval) were studied in detail in the Baltic sea area (Ul'st., 1992). In the Kaliningrad District a hiatus is evident, the duration of which extends from uppermost Hirnantian till the *Cystograptus vesiculosus* or *Demirastrites triangulatus* zones (Koren' et al., 2009). In collaboration with Prof. Fernando Alvarez (Spain) we shall prepare a manuscript about early Palaeozoic diversification of European "smooth" athyrididides.

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Axel Munnecke (Germany) continues working with Zhang Yuandong (NIGPAS, Nanjing) on Ordovician stable carbon isotope stratigraphy in China. In addition I am involved in a project (together with Paul Copper, Marco Vecoli, Aurelien Delabroye, and Michael Joachimski) investigating the Ellis Bay Formation on Anticosti Island.

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Elise Nardin (Germany) is working on faunal diversifications and the interactions between geosphere and biosphere during Paleozoic. My paleontological research focuses on the blastozoan diversification processes. The first approach is the establishment of a phylogeny showing the relationships with contemporaneous echinoderms (e.g., crinoids, edrioasteroids). The result will be the proposition of a new classification for the subphylum Blastozoa, and the understanding of the diversification processes, and its timing. The second approach is the question of the impact of the geodynamic events (orogeny, volcanism) on the morphological changes and the diversity dynamics of Palaeozoic fauna (collaboration B. Lefebvre (Univ-Lyon, France), M. Aretz (Univ-Toulouse, France), J. Bohaty (Univ-Cologne, Germany)). I am also concerned by the modeling of the influence of the geodynamic events on the Paleozoic diversification, palaeoclimate and paleobioproductivity. I am particularly interested in factors influencing the P, Mg, and Sr cycles (collaboration with Y. Godd ris, Y. Donnadieu, and G. Le Hir). To validate the model hypotheses, I also try to estimate the Ordovician biomass based on the approximate quantification of phyto- and zooplankton on different paleocontinental margins. This part results from collaboration with M. Aretz, F. Paris and M. Vecoli (France), C. Rubinstein (Argentina), P. Steemans (Belgium) and O. Hints (Estonia).

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Godfrey S. Nowlan (Canada) has a very moderate level of research at the moment. Our conodont lab continues to receive substantial numbers of samples and reports are prepared. Samples are arriving from the north as a result of support for work by GSC in Arctic Canada. New data will be acquired from Victoria Island. Two papers with

Keith Dewing (GSC) on Lower Paleozoic stratigraphy of the Arctic Islands are in the late stages of preparation. I have recently joined the ICS Subcommittee for Stratigraphic Information. I continue to work mainly in geoscientific outreach, currently focused on winding up the celebration of the International Year of Planet Earth in Canada, which includes a contest for school children, a careers in earth sciences web site and the co-writing and co-editing of a new popular book on the geology of Canada entitled: *Four Billion Years and Counting: Canada's Geological Heritage*.

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Olga Obut (Russia) is working on paleontology and biostratigraphy of the Ordovician radiolarians and conodonts from the south of West Siberia.

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Alan Owen (UK) has almost completed the description with David Bruton (Oslo) of a deep water trilobite fauna from the Upper Ordovician of Maine and has re-started work with Mike Romano (Sheffield) on a comparable fauna from eastern Ireland. Editing of a thematic set of papers (with Thomas Servais, Lille) on Early Palaeozoic Palaeoenvironments arising from the 2008 Annual Meeting of IGCP 503 'Ordovician Palaeogeography and Palaeoclimate' is complete and the papers will appear in Palaeogeography, Palaeoclimatology, Palaeoecology during 2010. The set includes a review paper on the palaeoenvironmental context of the Great Ordovician Biodiversification Event. Work has begun with Jonathan Adrain (Iowa City) and Richard Fortey (London) on Ordovician trilobite biogeography and the preliminary findings were presented at the 2009 meeting of IGCP 503 in Copenhagen. Study of an abnormal Upper Ordovician encrinurid trilobite specimen is still in progress with Patrick McDermott (St Clears, South Wales) and my PhD student Clare Torney continues to make interesting discoveries of the fine scale crystallographic structure and chemistry of trilobite eyes.

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Ian Percival (Australia) continued work on documenting Early and Middle Ordovician conodonts occurring in cherts of the Lachlan Orogen in central New South Wales. Collaboration with Yong-yi Zhen (Australian Museum, Sydney) resulted in two papers on Ordovician conodonts from South China appearing in *Alcheringa*. Another two papers with Dr Zhen as senior author (one on Darriwilian (Middle Ordovician) conodonts from New Zealand, the other reviewing the new family Serratognathidae) were published at the end of 2009 in the *Association of Australasian Palaeontologists Memoir on Cambro-Ordovician Studies Volume 3*. In March 2009 I visited the Nanjing Institute of Geology & Palaeontology and there worked with Wu Rongchang and Zhan Renbin on study of Ordovician biodiversification of conodonts in the Zitai Formation of Anhui Province (published in *Alcheringa* in March 2010). I also attended the final meeting of IGCP 503 in Copenhagen in September and the accompanying field excursion to Sweden and Norway.

Research on Ordovician brachiopods concentrated on finalising a study of the lingulate fauna from the Thompson Creek district of the northern South Island of New Zealand, and completing a paper describing a small fauna dominated by *Martellia* from Iran. I was also busy in the latter part of the year editing abstracts and writing a field guide for a post-congress excursion for the 6th International Brachiopod Congress, held in Melbourne in February 2010.

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José Piçarra (Portugal) is actively working on lower Palaeozoic stratigraphy from the South Portugal (Ossa Morena Zone) and also researching graptolites from Portugal and the French Armorican Massif. I am involved in studies of the geological and palaeontological heritage of the Barrancos region (South Portugal).

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Anne Põldvere (Estonia) continues as editor of the journal *Estonian Geological Sections* (issued by the Geological Survey of Estonia). The tenth issue of the journal is under preparation and will appear at the end of 2010. It will focus on the Viki drill core penetrating the Ordovician and lowermost Silurian (Llandovery, Wenlock) sedimentary rocks in the western part of Saaremaa Island, southwestern Estonia (NW part of the East European Platform). Rock composition will be specified using thin section data, and results of different chemical and mineralogical analyses. The stratigraphic subdivision of the sections will be improved on the basis of long-term study of the distribution of chitinozoans, conodonts and scolecodonts in the Ordovician and Silurian. For the first time new stable isotope data from the Ordovician and earlier data from the Silurian rocks will be presented together in the 2010 issue. The composition of Upper Ordovician and Silurian volcanic ash beds is investigated by X-ray fluorescence and diffractometry analyses. A large set of older and new data, collected in the 1970s and in 2005–2009, will be analysed mainly by researchers of the Institute of Geology at Tallinn University of Technology and the Geological Survey of Estonia. Traditional drawings illustrating the rock types in combination with fossil distribution and stratigraphic scale, sampling information on the Viki photo-log, photos of selected intervals and thin sections will be added to the text.

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Leonid Popov (UK) is presently working on various aspects of the Early Palaeozoic brachiopod taxonomy, biogeography and phylogeny. It includes collaborative studies on the Early to Mid Ordovician brachiopods of Iran together with Mansoureh Ghobadi Pour and Mohammad Kebrie-ee, and Late Ordovician brachiopods of Uzbekistan together with Irina Kim.

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G. Susana de la Puente (Argentina). In March 2009 I presented my thesis on

chitinozoa of the Ordovician successions from northwestern Argentina. The following month I began a postdoctoral fellowship (CONICET) on chitinozoa of the Silurian successions from northwestern Argentina, focusing on assemblages of the Ordovician-Silurian boundary, under the direction of Dr. Claudia Rubinstein in the Palaeopalynology Unit at IANIGLA-CCT, CONICET Mendoza.

During 2009 I submitted some papers which have already been accepted for publication, based on some data obtained from the thesis. I also studied and sampled new sections of the Ordovician and Silurian from northwestern Argentina, from which I am currently obtaining promising results in the laboratory.

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Sergey Rozhnov (Russia) is working on the Ordovician eocrinoids, paracrinoids and edrioblastoids from Baltica. Additionally, I am looking at the role of heterochrony in the establishment of the body plan of higher Echinoderm taxa and the tropical macrostructure of the Vendian and Early Paleozoic biotas.

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Claudia V. RUBINSTEIN (Argentina) continues working on Lower Palaeozoic marine and terrestrial palynomorphs. Research projects include the Ordovician from the Central Andean Basin, northwestern Argentina. They are focused in an integrated high resolution biostratigraphy based on organic-walled microphytoplankton, miospores, chitinozoans (by G. Susana de la Puente) and graptolites (by Blanca Toro), palaeobiogeography and palaeoenvironments. In the frame of a French – Argentinean collaboration project, together with Marco Vecoli (Lille) and Ricardo Astini (Córdoba, Argentina) we have just submitted a paper on Middle Ordovician organic walled microfossils, palaeoenvironments and sequence stratigraphy of the Sierras Subandinas (NW Argentina). A paper dealing with the Ordovician/Silurian boundary in the Cordillera Oriental (NW Argentina), together with Aurélien Delabroye (Lille), G. Susana de la Puente and R. Astini is still in progress.

