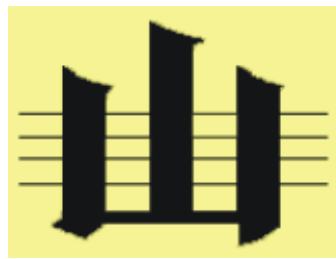


ORDOVICIAN NEWS

SUBCOMMISSION ON ORDOVICIAN STRATIGRAPHY
INTERNATIONAL COMMISSION ON STRATIGRAPHY

Number 28 (2011)

Edited by Ian G. Percival



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Cover photo

Renaissance façade (built in 1550s) of the Cisnerian University, Alcalá de Henares, Spain – venue of the 11th ISOS in May 2011.

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ORDOVICIAN NEWS Number 28 (2011)

CHAIRMAN'S MESSAGE

'Now comes a curious sequel to our story. A proposal has been made to take all Sedgwick's Arenig and Bala beds, and Murchison's Llandeilo and Caradoc, and constitute not Upper Cambrian, not Lower Silurian, but Ordovician with a view to putting an end to controversy! One shell is given to Sedgwick, the other to Murchison, but who gets the oyster?' (Clark and Hughes, 1890, p. 555: The Life and Letters of the Reverend Adam Sedgwick, Cambridge University Press).

We are rapidly approaching the 11th International Congress on our system. Few participants will be any doubt that it is we, Ordovician researchers, who were the fortunate recipients of Lapworth's oyster. Our meeting will be located in the beautiful and historic surroundings of Alcalá de Henares, a stone's throw from Madrid. Juan Carlos Gutiérrez-Marco, Isabel Rabano and their team have worked relentlessly to ensure that all the scientific and social events are in place together with the field excursions and not least a substantial book of papers for the meeting. We are promised the largest Ordovician gathering ever with close on 100 presentations covering all aspects of our great system. New Ordovician biotas continue to be found, not least the recently discovered Lagerstätte in Morocco. New techniques such as CT scanning and synchrotron tomography are revealing more about life in the Ordovician and leading-edge geochemical techniques such as clumped isotopes are set to revolutionize our understanding of climatic and environmental changes during the interval.

As I mentioned in previous newsletters the first phase of the Subcommittee's work has provided an enviable and robust international chronostratigraphic scheme at the stage level. This framework, together with some of the intensive work on the boundary levels within the system and those with the adjacent Cambrian and Silurian systems, has helped generate much new data for major research programmes such as the Great Ordovician Biodiversification Event (GOBE) and the end-Ordovician extinction events. Important has been the symbiosis with IGCP projects, particularly 410 and more recently 503 (see Servais & Owen 2010, *Palaeogeography, Palaeoclimatology, Palaeoecology* **294**; Munnecke, Calner & Harper 2010, *Palaeogeography, Palaeoclimatology, Palaeoecology* **296**). These and many themes will be developed in the recently announced new IGCP 591 'The Early to Middle Paleozoic Revolution: Bridging the gap between the Great Ordovician Biodiversification Event and the Devonian terrestrial revolution'.

As we enter a phase of evaluation of a number of our chronostratigraphic boundaries it is important to remember that these are defined by a point in time indicated by a 'golden' spike and correlated primarily by a key fossil species. Strong arguments are required to move a spike. Nevertheless, the existing infrastructure of the system is now ripe for further development. 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 or along the lines of the finer time slices proposed by Webby (2004: *The Great Ordovician Biodiversification Event*, Columbia University Press) and used effectively in developing data for the GOBE. As

I have emphasized before, over the last few years we have neglected 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 are many more that require calibration with our new global stages. This is a priority for our subcommission and is work that can involve everyone. Progress is now far advanced on a stable isotope curves for the Ordovician and these can help develop a new generation of nonbiologic means of correlation for our system. A more difficult area is sea-level or water-depth curves for the period but considerable advances have been made in this area.

Finally I thank all of you, particularly Ian Percival and Juan Carlos, for your continued important input and acknowledge the members of the previous Subcommission, not least our past chairmen Chen Xu and Stan Finney together with past Secretary Guillermo Albanesi, for steering the System through an exciting time in its development. Ian once again deserves our sincere gratitude for assembling and editing *Ordovician News*. We will toast Juan Carlos and his Iberian colleagues in the ancient city of Alcalá de Henares in a few weeks time.

David A.T. Harper
Chair, International Subcommission on the Ordovician System



International Commission on Stratigraphy Subcommission on Ordovician Stratigraphy

ANNUAL REPORT 2010

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. Summary table of Ordovician subdivisions

SYSTEM	GLOBAL SERIES	GLOBAL STAGES	KEY GRAPTOLITE/ CONODONT(C) BIOHORIZONS
ORDOVICIAN	UPPER	HIRNANTIAN	← <i>A. ascensus</i> (GSSP-Dob's Linn)
		KATIAN	← <i>N. extraordinarius</i> (GSSP-Wangjiawan North)
		SANDBIAN	← <i>D. caudatus</i> (GSSP-Black Knob Ridge)
	MIDDLE	DARRIWILIAN	← <i>N. gracilis</i> (GSSP-Fågelsång)
		DAPINGIAN	← <i>U. austrodentatus</i> (GSSP-Huangnitang)
	LOWER	FLOIAN	← <i>B. triangularis</i> (C), (GSSP-Huanghuachang)
		TREMADOCIAN	← <i>T. approximatus</i> (GSSP-Diabasbrottet)
			← <i>I. fluctivagus</i> (C) (GSSP-Green Point)

4. 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

Subcommission 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.

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)
S. Leslie (USA)
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).

5. 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.

6. Chief accomplishments and products in 2010 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.

Although 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. The proceedings of this conference (Early Palaeozoic biogeography and geography) to be published as a Memoir of the Geological Society are currently being edited by Harper and Servais. Publication will be in late 2011.

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 being planned dependent on funding and will be distributed to colleagues in different countries if funding permits.

c. *Ordovician News No. 27* was produced and posted on the Subcommission website and is available for download.

7. Chief problems encountered in 2010

The Subcommission 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 Subcommission, 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.

8. Summary of expenditure for 2010

TOTAL INCOME (from ICS): DKK 5,630

Support for attendance of subcommission officer at ICS meeting in Prague DKK 3,730

Support for attendance at IPC3 meeting in London DKK 1,600

Miscellaneous expenditure DKK 300

TOTAL EXPENDITURE DKK 5,630

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

The new Subcommission came into force during the 33rd IGC in Oslo. Plans for the Subcommission'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). **This will be addressed in a session at the Madrid Meeting.**

b. Will establish a forum to assess the efficacy and utility of the newly-established international stages. **This too will be addressed at the Madrid meeting.**

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. **During the Prague meeting in May those present agreed to begin discussions in their own regions regarding the possibilities of providing simple correlation charts, linking regional chronostratigraphies to the global 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. 27* in 2010.

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. **Little progress has been made on this front.**

During the business meeting at the final meeting of IGCP 503 and at the ICS meeting in Prague 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. **One major boundary problem may need urgent attention and will be raised at the forthcoming congress in Madrid.**
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. These time slices have been used in the recent *Palaeogeography, Palaeoclimatology, Palaeoecology* special issue on the palaeoecology of the GOBE edited by Servais and Owen (2010). **This will be addressed at the Madrid meeting.**
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. **In progress.**

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. **These issues were addressed in a recent issue of *Palaeogeography, Palaeoclimatology, Palaeoecology* edited by Munnecke, Calner and Harper (2010).**
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. **Some of these issues were addressed in the recent issue of *Palaeogeography, Palaeoclimatology, Palaeoecology* edited by Munnecke, Calner and Harper (2010).**
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. **This is now an active area research with the wide availability of Trond Torsvik's BugPlates program that is forming the basis for many chapters in the forthcoming *GSL Memoir on Early Palaeozoic biogeography and geography* edited by Harper and Servais.**
7. We already have a number of robust absolute dates for parts of the system but it would useful to develop more, not least to be able to calibrate the true rates of biological and geological process occurring during the period. **Discussions are now ongoing with a number of geochronology laboratories, for example the StarPlan group in Copenhagen, whose terrestrial dating facility is headed up by Jim Connelly.**
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.

10. Budget and ICS component for 2011

- 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 (more than half the manuscripts have now been received). 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**
- b. Preparation of an Ordovician Time Table, carried over from last year: **1000USD**
- c. Support for attendance at ISOS congress, May 2010 in Madrid: **5000USD**
- d. Support for production of revised regional correlation charts: **2500 USD**
- e. Startup funding for potential review of GSSPs, in particular that at the base of the system: **3000 USD**

TOTAL 2011 BUDGET: 16,500USD

REQUESTED FROM ICS: **8000USD**

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 and was marked by two volumes of *Palaeogeography, Palaeoclimatology, Palaeoecology* in 2010. 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 to be led by Brad Cramer and colleagues; and if successful will continue to support Ordovician together with Silurian 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 most of their activities.

11. Review chief accomplishments over last nine years (2001-2010)

- 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. 17-27 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 WOGOGO 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.

v. Support, participation and sponsorship of Ordovician session at IPC3 in London, June 2010.

w. Publication of a *Special Paper, Geological Society of America* (2010) on Ordovician research (edited by Finney and Berry).

x. Publication of two volumes of *Palaeogeography, Palaeoclimatology, Palaeoecology* (2010) on Ordovician research (edited by Servais and Owen together with Munnecke, Calner and Harper).

(Report compiled by David

Harper)

In memory of Tatiana Koren’
(1936- 2010)



Tatiana Koren' was born on the 3rd of March, 1936, in Leningrad (St. Petersburg, Russia).

In 1956 she graduated from the Geological faculty of Leningrad State University with highest honors and was employed by the Department of Regional Studies of Ural Mountains of All-Union Geological Research Institute. In this institute in St. Petersburg, Tatiana conducted uninterrupted scientific research and management duties for more than 50 years.

Silurian stratigraphy and graptolites were the favorite objects of her study starting from her Master's Thesis. In 1964 for her thesis "Silurian graptolites of Ural and their significance for stratigraphy" Tatiana obtained the degree of Doctor of Philosophy. In 1986 she earned the Doctor of Science degree for her thesis titled "Zonal stratigraphy and Silurian boundaries based on graptolites". This monograph concerned general aspects of stratigraphy, choosing and estimation of biozonal boundaries, compilation of biochronological scales in different facies, and concepts of biozonal standards. Her subsequent studies were devoted to analyses of evolution and biodiversity of Ordovician to Devonian graptolites, their correspondence with abiotic events, to estimation of criteria for biozonal subdivision and the correlative potential of regional biozones.

Tatiana Koren' was extremely creative, prolific and elegant in her geological and palaeontological researches. She always found ways of embarking on interesting and productive research, sometimes with dedicated colleagues from far away, and excelled despite the odds. Her extensive knowledge of the literature allowed her to readily combine observation on palaeontological objects with their interpretation. Her

research contributions had a decisive influence on the development and application of zonal graptolite biostratigraphy and event stratigraphy in Russia.

Tatiana was a permanent reviewer for many Russian geological issues including “Paleontological Journal”, “Stratigraphy” Geological Correlation” and others. She was a co-author and main editor of many monographs and books including “Biozonal Stratigraphy of Phanerozoic in Russia” published in 2006, and a new edition of “Geological Dictionary of Russia”.

Tatiana Koren’s service to the Russia Geological Research Institute has been extraordinary. From 2001 she served as a chief of the Department of Stratigraphy and Paleontology. Due to her activity and enthusiasm the Department is still one of the largest in the Institute and has carried out many interesting projects including revision of the stratigraphic and paleontological basis of geological mapping program at scales of 1:1000 000 and 1:200 000. As a leader of the stratigraphic branch in Russia for the last several years, she and her Departmental staff participated in numerous international geological mapping programs such as “Atlas of geological maps of central Asia and adjoining territories”, "Atlas of geological maps of Circumpolar Arctic at 1:5 000000 scale", “Geological map of Asia at 1:5 000000 scale (IGMA 5000)” and others. She was an attentive mentor for many young researchers, supervising 12 Ph.D. students.

For many years Tatiana Koren’ was a member of the Interdepartmental Stratigraphic Committee of Russia, and chairman of the Stratigraphic Committee on the Ordovician and Silurian of Russia. She also was chairman of the committee on graptolites in the Paleontological Institute of the Russian Academy of Science. Tatiana was a long-serving secretary, vice-chairman and then an executive member of Subcommission on Silurian Stratigraphy, and a specialist on Subcommissions on Ordovician and Devonian Stratigraphy of the International Commission on Stratigraphy. At different times of her life Tatiana curated the paleontological survey of Geodynamic Program in Kyrgyzstan, and was a member of Regional Stratigraphic Committees of Ural Mountains, Kazakhstan and Middle Asia. She led many programs and projects in Russia including projects from the Russian Foundation of Basic Researches.

As the author of more than 180 publications (many of them in English) and editor or co-editor of more than ten books, Tatiana Koren’ received numerous awards and medals. In 2001 she was awarded the title “Merited scientist of Russian Federation”. In 2007 she was enlisted in the plate of honor of the Ministry of Natural Resources and Ecology of Russia.

Those who met Tatiana at different conferences might have been convinced that her main field of interest was in stratigraphy and paleontology. The spectrum of Tatiana's interests, however, was wide-ranging and varied. She was well knowledgeable in architecture, classic music and ballet; admired in painting and literature. Her deep erudition, in combination with unexpected personal insights and a fine sense of humour made her a friend of many and an inspired and inspiring companion.

All her colleagues and friend mourn the loss of a distinguished colleague, effective leader and a friend. We will remember her.

Main selected papers and monographs of Tatiana Koren’

Koren’, T.N. 1971. The zones of *Monograptus hercynicus* and *Monograptus falcarius* in Pai-Khoi. *Lethaia* 4, 235–248.

- Koren', T.N. 1978. Early Devonian graptolites of South Fergana, Central Asia. *Casopis pro mineralogii a geologii. Roč.* 23(2), 113–130.
- Koren', T.N. 1979. Late monograptid faunas and the problem of graptolite extinction. *Acta Paleontologica Polonica* 24(1), 79–106.
- Koren', T.N. 1983. New Late Silurian Monograptids from Kazakhstan. *Palaeontology* 26, 407–434.
- Koren', T.N., Ordovskaya, M.M., Pylma, L.Ya. & Sobolevskaya, R.F. 1983. *Boundary of Ordovician and Silurian of North-East of SSSR*. L: Nauka, 205 p. (in Russian).
- Koren', T.N. 1987. Graptolite dynamics in Silurian and Devonian time. *Geological Society of Denmark, Bulletin* 35, 149–159.
- Koren', T.N. 1993. The key levels in the evolution of the Ludlow graptolites. *Stratigraphy. Geological Correlation* 1(5), 44–52. (in Russian)
- Koren', T.N. & Suyarkova A.A. 1994. *Monograptus deubeli* and *praedeubeli* (Wenlock, Silurian) in the Asian part of the former Soviet Union. *Alcheringa* 18, 85–101.
- Koren' T.N., Lenz, A.C., Loydell, D.K., Melchin, M.J., Storch, P. & Teller, L. 1996. Generalized Graptolite Zonal Sequence defining time intervals for global palaeogeographic studies. *Lethaia* 29(1), 59–60.
- Koren', T.N. & R.B. Rickards, 1996. Taxonomy, phylogeny and evolution of the early Silurian diplograptids, Southern Urals, Kazakhstan: *Special Papers in Palaeontology* 54. 103 p. Paleontological Association. London.
- Koren', T.N. (co-author and editor) 1997. *Atlas of zonal assemblages of the main groups of lower Paleozoic fossils of North Russia. Graptolites and trilobites*. St. Petersburg. VSEGEI. 205 p. (in Russian).
- Koren', T.N. & Suyarkova A.A. 1997. Late Ludlow and Pridoli monograptids from the Turkestan-Alai Mountains, South Tien Shan. *Palaeontographica* 247 A, 59–90.
- Koren', T.N. & Bjerreskov B. 1997. Early Llandovery monograptids from Bornholm and South Urals: taxonomy and evolution. *Geological Society of Denmark, Bulletin* 44, 1–43.
- Koren', T.N. (co-author and editor). 1998. *Methods of event stratigraphy in correlation of regional stratigraphic units: case study from the Lower Ordovician of north-west of Russia*. St. Petersburg. VSEGEI, 87 p. (in Russian).
- Koren', T.N. (co-author and editor). 2000. *Usage of event-stratigraphy levels for interregional correlation of Phanerozoic in Russia*. St. Petersburg. VSEGEI. 168 p. (in Russian)
- Koren', T.N. & Melchin, M. 2000. Lowermost Silurian graptolites from the Kurama Range, southeastern Uzbekistan. *Journal of Paleontology* 74(6), 1093–1113
- Koren', T.N. 2002. Problems of stratigraphic scale of Ordovician in Russia. *Regional geology and metalogenesis* 15, 4–25. (in Russian)
- Koren', T.N. & Suyarkova, A.A. 2004. The Ludlow (Late Silurian) neocucullograptid fauna from the southern Tien Shan, Kyrghizstan. *Alcheringa* 28, 333–387.
- Koren', T.N. & Rickards, R.B. 2004. An unusually diverse Llandovery (Silurian) Diplograptid fauna from the Southern Urals of Russia and its evolutionary significance. *Palaeontology* 47(4), 859–918.
- Koren', T.N. (co-author and editor). 2006. *Zonal stratigraphy of Phanerozoic in Russia*. St. Petersburg. VSEGEI. 256 p. (in Russian)
- Koren', T.N. 2006. Stratigraphic scale of Silurian system: biostratigraphic markers and correlation potential of the unit boundaries. *Evolution of biosphere and*

biodiversity. To 70th anniversary of A.Yu. Rozanov. M: KMK, 460–476. (in Russian)

Koren', T.N. & Sobolevskaya, R.F. 2008. The regional stratotype section and point for the base of the Hirnantian Stage (the uppermost Ordovician) at Mirny Creek, Omulev Mountains, Northeast Russia. *Estonian Journal of Earth Sciences* 57(1), 1–10.

Koren', T.N. 2009. *International stratigraphic scale of Precambrian and Phanerozoic: principles of composition and state of knowledge.* St. Petersburg. VSEGEI. 40 p. (in Russian).

(Memorial compiled by Tatiana Tolmacheva)

Call for Papers:

Bollettino della Società Paleontologica Italiana

Dear Colleagues,

We would like to kindly invite you to submit a manuscript for the *Bollettino della Società Paleontologica Italiana*. The BSPI is an international quarterly, peer reviewed journal devoted to rapid publication of high quality research results in all subfields of Paleontology, open to both original research articles as well as review articles. The journal was included within the ISI in 2008.