During 2009, G. Susana de la Puente has finished her PhD thesis entitled "Ordovician Chitinozoans from the Central Andean Basin (northwestern Argentina) and their applications to biostratigraphy, palaeobiogeography and palaeoenvironments" under my supervision. She carried out, for the first time in Argentina, a detailed systematic study on chitinozoan assemblages, thus generating an important collection of these

microfossils in the Palaeopalynological Unit of our institute (IANIGLA – CCT CONICET Mendoza) and providing the first approach to a chitinozoan biozonation of the Ordovician from Argentina.

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Matthew Saltzman (USA) is working on the relationship between silicate weathering and climate in the Middle Ordovician using Sr and Nd isotopes in carbonate rocks in North America. This is a collaborative effort with Steve Leslie at James Madison University. I continue to also study carbon isotopes of carbonate and organic matter in Middle to Late Ordovician sections in the Appalachian region (Pennsylvania, Virginia) and Oklahoma in collaboration with Steve Westrop, Lisa Amati and Carl Brett.

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Nikolay Sennikov (Russia) is working on lithostratigraphy, paleobiogeography and Ordovician graptolites from the Altay-Sayan Folded Area and Siberian Platform. Our research is focused on: a) Ordovician graptolite zonation for the Gorny Altai and Salair, identification of index-species for stage and substage boundaries of the new Ordovician stratigraphic scale (Dr. N. Sennikov and PhD student E. Bukolova); b) creation of conodont zonation for the Gorny Altai area to align it with those of Siberian and East-European platforms, and direct correlation with global Ordovician stratigraphic scale (Drs. N. Sennikov, O. Obut, T. Tolmacheva).

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Lawrence Sherwin (Australia). Although I retired officially five years ago I continue to be employed by the NSW Geological Survey on a contract basis, mostly in the specialty of regional mapping and palaeontological dating of strata. Graptolite workers are in short supply in Australasia, especially under the age of 65. I am

working on contributions to the Ordovician stratigraphy of the Braidwood 1:100 000 geological map, principally by identifying the Mid-Late Ordovician graptolite fauna. Contributions to the Goulburn 1:250 000 geological map and explanatory notes are complete and it is anticipated that both will be published in 2010.

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Paul Smith (UK) continues work on the stratigraphy and basin architecture of the NE Laurentian margin, and has recently completed some work (with James Wheeley) on the Edinburgh ionprobe to look at experimental limitations of conodonts when used for palaeotemperature and palaeo-oceanographic work.

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Thomas J. Suttner (Austria). Although my main research topics are addressed to Devonian stratigraphy and reef ecology of the Carnic Alps and the Graz Palaeozoic now, I am still working on some manuscripts concentrating on the conodonts, trilobites, tentaculites and palaeoscoleoids of the Pin Formation (Ordovician-Silurian, Northern India). Together with colleagues from the University of Graz, I organized the *Paleozoic Seas Symposium 2009*, which was a very successful meeting. A successor meeting is planned for 2011 (further details will be given in the near future). These days we are quite busy with the proceedings volume of this symposium.

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Tatiana Yu. Tolmacheva (Russia) is currently working on collections of Cambrian and Ordovician conodonts from Altai (with Nikolay Sennikov and Olga Obut) and Siberia (with Peep Männik and Andrei Dronov). At the beginning of last year Galina

Abaimova and I finished a paper on Late Cambrian conodonts from the Kulumbe River locality in northeast Siberia. I also continue to study conodonts from the siliceous rocks of Kazakhstan and Kyrgyzstan in long-term field work cooperation with Kirill Degtyarev, Alexey Ryazantsev (Geological Institute, Moscow) and Olga Nikitina (Institute of Geological Sciences, Almaty, Kazakhstan).

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Thijs Vandenbroucke (France) has moved from Ghent University (Belgium) to the “Géosystèmes” research group of the University of Lille1 (France), where I started working as *Chargé de Recherche* of the French CNRS (www.cnrs.fr) in October 2009. My current research projects continue to test the potential of several methods for ground-truthing Ordovician climate models and hypotheses. Our main focus stays on using the palaeobiogeography of planktonic chitinozoans and graptolites to ground-truth Ordovician climate model (GCM) predictions of ocean state. Our results from well-defined time slices in the Upper Ordovician (the *gracilis* biozone, HICE) have been presented at several meetings in 2009 (IGCP 503 meeting in Copenhagen, Denmark; Geological Belgica meeting in Ghent, Belgium) and have been published in the same year in *Paleoceanography* and a special issue of *Pal. Pal Pal* (now available online). The HICE paper is in submission. In addition, the potential of a number of geochemical methods to reconstruct seawater properties is being evaluated. The ORACLE (Ordovician Radiation, Climate and Environment) research collective (<http://web.me.com/thijs.vandenbroucke/Oracle/Welcome.html>) consists of Mark Williams (University of Leicester), Jan Zalasiewicz (University of Leicester), Howard Armstrong (Durham University), Koen Sabbe (Ghent University), Florentin Paris (University of Rennes), Alan Haywood (University of Leeds), Jaak Nolvak (University of Tallinn) and Jacques Verniers (Ghent University). We work in close cooperation with Alex Page (University of Berlin), Richard Fortey (Natural History Museum), Axel Munnecke (Erlangen University), and Mikael Calner (Lund University).

I am still trying to solve a few biostratigraphical problems, including the correlation difficulties at and around the *linearis* biozone level: this includes an ongoing study of the chitinozoans through the graptolitic Bornholm succession (Denmark, together with Arne Nielsen, Geological Museum, University of Copenhagen) and the Whitehouse Group on the Girvan Foreshore and inland sections (Scotland, together with Keith Ingham, Hungarian Museum).

Last year also saw the publication of a paper dealing with chitinozoans and age of the South-African Soom Shale lagerstätte, together with Richard Aldridge, Sarah Gabbot (University of Leicester), Florentin Paris and Johannes Theron, and the very last paper dealing results from my Ph.D, on the chitinozoans of the historical Type Caradoc and Shelve districts in the Welsh Borderlands (UK), together with Antonio Ancilletta, Richard Fortey and Jacques Verniers.

Next to the Ordovician projects, I remain involved in several projects dealing with the Silurian System. Jeremy Davies (BGS), Richard Waters (National Museum of Wales), Stewart Molyneux (BGS), Mark Williams, Jan Zalasiewicz, Jacques Verniers and myself are writing up a revision of the stratigraphy and facies architecture of the Llandovery type area in South Wales, following a 2 year (2007-2009) BGS project. Together with Olle Hints (University of Tallinn) and Axel Munnecke, I am trying to evaluate the differences in carbon isotope values between several groups of palynomorphs, using the Ireviken Event on the Isle of Gotland as a test case.

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Jacques Verniers (Belgium) can report on the publication on the early start of vascular plants in Saudi Arabia (low in the Ashgill, high in the Katian) which could well be dated by chitinozoans and two publications under the hand of my collaborator Thijs Vandenbroucke, who moved to Lille in October.

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Viive Viira (Estonia) continues working on Lower and Middle Ordovician conodonts from Estonia.

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Olev Vinn (Estonia) continues work on the palaeontology of problematic calcareous tubeworms from the Palaeozoic (e.g. cornulitids, tentaculitids, microconchids etc.) and evolution of tubeworm biomineralization. I am currently also working on the evolution of bioerosion and biofouling of hard substrates in the Ordovician of Baltica.

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Barry Webby (Australia). Since 2005, I have continued to maintain active research interests on aspects of the Treatise on Invertebrate Paleontology, Part E, volume 4 (Hypercalcified Porifera) as they pertain to the Ordovician Stromatoporoidea—their external morphology (jointly with Stephen Kershaw), origins and early development, biostratigraphic applications, and paleobiogeography—and the taxonomy of many of the Ordovician groups particularly the Order Labechiida, and the problematic Order Pulchilaminida. My role as Coordinating Author of this Treatise volume has continued with active involvement in its planning and organization and in preliminary editing work on the manuscripts submitted by the fifteen authors: they cover a wide range of topics within the hypercalcified sponge groups, including demosponge, calcisponge, sphinctozoan, inozoan, stromatoporoid, chaetetid and archaeocyath types), and not only the fossils but also the extant (living fossil) analogues. Some chapters on the stromatoporoid-type and chaetetid-type sponges have already reached an advanced stage of editing, and are expected to be published later this year in the new series called the *Online Treatise*. In addition I have completed work on some New South Wales Ordovician trilobites with Greg Edgecombe and a revision of the Malongulli radiolarians, with Paula Noble (see listed publications elsewhere). Other activities include preparation of a joint chapter on the Ordovician and Silurian biogeography of stromatoporoids with Heldur Nestor, to be contributed shortly to editors of the final IGCP 503 volume on the Lower Palaeozoic palaeobiogeography, to be published in 2011 in the Memoir series of the Geological Society of London. My other current work is mainly curatorial, involving cataloguing and transfers of an extensive Ordovician collection to the two main long-term repositories in the Sydney region (the Australian Museum, and Londonderry laboratory and storage facility of the Geological Survey of New South Wales).

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Reed Wicander (USA). During the past year I have continued my collaboration with colleagues on Ordovician acritarchs. I am presently finishing a manuscript with Clinton Foster on the acritarchs and prasinophytes from the Lower Ordovician (Tremadoc-Lower Arenig) Nambheet Formation, Canning Basin, Western Australia and their palaeogeographic significance.

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Brian J. Witzke (USA). Study of the Winneshiek Lagerstätte (St. Peter Sandstone) from northeast Iowa is underway with H. Liu, R. McKay, and D. Briggs. We will be presenting information on the conodont assemblages (some with soft tissue preservation) and depositional setting at the spring meeting of the NC-SC GSA. Deformation features in quartz grains (including PDFs) from the area indicate that the Lagerstätte was deposited in a local basin associated with an impact structure. Ongoing studies of the Maquoketa Formation in Iowa have been focusing on sequence stratigraphy, deposition, and biostratigraphy. The upper Maquoketa Neda Member, best known for its red shale-oolitic ironstone facies, is now recognized to include graptolitic shales and shelly faunas, as well. A summary of Maquoketa phosphatic diminutive faunas (mostly molluscan) was presented at the 2009 NACP meeting.

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Wu Rongchang (China) is a Ph.D. candidate at the Nanjing Institute of Geology and Palaeontology, Chinese Academy of Science (hopefully completing my thesis in 2011). I am working on the Ordovician conodont fauna from South China and its biodiversification, concentrating on conodonts from the Zitai Formation of Floian-Dapingian age.

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Yan Kui (China) mainly worked on Ordovician acritarchs this year. I went to Lille as a visiting researcher in June for one year. I attended the Absolutely Final Meeting of

IGCP 503 this September. I am now working on the systematic of some acritarch taxon, such as *Ampullula* and *Barakella*. I also concentrate on acritarch biostratigraphy in South China and its global correlation potential during Ordovician.

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Graham Young (Canada) continues to work on Palaeozoic palaeoecology and on the diversity of Ordovician Cnidaria. I am collaborating with Bob Elias, David Rudkin, and others to study palaeoenvironments and biotas in the Ordovician rocks of central and northern Manitoba. Graduate student Lori Stewart and undergraduate student Matt Demski (co-supervised with Bob Elias at the University of Manitoba) are studying palaeoenvironmental change in the Late Ordovician and the Ordovician – Silurian boundary interval. These studies integrate isotopic data with litho- and biostratigraphy. My current personal focus is on the biota of a soft-tissue site at William Lake (central Manitoba), where we find fossils such as cnidarian medusae (jellyfish) and eurypterids. At the Manitoba Museum, we are installing a multi-screen animated exhibit that will depict Late Ordovician life along a rocky shore in the Churchill area (to be opened in late March, 2010).

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Renbin Zhan (China) was engaged mainly with one research project, "The Great Ordovician Biodiversification Event: Taking South China as an Example". To further the investigation on this particular topic, I, together with my domestic and international colleagues, did a lot more field work in South China, particularly in those areas with nearshore shallow water and offshore deep water palaeogeographic backgrounds. Besides the palaeobiologic diversification, we also paid close attention to the sedimentological and lithological responses to the biologic radiation, and published some preliminary achievements. Ian Percival and I are collaborating on the comparative study of Late Ordovician brachiopods from New South Wales and South China on the purpose of investigating their palaeogeographic significance. Dave Harper and I are working together on a Middle Ordovician brachiopod fauna from Tibet, and some preliminary results will be published in 2010.

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Yuandong Zhang (China) is working on: (1) the response of graptolites in South China during the Ordovician radiation. This is a part of the NSFC major project on the “Palaeontological Evidence of Ordovician Bioradiation in South China” (2006-2009, I act as the leader). In the project, experts of many key fossil clades in Ordovician, such as graptolites, brachiopods, trilobites, acritarchs, nautiloids, bryozoans and bivalves, are involved. (2) the stable carbon isotope analysis of the Ordovician in South China and its implication for the stratigraphic correlation and palaeoenvironment (cooperating with Axel Munnecke of Germany). (3) a finer divisions and correlations of the Ordovician rocks in China, a project sponsored by the SinoPec Co., in which we aim specially at the refining correlation of Ordovician strata in the SW China, and Tarim Region where Ordovician black shale has been believed to be the source rock of the abundant petroleum under exploration (cooperating with Zhen Yongyi of Australia).

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Yong Yi Zhen (Australia) is working on Ordovician conodonts from New South Wales, Western Australia, Tasmania, New Zealand, Tarim and South China. In April 2009, Barry Webby, Michael Engelbretsen and I went a field trip and collected conodont samples from several latest Cambrian to Early Ordovician outcrops in far western New South Wales. In June to July 2009, I was invited to visit the Nanjing Institute of Geology and Palaeontology and participated in a field trip and sampled several Ordovician sections in South China with Yuandong Zhang and others from NIGP.

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Zhiyi Zhou (China) continues work on the Ordovician trilobite biofacies of the Yangtze Block and on the Darriwilian–early Katian trilobite faunas of northwestern

Tarim, Xinjiang, including those from the Saergan, Kanling and Qilang formations in the Kalpin area and from the Yijianfang, Tumuxiuke and Lianglitag formations in the Bachu area.

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ORDOVICIAN RESEARCH PUBLICATIONS 2009 (& preceding years)

- Aceñolaza, G.F. & Heredia, S. 2008. The status of the *Cruziana* (trilobite trace fossil) stratigraphy in Western Gondwana: The mixing of Lower and Upper Ordovician Elements in the Central Andean Basin of South America. In: I. Rábano, R. Gozalo and D. García Bellido (Eds.) Advances in Trilobite Research. *Cuadernos del Museo Geominero*, 9: 13-17. Madrid. ISBN 978-84-7840-707-1
- Aceñolaza, G., Heredia, S. & Carlorosi, J. 2008. La “Sepulturas limestone” (Harrington en Harrington y Leanza, 1957) en su área tipo, fósiles y edad, provincia de Jujuy, Argentina. *Acta Geológica Lilloana* 20(2): 147-158. ISSN 0567-7513
- Achab, A., Asselin, E., Desrochers, A., Riva, J. & Farley, C. (in press). Chitinozoan contribution to the development of a new Upper Ordovician stratigraphic framework for Anticosti Island. *Geological Society of America Bulletin*
- Albanesi, G.L., Bejerman, A.M. & Astini, R.A.. 2009. Conodont biostratigraphy and paleoenvironments of the lower Sierra de La Invernada Formation, Middle Ordovician, San Juan Precordillera, Argentina. *Permophiles* 53, ICOS 2009 Abstracts: 1-2.
- Álvaro, J.J., Bauluz, B., Pierre, C., Subías, I. & Vizcaíno, D. 2008. Carbon chemostratigraphy of the Cambrian-Ordovician transition in a mid-latitude mixed platform, Montagne Noire, France. *Geological Society of America Bulletin* 120, 962-975.
- Álvaro, J.J., Ezzouhairi, H., Ribeiro, M.L., Ramos, J.F. & Solá, A.R. 2008. Early Ordovician volcanism of the Iberian Chains (NE Spain) and its influence on preservation of shell concentrations. *Bulletin de la Société géologique de France* 179, 569-581.
- Álvaro, J.J. & Van Vliet-Lanoë, B. 2009. Late Ordovician carbonate productivity and glaciomarine record under quiescent and active extensional tectonics in NE Spain. In: Bassett, M.G. (ed.), Early Palaeozoic Pre-Gondwana Terranes: New Insights from Tectonics and Biogeography. *Geological Society, London, Special Publications* 325, 117-139.
- Armstrong, H.A., Baldini, J., Challands, T.J., Gröcke, D.R. & Owen, A.W. 2009. Response of the Inter-tropical Convergence Zone to Southern Hemisphere cooling during Upper Ordovician glaciation. *Palaeogeography, Palaeoclimatology, Palaeoecology* 284, 227-236.
- Ausich, W.I. and Copper, P. 2010. The Crinoidea of Anticosti Island (Late Ordovician and Early Silurian). *Palaeontographica Canadiana*, 29, 164 pp.
- Bassett, M.G., Popov, L.E., Aldridge, R.J., Gabbott, S.E. & Theron, J.N. 2009. Brachiopoda from the Soom Shale Lagerstätte (Upper Ordovician, South Africa). *Journal of Paleontology* 83, 614-623.
- Batchelor, R.A. 2009. Geochemical “Golden Spike” for Lower Palaeozoic metabentonites. *Earth and Environmental Science Transactions of the Royal Society of Edinburgh* 99, 177-187.
- Bates, D.E.B., Kosłowska, A., Loydell, D.K., Urbanek, A. and Wade, S. 2009. Ultrastructural observations on some dendroid and graptoloid graptolites and on *Mastigograptus*. *Bulletin of Geosciences (Czech Republic)*, 84: 21–26.
- Benedetto, J.L. & Cocks, L.R.M. 2009. Early Silurian (Rhuddanian) brachiopods from the Argentine Precordillera and their biogeographic affinities. *Ameghiniana*, 46, 241-253.