The BSPI will celebrate this year its 50th birthday. On this occasion, all full contents will be on open access on the journal web site, which means that all published articles are made freely available online without a subscription. The submission deadline for this Focus Anniversary Volume is **June 30th, 2011**.

Please read the Author Guidelines at http://www.spi.unimo.it/note_aut_en.htm for more information on the journal's policies and the submission process.

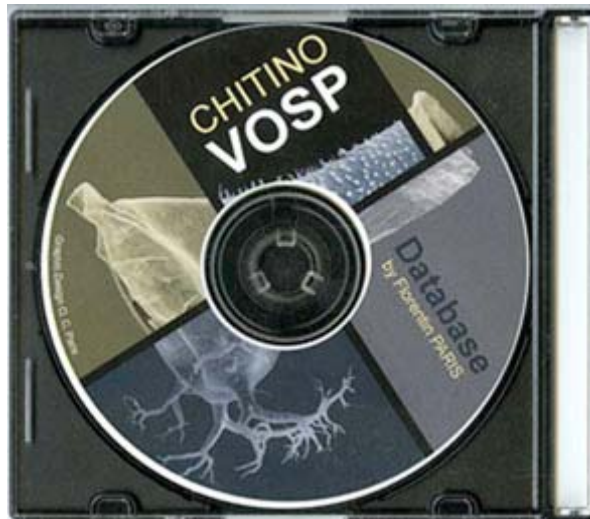
Do not hesitate to contact us if you need any additional information about the journal.

Best regards

Annalisa Ferretti and Carlo Corradini
(co-editors of the *Bollettino della Società Paleontologica Italiana*)

[for Annalisa's contact details, please see under her Research Report later in this issue of *Ordovician News*]

**CHITINOVOSP, a database recording the chitinozoan species
(F. Paris)**



A new version of CHITINOVOSP database is available now in English. This database recording all the chitinozoan species described since the first taxonomic paper on the group by Eisenack (1931) is for sale in the form of a CD (see photo). It may be of some help for chitinozoans workers. It should be also useful for Palaeozoic palynologists not very familiar with the chitinozoan group, but wanting to have a broad idea on chitinozoans they encounter in their palynological preparations. CHITINOVOSP runs on FileMaker Pro™ software. It includes an illustration of the holotype of most of the 1240 species and subspecies recorded so far in the group. It contains taxonomic information (species, sub-species, genus, updated generic assignment) and bibliographic data (author(s), year of description of the taxon and the related full reference, including the figure numbers of the type material). Other helpful data concerning the chronostratigraphy (range of the species by System, Series and Stages, as well as its FAD and LAD when accurately known) and the palaeogeographical location (locality/country and palaeoplate) of the recorded species are also provided. This database gives therefore an easy and immediate access to the main information concerning the chitinozoans.

Terms and condition of sale for academic researchers (500 €), or for industrial utilization (1500 €), can be obtained from “Creation Graphic” by E-mail: parisol@wanadoo.fr

See also the web page: <http://www.geosciences.univ-rennes1.fr/spip.php?article10>



11th International Symposium on the Ordovician System

Alcalá de Henares (Madrid)

May 9–13, 2011

– with field trips in Portugal and Spain –

THIRD CIRCULAR & DETAILED PROGRAMME

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- Sociedad Española para la Defensa del Patrimonio Geológico y Minero SEDPGYM (*Spanish Society for the Preservation of the Geological and Mining Heritage*)
- Consejo Superior de Investigaciones Científicas IGEO-CSIC (*Spanish Research Council*)
- Laboratorio Nacional de Energía e Geología LNEG (*National Laboratory of Energy and Geology, formerly Portuguese Geological Survey*), Portugal
- Universidad de Alcalá de Henares (Spain)
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Presentations

The oral technical sessions will consist of talks scheduled for 15 minutes inclusive of questions, that are arranged in single sessions on May 9th to 11th (Monday through Wednesday) in the Baroque building of the university (“Rectorate”), in the historic quarter of the city (Plaza de San Diego). Posters will be displayed there during Monday 9th to Wednesday 11th.

Format for oral contributions:

- TOTAL time allocated, including questions, is 15 min. You should therefore prepare a 12 min talk to allow time for questions - Session Chairs will be strict!
- No need to send presentations in advance, but instead bring them on a USB storage device.
- Please load your presentation onto the computers during the breaks in the programme, preferably well in advance so that potential technical issues can be dealt with before the sessions.
- We only provide PC’s for presentations.
- The PC’s will be desktop computers operating under Windows and will have PowerPoint 2003 installed. For anyone using a more recent version, we recommend that you save down to version 2003, to ensure compatibility.
- For Mac users, please save your presentations as a .ppt file.
- If you wish to use your own portable computer, we will allow this under special circumstances (if you cannot save to PowerPoint), but in this case we insist you contact us beforehand (isos11@igme.es).
- Please try to keep your file size reasonable (<20Mb).

Format for posters:

- Posters should be up by the morning of Monday 9th (starting at 9:00 am).
- Maximum poster size is A0 in portrait setting (we cannot display landscape posters).
- Do not use fonts smaller than 18 pt.
- Please prepare your poster so that it is understandable for the entire audience.
- We will provide pins and poster boards will be labelled.

Keynote speakers

Jean-François Ghienne (Institut de Physique du Globe de Strasbourg, UMR 7516 CNRS - Université de Strasbourg, France): *“The Late Ordovician glacial record: state of the art”*.

Peter Van Roy (Department of Geology and Soil Science, Ghent University, Belgium): *“New insights from exceptionally preserved Ordovician biotas from Morocco”*.

General Schedule

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, A. Sequeira & J.C. Gutiérrez-Marco.

May 9th: Registration, opening, introduction and first day of technical sessions at the University.

May 10th: Second day of technical sessions.

May 11th: Third day of technical sessions, followed by a walking tour through the city 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–16th: *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, S. Zamora & J.C. Gutiérrez-Marco.

Field Excursions

Participants will need to arrange for appropriate valid insurance coverage of illness, accidents, property and third party liability throughout the duration of the field excursions. A [“Release of Liability”](#) shall be signed by all participants prior to departure of the field trips ([see Forms](#)). Such insurance can be conveniently arranged by special travelling insurance or by the corresponding addition to home insurance for the duration of the excursion.

Pre-Symposium field trip. **May 3rd–8th. Ordovician of Portugal**. Co-leaders: A. Sá, J.M. Piçarra, N. Vaz, A. Sequeira & J.C. Gutiérrez-Marco. Field trip 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 feature 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, Ríos Rosas Street: metro stop *Ríos Rosas*, on Line 1 (light blue), exit "Ríos Rosas impares"). Return to Alcalá de Henares (south end of Plaza de Cervantes) 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.

Beginning and end of the excursion in Alcalá de Henares (*Plaza de Cervantes*, beside Tourist Office). Transportation, meals and accommodation for one night –in shared double rooms– are covered by the registration fee of 11th ISOS.

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, S. Zamora & J.C. Gutiérrez-Marco. Field trip fee covers all meals, 2 nights accommodation –in shared double rooms– and transportation during the excursion, but not accommodation for May 16th. The field trip will require a minimum of 12 participants, and is restricted to a maximum of 50.

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 and marls, 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 from Daroca to Alcalá de Henares (*Plaza de Cervantes*) in the late evening of May 16th. Please, remember that those intending to return all the way back to Madrid, need to contact the organizers in advance, at the time of Registration.

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.

At present, the best public transport from Madrid-Barajas Airport to Alcalá includes travelling to Madrid's *Nuevos Ministerios* or *Atocha-Renfe* train stations by subway (there are connections by Metro Lines 8, 6 and 1) or bus, and later catching the local train to Alcalá de Henares (45 min). Direct taxi from Barajas airport to Alcalá de Henares (19 km) is the fastest way (20 min, about 30-40 Euro). Details on train and bus schedules and fares, as well as maps and transportation websites, together with driving instructions, are all available in the symposium web page (www.igme.es/isos11/howto.htm)

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. Bring a raincoat or umbrella, especially for field trips participants. In case of last-minute rainy forecasts for Alcalá de Henares and field trip destinations, weather announcements will be posted in the Symposium's web page (www.igme.es/isos11).

Venue

Alcalá de Henares is a remarkable and celebrated city, located approximately 30 km northeast of Madrid and only 19 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 websites [infospain](#), [turismoalcala](#) or [paradores](#) also have comprehensive lists of touristic information about the city.

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.

Accompanying persons

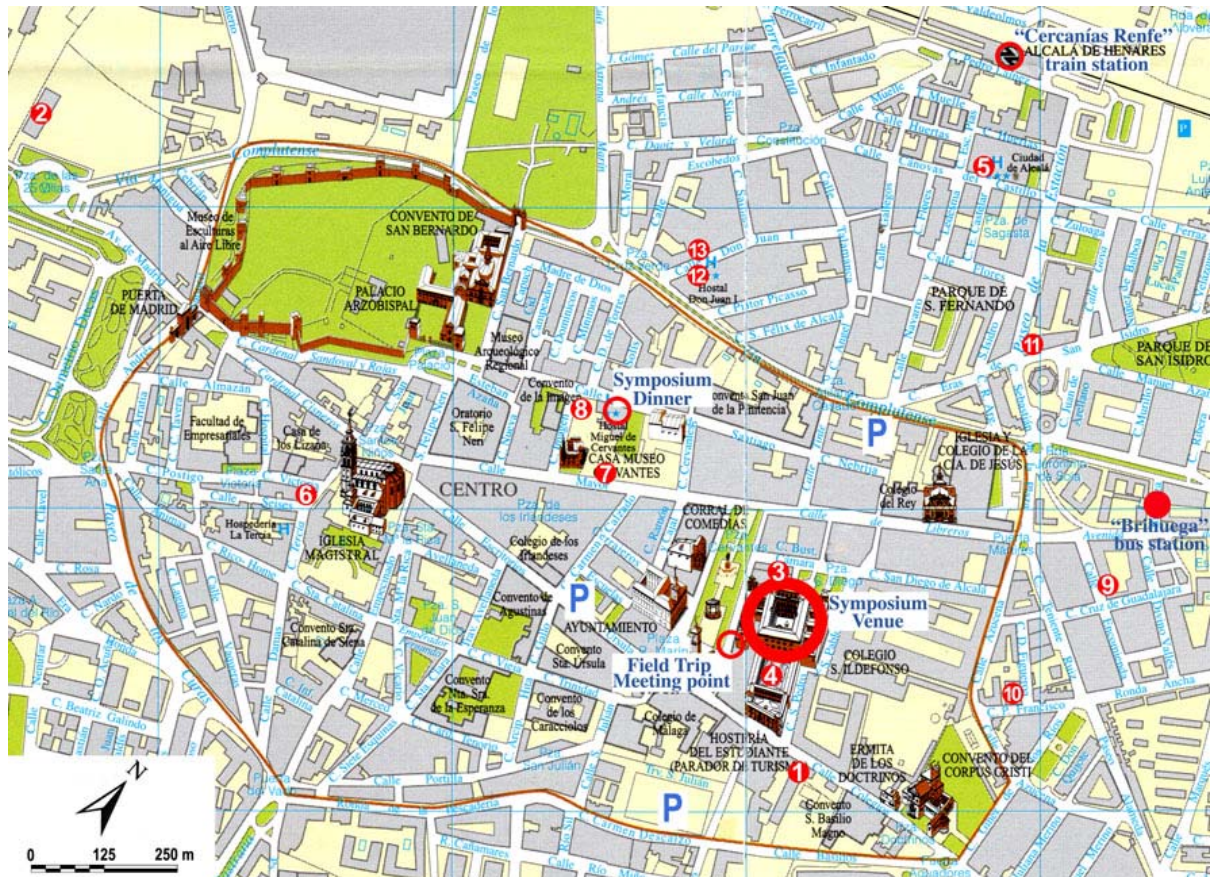
The Tourist Office in Alcalá de Henares will provide information and programmes for accompanying persons, visiting the main museums and monuments of this World Heritage City. The city of Madrid is also very accessible, with its commercial and historic center (Puerta del Sol) only 45 minutes away by train.

Accommodation

Participants are **expected to book their own accommodation** in Alcalá de Henares or Madrid. Alcalá de Henares is not a large city, and much of the accommodation available is within walking distance of the Cisnerian University buildings (Plaza de San Diego).

A selection of hotels, apartments and hostels in the Historic Quarter, near the conference location, as well as additional accommodation options outside the historical centre, is shown in the map and is also available on the Symposium's web site (www.igme.es/isos11/lodging.htm). Their prices are considerably cheaper than in Madrid, and several of these hotels offer special discount prices to ISOS participants, using the acronym "11 ISOS" in their reservations.

Important notice: if you are sharing a double room, please confirm in advance with the hotel whether occupants want double or single beds.



Updated schematic map of downtown Alcalá de Henares, with venue, transport and accommodation locations. Note that location of Symposium Dinner and Field Trip Meeting Point have been added.

Symposium volume

A refereed proceedings volume (*Ordovician of the World*) has been edited by Juan Carlos Gutiérrez-Marco, Isabel Rábano and Diego García-Bellido and published in a monographic series of the Geological Survey of Spain (*Cuadernos del Museo Geominero*). It will be presented at the time of the Registration together with the rest of the information package. After the meeting, all the papers published in the Symposium volume, will be freely accessible through the ISOS and the Geological Survey of Spain's web page.

Contact

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11th ISOS PROGRAMME

Tuesday, May 3rd – Sunday, May 8th

Pre-Symposium field trip. *Ordovician of Portugal.* Departure by bus from Madrid at 2:00 pm on Tuesday 3rd May from the Spanish Geological Survey (23, Rios Rosas Street: metro stop *Ríos Rosas*, on Line 1 (light blue), exit “*Ríos Rosas impares*”). Return to Alcalá de Henares (south end of *Plaza de Cervantes*) on the evening of Sunday 8th May.

TECHNICAL SESSIONS

Monday morning, May 9th

8.00-10.00	Reception for participants (Philosophers Courtyard)
10.00-11.00	Inauguration of 11th ISOS – Paraninfo of the Cisnerian University (Trilingual Courtyard)

Main College, Saint Ildephonsus Baroque cloister

11.00-11.45	Keynote Lecture Jean-François Ghienne THE LATE ORDOVICIAN GLACIAL RECORD: STATE OF THE ART
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Session 1	
Conveners	Stan C. Finney and Andrei V. Dronov
11.45-12.00	B.K. Sell INTENSE VOLCANISM AND ORDOVICIAN ICEHOUSE CLIMATE
12.00-12.15	S. Finnegan, S. Peters and W.W. Fischer LATE ORDOVICIAN-EARLY SILURIAN SELECTIVE EXTINCTION PATTERNS IN LAURENTIA AND THEIR RELATIONSHIP TO CLIMATE CHANGE
12.15-12.30	E. Díaz-Martínez, M. Vavrdová, P.E. Isaacson and C.Y. Grahn EARLY SILURIAN VS. LATE ORDOVICIAN GLACIATION IN SOUTH AMERICA
12.30-12.45	M. Ghavidel-syooki, J.J. Álvaro, L. Popov, M. Ghobadi Pour, M.H. Ehsani and A. Suyarkova STRATIGRAPHIC EVIDENCE FOR THE HIRNANTIAN (LATEST ORDOVICIAN) GLACIATION IN THE ZAGROS MOUNTAINS, IRAN
12.45-13.00	N.D. McDougall and R. Gruenwald ICE IN THE SAHARA: THE UPPER ORDOVICIAN GLACIATION IN SW LIBYA – A SUBSURFACE PERSPECTIVE
13.00	Spanish wine and <i>tapas</i>, with traditional “<i>la Tuna</i>” music

Monday afternoon, May 9th

Session 2	
Conveners	David L. Bruton and Roger A. Cooper
15.30-15.45	<u>D.A.T. Harper</u> A SIXTH DECADE OF THE ORDOVICIAN PERIOD: STATUS OF THE RESEARCH INFRASTRUCTURE OF A GEOLOGICAL SYSTEM
15.45-16.00	<u>B.K. Sell</u> , S.A. Leslie and J. Maletz NEW U-Pb ZIRCON DATA FOR THE GSSP FOR THE BASE OF THE KATIAN IN ATOKA, OKLAHOMA, USA AND THE DARRIWILIAN IN NEWFOUNDLAND, CANADA
16.00-16.15	<u>F. Terfelt</u> , G. Bagnoli and S. Stouge THE BASE OF THE ORDOVICIAN SYSTEM – A HORIZON IN LIMBO
16.15-16.30	<u>T.R.A. Vandenbroucke</u> , A.T. Nielsen and J. K. Ingham THE AGE OF THE <i>P. LINEARIS</i> GRAPTOLITE BIOZONE: A PROGRESS REPORT ON A POTENTIAL SOLUTION
16.30-16.45	<u>Ph. Legrand</u> ON THE KATIAN/HIRNANTIAN BOUNDARY. APPLICATION ON THE AFRICAN NORTHERN BORDER OF GONDWANA
16.45-17.00	<u>S.C. Finney</u> GSSP BOUNDARY INTERVALS ARE CRITICAL FOR CHARACTERIZATION AND CORRELATION OF CHRONOHORIZONS
17.00-17.30	Coffee break
Session 3	
Conveners	Stephen A. Leslie and Stig M. Bergström
17.30-17.45	<u>M. Mergl</u> FAUNAL TURNOVER NEAR THE KATIAN/HIRNANTIAN BOUNDARY IN THE PRAGUE BASIN (CZECH REPUBLIC)
17.45-18.00	<u>C.E. Mitchell</u> , P. Storch, C. Holmden, M.J. Melchin and J.C. Gutiérrez-Marco NEW STABLE ISOTOPE DATA AND FOSSILS FROM THE HIRNANTIAN STAGE IN BOHEMIA AND SPAIN: IMPLICATIONS FOR CORRELATION AND PALEOCLIMATE
18.00-18.15	<u>P. Copper</u> , H. Nestor and C. Stock DISTAL EFFECTS OF GLACIALLY-FORCED LATE ORDOVICIAN MASS EXTINCTIONS ON THE TROPICAL CARBONATE PLATFORM OF LAURENTIA: STROMATOPOROID LOSSES AND RECOVERY AT A TIME OF STRESS, ANTICOSTI ISLAND, EASTERN CANADA
18.15-18.30	<u>D. Kaljo</u> and T. Martma CARBON ISOTOPE TREND IN THE MIRNY CREEK AREA, NE RUSSIA, ITS SPECIFIC FEATURES AND POSSIBLE IMPLICATIONS OF THE UPPERMOST ORDOVICIAN STRATIGRAPHY
18.30-18.45	T. Meidla, <u>L. Ainsaar</u> and K. Truuver OSTRACODS IN BALTOSCANDIA THROUGH THE HIRNANTIAN CRISES
18.45-19.00	<u>O. Hints</u> , J. Nõlva, L. Paluveer and M. Tammekänd CONVENTIONAL AND CONOP9 APPROACHES TO BIODIVERSITY OF BALTIC ORDOVICIAN CHITINOZOANS
19.00-19.15	<u>G.N. Sarmiento</u> , J.C. Gutiérrez-Marco, R. Rodríguez-Cañero, A. Martín Algarra and P. Navas-Parejo A BRIEF SUMMARY OF ORDOVICIAN CONODONT FAUNAS FROM THE IBERIAN PENINSULA
19.15-19.30	<u>O.T. Obut</u> and A.M. Semenova NEW DATA ON UPPER ORDOVICIAN RADIOLARIANS FROM THE GORNY ALTAI (SW SIBERIA, RUSSIA)