- Bentley, C.J., Jago, J.B. & Cooper, R.A. 2009. An *Acmarhachis typicalis* Zone trilobite fauna from the Cambrian of northern Victoria Land, Antarctica. *Memoirs of the Association of Australasian Palaeontologists*, 37, 165-197.
- Bergström, S.M., Chen, X., Gutiérrez-Marco, J.C. & Dronov, A.V. 2009. The new chronostratigraphic classification of the Ordovician System and its relations to major regional series and stages and $\delta^{13}\text{C}$ chemostratigraphy. *Lethaia* 42 (1), 97-107.
- Bergström, S.M. & Löfgren, A. 2009. The base of the global Dapingian Stage (Ordovician) in Baltoscandia: conodonts, graptolites and unconformities. *Earth and Environmental Science Transactions of the Royal Society of Edinburgh*, 99: 189-212.
- Bergström, S.M., Schmitz, B., Rong, J., Young, S. & Saltzman, M.R., 2009. First documentation of the Ordovician Guttenberg $\delta^{13}\text{C}$ excursion (GICE) in Asia: chemostratigraphy of the Pagoda and Yanwashan formations in southeastern China. *Geological Magazine*, p. 1-11.
- Bernárdez, E. & Gutiérrez-Marco, J.C. 2009. Primer hallazgo de graptolitos oretanienses (Ordovícico Medio) en el cabo Vidrias (Asturias, extremo noroccidental de la Zona Cantábrica). *Geogaceta*, 47, 5-8.
- Blieck, A. 2009. Biodiversité, environnements et évolution au Paléozoïque : le cas des vertébrés du Cambrien au Dévonien. *Ann. Soc. Géol. Nord*, 2e série, 16 : 19-33. [In French; English abstract]
- Boncheva, I., Goncuoglu, M.C., Leslie, S.A., Lakova, I., Sachanski, V., Saydam, G., Gedik, I. & Konigshof, P. 2009. New conodont and palynological data from the Lower Palaeozoic in Northern Camdag, NW Anatolia, Turkey. *Acta Geologica Polonica*, 59(2), 157-171.
- Brett, C.E., Ferretti, A., Histon, K. & Schönlaub, H.P. 2009. Silurian sequence stratigraphy of the Carnic Alps, Austria. *Palaeogeography, Palaeoclimatology, Palaeogeography* 279: 1-28.
- Brett C.E., McLaughlin P.I. & DeSantis, M.K., 2009. Middle Paleozoic Sequence Stratigraphy and Paleontology of the Western Flank of the Cincinnati Arch. *North American Paleontological Convention-2009; Guidebook, Fieldtrip 6*, 58 p. University of Cincinnati, Cincinnati, Ohio.
- Bukolova E.V. 2009. New data on Lower-Middle Ordovician graptolites from the NE Altai, pp 3-4 in *Contributions of the XLVII International students conference "Students and scientific and technical progress": geology*. Novosibirsk, 2009. Novosibirsk State University Press. (in Russian).
- Candela, Y. & Hansen, T. in press. Brachiopod associations from the Middle Ordovician of the Oslo Region, Norway. *Palaeontology*.
- Candela, Y. & Harper, D.A.T. in press. Late Ordovician (Katian) brachiopods from the Southern Uplands of Scotland: Biogeographic patterns on the edge of Laurentia. *Earth and Environmental Sciences Transactions of the Royal Society of Edinburgh*.
- Carrera, M.G. & Ortega G. 2009. The hexactinellid sponge *Cyathophycus* from the Upper Ordovician of the Argentine Precordillera. *Ameghiniana* 46: 449-459
- Challands, T.J., Armstrong, H.A., Maloney, D.P., Davies J.R., Wilson, D. & Owen, A.W. 2009. Organic-carbon deposition and coastal upwelling during the Upper Ordovician (Late Katian): A case study from the Welsh Basin, U.K. *Palaeogeography, Palaeoclimatology, Palaeoecology*. 273 (3-4), 395-410.

- Chatterton, B.D.E., Copper, P., Dixon, O.A., & Gibb, S. 2008. Soft polyps with spicular sclerites in Silurian favositid corals from Anticosti Island, E. Canada, and Silurian heliolitids from the Canadian arctic. *Palaeontology*, 51(1): 173-198.
- Chen, X., Bergstrom, S.M., Zhang, Y.D., & Fan, J.X., 2009. The base of the Middle Ordovician in China with special reference to the succession at Hengtang near Jiangshan, Zhejiang Province, Southern China. *Lethaia* 42: 218-231.
- Cocks, L.R.M. 2009. Howard Brunton (1935-2008). *Geological Curator*, 9 [for 2008], 35-36.
- Cocks, L.R.M. & Fortey, R.A. 2009. Avalonia: a long-lived terrane in the Lower Palaeozoic? *Geological Society, Special Publications*, 325, 141-155.
- Cocks, L.R.M., Fortey, R.A. & Rushton, A.W.A. 2009. Correlation for the Lower Palaeozoic. *Geological Magazine* doi:10.1017/S0016756809990562.
- Cocks, L.R.M. & Popov, L.E. 2009. Generic homes for British Silurian linguloid brachiopods. *Palaeontology*, 52, 349-367, pls 1-3.
- Cocks, L.R.M. & Torsvik, T.H. 2009. Was Arctida a reality in the Palaeozoic? *Abstracts IGCP 5003, Ordovician palaeogeography and palaeoclimates, Copenhagen*, 5.
- Copper, P. 2009. Reefs under global climate stress: a Paleozoic paradox from the Late Ordovician through Devonian. Abstract, 9th North American Paleontological Convention, Cincinnati, p.313.
- Copper, P. 2009. What happened to the spirally lophophorate brachiopods during the multiple Late Ordovician mass extinctions? Abstract, 9th North American Paleontological Convention, Cincinnati, p.177.
- Copper, P., Stock, C.W. & Nestor, H., (in press). *Late Ordovician and Early Silurian stromatoporoid sponges from Anticosti Island, eastern Canada: crossing the O/S mass extinction boundary*. NRC Research Press, Ottawa.
- Delabroye, A. & Vecoli, M. 2010. The end-Ordovician glaciation and the Hirnantian Stage: A global review and questions about Late Ordovician event stratigraphy. *Earth-Science Reviews* 98, 269-282.
- Deline, B. and Ausich, W.I. 2009. Morphological constraints and the rise of the Myelodactylids: a reexamination of Early Paleozoic crinoid disparity [abstract]. *Geological Society of America Abstract with Programs*, 41(7): 685.
- Desrochers, A., Farley, C., Achab, A., Asselin, E., Riva, J. (in press). A far-field record of the end Ordovician glaciation: The Ellis Bay Formation, Anticosti Island, Eastern Canada, *Palaeogeography, Palaeoclimatology, Palaeoecology*
- Dronov, A.V., Kanygin, A.V., Timokhin, A.V., Tolmacheva, T.Ju., Gonta, T.V. 2009. Correlation of Eustatic and Biotic Events in the Ordovician Paleobasins of the Siberian and Russian Platforms. *Paleontological Journal*, Vol.43, No.11, pp.1477-1497.
- Edgecombe, G. D. & Webby B.D. 2006. The Ordovician encrinurid trilobite *Sinocybele* from New South Wales and its biogeographic significance. *Memoir of the Association of Australasian Palaeontologists*, 32, 413-422.
- Edgecombe, G.D. & Webby, B.D. 2007. Ordovician trilobites with eastern Gondwana affinities from central-west New South Wales and Tasmania. *Memoir of the Association of Australasian Palaeontologists*, 34, 255-281.
- Eriksson, M.E. & Hints, O. 2009. Vagrant benthos (Annelida; Polychaeta) associated with Upper Ordovician carbonate mud-mounds of subsurface Gotland, Sweden. *Geological Magazine* 146(3), 451-462. doi: 10.1017/S0016756809005962

- Ernst, A. & Munnecke, A. 2009. A Hirnantian (latest Ordovician) reefal bryozoan fauna from Anticosti Island, eastern Canada: taxonomy and chemostratigraphy. *Canadian Journal of Earth Sciences* 46, 207-229.
- Feng, H., Li, M., Zhang, Y., Erdtmann, B.D., Li, L. & Wang, W. 2009. Succession and global correlation of Late Tremadoc graptolite zones from South China. *Science in China (Series D)*, 52 (3): 287-299.
- Ghobadi Pour, M. & Popov, L.E. 2009. First report on the occurrence of *Neseuretinus* and *Ovalocephalus* in the Middle Ordovician of Iran. *Acta Palaeontologica Polonica* 54(1), 125–133.
- Ghobadi Pour, M., Popov, L.E. & Vinogradova, E.V. 2009. Mid Ordovician (late Darriwilian) trilobites of northern Betpak-Dala desert in Central Kazakhstan. *Memoirs of the Association of Australasian Palaeontologists* 37, 327-349.
- Ghobadi Pour, M. & Turvey, S.T. 2009. Revision of some Lower to Middle Ordovician lelostegiid trilobites from Iran and China. *Memoirs of the Australian Association of Australasian Palaeontologists* 37, 463-480.
- Glen, R.A., Percival, I.G. & Quinn, C.D. 2009. Ordovician continental margin terranes in the Lachlan Orogen, Australia: implications for tectonics in an accretionary orogen along the east Gondwana margin. *Tectonics* 28, TC6012, doi:10.1029/2009TC002446, 17 pp.
- Goldman, D., Leslie, S.A., Bergström, S.M., Nölvak, J., Young, S.A., & Finney, S.C., 2008. An Ordovician Global Reference Section recently selected in Oklahoma. *Oklahoma Geology Notes*, V. 68, No. 1 & 2, p. 15-18
- Gutiérrez-Marco, J.C. 2009. Capítulo 8. Hemicordados: graptolitos. In: Martínez-Chacón, M.L. & Rivas, P. (Eds.), *Paleontología de Invertebrados*. Coeditado por: Sociedad Española de Paleontología, Instituto Geológico y Minero de España, Universidad de Oviedo y Universidad de Granada (ISBN 978-84-613-4625-7), Oviedo, 497-524.
- Gutiérrez-Marco, J.C., Rábano, I., Sá, A.A. & Baeza Chico, E. 2009. Patrimonio icnológico del Cámbrico y Ordovícico en el Parque Nacional de Cabañeros (Castilla-La Mancha). In: Florido Laraña, P. & Rábano, I. (Eds.), *X Congreso Internacional sobre Patrimonio Geológico y Minero*, Coria, *Resúmenes de las Sesiones Científicas*. Instituto Geológico y Minero de España, Madrid (Dep. Leg. M-39233-2009, NIPO 474-09-061-2), 41-42.
- Gutiérrez-Marco, J.C., Sá, A.A., García-Bellido, D.C., Rábano, I. & Valério, M. 2009. Giant trilobites and trilobite clusters from the Ordovician of Portugal. *Geology* 37 (5), 443-446.
- Hansen, J., Nielsen, J.K. & Hanken, N.-M. 2009. The relationships between Late Ordovician sea-level changes and faunal turnover in western Baltica: Geochemical evidence of oxic and dysoxic bottom-water conditions. *Palaeogeography, Palaeoclimatology, Palaeoecology* 271, 268-278.
- Hansen, T. 2009. Trilobites of the Middle Ordovician Elnes Formation of the Oslo Region, Norway. *Fossils and Strata* 56, 215 pp.
- Harper, D.A.T. 2009. Diversity's big bang: The Great Ordovician Biodiversification Event. *GEO* 12, 22-27.
- Harper, D.A.T. 2010. The Ordovician brachiopod radiation: Roles of alpha, beta and gamma diversity. *Geological Society of America, Special Paper* 466, 69-83.
- Harper, D.A.T., Owen, A.W. & Bruton, D.L. 2009. Ordovician life around the Celtic fringes: Diversifications, extinctions and migrations of brachiopod and trilobite faunas at middle latitudes. In: Bassett, M.G. (ed), *Early Palaeozoic Peri-*

- Gondwanan Terranes: New insights from tectonics and Biogeography. *Geological Society, London, Special Publications*, 325, 157-170.
- Harrison, J.C., Nowlan, G.S., & Lehnert, O. 2008. Thermal maturity of Cambrian to Devonian rocks of northeastern Ellesmere Island. *Geological Survey of Canada Bulletin* 592, p. 169-185.
- Heredia, S. 2008. Primer registro de Conodontes ashgilianos en la Precordillera Argentina. *Ameghiniana* 45 (1): 59 – 68. ISSN 0002-7014
- Hints, L., Hints, O., Kaljo, D., Kiipli, T., Männik, P., Nõlvak, J. & Pärnaste, H. (in press). Hirnantian (latest Ordovician) bio- and chemostratigraphy of the Stirnas-18 core, western Latvia. *Estonian Journal of Earth Sciences*.
- Hints, O., Delabroye, A., Nõlvak, J., Servais, T., Uutela, A. & Wallin, Å. (in press). Biodiversity patterns of Ordovician marine microphytoplankton from Baltica: Comparison with other fossil groups and sea-level changes. *Palaeogeography, Palaeoclimatology, Palaeoecology*. doi:10.1016/j.palaeo.2009.11.003
- Hints, O. & Eriksson, M.E. (in press). Ordovician polychaetoid polychaetes: Taxonomy, distribution and palaeoecology. *Acta Palaeontologica Polonica* 55. doi:10.4202/app.2009.0086
- Holland, C.H. & Copper, P. 2008. Ordovician and Silurian nautiloid cephalopods from Anticosti Island: trajectory across the Ordovician-Silurian (O/S) mass extinction boundary. *Canadian Journal of Earth Sciences*, 45: 1015-1038, 7 text-figs.
- Huang Bing, Harper, D.A.T., Rong Jiayu & Zhan Renbin. 2009. Does “Lilliput Effect” of brachiopod exist in South China after the Late Ordovician mass extinction? *Rendiconti della Società Paleontologica Italiana* 3(3), 299–300.
- Huang Bing, Harper, D.A.T., Zhan Renbin & Rong Jiayu 2010. Can the Lilliput effect be detected in the brachiopod faunas of South China following the terminal Ordovician mass extinction? *Palaeogeography, Palaeoclimatology, Palaeoecology* 285, 277-286.
- Hubmann, B. & Suttner, T. J. 2009. Lower to Mid Palaeozoic of Austria: A bibliographic attempt – In: Suttner, T. J., Berkyova S., Hubmann, B., Koptikova, L. and Slavik, L. (Eds.): Regional Devonian Workshop - Prague & Graz, Prague, 25-27th May 2009. – *Berichte der Geologischen Bundesanstalt* 79, 73-122.
- Ivany, L., Brett, C.E., Baugh, H.L. & Wall, P. 2009. Coordinated stasis revisited: Taxonomic and ecologic stability in the Devonian of New York. *Paleobiology* 35: 499-524.
- Jin, J. & Copper, P. 2008. Response of brachiopod communities to environmental change during the Late Ordovician mass extinction interval, Anticosti Island, eastern Canada. *Fossils and Strata*, 54: 41-51.
- Jin J., Harper, D.A.T. & Rasmussen, C.M.Ø. 2009. *Sulcipentamerus* (Pentamerida, Brachiopoda) from the Lower Silurian Washington Land Group, North Greenland. *Palaeontology* 52, 385-399.
- Koren' T.N, Modzalevskaya T.L. & Suyarkova A.A. 2009. Regional stratigraphic chart of the Silurian of the East-European Platform. *Regional'naya geologiya i metallogeniya*, 39, 24-32.
- Kříž, J. & Steinová, M. 2009. Hirnantian bivalves from the Prague Basin (Upper Ordovician, Perunica, Bohemia). *Bulletin of Geosciences*, 84: 409-436.
- Kröger, B. & Landing, E. Early Ordovician community evolution with eustatic change through the middle Beekmantown Group, northeast Laurentia. *Palaeogeography, Palaeoclimatology, Palaeoecology*: doi:10.1016/j.palaeo.2009.11.025

- Kröger, B. & Landing, E. 2009. Cephalopods and Paleoenvironments of the Fort Cassin Formation (Upper Lower Ordovician), eastern New York and adjacent Vermont. *Journal of Paleontology* 83:664–693.
- Kröger, B., Servais, T., & Zhang Yunbai. The Origin and Initial Rise of Pelagic Cephalopods in the Ordovician. *PLoS ONE* 4(9): e7262. doi:10.1371/journal.pone.0007262.
- Kröger, B. & Zhang Yunbai, 2009. Pulsed cephalopod diversification during the Ordovician. *Palaeogeography, Palaeoclimatology, Palaeoecology* 273: 174–183.
- Kröger, B., Zhang Yunbai, & Isakar, M. 2009. Discosorids and Oncocerids (Cephalopoda) of the Middle Ordovician Kunda and Aseri Regional Stages of Baltoscandia and the early evolution of these groups. *Geobios*, 42: 273-292.
- Landing, E. & Kröger, B. 2009. The oldest cephalopods from East Laurentia. *Journal of Paleontology*, 83: 89-93.
- Lee, C.C., Lehnert, O., & Nowlan G.S. 2008. Sedimentology, stratigraphy and biostratigraphy of the Eureka Sound Group, northeastern Ellesmere Island, Nunavut. *Geological Survey of Canada Bulletin* 592, p. 115-168.
- Lefebvre B., Guensburg T. E., Hunter A. W., Nardin E., Reich M., Rozhnov S.V., Shroat-Lewis R., Sprinkle J., & Sumrall C. D. 2009. Palaeobiogeography of Ordovician echinoderms. *Absolutely final meeting of IGCP503: Ordovician palaeogeography and palaeoclimate. Copenhagen. 2009. Abstracts*. P.16
- Legrand, P. 2009. Faunal specificity, endemism and paleobiogeography: the post-glacial (Hirnantian-early Rhuddanian) graptolite fauna of the north-African border of Gondwana: a case study. *Bulletin de la Société Géologique de France* 180(4), 353-367, fig. 1-7. Paris.
- LeHeron, D., Armstrong, H.A., Wilson, C.R., Howard, J.P., & Gindre, L. 2010. Glaciation and deglaciation of the Libyan Desert: The Late Ordovician record. *Sedimentary Geology* 223, 100-125.
- Leslie, S.A., 2009. Relationships Between Upper Ordovician (Mohawkian) Lithofacies and Conodont Biofacies Distribution Patterns Using K-Bentonite Beds as Time-Planes, Eastern North America and Northwestern Europe. Chapter 3, in Conodont Studies Commemorating the 150th Anniversary of the First Conodont Paper (Pander, 1856) and the 40th Anniversary of the Pander Society, edited by D. Jeffrey Over, *Palaeontographica Americana*, 62, 23-40.
- Leslie, S.A., Bergström, S.M. & Huff, W.D. 2008. Ordovician K-bentonites discovered in Oklahoma. *Oklahoma Geology Notes*, V. 68, No. 1 & 2, p. 1-14.
- Li Guipeng, Zhan Renbin & Wu Rongchang. 2009. Response of Hirnantia Fauna to the environmental changes before the second phase of Late Ordovician mass extinction: Example from the Kuanyinchiao Formation at Shuanghe, southern Sichuan, southwest China. *Geological Journal of China Universities* 15(3), 304–317 (in Chinese with English abstract).
- Li, L., Feng, H., Li, M., Peng, J., Ji, X. & Wang, W. 2009. Biozonation of Floian (Lower Ordovician) graptolites from Yiyang, Hunan. *Journal of Stratigraphy*, 33(2): 123-137.
- Li Yue, Huang Zhibin, Wang Jianpo, Wang Zhihao, Xue Yaosong, Zhang Junming, Zhang Yuandong, Fan Junxuan & Zhang Yuanyuan. 2009. Conodont biostratigraphy and sedimentology of the Middle and Upper Ordovician in Bachu, Xinjiang. *Journal of Stratigraphy* 33(2): 113-122.
- Liu Jianbo & Zhan Renbin. 2009. Temporal distribution of diagnostic biofabrics in the Lower and Middle Ordovician in North China: clues of the geobiology of the great Ordovician biodiversification event. *Acta Geologica Sinica* 83(3), 513–523.