Tuesday morning, May 10th

Session 4	
Conveners	Zhang Yuandong and Olda Fatka
8.30-8.45	A. Delabroye, A. Munnecke, <u>T. Servais</u> , T. Vandenbroucke and M. Vecoli ABNORMAL ACROTARCHS IN THE RUN-UP OF EARLY PALAEOZOIC $\delta^{13}\text{C}$ ISOTOPE EXCURSIONS: INDICATION OF ENVIRONMENTAL POLLUTION, GLACIATION, OR MARINE ANOXIA?
8.45-9.00	<u>J. Liu</u> , R. Zhan, X. Dai, H. Liao, Y. Ezaki and N. Adachi DEMISE OF EARLY ORDOVICIAN OOLITES IN SOUTH CHINA: EVIDENCE FOR PALEOCEANOGRAPHIC CHANGES BEFORE THE GOBE
9.00-9.15	<u>K.G. Jakobsen</u> , D.A.T. Harper, A.T. Nielsen and G.A. Brock DARRIWILIAN BIOSTRATIGRAPHY AND PALAEOECOLOGY DURING THE GREAT ORDOVICIAN BIODIVERSIFICATION EVENT – A NORTHERN GONDWANAN PERSPECTIVE
9.15-9.30	<u>J.T. Haynes</u> and K.E. Goggin STRATIGRAPHIC RELATIONS OF QUARTZ ARENITES AND K-BENTONITES IN THE ORDOVICIAN BLOUNT MOLASSE, ALABAMA TO VIRGINIA, SOUTHERN APPALACHIANS, USA
9.30-9.45	<u>A.V. Dronov</u> , W.D. Huff, A.V. Kanygin and T.V. Gonta K-BENTONITES IN THE UPPER ORDOVICIAN OF THE SIBERIAN PLATFORM
9.45-10.00	<u>N.V. Sennikoy</u> , O.T. Obut, E.V. Bukolova and T.Yu. Tolmacheva TRACES OF THE GLOBAL AND REGIONAL SEDIMENTARY EVENTS IN EARLY ORDOVICIAN SECTIONS OF THE GORNY ALTAI (SIBERIA)
10.00-10.15	<u>P. Kraft</u> , T. Hroch and M. Rajchl FOSSIL ASSEMBLAGES REFLECTING PROCESSES OF THE EARLY DEVELOPMENT OF THE PRAGUE BASIN (BOHEMIAN MASSIF, CZECH REPUBLIC)
10.15-10.30	<u>I.G. Percival</u> , R.A. Cooper, Y.Y. Zhen, J.E. Simes and A.J. Wright RECENT DISCOVERIES AND A REVIEW OF THE ORDOVICIAN FAUNAS OF NEW ZEALAND
10.30-10.45	<u>D.A.T. Harper</u> , R.B. Zhan, L. Stemmerik, J. Liu, S.K. Donovan and S. Stouge ORDOVICIAN ON THE ROOF OF THE WORLD: MACRO- AND MICROFAUNAS FROM TROPICAL CARBONATES IN TIBET
10.45-11.00	<u>A.A. Sá</u> , D. Rocha and A. Paz ORDOVICIAN GEOSITES AS THE BASIS OF THE CREATION OF THE EUROPEAN AND GLOBAL AROUCA GEOPARK (PORTUGAL)
11.00-11.30	Coffee break

Tuesday morning (contd), May 10th

Session 5	
Conveners	Li Jun and Ian G. Percival
11.30-11.45	<u>D.L. Bruton</u> A SUMMARY OF THE ORDOVICIAN OF THE OSLO REGION, NORWAY - FUTURE CHALLENGES
11.45-12.00	<u>A.V. Dronov</u> , L. Ainsaar, D. Kaljo, T. Meidla, T. Saadre and R. Einasto ORDOVICIAN OF BALTOSEANDIA: FACIES, SEQUENCES AND SEA-LEVEL CHANGES
12.00-12.15	<u>D. Goldman</u> , S.M. Bergström, H.D. Sheets and C. Pantle A CONOP9 COMPOSITE-TAXON RANGE-CHART FOR ORDOVICIAN CONODONTS FROM BALTOSEANDIA: A FRAMEWORK FOR BIODIVERSITY ANALYSES
12.15-12.30	H.D. Sheets, <u>D. Goldman</u> , S.M. Bergström and C. Pantle CONODONT BIODIVERSITY DYNAMICS FROM THE ORDOVICIAN OF BALTOSEANDIA
12.30-12.45	<u>S. Stouge</u> , P. Du and Z. Zhao MIDDLE ORDOVICIAN (DARRIWILIAN) GLOBAL CONODONT ZONATION BASED ON THE DAWANGOU AND SAERGAN FORMATIONS OF THE WESTERN TARIM REGION, XINJIANG PROVINCE, CHINA
12.45-13.00	<u>S.A. Leslie</u> , M.R. Saltzman, S.M. Bergström, J.E. Repetski, A. Howard and A.M. Seward CONODONT BIOSTRATIGRAPHY AND STABLE ISOTOPE STRATIGRAPHY ACROSS THE ORDOVICIAN KNOX/BEEKMANTOWN UNCONFORMITY IN THE CENTRAL APPALACHIANS
13.00-13.15	<u>T.Yu. Tolmacheva</u> , K.E. Degtyarev, L.E. Popov, A.V. Ryazantsev, A.B. Kotov and P.A. Aleksandrov THE LOWER TO MIDDLE ORDOVICIAN CONODONT BIOSTRATIGRAPHY OF NORTHERN TIAN SHAN (WESTERN PART OF THE KIRGYZ RANGE), KYRGYZSTAN

13.15-14.00	Keynote Lecture Peter Van Roy NEW INSIGHTS FROM EXCEPTIONALLY PRESERVED ORDOVICIAN BIOTAS FROM MOROCCO
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Tuesday afternoon, May 10th

Session 6	
Conveners	Nikolay V. Sennikov and Hans-Peter Schönlaub
15.00-15.15	<u>J.A. Gámez Vintaned</u> and U. Schmitz THE LATE TREMADOCIAN–EARLY ARENIG 2ND ORDER SEQUENCE OF THE CADENAS IBÉRICAS (NE SPAIN) AND ITS COMPARISON WITH BALTICA
15.15-15.30	<u>L.M.E. McCobb</u> , W.D. Boyce and I. Knight CORRELATION OF LOWER ORDOVICIAN (IBEXIAN) FAUNAS IN NORTH-EASTERN GREENLAND AND WESTERN NEWFOUNDLAND – NEW TRILOBITE AND LITHOSTRATIGRAPHIC DATA
15.30-15.45	<u>J.M. Adrain</u> A NEW TRILOBITE BIOSTRATIGRAPHY FOR THE LOWER ORDOVICIAN OF WESTERN LAURENTIA AND PROSPECTS FOR INTERNATIONAL CORRELATION USING PELAGIC TRILOBITES

Tuesday afternoon (contd), May 10th

15.45-16.00	<u>P. Budil</u> , <u>O. Fatka</u> , <u>P. Kolář</u> and <u>M. David</u> PRELIMINARY REPORT ON <i>ARTHRORHACHIS</i> HAWLE AND CORDA, 1847 (AGNOSTIDA) IN THE PRAGUE BASIN (BARRANDIAN AREA, CZECH REPUBLIC)
16.00-16.15	<u>O. Fatka</u> , <u>P. Budil</u> and <u>Š. Rak</u> POSSIBLE REMAINS OF THE DIGESTIVE SYSTEM IN ORDOVICIAN TRILOBITES OF THE PRAGUE BASIN (BARRANDIAN AREA, CZECH REPUBLIC)
16.15-16.30	<u>V. B. Kushlina</u> and <u>A.V. Dronov</u> A GIANT <i>RUSOPHYCUS</i> FROM THE MIDDLE ORDOVICIAN OF SIBERIA
16.30-16.45	<u>R. Zhan</u> , <u>Y. Liang</u> and <u>L. Meng</u> ON THE MACROEVOLUTION OF <i>EOSPIRIFER</i> SCHUCHERT, 1913 (SPIRIFERIDA, BRACHIOPODA)
16.45-17.00	<u>C.M.Ø. Rasmussen</u> FINAL DESTINATION, FIRST DISCOVERED: THE TALE OF <i>OANDUPORELLA</i> HINTS, 1975
17.00-17.30	Coffee break
Session 7	
Conveners Olle Hints and Thijs R.A. Vandenbroucke	
17.30-17.45	<u>I.G. Percival</u> , <u>L.E. Popov</u> , <u>R.B. Zhan</u> and <u>M. Ghobadi Pour</u> PATTERNS OF ORIGATION AND DISPERSAL OF MIDDLE TO LATE ORDOVICIAN BRACHIOPODS: EXAMPLES FROM SOUTH CHINA, EAST GONDWANA, AND KAZAKH TERRANES
17.45-18.00	<u>M. Ghobadi Pour</u> , <u>L.E. Popov</u> , <u>L. McCobb</u> and <u>I.G. Percival</u> NEW DATA ON THE LATE ORDOVICIAN TRILOBITE FAUNAS OF KAZAKHSTAN: IMPLICATIONS FOR BIOGEOGRAPHY OF TROPICAL PERI-GONDWANA
18.00-18.15	<u>J.A. Rasmussen</u> , <u>A.T. Nielsen</u> and <u>D.A.T. Harper</u> AN UNUSUAL MID ORDOVICIAN ISLAND ENVIRONMENT ON THE WESTERN EDGE OF BALTICA: NEW PALAEOECOLOGICAL AND PALAEOBIOGEOGRAPHICAL DATA FROM HARDANGERVIDDA, SOUTHERN NORWAY
18.15-18.30	<u>J. Maletz</u> and <u>P. Ahlberg</u> DARRIWILIAN (ORDOVICIAN) GRAPTOLITE FAUNAS AND PROVINCIALISM IN THE TØYEN SHALE OF THE KRAPPERUP DRILL CORE (SCANIA, SOUTHERN SWEDEN)
18.30-18.45	<u>K. Yan</u> , <u>J. Li</u> and <u>T. Servais</u> BIODIVERSITY PATTERNS AND THEIR IMPLICATIONS OF EARLY-MIDDLE ORDOVICIAN MARINE MICROPHYTOPLANKTON IN SOUTH CHINA
18.45-19.00	<u>A. Jiménez-Sánchez</u> THE UPPER KATIAN (UPPER ORDOVICIAN) BRYOZOANS FROM THE IBERIAN CHAINS (NE SPAIN): A REVIEW
19.00-19.15	<u>M. Steinová</u> MIDDLE ORDOVICIAN BIVALVES FROM BOHEMIA, SPAIN AND FRANCE
19.15-19.30	<u>N.V. Sennikoy</u> , <u>O.T. Obut</u> and <u>E.V. Bukolova</u> ORDOVICIAN REGIONAL CHRONOSTRATIGRAPHICAL SCHEME OF THE GORNY ALTAI
19.30–21.00	Open assembly of the Ordovician Subcommittee DESTINATION 2015: The next venue

Wednesday morning, May 11th

Session 8	
Conveners	Arnie T. Nielsen and Michal Mergl
9.00-9.15	<u>M.A. Rodríguez Sastre</u> and L. González Menéndez STRATIGRAPHY AND STRUCTURE OF THE UPPERMOST PART OF THE LUARCA FORMATION IN ALTO BIERZO, LEÓN (ORDOVICIAN, NW SPAIN)
9.15-9.30	<u>J.M. Piçarra</u> , Z. Pereira and J.C. Gutiérrez-Marco ORDOVICIAN GRAPTOLITES AND ACRITARCHS FROM THE BARRANCOS REGION (OSSA-MORENA ZONE, SOUTH PORTUGAL)
9.30-9.45	<u>J. Maletz</u> and S. Egenhoff GRAPTOLITE BIOSTRATIGRAPHY AND BIOGEOGRAPHY OF THE TABLE HEAD AND GOOSE TICKLE GROUPS (DARRIWILIAN, ORDOVICIAN) OF WESTERN NEWFOUNDLAND
9.45-10.00	<u>E.V. Bukolova</u> GRAPTOLITE ZONATION FOR THE LOWER AND MIDDLE ORDOVICIAN OF THE GORNY ALTAI (SW SIBERIA, RUSSIA)
10.00-10.15	<u>Y.D. Zhang</u> , Y.Y. Song and J. Zhang LATE DARRIWILIAN TO EARLY SANDBIAN GRAPTOLITE BIOSTRATIGRAPHY IN WESTERN ZHEJIANG AND EASTERN JIANGXI PROVINCES, SE CHINA
10.15-10.30	<u>J.C. Gutiérrez-Marco</u> , D. Goldman, J. Reyes-Abril and J. Gómez A PRELIMINARY STUDY OF SOME SANDBIAN (UPPER ORDOVICIAN) GRAPTOLITES FROM VENEZUELA
10.30-10.45	<u>B.A. Toro</u> , J. Maletz, Y.D. Zhang and J. Zhang COMPARATIVE ANALYSIS OF THE EARLY ORDOVICIAN BALTOGRAPTID SPECIES OF NORTHWESTERN ARGENTINA, BALTOSCANDIA AND SOUTH CHINA
10.45-11.00	P.M. Sadler and <u>R.A. Cooper</u> GRAPTOLOID EVOLUTIONARY RATES: SHARP CONTRAST BETWEEN ORDOVICIAN AND SILURIAN
11.00-11.30	Coffee break
Session 9	
Conveners	Chuck E. Mitchell and Aberra Mogessie
11.30-11.45	<u>U. Zimmermann</u> FROM FORE-ARC TO FORELAND: A CROSS-SECTION OF THE ORDOVICIAN IN THE CENTRAL ANDES
11.45-12.00	<u>Y. Isozaki</u> ORDOVICIAN ROCKS IN JAPAN
12.00-12.15	<u>R. Arenas</u> , J. Abati, S. Sánchez Martínez, P. Andonaegui, J.M. Fuenlabrada, J. Fernández-Suárez and P. González Cuadra A PERI-GONDWANAN ARC ACTIVE IN CAMBRIAN-ORDOVICIAN TIMES: THE EVIDENCE OF THE UPPERMOST TERRANE OF NW IBERIA
12.15-12.30	<u>J.M. Casas</u> , P. Castiñeiras, M. Navidad, M. Liesa, J.F. Martínez, J. Carreras, J. Reche, A. Iriondo, J. Aleinikoff, J. Cirés and C. Dietsch ORDOVICIAN MAGMATISM IN NE IBERIA
12.30-12.45	<u>F. Bussy</u> , V. Péronnet, A. Ulianov, J.L. Epard and J. von Raumer ORDOVICIAN MAGMATISM IN THE EXTERNAL FRENCH ALPS: WITNESS OF A PERI-GONDWANAN ACTIVE CONTINENTAL MARGIN
12.45-13.00	<u>G.M. Stampfli</u> , J. von Raumer and C. Wilhem THE DISTRIBUTION OF GONDWANA-DERIVED TERRANES IN THE EARLY PALEOZOIC

Wednesday May 11th 13.00-13.15	I. Dias da Silva, E. González-Clavijo, P. Barba, M.I. Valladares and J.M. Ugidos GEOCHEMISTRY OF LOWER PALAEOZOIC SHALES. A CASE STUDY IN A SECTOR OF THE IBERIAN VARISCIDES
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13.15-14:00	Meeting of graptolite workers involved in the next <i>Treatise</i> Convenor: J. Maletz
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Wednesday Afternoon, May 11th

15.00-16.00	Presentation of the New IGCP Project No. 591 “The Early to Middle Paleozoic Revolution” followed by the closing ceremony of 11th ISOS
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16.00-18:30	Guided walking-tour through the historic quarter of Alcalá de Henares, including visits inside the most emblematic monuments
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21.00	Conference dinner (Restaurant “La Cúpula”, Santiago 18, see map)
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Thursday, May 12th – Friday, May 13th

Symposium field trip. *Ordovician stratigraphy and palaeontology of the Ciudad Real province.*

Beginning and end of the excursion in Alcalá de Henares (*Plaza de Cervantes*, beside Tourist Office). Transportation, meals and accommodation for one night –in shared double rooms– are covered by the registration fee of 11th ISOS.

Saturday, May 14th – Monday, May 16th

Post-Symposium field trip. *Ordovician of the Iberian Range (NE Spain).*

Departure from Alcalá de Henares to Albarracín in the early morning of May 14th; return from Daroca to Alcalá de Henares (*Plaza de Cervantes*) in the late evening of May 16th. Please, remember that those intending to return all the way back to Madrid, need to contact the organizers in advance, at the time of Registration.

Poster Presentations

WHOLE-ROCK AND ISOTOPE GEOCHEMISTRY OF ORDOVICIAN TO SILURIAN UNITS OF THE CUYANIA TERRANE, ARGENTINA: INSIGHTS FOR THE EVOLUTION OF SW GONDWANA MARGIN

P. Abre, C. Cingolani, B. Cairncross and F. Chemale Jr.

OCEAN CURRENTS AND STRIKE-SLIP DISPLACEMENTS IN WESTERN GONDWANA: THE CUYANIA HYPOTHESIS IN CAMBRIAN-ORDOVICIAN TIMES

F.G. Aceñolaza

GEOCHEMICAL FEATURES OF THE ORDOVICIAN SUCCESSION IN THE CENTRAL IBERIAN ZONE (SPAIN)

P. Barba, J.M. Ugidos, E. González-Clavijo and M.I. Valladares

FAUNAL SHIFTS AND CLIMATIC CHANGES IN THE UPPER ORDOVICIAN OF SOUTH AMERICA (W GONDWANA)

J.L. Benedetto, T.M. Sánchez, M.G. Carrera, K. Halpern and V. Bertero

REWORKED CONODONTS IN THE UPPER ORDOVICIAN SANTA GERTRUDIS FORMATION (SALTA, ARGENTINA)

J. Carlorosi, S. Heredia, G.N. Sarmiento and M.C. Moya

A POST-GLACIAL BRYOZOAN FAUNA FROM THE UPPER ORDOVICIAN (HIRNANTIAN) OF THE ARGENTINE PRECORDILLERA

M. Carrera and K. Halpern

CARBON ISOTOPE DEVELOPMENT IN THE ORDOVICIAN OF THE YANGTZE GORGES REGION (SOUTH CHINA) AND ITS IMPLICATION FOR STRATIGRAPHIC CORRELATION AND PALEOENVIRONMENTAL CHANGE

J. Cheng, Y.D. Zhang, A. Munnecke and C. Zhou

THE HIRNANTIAN-EARLY LLANDOVERY TRANSITION SEQUENCE IN THE PARANÁ BASIN, EASTERN PARAGUAY

C.A. Cingolani, N.J. Uriz, M.B. Alfaro, F. Tortello, A.R. Bidone and J.C. Galeano Inchausti

LATE ORDOVICIAN GLACIAL DEPOSITS IN VALONGO ANTICLINE (NORTHERN PORTUGAL): A REVISION OF THE SOBRIDO FORMATION AND A CONTRIBUTION TO THE KNOWLEDGE OF ICE-MARGINAL LOCATIONS

H. Couto and A. Lourenço

BIOSTRATIGRAPHY OF THE GENUS *CALIX* (ECHINODERMATA, DIPLOPORITA) IN THE MIDDLE ORDOVICIAN OF THE SOUTHERN CENTRAL IBERIAN ZONE (SPAIN)

J.C. Gutiérrez-Marco and J. Colmenar

ORDOVICIAN BRACHIOPOD DIVERSITY REVISITED: PATTERNS AND TRENDS IN THE OSLO REGION

J.W. Hansen, D.A.T. Harper and A.T. Nielsen

**MAJOR ORDOVICIAN TEPHRAS GENERATED BY CALDERA-FORMING
EXPLOSIVE VOLCANISM ON CONTINENTAL CRUST: EVIDENCE FROM
BIOTITE COMPOSITIONS**

J.T. Haynes, W.D. Huff, and W.G. Melson

**MIDDLE DARRIWILIAN CONODONT BIOSTRATIGRAPHY IN THE
ARGENTINE PRECORDILLERA**

S. Heredia and A. Mestre

UPPER KATIAN STRATIGRAPHY IN THE PRAGUE BASIN (CZECH REPUBLIC)

P. Kraft, J. Bartošová, T. Hroch, L. Koptíková and J. Frýda

**CONODONT BIOSTRATIGRAPHY FROM SHALLOW WATER UPPER
ORDOVICIAN PLATFORM ROCKS IN THE SUBSURFACE OF SOUTH TEXAS**

S.A. Leslie, J.E. Barrick, J. Mosley and S.M. Bergström

**NEW INSIGHTS ON THE HIRNANTIAN PALYNOSTRATIGRAPHY OF THE RIO
CEIRA SECTION, BUÇACO, PORTUGAL**

G. Lopes, N. Vaz, A.J.D. Sequeira, J.M. Piçarra, P. Fernandes and Z. Pereira

**EARLY ORDOVICIAN ARTHROPOD TRACE FOSSILS IN THE PRAGUE BASIN
(CZECH REPUBLIC)**

M. Mergl

**THE TREMADOCIAN DEPOSITS OF THE ARGENTINIAN EASTERN
CORDILLERA: A SCANDINAVIAN SIGNAL IN THE CENTRAL ANDES**

M.C. Moya and J.A. Monteros

**EARLY ORDOVICIAN MAGMATISM IN THE NORTHERN CENTRAL IBERIAN
ZONE (IBERIAN MASSIF): NEW U-Pb (SHRIMP) AGES AND ISOTOPIC Sr-Nd
DATA**

M. Navidad and P. Castiñeiras

**A RE-CALIBRATED REVISED SEA LEVEL CURVE FOR THE ORDOVICIAN OF
BALTOSCANDIA**

A.T. Nielsen

**DARRIWILIAN GRAPTOLITES FROM THE LINA RANGE, NORTHWESTERN
PUNA OF JUJUY, ARGENTINA**

G. Ortega, G.L. Albanesi and C.R. Monaldi

**NEW INSIGHTS INTO THE STRATIGRAPHY AND STRUCTURE OF THE UPPER
ORDOVICIAN ROCKS OF THE LA CERDANYA AREA (PYRENEES)**

C. Puddu and J.M. Casas

**BIOSTRATIGRAPHY OF THE MIDDLE ORDOVICIAN BRACHIOPODS FROM
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J. Reyes-Abril, J.C. Gutiérrez-Marco and E. Villas

**ORDOVICIAN VS. “CAMBRIAN” ICHNOFOSSILS IN THE ARMORICAN
QUARTZITE OF CENTRAL PORTUGAL**

A.A. Sá, J.C. Gutiérrez-Marco, J.M. Piçarra, D.C. García-Bellido, N. Vaz and G.F. Aceñolaza

THE LATE ORDOVICIAN GLACIAL EVENT IN THE CARNIC ALPS (AUSTRIA)

H.P. Schönlaub, A. Ferretti, L. Gaggero, E. Hammarlund, D.A.T. Harper, K. Histon, H. Priewalder, C. Spötl, and P. Štorch

POLAR FRONT SHIFT AND ATMOSPHERIC CO₂ DURING THE GLACIAL MAXIMUM OF THE EARLY PALEOZOIC ICEHOUSE

T.R.A. Vandenbroucke, H. A. Armstrong, M. Williams, F. Paris, J.A. Zalasiewicz, K. Sabbe, J. Nölvak, T.J. Challands, J. Verniers and T. Servais

CHITINOZOANS OF RIBEIRA DA LAJE FORMATION, AMÊNDOA-MAÇÃO SYNCLINE (UPPER ORDOVICIAN, PORTUGAL)

N. Vaz, F. Paris and J.T. Oliveira

ORDOVICIAN COSMIC SPHERULES FROM THE CORDILLERA ORIENTAL OF NW ARGENTINA: PRELIMINARY SEM & EDX INVESTIGATION

G.G. Voldman, G.L. Albanesi, C.R. Barnes, G. Ortega and M.J. Genge

EARLY-MIDDLE ORDOVICIAN ACROTARCH ASSEMBLAGE FROM CHENGKOU, CHONGQING CITY, SOUTH CHINA

K. Yan, J. Li and T. Servais

BIOSTRATIGRAPHY AND PALEOENVIRONMENTS OF THE SANTA ROSITA FORMATION (LATE FURONGIAN TREMADOCIAN), CORDILLERA ORIENTAL OF JUJUY, ARGENTINA

F.J. Zeballo, G.L. Albanesi and G. Ortega

DETRITAL SOURCE ANALYSES OF LATE ORDOVICIAN (HIRNANTIAN?) TO SILURIAN DEPOSITS OF NORTHWESTERN AND EASTERN ARGENTINA AND CONSTRAINTS FOR PALAEOTECTONIC EVOLUTION

U. Zimmermann



The Early to Middle Paleozoic Revolution

Bridging the Gap between the Great Ordovician Biodiversification Event and the Devonian Terrestrial Revolution

***International Geoscience Programme (IGCP) Project
591***

The Early Ordovician to Early Devonian interval contains several of the most significant paleoclimate and paleobiological events in Earth history. This interval of Earth history also contains the acme and amelioration of the Early Paleozoic Ice Age, which provides an important historical analogue for researchers of modern global change. Additionally, this interval contains the roots of the invasion of life onto land. The Earth did not go quietly into the Middle Paleozoic and the primary research objective of IGCP 591 – ‘*The Early to Middle Paleozoic Revolution*’ is to investigate this dynamic and important interval in the history and evolution of life and our planet.

IGCP 591 is designed to allow the Early to Middle Paleozoic global community an opportunity to build on the momentum gained by the highly successful IGCP projects 410 and 503 by providing a regular venue in which to continue their research and dialogue so effectively begun during those projects. We are pleased to announce the commencement of this project with the 2011 Meetings and Field Excursions of the International Subcommissions on Ordovician and Silurian Stratigraphy in Madrid, Spain, and Ludlow, England, respectively.

A host of IGCP 591 related field trips and symposia have already been scheduled, but we would love to hear of anyone interested in hosting further activities. Below we have included the tentative work plan for the project over the next five years. As with all IGCP projects, a small amount of funds are made available each year to help researchers from developing countries, students, and early career researchers attend project activities. Annual meetings are the primary objective of financial support and the majority of funds available will be directed toward attendance at the annual meeting each year. We look forward to IGCP 591 getting underway, and thank everyone in the community who emailed their support for the project.

PROJECT YEAR 1 – 2011 – IMPROVING BIO- & CHRONOSTRATIGRAPHIC CORRELATION

Joint meetings held with the Ordovician and Silurian Subcommissions

2011 – Madrid: SOS meeting and field excursion (Portugal, Ciudad Real, Iberian Range)

2011 – Ludlow: SSS meeting and field excursion (Wales, Welsh Borderlands, West Midlands)

[Special Volumes – *Spanish Geological Survey (Ord.)/Bulletin of Geosciences (Sil.)*]

Associated Symposia and/or Field Trips in 2011

Riga, Latvia (Aug. 28-Sept. 1): 8th Baltic Stratigraphic Conference & IGCP 591 regional field meeting (*Luksevics*)

Minneapolis: GSA National Meeting, Ordovician Post-Meeting Field Trip and IGCP 591 regional field excursion (Sandbian-Katian of the US Midcontinent
Oct. 9-12 (meeting) MN, WI, IA, IL) – (*McLaughlin, Witzke, Emsbo, Sell, Emerson*)
Oct. 12-15 (trip)

PROJECT YEAR 2 – 2012 – GLOBAL SEA LEVEL & SEQUENCE STRATIGRAPHY

Annual Meeting - USA

2012 – Cincinnati: **Pre** – Katian-Wenlock - Southern Appalachian Basin (KY, OH, IN)
(Cramer & Brett) **Post**– Wenlock-Lochkovian - Illinois Basin/Michigan Basin (IL, IN, MI)
[Special Volume – *Stratigraphy*]

Associated Symposia and/or Field Trips in 2012

Vienna, Austria (Apr. 7-12): EGU general assembly (*Žigaitė*)
Dayton, Ohio, USA (Apr. 22-24): GSA North Central meeting, IGCP 591/596/Pander
Society Symposium (*Kleffner, Bauer*)
Brisbane, Australia (Aug. 6-10): IGC general assembly, Symposium 3.5 in technical
program, Theme 3 (*Histon, Tewari, & Melchin*)

PROJECT YEAR 3 – 2013 – BIOLOGICAL & CHEMICAL INDICATORS OF CLIMATE EVENTS

Annual Meeting - Sweden

2013 – Lund: **Pre** – Katian-Wenlock – Mainland Sweden & Norway
(Calner) **Post** – Llandovery-Ludlow – Gotland
(Eriksson) [Special Volume – *GFF*]

Associated Symposia and/or Field Trips

2013 – Mendoza, Argentina: ICoS meeting and IGCP 591 regional field meeting (*Albanesi*)

PROJECT YEAR 4 – 2014 – EVOLUTIONARY PALEOECOLOGY AND PALEOBIOGEOGRAPHY

Annual Meeting - Lithuania

2014 – Vilnius: **Pre** – Katian-Lochkovian – Lithuanian Core Library
(*Žigaitė*) **Post** – Katian-Lochkovian – Holy Cross Mountains (Poland)
(*Radzevičius*) [Special Volume]

Associated Symposia and/or Field Trips

2014 – Nanjing, China: IGCP 591 regional field meeting (*Zhan*)

PROJECT YEAR 5 – 2015 – OCEANOGRAPHIC AND CLIMATE MODELING

Annual Meeting - France

2015 – Lille: **Pre** – Llandovery-Wenlock – Welsh Basin? (Wales)
(*Vandenbroucke*) **Post** – Ordovician-Silurian - Bornholm (Denmark)
(*Verniers*) [Special Volume]

Associated Symposia and/or Field Trips

2015 – Anticosti Island, Canada: IGCP 591 regional field meeting (*Jin & Desrochers*)

The project website (igcp591.org) is now available online. Please check it regularly for updates about upcoming meetings, travel assistance, and any other details regarding IGCP 591 as more information becomes available. We hope to see many of you at these events over the next five years.

IGCP 591 – *The Early to Middle Paleozoic Revolution*

Bradley D. Cramer (Kansas, USA)	Živilė Žigaitė (Vilnius, Lithuania)
Thijs R.A. Vandenbroucke (Lille, France)	Kathleen Histon (Modena, Italy)
Renbin Zhan (Nanjing, China)	Guillermo L. Albanesi (Córdoba, Argentina)
Michael J. Melchin (St. Francis Xavier, Canada)	Mikael Calner (Lund, Sweden)

ORDOVICIAN RESEARCH REPORTS & CONTACT DETAILS

Leho AINSAAR (Estonia) is working on Ordovician stable isotope chemostratigraphy and carbonate sedimentology. Current activities include Middle and Upper Ordovician carbonate successions in Baltoscandia, Siberia and Mongolia.

Leho Ainsaar

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Guillermo ALBANESI (Argentina) is developing his Guggenheim Fellowship (as invited researcher by visiting S. Bergstrom, C. Barnes, G. Nowlan and D. Aldridge) and is starting a new project on Lower Paleozoic conodont faunas from the Eastern Cordillera and Puna of northwest Argentina, which involves a working team from different universities and a new PhD student associated to the project for the next three years. G. Voldman defended his PhD thesis on Ordovician conodont palaeothermometry in 2010, and F. Zeballo will defend a PhD thesis on Cambrian-Ordovician conodont biostratigraphy in early 2011 under his supervision. He is participating, together with Gladys Ortega and 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. In late 2010 he joined Brad Cramer and co-leaders to submit a new IGCP project proposal as continuation of the previous 410 and 503 projects. He is coordinating the Argentine conodont team to organize the next International Conodont Symposium in Mendoza, Argentina, July 2013.

Guillermo Luis Albanesi

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Dick ALDRIDGE (UK) continues working on various Soom Shale animals, with Sarah Gabbott, Hannes Theron and others. Guillermo Albanesi and Gladys Ortega were visitors during 2010, and we spent some pleasant hours looking at a conodont fauna from Santa Gertrudis.

Richard J. Aldridge

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Chris BARNES (Canada). 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, particularly oxygen isotopes, is being pursued further in collaboration with Julie Trotter (University of Western Australia). Both Guillermo Albanesi and Gustavo Voldmann (CONICET, Cordoba) each spent two months during 2010 at UVic for conodont research. I was fortunate and honoured to receive the Logan Medal from the Geological Association of Canada and the Brady Medal from The Micropalaeontological Society in 2010.

Chris Barnes

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Jeff BAUER (U.S.A.) is continuing work on Ordovician conodonts and will be finishing a report on conodonts from the Pruitt Ranch Member of the Oil Creek Formation.

Jeff Bauer

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Juan L. BENEDETTO (Argentina) is currently working on the taxonomy, palaeoecology and phylogenetic relationships of deep-water Middle Ordovician brachiopods from the Argentine Precordillera. He has also started work on palaeoclimatic changes in the Sandbian, Katian and Hirnantian based on faunal and lithofacial shifts. Other studies include a revision of latest Ordovician?-Lower Silurian brachiopods from the Itacurubi Group of Paraguay and a study of Sandbian brachiopods of Bolivia. Luis is also involved in a program of intensive sampling of the volcanoclastic successions of the Sierra de Famatina of Floian-Dapingian age.

Juan Luis Benedetto

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Matilde Sylvia BERESI (Argentina) continues working in ongoing collaborations with Susana Heredia (conodonts) on Ordovician biostratigraphy, microfacies, and sedimentary environments of the San Juan Formation at the Las Chacritas and Villicúm Range sections, Precordillera of San Juan and of the Salagasta Range, and the San Isidro area, in the Precordillera of Mendoza Province. Other studies include sponge faunas of the Cambrian and Ordovician and Cambrian platforms. *Choiarella scotica* (demosponge) was recently published in collaboration with Joe Botting & E. Clarkson, while a publication on the oldest Ordovician foraminifers from South America in the Salagasta section, is in press (with Gallina Nestell as the first author and S. Heredia, A. Mestre and M. Beresi).

Matilde Sylvia Beresi

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Stig M. BERGSTRÖM (USA). Although retired, I am still going to the office on a daily basis and very much enjoy doing research on Ordovician matters. The past year was one of my most productive and at the moment I am involved in a variety of projects (conodonts, $\delta^{13}C$ chemostratigraphy, palaeotemperatures using ^{18}O in conodont apatite, stratigraphy, etc.) and I cooperate with workers in North America, Sweden, Norway, China, Argentina, and Germany. I am looking forward to meeting many Ordovician workers and old friends in Spain this Spring.

Stig M. Bergstrom

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Alain BLIECK (France) is still working on Early and Mid-Palaeozoic, including Ordovician vertebrates, and on their relationships to conodonts. The latter have recently been considered as "stem-gnathostomes" by a group of British palaeontologists since Donoghue et al.'s paper (2000). However, our results published in *Geodiversitas* (Turner et al., 2010) show that conodonts are neither gnathostomes, nor vertebrates, nor craniates. They are even perhaps not chordates, but our analysis does not go that far. Another shorter paper has been submitted to *Episodes* in order to present these results to geoscientists.

Dr. Alain Blicck

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Carlton E. BRETT (USA). Patrick McLaughlin and I continue to work together on a number of Ordovician projects in eastern North America with collaborators from around the region. We are working closely with Don Mikulic, Joanne Kluessendorf, and Brian Witzke on the Ordovician-Silurian boundary interval across eastern North America with many new insights and surprising results (stay tuned).

Our ongoing NSF project with Steve Westrop and Lisa Amati is focused on investigating sequence stratigraphic, geochemical, and biotic patterns through the Sandbian to early Katian. This initiative is concentrated in several different geographic areas simultaneously, including the northern Appalachian Basin, Cincinnati Arch, southern Midcontinent, and Upper Mississippi Valley; I am collaborating with Westrop and graduate student Jesse Carlucci (University of Oklahoma, Norman) on revising sequence stratigraphy of the Katian Bromide Formation in the Arbuckle Mountains, Oklahoma. Associated with this work, Pat McLaughlin and collaborators will be leading a field trip for the 2011 Geological Society of America national meeting (held in Minneapolis, MN) to sections in southwestern Wisconsin and eastern Iowa to highlight local and regional sequence stratigraphic patterns and new geochemical data through this interval.

My student Nathan Marshall is wrapping up his sequence stratigraphic and geochemical study of the Edenian Kope Formation of the Cincinnati Arch and another student, Tom Schramm, is completing a detailed sequence stratigraphic and magnetic susceptibility study on the type Maysvillian strata of Ohio, Kentucky, and Indiana.