- Maletz, J., Albanesi, G.L. & Voldman, G.G. 2009. Lower Darriwilian radiolarians from the Argentine Precordillera. *Geobios*, 42: 53-61, figs. 1-5. ISSN: 0016-6995 (SCI-ISI).
- Malinky, J.M., Eriksson, M.E. & Ahlberg, P. 2009. "Mediterranean Province" hyoliths from the middle Cambrian and Upper Ordovician of Sweden. *GFF*, 131: 281-291.
- Männik, P., Bogolepova, O. K., Pöldvere, A. & Gubanov, A. P. 2009. New data on Ordovician–Silurian conodonts and stratigraphy from the Severnaya Zemlya Archipelago, Russian Arctic. *Geological Magazine* 146, 497–519.
- Mikulas, R. 2009. Ramenonožci rodu *Aegiromena*: jak hledat ve fosilním materiálu informaci o průběhu evoluce (Brachiopods of the genus *Aegiromena*: how to extract evolution-related data from the fossils record). *Živa* 2009(5), 217.
- Molyneux, S.G., Servais, T., Delabroye, A., Li Jun, Vecoli, M. & Yan Kui, 2009. Lower Palaeozoic phytoplankton biogeography. In David A. T. Harper and Maureen McCorry (eds), Absolutely final meeting of IGCP 503: Ordovician palaeogeography and palaeoclimate Copenhagen 2009, Abstracts. 12-13.
- Nardin, E., Almazan Vasquez, E., & Buitrón Sánchez, B.E., 2009. First report of *Gogia* (Eocrinoidea, Echinodermata) from the Early-Middle Cambrian of Sonora (Mexico), with biostratigraphical and palaeoecological comments. *Geobios*, 42: 233-242.
- Nardin, E., Lefebvre, B., David, B., & Mooi, R., 2009. La diversification des échinodermes primitifs au Paléozoïque inférieur : l'exemple des blastozoaires. *Comptes-Rendus PalEvol*, 8: 179-188.
- Negri, A., Ferretti, A., Wagner, T. & Meyer, P.A. (Eds) 2009. Organic-carbon-rich sediments through the Phanerozoic: Processes, progress, and perspectives. *Palaeogeography, Palaeoclimatology, Palaeoecology, Special Issue*, vol. 273, Issues 3-4, 197 pp., Amsterdam.
- Negri, A., Ferretti, A., Wagner, T. & Meyer, P.A. 2009. Organic-carbon-rich sediments through the Phanerozoic: Processes, progress, and perspectives. In: Negri, A., Ferretti, A., Wagner, T. & Meyer, P.A., (Eds), Organic-carbon-rich sediments through the Phanerozoic: Processes, progress, and perspectives. *Palaeogeography, Palaeoclimatology, Palaeoecology, Special Issue*, vol. 273, Issues 3-4, 213-217, Amsterdam.
- Negri, A., Ferretti, A., Wagner, T. & Meyer, P.A. 2009. Phanerozoic organic-carbon-rich marine sediments: Overview and future research challenges. In: Negri, A., Ferretti, A., Wagner, T. & Meyer, P.A., (Eds), Organic-carbon-rich sediments through the Phanerozoic: Processes, progress, and perspectives. *Palaeogeography, Palaeoclimatology, Palaeoecology, Special Issue*, vol. 273, Issues 3-4, 218-227, Amsterdam.
- Nestell, G., Heredia, S. & Mestre, A. 2009. First Ordovician Foraminifera in South America: a Darriwilian (Middle Ordovician) fauna from the San Juan Formation, Argentina. *Micropaleontology* 55(4): 329-344. ISSN 0300-7227
- Nestor, H., Webby, B.D. & Zhen, Y.Y., 2009. Biogeography of Ordovician-Silurian Stromatoporoidea. IGCP Project 503: Ordovician Palaeogeography and Palaeoclimate, Copenhagen Symposium 31 August – 4 September 2009, Abstracts, p. 32.
- Nielsen, S., Bandel, K. & Kröger, B., 2009. Siphuncular tube and shell ultrastructure of *Aturia cubaensis* (Cephalopoda, Nautiloidea) from the Cenozoic of Chile with implications for marine climates of the southeastern pacific. *Geobios* 42:73–88.

- Noble P.J. & Webby, B.D. 2009. Katian (Ordovician) radiolarian from the Malongulli Formation, New South Wales, Australia, a reexamination. *Journal of Paleontology* 83(4), 548-561.
- Obut O.T. 2009. Paleozoic radiolarians from Gorny and Rudny Altai (SW Siberia, Russia). *Abstracts of the 12th Meeting of the International Association of Radiolarian Paleontologists* (Nanjing, China, September 14-17, 2009), 130-131.
- Peng, J., Feng, H., Fu, X., Zhao, Y. & Yao, L. 2009. New Braoriid arthropods from the Early Cambrian Balang Formation of the eastern Guizhou, South China. *Acta Geologica Sinica*, 83(6): 801-813.
- Percival, I.G. 2009. Late Ordovician Strophomenide and Pentameride brachiopods from central New South Wales. *Proceedings of the Linnean Society of New South Wales* 130, 157-178.
- Percival, I.G. 2009. Rare fossils (Conulata; Rostroconchia; Nautiloidea) from the Late Ordovician of central New South Wales. *Proceedings of the Linnean Society of New South Wales* 130, 179-191.
- Percival, I.G., Wright, A.J. & Hamed, A. 2009. *Martellia* and associated Middle Ordovician brachiopods from the Katkoyeh Formation, east-central Iran. *Memoirs of the Association of Australasian Palaeontologists* 37, 315-325.
- Percival, I.G., Wright, A.J., Simes, J.E., Cooper, R.A. & Zhen, Y.-y. 2009. Middle Ordovician (Darriwilian) brachiopods and trilobites from Thompson Creek, northwest Nelson, New Zealand. *Memoirs of the Association of Australasian Palaeontologists* 37, 611-639.
- Percival, I.G., Zhen, Y.Y., Wright, A.J., Cooper, R.A. & Simes, J.E., 2009. Biogeographic affinities of a new Middle Ordovician (Darriwilian) shelly fauna from the South Island of New Zealand. IGCP Project 503: Ordovician Palaeogeography and Palaeoclimate, Copenhagen Symposium 31 August – 4 September 2009, Abstracts, p. 14.
- Piçarra, J.M. 2009. Roteiro Geológico do Parque de Natureza de Noudar. In Pedro Florido & Isabel Rábano (Eds.), Una visión multidisciplinar del Patrimonio Geológico y Minero. X Congreso Internacional sobre Patrimonio Geológico y Minero, Coria, Resúmenes, 43-44.
- Popov, L.E., Bassett, M.G., Holmer, L.E. & Ghobadi Pour, M. 2009. Early ontogeny and soft tissue preservation in siphonotretide brachiopods: New data from the Cambrian–Ordovician of Iran. *Gondwana Research* 16, 151–161.
- Popov, L.E., Bassett, M.G., Zhemchuzhnikov, V.G., Holmer, L.E. & Klishevich, I.A. 2009. Gondwanan faunal signatures from early Palaeozoic terranes of Kazakhstan and Central Asia: evidence and tectonic implications. In: Bassett, M. G. (ed.) Early Palaeozoic Peri-Gondwanan Terranes: New Insights from Tectonics and Biogeography. *The Geological Society, London, Special Publications* 325, 23–64.
- Popov, L.E., Ghobadi Pour, M., Bassett, M.G. & Kebria-Ee, M. 2009. Billingsellide and orthide brachiopods: New insights into earliest Ordovician evolution and biogeography from northern Iran. *Palaeontology* 52, 35-52.
- de la Puente, G.S. 2009, in press. Quitinozoos del Floiano (Ordovícico Inferior) del área de Santa Victoria, Cordillera Oriental, noroeste argentino. Parte 1: Sistemática. *Ameghiniana*, ID 232.
- de la Puente, G.S. 2009, in press. Quitinozoos del Floiano (Ordovícico Inferior) del área de Santa Victoria, Cordillera Oriental, noroeste argentino. Parte 2: Implicancias bioestratigráficas, paleobiogeográficas y paleoambientales, *Ameghiniana*, ID 233.
- de la Puente, G.S. & Rubinstein, C.V. 2009. Late Tremadocian chitinozoans

- and acritarchs from northwestern Argentina (Western Gondwana). *Review of Palaeobotany and Palynology*, 154: 65-78.
- Rasmussen, C.M.Ø, Nielsen, A.T. & Harper, D.A.T. 2009. Ecostratigraphical interpretation of lower Middle Ordovician East Baltic sections based on brachiopods. *Geological Magazine* 146, 717-731.
- Rong Jiayu, Zhan Renbin, Huang Bing & Harper, D.A.T. 2009. Discovery of a latest Ordovician deep water brachiopod fauna at Yuhang, Hangzhou, Zhejiang, East China. *Rendiconti della Società Paleontologica Italiana* 3(3), 333-334.
- Rong Jiayu, Zhou Zhonghe, Wang Yi & Zhan Renbin. 2009. Life process and its coevolution with the earth environments. 81-91. In: Strategic Research Group on Earth Sciences of the Earth Science Section of the Chinese Academy of Sciences (ed.), Strategic Research on the 21st Century Chinese Earth Sciences. Beijing, Science Press (in Chinese).
- Rozhnov S.V. 2009. Development of the trophic structure of Vendian and Early Paleozoic marine communities. *Paleontological Journal*. 43 (11), 1364-1367.
- Rozhnov S.V. (Ed.) 2009. Proceedings of the International conference "Development of Early Paleozoic biodiversity: role of biotic and abiotic factors, and event correlation". *Paleontological Journal*. 43(11), 1363-1513.
- Rozhnov, S.V. 2009. The Role of Heterochrony in the Establishment of the Body Plan of Higher Echinoderm Taxa. *Biology Bulletin*, 36(2), 117 - 127.
- Rozhnov S.V. 2009. Eocrinoids and paracrinoids of the Baltic Ordovician basin: a biogeographical aspect. *Absolutely final meeting of IGCP503: Ordovician palaeogeography and palaeoclimate. Copenhagen. 2009. Abstracts*. P.16
- Rozhnov S. 2009. New data on Ordovician eocrinoids and paracrinoids of the Baltic region. *Geophysical Research Abstracts, Vol. 11. EGU General Assembly*.
- Rozhnov S.V., Mingin Ch., & Kushlina V.B. 2009. Discovery of Rhombifera (Echinoderms) in the Ordovician of Mongolia. *Paleontological Journal*. 43(11), 1425-1431.
- Rozhnov S.V., Minjin Ch., & Kushlina V.B. 2009. The First Record of Echinoderms in the Ordovician of Mongolia: Biogeographical Significance. *Absolutely final meeting of IGCP503: Ordovician palaeogeography and palaeoclimate. Copenhagen. 2009. Abstracts*. P.16
- Sá, A.A., Brilha, J., Rocha, D., Couto, H., Rábano, I., Medina, J., Gutiérrez-Marco, J.C., Cachão, M. & Valério, M. 2009. *Geopark Arouca. Geologia e Património Geológico* (ISBN 978-989-96055-3-4). Associação Geoparque Arouca, SerSilito Gráfica Lda., Arouca (Portugal), 136 pp., 150 figs.
- Sá, A.A. & Gutiérrez-Marco, J.C. 2009. Cefalópodos del Ordovícico Medio de la Formación Valongo, norte de Portugal. *Geogaceta*, 47, 9-12.
- Sá, A.A., Gutiérrez-Marco, J.C., Rábano, I., Meireles, C. & Campos, N. 2009. Aportación paleontológica al patrimonio geológico y minero de Moncorvo (norte de Portugal): mito y realidad de sus fósiles de hierro. In: Florido Laraña, P. & Rábano, I. (Eds.), *X Congreso Internacional sobre Patrimonio Geológico y Minero*, Coria, *Resúmenes de las Sesiones Científicas*. Instituto Geológico y
- Sá, A.A., Gutiérrez-Marco, J.C., Rocha, D., Valério, M., Brilha, J. & Rábano, I. 2009. Ordovician ichnofossils: a new scientific and educational resource for the Arouca Geopark. In: Neto de Carvalho, C & Rodrigues, J. (eds.), *New Challenges with Geotourism* (ISBN 978-972-8285-52-4). Idanha -a-Nova Municipality/Geopark Naturtejo da Meseta Meridional, Escala vertical Lda., Idanha-a-Nova (Portugal), 140-142. Minero de España, Madrid (Dep. Leg. M-39233-2009, NIPO 474-09-061-2), 27-28.

- Sá, A.A., Meireles, C., Piçarra, J., Vaz N. & Gutiérrez-Marco, J.C. 2009. The Hirnantian stratigraphy of Portugal, with notes on the Trás-os-Montes and Valongo-Arouca areas. Absolutely final meeting of IGCP 503, "Ordovician palaeogeography and paleoclimate". Abstracts, 16. Copenhagen.
- Sadler, P.M. & Cooper, R.A., 2008. Improved resolution and quantified uncertainty – time scales of the future. *Newsletters in Stratigraphy* 43(1): 49-53.
- Sadler, P.M., Cooper, R.A., & Melchin, M. 2009. A high resolution Early Paleozoic (Ordovician-Silurian) timescale. *Geological Society of America Bulletin* 121:887-906.
- Sennikov N.V. 2009. Middle Cambrian-Early Ordovician history of the continental margin at the Altaian margin of the Paleo-Asian ocean, pp 74-76 in *Geodynamic evolution of lithosphere of the Central-Asian Belt, from ocean to continent*. Contributions No. 7, vol. 2. Irkutsk: Institute of Geography SB RAS Press. (in Russian)
- Sennikov N.V. & Obut O.T. 2009. Paleobathymetry and silica-sedimentation model for the Altaian Late Ordovician basin, pp 91-94 in *Nature and economics of the West Siberia and adjacent area. Vol. 1. Geology and paleontology. Contributions of the All-Russian conference*. Novokuznetsk, Kuzbass State Pedagogic Academy. (in Russian)
- Sennikov N.V., Obut O.T. & Bukolova E.V. 2009. Identification of the new Ordovician chronostratigraphic standard boundaries in Gorny Altai, pp 95-99 in *Nature and economics of the West Siberia and adjacent area. Vol. 1. Geology and paleontology. Contributions of the All-Russian conference*. Novokuznetsk, Kuzbass State Pedagogic Academy. (in Russian)
- Servais, T., Harper, D.A.T., Li J., Munnecke, A., Owen, A.W. & Sheehan, P.M. 2009. Understanding the Great Ordovician Biodiversification Event (GOBE): Influences of paleogeography, paleoclimate and palaeoecology. *GSA Today* 19, 4-10.
- Sherwin, L, Johnston, A. & Levitzke, D., 2006. Implications of a Middle Ordovician graptolite - caryocaryid association in East Gondwana. pp. 61-62 In *Palaeogeography and Global Correlation of Ordovician Events (IGCP 503 Project "Ordovician Palaeogeography and Palaeoclimate")*: Contributions of International Symposium Novosibirsk, Aug 5-7, 2006. - Novosibirsk: Academic Publishing House "Geo", 2006. - 85 pp.
- Sorrentino, L., Benedetto J.L. & Carrera, M.G. 2009. Diversidad taxonómica y distribución de los morfotipos de braquiópodos en la Zona de *Ahtiella argentina* (Ordovícico Medio), Formación San Juan, Precordillera Argentina. *Ameghiniana* 46: 481-493.
- Stemans, P., Le He'risse', A., Melvin, J., Miller, M.A., Paris, F., Verniers J. & Wellman, C.H. 2009. Origin and radiation of the earliest vascular land plants. *Science*, 324, p. 353.
- Tolmacheva T.Yu. & Abaimova G.P. 2009. Late Cambrian and Early Ordovician conodonts from the Kulumbe River section, northwest Siberian Platform. *Memoirs of the Association of Australasian Palaeontologists* 37, 427–451.
- Tolmacheva T.Yu., Degtyarev, K.E., Ryazantsev A.V. & Nikitina, O.I. 2009. Conodonts from the Upper Ordovician siliceous rocks of Central Kazakhstan. *Paleontological Journal* 43 (11), 1–15.
- Toro B.A., de la Puente G.S. & Rubinstein C.V., 2009, in press. New graptolite, chitinozoan and acritarch records from the Pascha-Incamayo area, Cordillera Oriental, Argentina. *Comptes rendus - Palevol*, doi:10.1016/j.crpv.2009.09.001.