Carlton E. Brett

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Elena BUKOLOVA (Russia) is a PhD student at the Institute of Petroleum Geology and Geophysics in Novosibirsk; she is working on Ordovician biostratigraphy and graptolites from the Gorny Altay (South of West Siberia).

Elena Bukolova

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Yves CANDELA (Scotland) is working on the Royal Museum Project destined at redeveloping new exhibitions galleries at the National Museums Scotland, Edinburgh. This project is coming to an end, and the Museum is to re-open during summer 2011. Nevertheless, I was able to continue research on Ordovician brachiopod faunas through collaboration with David Harper (Copenhagen) and Thomas Hansen (Oslo, now in Copenhagen). These investigations resulted in the publication of two papers. I am also working on relationship within the brachiopod superfamily Plectambonitoidea. I am currently working on a new choiid sponge from the Silurian of the Pentland Hills, Scotland (collaboration with Joseph Botting, now in China).

Yves Candela

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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.

Marcelo G. Carrera

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Carlos CINGOLANI (Argentina) is working (with PhD students and coworkers) on provenance and tectono-stratigraphic evolution on the Ordovician and Silurian units of the Argentine Precordillera (Cuyania) Terrane, 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. A project on Paraná Basin sequences (Paraguay) is in development. A new graptolite fauna record from the Eusebio Ayala Formation, as a part of the Itacurubí Group was described by M. Alfaro and N. Uriz. The presence of the *N. persculptus* Biozone allows us to correlate this unit with other areas of southern South America.

Research topics are:

a. *Upper Ordovician from San Rafael Block, Mendoza, as a part of the Precordillera terrane.* We obtained some geochemical and isotopic data on the Ponón Trehué Formation (Middle to Upper Ordovician), which are in contact with the Grenvillian-age basement. The provenance permits characterization of the basement of the Precordillera terrane enabling comparison to other areas.

c. *Upper Ordovician of the Northern part of Precordillera terrane.* The 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.

e. *Ordovician K-bentonites.* A PhD thesis at the University of La Plata (Andrea Bidone) 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.

g. *Intracratonic Paraná Basin of Eastern Paraguay.* A new graptolite fauna from the Eusebio Ayala Formation was recorded. A low diversity fauna of *Normalograptus persculptus* and *Normalograptus normalis* and *Normalograptus medius* were present associated with brachiopods, bivalves, trilobites and cephalopods. The *N. persculptus* Biozone allows us to correlate the Eusebio Ayala Formation with other areas of southern South America and to extend this record to sedimentary sequences of the Ordovician-Silurian boundary in high paleo-latitude peri-Gondwanan basins.

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Robin COCKS (U.K.) has had another busy year. Review papers with Trond Torsvik on the palaeogeography of the whole Palaeozoic have been accepted, on Laurentia by *Earth-Science Reviews*, and on central Gondwana (all of Africa and Arabia and parts of India, Antarctica and South America) by *Special Publications of the Geological Society, London*. A new project with Trond on Asia (apart from Siberia and India) has started. Successive global reconstructions at 10 my intervals from 540 to 400 Ma have been compiled with Trond for the “Green Book” successor edited by David Harper. Systematic work on Katian and Hirnantian brachiopods from the Chingiz Terrane, Kazakhstan, is continuing with Leonid Popov. A new systematic project has started on the Late Ordovician brachiopods of the Sholeshook Limestone, Slade and Redhill Beds and Lower Haverford Mudstone formations, Pembrokeshire, southwest Wales.

L. Robin M. Cocks

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Roger COOPER (New Zealand) reports that a major revision and standardisation of all radiometric data used for time scale calibration by Mark Schmitz (with Felix Gradstein), together with the development of a new enlarged CONOP composite sequence by Peter Sadler has led to a revision of the Ordovician and Silurian time scales for the forthcoming Elsevier book on the Geochronological Scale (Gradstein et al.) due out in 2012. The new scale is based on the stratigraphic distribution of 2154 graptolite species in 518 sections from around the world. The method is the same as used for the 2004 timescale of Gradstein et al. The same CONOP composite is being used to derive precise evolutionary rates and standing species diversity for the graptolite clade. Papers are in preparation for the ISOS meeting in Madrid and the *Proc. Yorks. Geol. Soc.* volume commemorating the work of Barrie Rickards. One notable outcome of this work is the sharp contrast in evolutionary dynamics between the Ordovician and the Silurian and the close correlation in extinction and origination with the $\delta^{13}\text{C}$ curve, particularly in the Silurian. A paper in *Paleobiology* uses the CONOP composite to find that extinction probability in graptolites is dependent on the environment in which they lived; shallow water species had a median duration twice as long as that of deep water species. A review of graptoloid paleoecology (with Sue Rigby, David Loydell and Dennis Bates) has been completed and will form the basis for the Paleoecology chapter in the graptolite Treatise. With Ian Percival, Yongi Zhen and John Simes the microfauna (mainly conodonts and inarticulate brachiopods) of the Early Ordovician of the Maruia area in the South Island are being described. The fossils are from the Sluice Box Formation (an equivalent of Summit Limestone) and range from Late Cambrian to Darriwilian.

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Paul COPPER (Canada/France) is working on additional monographs about the Anticosti spire-bearers at the O/S boundary, i.e. the atrypids, athyrids and the Silurian late-comers in Laurentia, the spiriferids. And a paper with Jin Jisuo about the nature of the Hirnantian [Gamachian] brachiopod fauna on Anticosti, extinctions and recovery, vis-à-vis the conventional stratigraphy at the boundary, sequence stratigraphy and chemostratigraphy.

I am also in a small part of a submitted paper looking at the Anticosti O/S boundary using acritarchs (with the Lille group)

Paul Copper

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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 at contributing to a better knowledge of the Palaeozoic stratigraphy and also defining prospecting guides for gold. Detailed studies were and are being developed on the Cambro-Ordovician transition, Lower Ordovician ironstones bearing volcanogenic prints with organic matter, hydrocarbons, 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.

Helena Couto

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Aurélien DELABROYE (France) defended his PhD thesis at Lille on March 2010 (France) on acritarch dynamics across the Ordovician-Silurian boundary. Several papers extracted from his manuscript are currently under press or have been submitted. Now, working at the “Laboratoire des Mécanismes et Transferts en Géologie” (Toulouse) since September as teaching assistant in Palaeontology, he begins to focus on the problematical “Late Palaeozoic Phytoplankton Blackout” with his colleague, Dr Markus Aretz.

Aurélien Delabroye

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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. Starting from last year, I am busy with a 3-year project “Comparative analysis of the biotic evolution in the Ordovician paleobasins of the Siberian and Russian platforms in connection with changes of paleogeographical conditions” (financed by the Russian Foundation for Basic Research). In this work I am collaborating with Alexaner Kanygin, Taras Gonta, Alexandr Timokhin, Veronica Kushlina, Elena Raevskaya and Tatiana Tolmacheva. I am also working on the Ordovician ichnofossils and ichnofacies from both platforms in close cooperation with Radek Mikuláš and Richard Bromley.

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Svetlana DUBININA (Russia) is working on the Late Cambrian and Early Ordovician conodonts from carbonate facies of the Batyrbay section (Malyi Karatau, South Kazakhstan). I and my colleagues Korchagin, O.A. (Moscow, GIN RAS), Tsel'movich, V.A. (Geophysical Observatory Borok – Branch of Institute of Physics of the Earth, RAS, Borok) have repeated the investigation of the highest Batyrbaian Stage of the Upper Cambrian in the Batyrbay section. I distinguished a stratigraphic interval between the upper boundary of the Batyrbaian Stage and the lower boundary of the Ordovician as a new Aisha-Bibian Stage, occupying the highest unit in the stratigraphic sequence of stages of the Cambrian System. A stratigraphic range of this Stage and Global Standard Stratotype-section and Point (GSSP) for the lower boundary of the Aisha-Bibian Stage has been proposed. The Aisha-Bibian Stage corresponds to the upper part of the Stage 10 of the International Stratigraphic Scale. I am working in cooperation with Gappar Kh. Ergaliev and V.G. Zhemchuzhnikov (K.I. Satpaev Institute of Geological Sciences, Republic of Kazakhstan) on the Late Cambrian conodonts of the Batyrbay section, i.e. in the interval of the section that corresponds to the Lower part of the Stage 10. Also, I am working on the Ordovician conodonts from various rock complexes of the Ordovician convergent margin investigated in the Southern Urals structure. In this topic I continue to collaborate with structural geologist Aleksei Ryazantsev (Moscow, GIN RAS). The Ordovician conodont biostratigraphic framework of the Southern Urals has already been elaborated and published, but I am presently improving this scale.

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Bob ELIAS (Canada) continues to study coral faunas during the great Ordovician biodiversification, end-Ordovician mass extinction, and Early Silurian recovery. A major paper on “Coral biogeography in the Late Ordovician (Cincinnatian) of Laurentia” has been completed in collaboration with Graham Young (Manitoba Museum, Canada), Dong-Jin Lee (Andong National University, Korea), and Boo-Young Bae (Seoul National Science Museum, Korea). It will be published in a Geological Society Memoir on Early Palaeozoic Palaeobiogeography and

Palaeogeography. I and Graham Young (adjunct professor) welcome inquiries from students interested in graduate studies at University of Manitoba [see www.umanitoba.ca/geoscience/program/gradstudies/gradbrochurejune08.pdf]. Lori Stewart is completing a M.Sc. thesis on the stratigraphy, paleoenvironments, and paleoecology of a fascinating Upper Ordovician section in central Manitoba. Matt Demski has started a M.Sc. thesis on the Ordovician-Silurian boundary interval and associated coral faunas in the Williston Basin area of Manitoba and Saskatchewan. Preliminary results of some of their work were presented at GeoCanada 2010 in Calgary and IPC3 in London. Ben Wheadon is doing a B.Sc. thesis on the O-S boundary interval in the Hudson Bay Basin at a site near Churchill, Manitoba. Together, these are the first studies of the uppermost Ordovician and O-S boundary in Manitoba and Saskatchewan to integrate isotopic data with litho- and biostratigraphy, including conodont analyses by Godfrey Nowlan (Geological Survey of Canada).

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Annalisa FERRETTI (Italy). My Ordovician research continues to be concentrated on conodont faunas from South Europe. Data integrated from multidisciplinary studies in the Carnic Alps by an international team of researchers led by Hans Peter Schönlaub focused on different aspects of lithostratigraphy, biostratigraphy, chemostratigraphy and chronostratigraphy have highlighted further evidence for the Hirnantian Stage. Preliminary results will be presented at the ISOS meeting in Madrid.

I was recently 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 Third International Palaeontological Congress (IPC3) of London 2010. A Special Issue of *Palaeogeography, Palaeoclimatology, Palaeoecology* on the same topic will follow the Symposium. A multi-team study on the significance and nature of peculiar “colours” in some Palaeozoic sequences from N Gondwana has revealed a distinct signal of microbial activity. Results have been presented at the same IPC3 Symposium.

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Åsa FRISK (Switzerland) finished her PhD at Uppsala University (Sweden) in the end of 2009, thesis titled "Late Ordovician faunal distribution and ecospace partitioning in marine impact craters: the aftermath of the Lockne and Tvären events".

She recently started working as a postdoc at the Paläontologisches Institut und Museum, Zürich, Switzerland, focusing on the biotic recovery after the Permian-Triassic Mass Extinction. However, she is still working on several Ordovician projects (Upper Ordovician of the Siljan District, the Bjørkåsholmen Formation, the Dalby Limestone and related faunas, Ordovician marine impacts).

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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 Tremadocian trilobites and linguliform brachiopods from the eastern Alborz Mountains in northern Iran, upper Ordovician trilobite and associated faunas from Zagros Mountains, southern Iran and Late Ordovician (Sandbian to early Katian) raphiophorid trilobite associations of Central Kazakhstan.

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Thomas HANSEN (Denmark) reports that he is presently not working on the Ordovician. Never the less the year 2010 saw the publication of a small paper on cyrtometopinid trilobites from Russia and a joint paper with Yves Candela on brachiopod associations from the Middle Ordovician Elnes Formation in Norway. A final paper written together with A. T. Nielsen and D. L. Bruton on the palaeoecology of a late Mid Ordovician mud dominated epicontinental sea was published in January.

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David A.T. HARPER (Denmark) continues research 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 Mc 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). Studies continue with Rong Jiayu, Chen Xu, Zhan Renbin 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 Stage, the late Ordovician extinctions and early Silurian recovery. New projects on the Ordovician of southern Tibet and Xinjiang have been developed with Zhan Renbin (Nanjing), Liu Jianbo (Beijing), Lars Stemmerik and Svend Stouge (Copenhagen) and work is proceeding on material collected during 2009 (Tibet) and 2010 (Xinjiang). And the Palaeozoic group in Copenhagen together with Glenn Brock and his colleagues in Macquarie have been investigating the Ordovician in the Amadeus Basin, central Australia. 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 2.07 is available at <http://folk.uio.no/ohammer/past>). Within the frame of the now completed IGCP 503 project, Dave Harper and Thomas Servais are currently editing some 20 manuscripts that address the relationships between biogeography and palaeogeography in the Early Palaeozoic. These results will be published later this year in a *Geological Society of London Memoir*.

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Susana HEREDIA (Argentina) is working on Middle Ordovician conodonts of the *Lenodus variabilis* to *Eoplacognathus suecicus* Zones (taxonomy and biofacies) in the Central Precordillera. Lower Ordovician conodonts from the Southern Precordillera are still under study. Ordovician conodonts from Eastern Cordillera (NW Argentina) are being studied with PhD student Josefina Carlorosi. In December 2010 Ana Mestre submitted her PhD dissertation on Middle Ordovician conodonts of the Central Precordillera, now obtaining her doctorate. Susana shares interests on Ordovician matters with Matilde Beresi, Guillermo Aceñolaza, Gilberto Aceñolaza, Juan Pablo Milana, Galina Nestell (soon a paper about the oldest foraminifers from South America will be published) and Graciela Sarmiento.

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Linda HINTS (Estonia) continues studies of the Upper Ordovician sections and brachiopods, with special attention to Hirnantian brachiopods in the East Baltic.

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Olle HINTS (Estonia) is continuing studies primarily on Ordovician-Silurian microfossils. Together with colleagues from Tallinn several collaborative studies are under way and some results have been published on Darriwilian and Hirnantian intervals. As a new direction, together with Jaak Nõlvak (Tallinn), he started CONOP9 quantitative stratigraphic approach in order to model the distribution and biodiversity of Ordovician chitinozoans (a paper to be presented on 11th ISOS). Together with Mats E. Eriksson (Lund) he is studying Ordovician and Silurian scolecodonts. A systematic review of the characteristic Ordovician family Polychaeturidae was published in 2010 and a paper on polychaete palaeobiogeography was completed for the *Geological Society of London Memoirs* series. Together with Marco Vecoli (Lille) and Aurelien Delabroye (Toulouse) two papers on latest Ordovician acritarchs and cryptospores from Estonia are currently in press, and a review of the diversification of Ordovician microphytoplankton in Baltica was published in the special issue of PPP, jointly with Thomas Servais (Lille) and other colleagues. Olle also continues development of Estonian geocollections database, which contains growing information on Ordovician fossils, localities, drill cores, geochemistry etc and is freely accessible at <http://sarv.gi.ee>.

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Anette E.S. HÖGSTRÖM (Norway). The most important change is that as of September 2010 I am at the Tromsø University Museum, with a permanent position providing exciting new possibilities.

Anette E.S. Högström

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Dimitri KALJO (Estonia) is still working on the Ordovician and Silurian bio- and chemostratigraphy of Baltica and elsewhere for comparison. Some team works about Ordovician chemostratigraphy in Baltica and Mirny Creek area (Russia) are close to being finished.

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Petr KRAFT (Czech Republic) continued a project on the upper Katian in the Prague Basin. Together with my student and several colleagues we studied especially integrated stratigraphy of this interval. As several large building projects (especially reconstruction of the railway near Rokycany) I spent the second whole field season by collecting interesting and partly very rich material from temporary outcrops in Lower and Middle Ordovician. I also continued one project and started the second one on New South Wales graptolites together with Ian Percival and some other colleagues.

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Björn KRÖGER (Germany) currently is concentrating on the Ordovician diversification of reef environments. I work on the sedimentology and fauna of the Katian reefs of the Vasalemma Formation, Estonia in cooperation with Mare Isakar.

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. A revision of a Floian cephalopod association from Morocco is in preparation. 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) has had to stop field work in Algerian Sahara. Now, I am studying Uppermost Ordovician graptolites of this country.

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Alain LE HERISSE (France) is continuing work on Ordovician, Silurian and Devonian Organic-Walled Microphytoplanktonic assemblages and related forms. Interests are for detailed biostratigraphy, and impact of the climatic and oceanic changes and bioevents on their succession. Main papers in preparation concern: the Upper Ordovician of Saudi Arabia (in collaboration with M. Al Ruwaili, M. Miller and S. Molyneux); the Ordovician/Silurian boundary of Chad (in collaboration with F. Paris and P. Steemans); the Ordovician/Silurian boundary of the Sbaa basin, Algeria (in collaboration with E. Portier GDF-Suez, F. Paris and B. Videt); the Upper Ordovician of the Northeast Algeria and comparisons with sections of Morocco and Mauritania; The Upper Devonian of the Amazon basin (in collaboration with J.H.G. Melo and R. Rodriguez, Petrobras) and a Palynozonation of the Devonian of Bolivia (in collaboration with J.H.G. Melo). Also I collaborate with E. Javaux, P. Steemans of Liege, Belgium, and C. Marshall (University of Kansas, Lawrence, USA), using non diagenetic material of acritarchs, to establish their biogeochemical signature and to discuss the classification and evolution of microorganisms.

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LI Jun (China) continues working on Ordovician acritarchs from China. In late May and early June, he went to Prague, Czech Republic, participating in two meetings: the ICS (International Commission of Stratigraphy) workshop, the GSSP Concept, and 15th Field Conference of the Cambrian stage Subdivision Working Group. In September, he went to Warsaw, Poland taking part in the CIMP 2010 General Meeting. Before the meeting, he was in Lille, France to work with Thomas Servais.

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Anita LÖFGREN (Sweden) is continuing work on Ordovician conodonts, mainly with biostratigraphical aspects and in Baltoscandia.

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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 December 2010 a project “Upper Ordovician-Lower Silurian conodont biostratigraphy in stratigraphic sequences” ended. Final papers of the project are in preparation. I am also participating in projects “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 faunas and sedimentary basins on different palaeocontinents are going on. A paper about Ordovician-Silurian boundary in Subpolar Urals (Russia) is in press.

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

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Tõnu MEIDLA (Estonia) is actively working on several aspects of Ordovician and Silurian ostracods from the Baltic area and Canada, in cooperation with O. Tinn and V. Perrier. We also have obtained some preliminary results in quantifying the biogeographic patterns of Ordovician ostracods (in cooperation with O. Tinn, M. Williams, D. Siveter, M.J. Salas, T. Vandenbroucke and K. Sabbe). A research project dealing with various aspects of the Ordovician palaeoenvironments (palaeoclimates, stable isotopes) is in progress, in cooperation with L. Ainsaar, O. Tinn, V. Perrier. Sea level studies are continued in cooperation with L. Ainsaar and A. Dronov.

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Michal MERGL (Czech Republic) is working on detailed research of the faunistic turnover around the Katian/Hirnantian boundary in the Barrandian of the Czech Republic. In 2007 a new locality with finely preserved fauna of the so-called “Pernik Bed” was observed and careful laboratory sampling has been carried out in the past few years. There are new taxa of bryozoans, brachiopods, ostracods and especially odontopleurid trilobites. Just above this fauna, the shelly *Hirnantia* Fauna with *Kinnella kielanae* and *Hirnantia sagittifera* has been observed at the base of the Kosov Formation (the new, early Hirnantian horizon with this fauna in Bohemia).

My other research is focussed on the Tremadocian fauna of the Barrandian with the overlap to Klabava Formation (Floian and Dapingian). Revision of rhynchonelliform brachiopods of the Tremadocian is being prepared, based on new material, including the enigmatic “orthid” *Poramborthis*.

My third interest focusses on Silurian and Devonian phosphatic brachiopods, especially discinids, and other non-conodont phosphatic “small shelled fauna”. I am now fairly occupied by University administration work but the Ordovician is still my favourite.

Request to conodont workers... Would anyone be interested in participating in a (probably very problematic) taxonomic evaluation of the drepanoistid conodonts from

the late Tremadocian – Floian of the Barrandian? I have small collection (tens of specimens) of material (fairly well) preserved as external and partially internal moulds in fine red shale. It is not problem to collect others. Any idea about age and correlation of these conodonts would be welcome, because other stratigraphically important groups (trilobites, organic walled fossils) are missing. Latex replica of these moulds were prepared and studied on SEM and show nice details.

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Ana MESTRE (Argentina) is working on Middle Ordovician conodonts of the *Lenodus variabilis* to *Eoplacognathus suecicus* Zones (taxonomy and biofacies) in the Precordillera. Lower Ordovician and Silurian conodonts and forams from the Precordillera are still under study. Ana shares interests on Ordovician and Silurian matters with Susana Heredia, Matilde Beresi, Galina Nestell (soon a paper about the oldest foraminifers from South America will be published) and Graciela Sarmiento.

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Tatiana L. MODZALEVSKAYA (Russia) is actively continuing work on project: "Ordovician and Silurian Palaeogeography East-European Platform on the biogeography base of the studying separate fauna. Biogeography and migration way through the East- European Silurian Basin.
In collaboration with Prof. Fernando Alvarez (Spain) we shall prepare a manuscript about Palaeozoic diversification of Kuzbassian plicatyrindines (Brachiopoda).

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Elise NARDIN (Germany) is working on faunal dynamics and the interactions between geosphere and biosphere during the early-middle Paleozoic. The diversification dynamics research focuses on the blastozoan diversification processes. The first approach is the establishment of a phylogeny of the blastozoans showing the relationships with contemporaneous echinoderms (e.g., crinoids, edrioasteroids). This will result on a better understanding of the ontogeny and diversification processes, and its timing. The second approach is the question of the impact of the environmental factors on the morphological changes and the diversity dynamics of Palaeozoic fauna (collaboration B. Lefebvre (Univ.-Lyon, France), M. Aretz (Univ.-Toulouse, France), J. Bohatý (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 some major biogeochemical cycles (collaboration with Y. Godd eris, Y. Donnadieu, and G. Le Hir), and their impact on the marine life.

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Godfrey S. NOWLAN (Canada) continues to have a moderate level of research at the moment. Our conodont lab receives substantial numbers of samples and reports are prepared. In 2010 I completed reports on Cambrian, Ordovician and Silurian conodonts from Victoria Island, the Sekwi and Little Bear River areas of Northwest Territories, the Coal River area of Yukon, and stratigraphic wells on the shores of Hudson Bay, near Churchill, Manitoba. I have completed a paper with Keith Dewing on the Arctic margin of Laurentia for the Great Carbonate Bank to be published as an AAPG Memoir. I continue to work mainly in geoscientific outreach, currently focused on winding up the celebration of the International Year of Planet Earth in Canada. I am also involved with a bid by Canada for the 36th International Geological Congress in 2020.

Godfrey S. Nowlan

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Olga OBUT (Russia) is working on paleontology and biostratigraphy of the Ordovician radiolarians, chitinozoans and conodonts from South of West Siberia.

Dr. Olga T. Obut

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Alan OWEN (UK) is continuing his investigations of Ordovician deep-water trilobites; a paper with Mike Romano (Sheffield) documenting the fauna from the Oriel Brook Formation in eastern Ireland is in press and the description with David Bruton (Oslo) of the fauna from the Upper Ordovician Pyle Argillite in Maine is nearing completion. 2010 saw the publication of a thematic set of papers (edited jointly with Thomas Servais, Lille) on Early Palaeozoic Palaeoenvironments and included a review paper on the palaeoenvironmental context of the Great Ordovician Biodiversification Event with Thomas Servais and others. Study of an abnormal Upper Ordovician encrinurid trilobite specimen is still in progress with Patrick McDermott (St Clears, South Wales) and my student Clare Torney has successfully defended her PhD thesis on the fine scale crystallographic structure and chemistry of trilobite eyes.

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Florentin PARIS (France) retired on November 1st, 2010 and thus is no longer at Rennes University. However, he continues at home (new e-mail address: [<florentin.paris@orange.fr>](mailto:florentin.paris@orange.fr)) his investigations on Ordovician chitinozoans from northern Gondwana and he is completing several papers dealing with Upper Ordovician material (Mauritania, Morocco). The database CHITINOVOSP is being updated. An English version of this database recording the most important features of the 1240 chitinozoan species described (up to 2010) is now available (see notice earlier in this issue of *Ordovician News*).

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Matthew PARKES (Ireland) is working on Ordovician sections in Ireland at Portrane and Lambay Island, and at Kildare. A description of the brachiopod fauna at Raheen (County Waterford) with Dave Harper and Zhan Renbin is near completion. Work with Dave Harper, Svend Stouge and George Sevastopulo on the faunas at Bellewstown is ongoing.

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Ian PERCIVAL (Australia) maintains an active interest in Ordovician conodonts in cherts of the Lachlan Orogen in central and southern New South Wales, extending this into documentation of the diverse associated biota occurring in these deepwater cherts for a symposium at the International Palaeontological Congress in London in July 2010. He continued collaboration with Yong Yi Zhen (Australian Museum) on Ordovician conodont biostratigraphy of China. Ian was extensively involved with the International Brachiopod Congress that took place in Melbourne in February 2010, including co-leading a field trip to central NSW. Study of Australasian Ordovician brachiopods continues, with input of Australian and New Zealand distributional data into papers being prepared for the forthcoming *Geological Society of London Memoir* on Ordovician and Silurian biogeography. Data from Australia on Ordovician – Silurian gastropods and their kin was also assembled for this project. Study of Darriwilian acrotretoid brachiopods and conodonts from the Maruia area in the South Island of New Zealand is underway (with Yong Yi Zhen, Roger Cooper and John Simes). Ian has now ventured into graptolites, recently hosting Petr Kraft (Charles University, Prague) on a short visit to study Early Ordovician graptolites of NSW.

Apart from research, Ian remains responsible for day-to-day palaeontological advice and identification services to support the regional mapping program of the Geological Survey of NSW. A paper reviewing all Cambrian and Ordovician stratigraphic units throughout the state has been submitted, as has another reassessing Ordovician stratigraphy in the Wellington region of central NSW.

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

José Manuel Piçarra d'Almeida

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Teresa PODHALAŃSKA (Poland) is working on the Ordovician/Silurian boundary beds, biostratigraphy, microfacies, Llandovery graptolites, chemostratigraphy and sea-level changes in the Late Ordovician and the Early Silurian in Poland. I deal with the carbon isotope data from the upper Ordovician and the lower Silurian strata and their interregional correlation. Recently I also have been studying Silurian biostratigraphy and graptolites.

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Leonid E. POPOV (United Kingdom) is currently working on the Ordovician brachiopod faunas from Kazakhstan and Iran. Other aspects of the ongoing research include Ordovician brachiopod biogeography, biofacies, systematic and ontogeny.

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Brian R. PRATT (Canada) continues to work on various Ordovician themes, including in the subsurface of Saskatchewan, the Canadian Arctic, the Rocky Mountains of western Canada, western Newfoundland, and western Argentina. A preliminary report was published of our study tracking deformation horizons observed in core and ascribed to earthquake events that occurred during deposition. These in turn are being related to basement faults, as a measure of synsedimentary tectonic activity.

Prof. Brian R. Pratt

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G. Susana DE LA PUENTE (Argentina) is continuing with her postdoctoral fellowship (CONICET) on chitinozoa of the Silurian successions from northwestern Argentina, focusing on the assemblages of the Ordovician-Silurian boundary, under the direction of Dr. Claudia Rubinstein in the Palaeopalynology Unit at IANIGLA-CCT, CONICET Mendoza. From February to March 2011 I was working on a two month CONICET grant with Thijs Vandenbroucke at the University of Lille. This grant is part of my postdoctoral fellowship and includes the chitinozoan studies of the Upper Ordovician-Silurian levels from the Sierras Subandinas, in the eastern part of the Central Andean Basin of Argentina. I have been awarded a job as a scientific researcher of the National Council of Scientific and Technical Research (CONICET) of Argentina where I will continue working on chitinozoans.

It is a pleasure to communicate that the proposal by Claudia Rubinstein, Beatriz Waisfeld and Claudia Marsicano to organize the **Fourth International Palaeontological Congress in Mendoza, Argentina in 2014** has been accepted. It will be held from September 28th to October 3rd, 2014. Therefore, I will be actively involved in this organization over the next few years.

Graciela Susana de la Puente

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John REPETSKI (USA) continues to work chiefly on Ordovician and Late Cambrian conodonts and biostratigraphy of several regions of Laurentia, including the Appalachians, Midcontinent North America, Great Basin, and Alaska. I collaborated on several of the chapters in the forthcoming AAPG Special Volume on the ‘Great American Carbonate Bank.’ This volume is [finally] in press and may appear during 2011 (containing approximately 50 papers concerning Ordovician topics).

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RONG Jiayu (China) has been working on the following fields: 1) Expansion of the Cathaysian Oldland and Central Guizhou Oldland through the Ordovician-Silurian transition and their possible dynamics using biostratigraphic, synecological, and palaeogeographical data; 2) Uplift of the Yangtze Platform in Silurian; 3) Telychian shallow marine red beds; 4) The brachiopods through the Ordovician-Silurian transition following the *Hirnantia* Fauna in Southeastern China.

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Artur Abreu SÁ (Portugal) continues working on Ordovician stratigraphy and faunas of the Central-Iberian Zone in Portugal (with Juan Carlos Gutiérrez-Marco, José Piçarra, Carlos Meireles and Nuno Vaz) and Spain (with Juan Carlos Gutiérrez-Marco and Isabel Rábano). My work is also focused in the Ordovician Geological Heritage of Portugal (Arouca Geopark and Ordovician of Central-Iberian Zone Framework) and Spain (Geodiversity and Geosites of the Cabañeros National Park). I'm involved in the organization of the 11th ISOS, mainly in the preparation of the Pre-Symposium field-trip that will be held in Portugal and Northern Spain. I'm also starting the supervision of two Ph.D. students in Middle and Upper Ordovician trilobites of Portugal. I'm still working as Scientific Coordinator of the Arouca Geopark (EGN/GGN).

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Matthew SALTZMAN (USA) is working on a project with Steve Leslie (James Madison University) related to Sr and Nd isotope stratigraphy of the Ordovician, particularly focused on the continuity of deposition through the Darriwilian and Early Sandbian in the Central Appalachians. This work is collaborative with Stig Bergstrom, Ken Foland, Alyssa Bancroft, and Amanda Howard at Ohio State, as well as John Repetski at the USGS and Seth Young and Indiana University. Matthew is also working on a collaborative project with Steve Westrop (Univ of Oklahoma), Lisa Amati (SUNY Potsdam), and Carlton Brett (Univ of Cincinnati) to understand changes in carbon cycling that occurred together with faunal changes in response to the Taconic orogeny.

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Teresa M. SÁNCHEZ (Argentina) is continuing work on the early Ordovician bivalves from northwestern Argentina in order to understand the early stages of bivalve evolution in the context of the early Ordovician radiation on the Gondwana shelves. Research focuses on the taxonomy, phylogeny and paleoecology, including ecospace occupation through the Ordovician diversification. Currently I am working on the next version of the Treatise of Paleontology, Bivalvia and Rostroconchia revised. Also I am working on the taxonomy of Paleozoic protobranch bivalves.

Teresa M. Sánchez

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Nikolay SENNIKOV (Russia) is working on lithostratigraphy, biostratigraphy, paleobiogeography and Ordovician graptolites from the Altai-Sayan Folded Area and Siberian Platform. Continuing research is focused on: a) Ordovician graptolite zonation for the Gorny Altai and Salair, South of West Siberia, Russia (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).

Late Ordovician reefs of the Altai-Salair basin (South of West Siberia)

Two Late Ordovician reef-forming events have been revealed and investigated in the Altai-Salair basin (Drs. N.V. Sennikov, O.T. Obut, T.Yu. Tolmacheva, PhD student E.V. Bukolova, MS student R.A. Khabibulina). Duration of reef formation ranged from 0.5 to 3 Ma (early-middle Katian, early Hirnantian). Intervals with retardation of reef-formation or their reduction ranged about 10 Ma.

Studied reef systems were “level-sensitive” and stretched on more than 300 km. By scale they are comparable with the modern Australian Great Barrier Reef. Thickness of the Late Ordovician (early-middle Katian and early Hirnantian) Altai-Salair reef deposits, represented by massive, non-bedded limestones that characterized the central part of the carbonate platform, is 250-400 m. Width of the carbonate platforms is estimated at 5-10 to 15-20 km. The more diverse litho-facies found in the profile of the carbonate platform, the wider was the carbonate platform. Reefs maximal in size (2-3 km in diameter) were concentrated closer to the outer edge of the carbonate platform. Here large algal bioherms up to 15-25 m in diameter were formed.

Ordovician reef systems were formed on the outer shelf and their outer slopes were close to the continental slope. The early-middle Katian Altai-Salair carbonate platform was formed during regional transgression that coincided with a peak of global transgression. The Altaian early Hirnantian carbonate platform was formed during sea-level rise and regional downwarping (more than 500m), that compensated for coinciding global regression.

On the outer margin of the Altaian early Hirnantian carbonate platform, distant (up to 5-10 km) towards the open-oceanic basin, terrigenous-siliceous sedimentation occurred at the over-deepened shelf. On the basis of bio-indicators, reconstructed depths are estimated at 300-600 m. During the Late Ordovician, migration of the

Altai-Salair carbonate platform inner and outer margins took place. The inner margin of the carbonate platform experienced the greatest movements (up to 10 km).

It was mentioned that paleobiota structures in separate litho-facies of the Altaian Late Ordovician reef systems during the same chronostratigraphic interval were considerably different.

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Philippe STEEMANS (Belgium) is working on miospores ranging from the Ordovician up to the Early Devonian from Argentina with my colleague Claudia Rubinstein (Mendoza). Charlie Wellman (Sheffield), Merrell Miller (Dhahran) and I are writing an expanded paper on the Ordovician material from the QSAIBA borehole (Saudi Arabia) in which we had found the oldest trilete spores. We had published in a synthetic paper in *Science*. Pierre Breuer (Dhahran) and I are writing a huge paper (mainly concerning spore systematics) on the Late Pragian up to the Givetian/Frasnian boundary from Saudi Arabia. Emmanuelle Javaux, Kevin Lepot and I (all from Liège) are working on the chemical composition, ultrastructure, FTIR analysis on the enigmatic Ordovician *Gloeocopsomorpha prisca*. This material has been collected during a field trip I have done in the St Petersburg area with Lena Raevskaya (St Petersburg).

I'm hand picking Silurian cryptospores and trilete spores from Götland, from the same locality on which I have published with co-authors this year in RPP. This material will be send to my colleague Suryendu Dutta (Bombay) for a geochemistry analysis using pyrolysis-GC-MS.

I have progressively moved my researches in the field of geochemical and FTIR analysis done on different fossil palynomorphs to compare with extant ones to better characterise the biological affinity of what we observed under microscope.

Request for spore samples ... I'm building with my assistant, Elodie Petus, a database on the most important spore species from the Ordovician up to the Carboniferous. This work was begun in 2009 and will continue up to the end of 2002. This database is financially supported by a petroleum society from Brazil (I let you guess). I take this opportunity to ask if you would have available samples from the Late Devonian up to the Bashkirian to put into this database. You may contact me by email p.steemans@ulg.ac.be. Of course expenses will be refunded.

Philippe Steemans

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Thomas J. SUTTNER (Austria) is working on Late Ordovician faunas of the neritic sequence of Spiti (N-India). Apart from other manuscripts related to the Himalayan sections, I worked together with Erika Kido on a sort of review-manuscript of Ordovician and Silurian events related to the distribution of reefs (still in press).

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Blanca A. TORO (Argentina). After making two scientific visits to China during 2010, I continued to focus on multidisciplinary projects related to taxonomic and paleobiogeographic aspects of the Lower Paleozoic graptolites of South America (NW Argentina and Bolivia). A new graptolite, chitinozoan and acritarch assemblage was recently described in the Argentine Eastern Cordillera. First achievements related to the biostratigraphic analysis of the Floian graptolites from the Aguilar range were also presented (together with the PhD student under my direction, Barbara Vento). Statistical treatment of the paleobiogeographic affinities is under preparation in cooperation with Jörg Maletz. Collaborative research with Zhang Yuandong and Chinese colleagues continues with the main objective of integrating the expected results of the comparative study between early Ordovician graptolites of NW Argentina and South China and equivalent records obtained by Jörg Maletz in Sweden.