- Torsvik, T.H. & Cocks, L.R.M. 2009. New palaeogeographical base maps for the Lower Palaeozoic. *Abstracts IGCP 5003, Ordovician palaeogeography and palaeoclimates, Copenhagen*, 19.
- Torsvik, T.H. & Cocks, L.R.M. 2009. The Lower Palaeozoic palaeogeographical evolution of the northeastern and eastern peri-Gondwanan margin from Turkey to New Zealand. *Geological Society, Special Publications*, 325, 3-21.
- Vandenbroucke, T.R.A., Ancilletta, A., Fortey, R. A. & Verniers, J. 2009. A modern assessment of Ordovician chitinozoans from the Shelve and Caradoc areas, Shropshire, and their significance for correlation. *Geological Magazine* 146 (2), 216-236. doi:10.1017/S0016756808005815.
- Vandenbroucke, T.R.A., Armstrong, H., Williams, M., Paris, F., Sabbe, K., Zalasiewicz, J., Nolvak, J. & Verniers, J. 2010. Epipelagic chitinozoan biotopes map a steep latitudinal temperature gradient for earliest Late Ordovician seas: implications for a cooling Late Ordovician climate. *Palaeogeography, Palaeoclimatology, Palaeoecology*, doi: 10.1016/j.palaeo. 2009.11.026.
- Vandenbroucke, T.R.A., Armstrong, H., Williams, M., Zalasiewicz, J. & Sabbe, K. 2009. Ground-truthing Late Ordovician climate models using the paleobiogeography of graptolites. *Palaeoceanography* 24, PA4202, doi:10.1029/2008PA001720.
- Vandenbroucke, T.R.A., Gabbott, S.E., Paris, F., Aldridge, R.J. & Theron, J.N. 2009. Chitinozoans and the age of the Soom Shale, an Ordovician black shale Lagerstätte, South Africa. *Journal of Micropalaeontology* 28, 53-66.
- Vinn, O. 2009. Attempted predation on Early Paleozoic cornulitids. *Palaeogeography, Palaeoclimatology, Palaeoecology* 273, 87-91.
- Vinn, O. & Mutvei, H. 2009. The calcareous tubeworms of the Phanerozoic. *Estonian Journal of Earth Sciences* 58 (4), 286-296.
- Vogel, K. & Brett, C.E. 2009. Record of microendoliths in different facies of the Upper Ordovician in the Cincinnati Arch region USA: The early history of light-related microendolithic zonation. *Palaeogeography, Palaeoclimatology, Palaeoecology* 281: 1-24.
- Voldman, G.G. & Albanesi, G.L. 2009. Thermal maturation and burial history of the lower paleozoic in the argentine precordillera from conodont colour alteration data. *Permophiles* 53, ICOS 2009 Abstracts: 51.
- Voldman, G.G., Albanesi, G.L. & Ramos, V.A. 2009. Ordovician metamorphism in the carbonate platform of the Argentine Precordillera: implications for the geotectonic evolution of the proto-Andean margin of Gondwana. *Geology*, 37, 4: 311-314; doi: 10.1130/G25540A.1; figs. 1-3; Data Repository item 2009081. (SCI-ISI).
- Voldman G.G., Bustos Marún, R.A. & Albanesi, G.L. 2009. A mathematical approach to the assessment of the conodont colour alteration index (CAI). *Permophiles* 53, ICOS 2009 Abstracts: 52.
- Whittle, R.J., Gabbott, S.E., Aldridge, R.J. & Theron, J.N. 2008. Late Ordovician scolecodont apparatuses from the Soom Shale Lagerstätte, South Africa. *Journal of Micropalaeontology* 27, 147-159.
- Whittle, R.J., Gabbott, S.E., Aldridge, R.J. & Theron, J.N. 2009. An Ordovician lobopodian from the Soom Shale Lagerstätte, South Africa. *Palaeontology* 52, 561-567.
- Wu, R.C., Percival I.G. & Zhan, R.B. 2010. Biodiversification of Early-Mid Ordovician conodonts from the Zitai Formation of Anhui Province, East China. *Alcheringa* 34, 75-86.

- Xu, C., Bergström, S.M., Zhang Y.-D. & Fan J.X. 2009. The base of the Middle Ordovician in China with special reference to the succession at Hengtang near Jianshan, Zhejiang Province, southern China. *Lethaia*, 42:218-231.
- Yan Kui, Li Jun, & Servais, T. 2009. A revision of the Ordovician *Ampullula/Stelomorpha* acritarch plexus: palaeogeographical implications. In David A. T. Harper and Maureen McCorry (eds), Absolutely final meeting of IGCP 503: Ordovician palaeogeography and palaeoclimate Copenhagen 2009, Abstracts. 35.
- Young, S.A., Saltzman, M.R., Foland, K., Linder, J., & Kump, L., 2009. A major drop in seawater $^{87}\text{Sr}/^{86}\text{Sr}$ during the Middle Ordovician (Darriwilian): Links to volcanism and climate? *Geology*, v. 37, p. 951-954.
- Zamora, S., Álvaro, J.J. & Vizcaino, D. 2009. Pelmatozoan echinoderms from the Cambrian-Ordovician transition of the Iberian Chains (NE Spain): early diversification of anchoring strategies. *Swiss Journal of Geosciences* 102, 43-55.
- Zeballo, F.J. & Albanesi, G.L. 2009. Conodontes cámbricos y *Jujuyaspis keideli* Kobayashi en el Miembro Alfarcito de la Formación Santa Rosita, Quebrada de Humahuaca, Cordillera Oriental de Jujuy. *Ameghiniana*, 46 (3): 537-556. (SCI-ISI).
- Zeballo, F.J., Albanesi, G.L. & Ortega, G. 2009. Biostratigraphy of the Santa Rosita Formation (Furongian-Lower Ordovician), Cordillera Oriental of Jujuy, Argentina. *Permophiles* 53, ICOS 2009 Abstracts: 56-57.
- Zhan Renbin, Zhang Yuandong & Liu Jianbo. 2009. The Ordovician radiation—A massive biodiversification of the earth history. 106–114. In: Sha Jingeng, ed. Century Leap—The Splendid Palaeontology of China. Beijing: Science Press. 492 pp (in Chinese).
- Zhang Tonggang, Shen Yanan, Zhan Renbin, Shen Shuzhong & Chen Xu. 2009. Large perturbations of the carbon and sulfur cycle associated with the Late Ordovician mass extinction in South China. *Geology* 37(4), 299–302.
- Zhang Yuandong, Fan Junxuan, Bernd-D. Erdtmann, & Liu Xiao 2009. Darriwilian graptolites of the Shihtien Formation (Ordovician) in West Yunnan, China. *Alcheringa* 33(4), 303-329.
- Zhang Yuandong, Fan Junxuan, & Liu Xiao, 2009. Graptolite biostratigraphy of the Shihtien Formation (Darriwilian) in West Yunnan, China. *Bulletin of the Geoscience* 84(1): 35-40.
- Zhang Yuandong, Xu Honggeng, Guo Weiming, Zhou Qing, He Zhenyu, & Wang Xudong. 2009. Biostratigraphy of the Huangnitang Reservoir Section in Changshan, Zhejiang Province. *Journal of Stratigraphy* 33(4), 337-350.
- Zhang Yuandong, Zhan Renbin, Fan Juanxuan, Cheng Junfeng & Liu Xiao. 2009. Some essential problems about the study of the great Ordovician biodiversification. *Science in China, Series D: Earth Sciences* 39(2), 129–143 (in Chinese).
- Zhen, Y.Y. & Nicoll, R.S., 2009: Biogeographic and biostratigraphic implications of the *Serratognathus bilobatus* fauna (Conodonta) from the Emanuel Formation (Early Ordovician) of the Canning Basin, Western Australia. *Records of the Australian Museum* 61(1), 1-30.
- Zhen, Y.Y., Percival, I.G., Liu, J.B., & Zhang, Y.D. 2009. Conodont fauna and biostratigraphy of the Honghuayuan Formation (Early Ordovician) of Guizhou, South China. *Alcheringa* 33(3): 257–295.

- Zhen, Y.Y., Percival, I.G., Simes, J.E., Cooper, R.A. & Wright, A.J. 2009. Darriwilian (Middle Ordovician) conodonts from Thompson Creek, Northwest Nelson, New Zealand. *Memoirs of the Association of Australasian Palaeontologists* 37, 27-53.
- Zhen, Y.Y., Percival, I.G. & Zhang, Y.D., 2009. Early Ordovician (Floian) biogeography of *Serratognathus* (Conodonts) in eastern Gondwana. IGCP Project 503: Ordovician Palaeogeography and Palaeoclimate, Copenhagen Symposium 31 August – 4 September 2009, Abstracts, p. 21.
- Zhen, Y.Y., Zhang, Y.D. & Percival, I.G., 2009. Early Sandbian (Late Ordovician) conodonts from the Yenwashan Formation, western Zhejiang, South China. *Alcheringa* 33 (2), 133–161.
- Zhen, Y.Y., Zhang, Y.D. & Percival, I.G. 2009. Serratognathidae fam. nov. (Conodonts) from the Early Ordovician (Floian) of Northern Gondwana — phylogeny, biogeography and biostratigraphic applications. *Memoirs of the Association of Australasian Palaeontologists* 37, 669-686.
- Zhen, Y.Y. & Zhou, Z.Y., 2008: Chapter 11: History of trilobite biodiversity – a Chinese perspective. 301-330. In Zhou, Z.Y. & Zhen, Y.Y. (eds), *Trilobite record of China*. Science Press, Beijing.
- Zhou Zhiyi, Yuan Wenwei & Zhou Zhiqiang, 2009. Evolutional trends and palaeobiogeography of the Ordovician trilobite *Ovalocephalus* Koroleve 1959. *Proceedings of the Royal Society B* 277, 257–266.
- Zhou, Z.Y. & Zhen, Y.Y. (eds), 2008: *Trilobite record of China*. Science Press, Beijing, 402pp.
- Zhou, Z.Y. & Zhen, Y.Y., 2008: Editorial preface. I-V. In Zhou, Z.Y. & Zhen, Y.Y. (eds), *Trilobite record of China*. Science Press, Beijing.
- Zhou, Z.Y. & Zhen, Y.Y., 2008: Chapter 1: Introduction with reference to previous work, stratigraphical and geological settings, and biogeography. 1-20. In Zhou, Z.Y. & Zhen, Y.Y. (eds), *Trilobite record of China*. Science Press, Beijing.
- Zhou Zhiyi, Zhen Yongyi, Zhou Zhiqiang & Yuan Wenwei, 2009. Ordovician trilobite biogeography of China. *Journal of Palaeogeography* 11 (1), 69–80.
- Zhou Zhiyi & Zhou Zhiqiang, 2009. Ordovician cyclopygid trilobites from the Pagoda Formation of southwestern Shaanxi, China. *Memoirs of the Association of Australasian Palaeontologists* 37, 87-101.
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