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Thijs VANDENBROUCKE (France) integrated the “Géosystèmes” research group of the University of Lille1 (France) as *Chargé de Recherche* of the French CNRS (www.cnrs.fr) in October 2009. His current research projects continue to test the potential of several methods for ground-truthing Ordovician climate models and hypotheses. The main focus stays on using the palaeobiogeography of planktonic chitinozoans and graptolites to ground-truth Ordovician climate model (GCM) predictions of ocean state. The results from well-defined time slices in the Upper Ordovician have been published in *Pal. Pal. Pal.* and *PNAS* last year (see publication lists), including a re-assessment of Hirnantian atmospheric CO₂ levels. Together with Mark Williams (University of Leicester), Howard Armstrong (Durham University) and Jan Zalasiewicz (University of Leicester), Thijs hosted a session at the IPC3 meeting in London (June 2010), entitled “Modelling the climate of Palaeozoic Earth”.

He also hosted the 54th Annual Meeting of the Palaeontological Association, together with Stephen Louwye and Jacques Verniers of Ghent University.

We are 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, Hunterian Museum). In Lille, Elise Porez has started an MSc research project on a Hirnantian section in central Wales and Susana De La Puente is visiting the department for a few months as a postdoc, to work with us on Late Ordovician - Early Silurian biostratigraphic problems in Argentina.

Next to the Ordovician projects, I remain involved in several projects dealing with the Silurian System, most notably in a revision of the stratigraphy and facies architecture of the Llandovery type area in South Wales together with Jeremy Davies (BGS), Richard Waters (National Museum of Wales), Stewart Molyneux (BGS), Mark Williams, Jan Zalasiewicz, and Jacques Verniers.

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Jacques Verniers

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Viive VIIRA (Estonia) continues working on Ordovician conodonts. A paper on Early and Middle Ordovician conodonts from SE Estonia subsurface is in press in *Estonian Journal of Earth Sciences*.

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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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Wenhui WANG (China) is mainly working on Tremadocian graptolites from the Nanba area of Hunan province, South China. In 2010, I studied at the Research Unit of Paleontology at Ghent University under the supervision of Jacques Verniers and Thijs Vandenbroucke. There I worked on the Late Tremadocian chitinozoans from the Nanba Section, South China. In this study, I am able to make a calibration between the earliest chitinozoan biozones versus graptolite biozones.

Since the beginning of 2011, I have been looking at acritarchs from the same section in South China with the guidance of Marco Vecoli and Jun Li. A diverse and moderately well preserved fauna has been presented. My continuing work and part of my Ph.D thesis will be trying to establish cross correlated acritarch–chitinozoan–graptolite biozonation in the Tremadocian for the Jiangnan slope region in South China.

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Barry D. WEBBY (Australia). The *Treatise Online* was launched as a version of the *Treatise on Invertebrate Paleontology* from the Paleontological Institute in Lawrence, Kansas October 2010. As coordinating author of the *Treatise on Invertebrate Paleontology*, Part E, Revised volume 4 (Hypercalcified Porifera) I had a role in the processing the 12 uploaded chapters that dealt with topics such as the Palaeozoic stromatoporoids by Colin Stearn, a chapter on the living hypercalcified sponges by Jean Vacelet & others, and was responsible for compiling a glossary of terms for all fossil and living hypercalcified sponges (including living forms, the stromatoporoids, chaetetids, sphinctozoans, inozoans and archaeocyaths) – see Webby (2010) in list of publications. Further chapters are currently being uploaded to the *Treatise Online*, and when this has been completed, the next task will be to assemble all the chapters together into a printed volume of the *Treatise on Invertebrate Paleontology* Part E, Revised volume 4. In addition, a joint paper on the Ordovician and Silurian biogeography of stromatoporoids with Heldur Nestor is in press as part of the final IGCP 503 volume on the Lower Palaeozoic palaeobiogeography, expected 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 transferring an extensive Ordovician collection to the two main long-term fossil repositories in the Sydney region (the Australian Museum, and Londonderry laboratory and storage facility of the Geological Survey of New South Wales). However, also thin sectioning and preliminary descriptions of a small collection of Ordovician sphinctozoans and other sponges collected originally by Leonid Popov from Kazakhstan is also under way with the help of Leonid, Ian Percival, Zhen Yong Yi and others.

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Rongchang WU (China) is a Ph.D. candidate in Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences. My research is mainly focused on the Ordovician conodont fauna from South China and its biodiversification. In June 2011 I plan to complete and defend my Ph.D. on the conodonts from the Zitai Formation (Floian-Dapingian) of South China.

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YAN Kui (China) mainly worked on Ordovician acritarchs this past year. I continued working with Thomas Servais in Lille University until July, examining the acritarch diversity pattern in South China. I attended the 2nd International Palaeontology Congress in London in June-July 2010, and CIMP2010 in Warsaw in September. I am now working on the systematics of some acritarch taxa, such as *Barakella*. I am also concentrating on the acritarch biostratigraphy in South China and its global correlation potential during the Ordovician.

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ZHAN Renbin (China) is supported by two major research projects from the National Natural Science Foundation of China (40825006) and the Ministry of Science and Technology of China (2006CB806402, 2006FY120300-5) respectively, I have been continuously working on the Great Ordovician Biodiversification Event (GOBE) mainly in South China together with my international colleagues. The

Ordovician-Silurian Research Group at the Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences (NIGPAS) concentrates on the palaeontological aspects of the research, while some of our colleagues outside NIGPAS are mainly working on the sedimentological and geochemical aspects. We are collaborating together to investigate the co-evolution between the marine organisms and the environments, and the dynamics of the Ordovician Radiation. In 2010, we were making some case studies in those nearer shore and marginal platform localities, and some achievements have already been published.

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Yong Yi ZHEN (Australia). During 2010 I have been mainly working on the Middle-Late Ordovician conodonts from the Dawangou Section of the Tarim Basin, northwestern China. Supported by a visiting fellowship I took part in a field trip in the Zhejiang Province of eastern China with colleagues from the Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences, and collected conodont samples from three Ordovician sections in the region. In July, I joined a number of palaeontologists from the Queensland Museum, Macquarie University, Museum Victoria and the University of Lille (France) on a field trip to Queensland. My main objective of this field work was to collect conodont samples from the Late Ordovician Carriers Well Formation of the Broken River area in north Queensland and from the Late Ordovician Fork Lagoons Beds of central Queensland.

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ORDOVICIAN RESEARCH PUBLICATIONS 2010 (& preceding years)

- Abre, P., Cingolani, C.A., Zimmermann, U., Cairncross, B. & Chemale Jr., F., 2010. Provenance of Ordovician clastic sequences of the San Rafael Block (Central Argentina), with emphasis on the Ponón Trehué Formation. *Gondwana Research* 19, 275–290 .doi: 10.1016/j.gr.2010.05.013.
- Aceñolaza, F.G., Carlorosi, J. & Heredia, S. 2010. Trazas Fósiles y Conodontes en el Ordovícico del Flanco Occidental de la Cuesta de Lipán, Departamento Purmamarca, Jujuy, Argentina. *Revista de la Asociación Geológica Argentina* 66(1), 164-170.
- Aceñolaza, G. & Gutiérrez-Marco, J.C. 2010. Icniostratigrafía de *Cruziana* (traza fósil) en el Ordovícico de Sudamérica y sus registros en el Perú y Colombia. In: Macharé Ordoñez, J. (Ed.), *XV Congreso Peruano de Geología*. Sociedad Geológica del Perú, Publicación Especial 9, 189-192.
- Alfaro, M., Uriz, N.J., Cingolani, C.A., Bidone, A. & Galeano Inchausti, J.C., 2010. Hallazgo de la Biozona de *P. persculptus* en la Formación Eusebio Ayala (Ordovícico superior?-Llandovery), Paraguay oriental. X Congreso Argentino de Paleontología y Bioestratigrafía. Abstract.
- Al-Ghammari, M., Booth, G., Paris, F. 2010. New chitinozoan species from the Saih Nihayda Formation, Middle Ordovician of the Sultanate of Oman. *Review of Palaeobotany and Palynology* 158, 250-261.
- Ainsaar, L., Kaljo, D., Martma, T., Meidla, T., Männik, P., Nõlvak, J. & Tinn, O. 2010. Middle and Upper Ordovician carbon isotope chemostratigraphy in Baltoscandia: A correlation standard and clues to environmental history. *Palaeogeography, Palaeoclimatology, Palaeoecology* 294, 189-201.
- Albanesi, G.L. & Bergström, S.M. 2010. Early-Middle Ordovician conodont paleobiogeography with special regard to the geographic origin of the Argentine Precordillera: A multivariate data analysis. In: S.C. Finney & W.B.N. Berry (eds.). *The Ordovician Earth System. Geological Society of America, Special Paper* 466, 119-139.
- Ausich, W.I. & Copper, P. 2010. The Crinoidea of Anticosti Island (Late Ordovician and Early Silurian). *Palaeontographica Canadiana* 29, 157pp., 12 pls.
- Bauer, J.A., 2010. Conodonts and conodont biostratigraphy of the Joins and Oil Creek formations, south-central Oklahoma. *Oklahoma Geological Survey Bulletin* 150, 44 p.
- Benedetto, J.L. 2009. *Chaniella*, a new lower Tremadocian (Ordovician) brachiopod from northwestern Argentina and its phylogenetic relationships with basal rhynchonelliforms. *Palaeontologische Zeitschrift* 83, 393-405.
- Benedetto, J.L. 2010. Endopunctae in the ‘plectorthoid’ *Famatinorthis* Levy & Nullo (Middle Ordovician, Famatina Range, Argentina): Implications for early diversification of dalmanellidine brachiopods. *Geological Society of Australia, Abstracts 6th International Brachiopod Congress*, Melbourne, p. 15.
- Benedetto, J.L. & Cocks, L.R.M. 2009. Lower Silurian (Rhuddanian) brachiopods from the Argentine Precordillera and their biogeographic affinities. *Ameghiniana* 46, 241-253.
- Benedetto, J.L., Vaccari, N.E., Waisfeld, B.G., Sánchez, T.M. & Foglia, R.D. 2009. Cambrian and Ordovician paleobiogeography of Andean margin of Gondwana and accreted terranes. In: Bassett, M.G. (ed.), *Early Palaeozoic Peri-Gondwanan*

- Terranes: New Insights from Tectonics and Biogeography. The Geological Society, London, Special Publications 325, 199-230.*
- Beresi, M.S. 2010. Primer registro de *Archaeoscyphia pulcra* (Porifera) en el Cerro Negro de Huaco, Precordillera de San Juan. *Serie de Correlación Geológica* 25, 115-122, Tucumán. ISSN on line 1666-9479
- Beresi, M.S. 2010. The first occurrence of the Silurian spicules of the Argentine Precordillera. *X Congreso Argentino de Paleontología y Bioestratigrafía y VII Congreso Latinoamericano de Paleontología, 2 Simposio de Bioestratigrafía y eventos del Paleozoico inferior: 42.*
- Beresi M.S., Botting J. & Clarkson E. 2010. A new demosponge, *Choiarella scotica*, from the Caradoc (Ordovician) of Wallace's Southern Uplands, Scotland. *Scottish Journal of Geology* 46, 77-83.
- Beresi, M.S., Cabaleri, N.M., Rodriguez M.C., Almazán Vazquez & Buitrón Sánchez B. 2010. Microfacies and paleoenvironments from the carbonate shelf of the southwest Laurentia border, Pozo Nuevo Formation, lower - middle Ordovician (Central Sonora, México). In: Abstracts Volume, 18th *International Sedimentology Congress*, (Eds. E. Schwarz, S. Georgieff, E. Piovano and D. Ariztegui) p. 172. Mendoza, Argentina.
- Beresi, M.S. & Rodriguez, M.C. 2010. Microfacies asociadas a las zonas de *Oepikodus evae* y *O. intermedius* (conodonta) en el Ordoviciano de Salagasta, Mendoza. *XVIII International Sedimentology Congress, Mendoza, 2 Simposio de Bioestratigrafía y eventos del Paleozoico inferior: 43.*
- Bergström, S.M., Agematsu, S. & Schmitz, B. 2010. Global Upper Ordovician correlation by means of $\delta^{13}\text{C}$ chemostratigraphy: Implications of the discovery of the Guttenberg $\delta^{13}\text{C}$ excursion (GICE) in Malaysia. *Geological Magazine* 147, 641-651.
- Bergström, S.M., Chen Xu, Schmitz, B., Young, S., Rong Jia-yu, and 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* 146(1), 1-11.
- Bergström, S.M. & Leslie, S.A. 2010. The Ordovician zone index conodont *Amorphognathus ordovicicus* Branson and Mehl, 1933 from its type locality and the evolution of the genus *Amorphognathus* Branson and Mehl, 1933. *Journal of Micropaleontology* 29, 73-80.
- Bergström, S.M., Schmitz, B., Saltzman, M.R. & Huff, W.D. 2010. The Upper Ordovician Guttenberg $\delta^{13}\text{C}$ excursion (GICE) in North America and Baltoscandia: Occurrence, chemostratigraphic significance, and paleoenvironmental relationships. *Geological Society of America Special Paper* 466, 37-67.
- Bergström, S.M., Schmitz, B., Young, S.A. & Bruton, D.L. 2010. The $\delta^{13}\text{C}$ chemostratigraphy of the Upper Ordovician Mjøsa Formation at Furuberget near Hamar, southeastern Norway: Baltic, Trans-Atlantic and Chinese relations. *Norwegian Journal of Geology* 90, 65-78.
- Bergström, S.M., Young, S.A. & Schmitz, B. 2010. Katian (Upper Ordovician) $\delta^{13}\text{C}$ chemostratigraphy and sequence stratigraphy in the United States and Baltoscandia: a regional review. *Palaeogeography, Palaeoclimatology, Palaeoecology* 296, 217-234.
- Blicek, A. 2009. Biodiversité, environnements et évolution au Paléozoïque : le cas des vertébrés du Cambrien au Dévonien [Palaeozoic biodiversity, environments and

- evolution: the case of Cambrian to Devonian vertebrates]. *Ann. Soc. Géol. Nord, 2e série*, 16, 19-33, 11 fig. ; Villeneuve d'Ascq. [In French, with English abstract]
- Boucot, A.J. & Chen Xu, 2009. Fossil plankton depth zones. *Palaeoworld* 18, 213-234.
- Boucot, A.J., Chen Xu, Scotese, C.R. & Fan Juanxuan. 2009. *Phanerozoic Global Paleoclimatic Reconstruction*, pp1-173 with 27 Reconstruction maps. Science Press, Beijing. (Chinese version).
- Brett, C.E., Allison, P.A. & Hendy, A.J.W., 2010. Comparative taphonomy and sedimentology of small-scale mixed carbonate/siliciclastic cycles: Synopsis of Phanerozoic examples. In Allison, P.A. & Bottjer, D.J. (eds.). *Taphonomy: Process and Bias through Time*, Springer Verlag.
- Breuer, P., Steemans, P., & Di Pasquo, M. *Paleophytogeographic distribution of Devonian miospore assemblages*. (2009, September).
<http://hdl.handle.net/2268/22377>
- Buatois, L.A., Mangano, M.G., Brussa, E.D., Benedetto, J.L. & Pompei, J.F. 2009. The changing face of the deep: Colonization of the Early Ordovician deep-sea floor, Puna, northwest Argentina. *Palaeogeography, Palaeoclimatology, Palaeoecology* 280, 291-299.
- Buggisch, W., Joachimski, M.M., Lehnert, O., Bergström, S.M., Repetski, J.E. & Webers, G. 2010. Did intense volcanism trigger the first Late Ordovician icehouse? *Geology* 38, 327-330.
- Bukolova E.V. 2010. Taxonomic diversity of graptolites in the Gorny Altai Ordovician basin // Contributions to IV International Symposium "Evolution of Life on the Earth". Tomsk, p.215-217. [in Russian]
- Bukolova E.V. & Sennikov N.V. 2010. New data on boundary strata of Ordovician Tuloi and Karasu formations, Gorny Altai // Contributions to 8th Uralian Lithologic Meeting "Actual lithologic question". Ekaterinburg, p.50-52. [in Russian]
- Candela, Y. 2011. Phylogenetic relationships of leptellinid brachiopods. *Alcheringa* [First published on: 02 December 2010 DOI: 10.1080/03115518.2011.527165].
- Candela, Y. & Hansen, T. 2010. Brachiopod associations from the Middle Ordovician of the Oslo Region, Norway. *Palaeontology* 53(4), 833–867.
- Candela, Y. & Harper, D.A.T. 2010. 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* 100, 253–274.
- Carrera, M.G. & Ernst, A. 2010. Darriwilian bryozoans from the San Juan Formation (Ordovician), Argentine Precordillera. *Ameghiniana* 47, 343-354.
- Carrera, M.G. & Maletz, J. 2010. Ordovician sponge spicules from Spitsbergen, Nevada and Newfoundland: new evidence for the Hexactinellid early differentiation. 10^o Argentinian and Latin American Paleontological Congress, La Plata.
- Chacaltana, C., Gutiérrez-Marco, J.C., Rábano, I. & García-Bellido, D.C. 2010. Descubrimiento de cornulítidos y otros raros invertebrados ordovícicos en el Altiplano peruano. In: Macharé Ordoñez, J. (Ed.), *XV Congreso Peruano de Geología*. Sociedad Geológica del Perú, Publicación Especial 9, 213-216.
- Chen Xu. 2010. An introduction to the new classification of the British Ordovician and Silurian graptolite biozonation. *Journal of Stratigraphy* 34(2), 161-164. (Chinese)

- Chen Xu, Bergström, S.M., Zhang Yuandong & Fan Junxuan. 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.
- Chen Xu, Bergström, S.M., Zhang Yuandong, Goldman, D. & Chen Qin, 2010, Upper Ordovician (Sandbian – Katian) graptolite and conodont zonation in the Yangtze region. *Earth and Environmental Science Transactions of the Royal Society of Edinburgh* 101, 1-24.
- Chen Xu, Zhang Yuandong, Fan Junxuan, Cheng Junfeng, & Li Qijian 2010. Ordovician graptolite-bearing strata in southern Jiangxi with a special reference to the Kwangsi Orogeny. *Science China, Earth Sciences* 53(11), 1602-1610.
- Chen Xu, Zhou Zhi-yi & Fan Jun-xuan, 2010. Ordovician paleogeography and tectonics of the major paleoplates of China. *Geological Society of America, Special Paper* 466, 85-104.
- Cingolani, C.A., 2010. The Tandilia System of Argentina as a southern extension of the Río de la Plata craton: an overview. *Int J Earth Sci (Geol Rundsch)* DOI 10.1007/s00531-010-0611-5
- Cocks, L.R.M. 2010. Caradoc strophomenoid and plectambonitoid brachiopods from Wales and the Welsh Borderland. *Palaeontology* 53, 1155-1200, pls 1-11.
- Cocks, L.R.M., Fortey, R.A. & Rushton, A.W.A. 2010. Correlation for the Lower Palaeozoic. *Geological Magazine* 147, 171-180.
- Cooper, R.A. & P.M. Sadler. 2010. Facies preference predicts extinction probability in Ordovician graptolites. *Paleobiology* 36(2), 167-187.
- Couto, H. 2010. *Auriferous mineralizations associated to Lower Ordovician ironstones of Dúrico-Beirã area*. X Congresso de Geoquímica dos Países de Língua Portuguesa. XVI Semana de Geoquímica. Deolinda Flores & Manuela Marques Eds. Memórias N°14. Faculdade de Ciências da Universidade do Porto. p. 217-222.
- Couto, H. 2010. *Lower Ordovician ironstones of Valongo Anticline*. Revista Electrónica de Ciências da Terra, Geosciences On-line Journal, e-Terra, <http://e-terra.geopor.pt>. ISSN 1645-0388. Volume 20, n° 4.
- Couto, H., Lourenço, A. & Borges, F., 2010. *Study of quartz in cathodoluminescence*. Revista Electrónica de Ciências da Terra, Geosciences On-line Journal, e-Terra, <http://e-terra.geopor.pt>. ISSN 1645-0388. Volume 16, n° 2.
- Dahlqvist, P., Harper, D.A.T. and Wickström, L. 2010. Late Ordovician shelly faunas from Jämtland: palaeocommunity development along the margin of the Swedish Caledonides. *Bulletin of Geosciences* 85, 505-512.
- 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.
- Delabroye, A., Vecoli, M., Hints, O. & Servais, T. (in press). Acritarchs from the Ordovician-Silurian boundary beds of the Valga-10 drill core, southern Estonia (Baltica), and their stratigraphical and palaeobiogeographical implications. *Palynology*. DOI: 10.1080/01916122.2010.491636
- Doctor, D.H., Orndorff, R.C., Parker, R.A., Weary, D.J. & Repetski, J.E. 2010. Geologic map of the White Hall quadrangle, Frederick County, Virginia, and Berkeley County, West Virginia. *U.S. Geological Survey Open-File Report* 2010-1265, 1 pl., scale 1:24,000. Available only at <http://pubs.usgs.gov/of/2010/1265>.
- Dong, Xi-Ping, Bengtson, S., Gostling, N.J., Cunningham, J.A., Harvey, T.H.P., Kouchinsky, A., Val'kov, A.K., Repetski, J.E., Stampanoni, M. & Donoghue, P.C.J. 2010. The anatomy, taphonomy, taxonomy and systematic affinity of

- Markuelia*, Early Cambrian to Early Ordovician scalidophorans. *Palaeontology* 53(6), 1291-1314.
- Dronov, A. & Mikuláš, R. 2010. Paleozoic Ichnology of St. Petersburg Region. Field Guide for the 4th International Workshop on Ichnotaxonomy, June 21-25, Moscow – St. Petersburg, *Transactions of the Geological Institute*, vol. 596, pp. 1-70.
- Dubinina, S.V. 2009. Proposed new terminal Stage of the Cambrian System in Kazakhstan. Stratigraphy, Fossils and Progress of International Stratigraphic Scale of Cambrian System. Abstracts and short papers of the 14-th International Field Conference of the Cambrian Stage Subdivision Working Group. Almaty - Malyi Karatau Ridge, Southern Kazakhstan. August 24 - September 02, 2009. Almaty: Gylym, 18-19.
- Dubinina, S.V. 2009. Proposed new terminal Stage of the Cambrian System. Proceedings of the International Conference “Geology: history, theory, practice”. October 14 -16, 2009. V.E. Vernadskyi State Geological Museum, Russian Academy of Sciences. Moscow, 83-86. [in Russian].
- Egenhoff, S., Cassle, C., Maletz, J., Frisk, Å.M., Ebbestad, J.O.R. & Stübner, K. 2010: Sedimentology and sequence stratigraphy of the most pronounced Early Ordovician sea-level fall on Baltica - the Bjørkåsholmen Formation in Norway and Sweden. *Sedimentary Geology* 224, 1-14.
- Elias, R.J. 2010. Stability strategies and hydrodynamic behavior of liberossessile solitary rugose corals (Ordovician; Red River-Stony Mountain Province, North America); *In* O. Kossovaya and I. Somerville (eds.). Fossil Corals, Archaeocyaths and Sponges: Proceedings of the 10th International Symposium on Fossil Cnidaria and Porifera. *Palaeoworld* 19, 368-373.
- El Taki, H. & Pratt, B.R. 2009. Synsedimentary deformation in laminated dolomites and evaporites of the Herald Formation (Red River Group): signature of Late Ordovician tectonic activity in southern Saskatchewan, *in* Summary of Investigations 2009, Volume 1, *Saskatchewan Geological Survey, Saskatchewan Ministry of Energy and Resources, Miscellaneous Report 2009-4.1, Paper A-3*, 10 pp.
- Ergaliev, G.Kh., Zhemchuzhnikov, V.G., Popov, L.E., Bassett, M.G., Nikitina, O.I., Dubinina, S.V., Ergaliev, F.G. & Fazylov, E.M. 2009. Field Excursion Guide-Book. 14-th International Field Conference of the Cambrian Stage Subdivision Working Group. Almaty - Malyi Karatau Ridge, Southern Kazakhstan. August 24 -September 02, 2009. Almaty, 1-71.
- Eriksson. M.E. & Frisk, Å.M. Polychaete marine astrobleme palaeoecology in the early Late Ordovician of Sweden. doi:10.1017/S0016756810000579 *Geological Magazine*.
- Frisk, Å.M. & Harper, D.A.T. 2010. Palaeoenvironmental aspects of Late Ordovician *Sericoidea* shell concentrations in an impact crater, Tvären, Sweden. *Lethaia*, DOI: 10.1111/j.1502-3931.2010.00250.x
- Gabbott, S.E., Zalasiewicz, J.A., Aldridge, R.J. & Theron, J.N. 2010. Eolian input fertilized the Late Ordovician post-glacial marine Soom Shale basin, South Africa. *Geology* 38, 1103-1106.
- Gerrienne, P., Petus, E. & Steemans, P. *Miscellanea palaeontologica*. Paper presented at PPMB-MVP meeting, Liège, Belgique. (2009, December 04). <http://hdl.handle.net/2268/30260>
- Gerrienne, P. & Steemans, P. *Miscellanea palaeontologica 2010*. Paper presented at Groupe de contact FNRS - MVP et PPMB. (2010, November 30). <http://hdl.handle.net/2268/78105>

- Goldman, D., Pantle, C., Sheets, H.D. & Bergström, S.M. 2010. A composite taxon range chart and conodont biodiversity dynamics from the Ordovician of Baltoscandia. *Geological Society of America Abstracts with Programs* 42, 49.
- Grahn, Y. & Paris, F. 2010. Emergence, biodiversification and extinction of the chitinozoan group. *Geological Magazine* doi:10.1017/S001675681000052X
- Gutiérrez-Marco, J.C., Carlotto, V., Monge, R., Chacaltana, C. & Cárdenas, J. 2010. Problemática de la Formación Sandia (Ordovícico) en la Cordillera Oriental peruana: ¿una o varias unidades de distinta edad?. In: Macharé Ordoñez, J. (Ed.), *XV Congreso Peruano de Geología*. Sociedad Geológica del Perú, Publicación Especial 9, 853-857.
- Gutiérrez-Marco, J.C., Ghienne, J.-F., Bernárdez, E. & Hacar, M. P. 2010. Did the Late Ordovician African ice sheet reach Europe? *Geology* 38(3), 279-282.
- Gutiérrez-Marco, J.C., San José Lancha, M.A. de, Pieren Pidal, A.P., Rábano, I., Baeza Chico, E., Sá, A.A., Perejón Rincón, A. & Sarmiento, G.N. 2010. Geología y Paleontología del Parque Nacional de Cabañeros. In: Ramírez, L. & Asensio, B. (Eds.), *Proyectos de investigación en parques nacionales: 2006-2009* (ISBN 978-84-8014-780-4). Organismo Autónomo Parques Nacionales, Serie investigación en la red, vol. 3. Madrid, 29-54.
- Hansen, T. 2010. Cyrtometopiniid trilobites from the upper Volkhov and lower Lynna Formation (lower Darriwilian) of NW Russia. *Bulletin of the Geological Society of Denmark* 58, 1-13.
- Hansen, T., Nielsen, A.T. & Bruton, D.L. 2011. Palaeoecology in a mud-dominated epicontinental sea: A case study of the Ordovician Elnes Formation, southern Norway. *Palaeogeography, Palaeoclimatology, Palaeoecology* 299, 348-362.
- Harper, D.A.T. 2010. The Ordovician Biodiversification Event: Finding a context. *Darwin's Heritage Today*, 114-125. Chinese Higher Education Press, Beijing.
- 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., Alvarez, F., Boucot, A.J., Williams, A., Wright, A.D. & Schemm-Gregory, M. 2010. Tropicidoleptida (Brachiopoda): Devonian hopeful monsters or misplaced orphans. *Special Papers in Palaeontology* 84, 119-216.
- Harper, D.A.T. & Drachen, A. 2010. The Orthida: The rise and fall of a great Palaeozoic clade. *Special Papers in Palaeontology* 84, 107-117.
- Harper, D.A.T., Parkes, M.A. & McConnell, B.J. 2010. Late Ordovician (Sandbian) brachiopods from the Mweelrea Formation, South Mayo, western Ireland: stratigraphic and tectonic implications. *Geological Journal* 45, 445-450.
- Hennissen, J., Vandenbroucke, T.R.A., Chen Xu, Tang Peng & Verniers, J. 2010. The Dawangou auxiliary GSSP (Xinjiang autonomous region, China) of the base of the Upper Ordovician Series: putting global chitinozoan biostratigraphy to the test. *Journal of Micropalaeontology* 29, 93-113, doi: 10.1144/0262-821X09-005.
- Henriques, M.H., Guimarães, F.A., Sá, A.A., Silva, E. & Brilha, J. 2010. The International Year of Planet Earth in Portugal: past activities and further developments. *Episodes* 33, 33-37.
- Heredia, S., Beresi, M., Mestre, A. & Rodríguez, M.C. 2009. El Ordovícico Inferior en la Sierra de La Higuera (Mendoza): conodontes y microfácies. *Serie Correlación Geológica* 25, 7-18.
- Heredia S. & Mestre A., 2007. Conodont provincialism in the Upper Ordovician of the Cuyania Terrane (Argentina). In: Diaz-Martinez, E. y Rábano, I. (eds.). *Cuadernos del museo Geominero* N° 8, 189-194.

- Heredia, S. & Mestre, A. 2010. The *Eoplacognathus suecicus* Zone (Conodonta) in the Central Precordillera, Argentina. X Congreso Argentino de Paleontología y Bioestratigrafía, VII Congreso Latinoamericano de Paleontología, p. 49. Simposio de Bioestratigrafía y Eventos del Paleozoico Inferior.
- Heredia, S. & Milana, J.P. 2010. Conodontes sandbianos (Ordovícico Superior) de la Quebrada La Pola, Sierra de Villicúm, Precordillera Oriental de San Juan. *Ameghiniana* 47(4).
- Hints, L. 2010. A new glyptorthid species (Brachiopoda: Orthida) from the Upper Ordovician of Estonia. *Estonian Journal of Earth Sciences* 59(3), 189-194.
- Hints, L., Hints, O., Kaljo, D., Kiipli, T., Männik, P., Nõlvak, J. & Pärnaste, H. 2010. Hirnantian (latest Ordovician) bio- and chemostratigraphy of the Stirnas-18 core, western Latvia. *Estonian Journal of Earth Sciences* 59(1), 1-24.
<http://dx.doi.org/10.3176/earth.2010.1.01>
- Hints, O., Delabroye, A., Nõlvak, J., Servais, T., Uutela, A. & Wallin, Å. 2010. Biodiversity patterns of Ordovician marine microphytoplankton from Baltica: Comparison with other fossil groups and sea-level changes. *Palaeogeography, Palaeoclimatology, Palaeoecology* 294(3-4), 161-173.
<http://dx.doi.org/10.1016/j.palaeo.2009.11.003>
- Hints, O. & Eriksson, M.E. 2010. Ordovician polychaetoid polychaetes: Taxonomy, distribution and palaeoecology. *Acta Palaeontologica Polonica* 55(2), 309-320.
<http://dx.doi.org/10.4202/app.2009.0086>
- Huang Bing & Rong Jiayu. 2010. Statistically differentiating *Katastrophomena* from *Strophomena* (Ordovician-Silurian strophomenid brachiopods). *Memoirs of the Association of Australasian Palaeontologists* 39, 245-259.
- 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.
- Huff, W.D., Bergström, S.M. & Kolata, D.R. 2010. Ordovician explosive volcanism. *Geological Society of America Special Paper* 466, 13-28.
- Jin Jisuo & Copper, P. 2010. Microbially induced phosphatization of intercrystalline tissue in the Late Ordovician brachiopod *Plaesiomys*, Anticosti Island, eastern Canada. *Special Papers in Palaeontology* 84, 1-15.
- Jin, Jisuo & Copper, P. 2010. Origin and evolution of the Early Silurian (Rhuddanian) virgianid pentameride brachiopods — the extinction recovery fauna from Anticosti Island, eastern Canada. *Bolletino della Società Paleontologica Italiana* 49, 1-11, 6 text-figs.
- Kanygin, A., Dronov, A., Timokhin, A. & Gonta, T. 2010. Depositional sequences and palaeoceanographic change in the Ordovician of the Siberian craton. *Palaeogeography, Palaeoclimatology, Palaeoecology* 296(3-4), 285-294.
- Karem, A., Stouge, S., Christiansen, J. L., Harper, D.A.T, Knight, I. & Boyce, D. 2010. Carbon-isotope stratigraphy of the Lower Ordovician succession in Northeast Greenland: Implications for correlations with St. George Group in western Newfoundland (Canada) and beyond. *Sedimentary Geology* 225, 67-81.
- Key, M.M., Jr., Schumacher, G.A., Babcock, L.E., Frey, R.C., Heimbrock, W.P., Felton, S.H., Cooper, D.L., Gibson, W.B., Scheid, D.G. & Schumacher, S.A. 2010. Paleocology of commensal epizoans fouling *Flexicalymene* (Trilobita) from the Upper Ordovician, Cincinnati Arch region, USA. *Journal of Paleontology* 84, 1121-1134.

- Kiipli, E., Kiipli, T., Kallaste, T. & Ainsaar, L. 2010. Distribution of phosphorus in the Middle and Upper Ordovician Baltoscandian carbonate palaeobasin. *Estonian Journal of Earth Sciences* 59, 247-255.
- Kröger, B., Ebbestad, J.O.R., Högström, A.E.S. & Frisk, Å.M. 2011. Mass concentration of Hirnantian cephalopods from the Siljan District, Sweden; taxonomy, palaeoecology and palaeobiogeographic relationship. *Fossil Record* 14, 35–53.
- Kröger, B. & Evans, D.H. 2011. Paleoeological analysis of the late Tremadocian–early Floian (Early Ordovician) cephalopod fauna of the Montagne Noire, France. *Fossil Record* 14, 5–34.
- 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. & Landing, E. 2010. Early Ordovician community evolution with eustatic change through the middle Beekmantown Group, northeast Laurentia. *Palaeogeography, Palaeoclimatology, Palaeoecology* 294, 174–188.
- Kröger, B., Servais, T. & Zhang Yunbai. 2009. 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. 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.
- Landing, E., Westrop, E., Kröger, B. & English, A. 2010. Left behind – delayed extinction and a relict trilobite fauna in the Cambrian–Ordovician boundary succession (east Laurentian platform, New York). *Geological Magazine*, Available on CJO 19 Nov 2010 doi:10.1017/S0016756810000919.
- Legrand Ph. 2010. A propos des unités des Grès des Tassilis internes(Sahara Algérien). Du terrain aux forages. Que veut dire Unité III ?. *Premier Colloque International sur la Géologie du Sahara algérien. Ressources minérales, en hydrocarbures et en eau. Recueil des résumés*, p. 34. Ouargla.
- Lefebvre B., Noailles F., Franzin B., Régnault S., Nardin E., Hunter A.W., Zamora S., Van Roy P., El Hariri K. & Lazreq N. 2010. Les gisements à échinodermes de l'Ordovicien supérieur de l'Anti-Atlas oriental (Maroc): un patrimoine scientifique exceptionnel à préserver, *Bulletin de l'Institut scientifique, Rabat* 32, 1-17.
- Le Herisse, A., Dorning, K.J., Mullins, G.L. & Wicander, R. 2009. Global implications of organic-walled phytoplankton biodiversity through the late Silurian to earliest Devonian. *Palynology* 33, 25-75.
- Li Jun, Servais, T. & Yan Kui. 2010. Acritarch biostratigraphy of the Lower-Middle Ordovician boundary (Dapingian) at the Global Stratotype Section and Point (GSSP), Huanghuachang, South China. *Newsletter on Stratigraphy* 43/3, 235–250.
- Li Jun, Servais, T. & Yan Kui. 2010. Biodiversity patterns of lower - middle Ordovician marine microphytoplankton in South China: relation to the evolution of the marine invertebrates. Abstracts, International Palaeontological Congress 2010, London. p. 418.

- Liu Jianbo, Yoichi, E., Natsuko, A. & Zhan Renbin. 2010. Evidence for decoupling of relative abundance and biodiversity of marine organisms in initial stage of GOBE: A preliminary study on Lower Ordovician shellbeds of South China. *Journal of Earth Science* 21(special issue), 44–48.
- Loi, A., Ghienne, J.F., Dabard, M.P., Paris, F., Botquelen, A., Christ, N., Elaouad-Debbaj, Z., Gorini, A., Vidal, M., Videt, B. & Destombes, J. 2010. The Late Ordovician glacio-eustatic record from a high-latitude storm-dominated shelf succession; the Bou Ingarf section (Anti-Atlas, Southern Morocco). *Palaeogeography, Paleoclimatology, Palaeoecology* 296, 332-358.
- Lowell, G.R., Harrison, R.W., Weary, D.J., Orndorff, R.C., Repetski, J.E. & Pierce, H.A. 2010. Rift-related volcanism and karst geohydrology of the southern Ozark dome, p. 99-158, in Evans, K.R. & Aber, J.S. (eds.) From Precambrian rift volcanoes to the Mississippian shelf margin: Geological Field Excursions in the Ozark Mountains. *Geological Society of America Field Guide* 17. doi: 10.1130/2010.0017(06)
- Männik, P. 2010. Distribution of Upper Ordovician, Llandovery and Wenlock conodonts. In: Pöldvere, A. (ed.) Viki drill core. *Estonian Geological Sections* 10, 21-24.
- Meidla, T., Tinn, O., Salas, M.J., Williams, M., Vandenbroucke, T. & Sabbe, K. 2010. Biogeography of Ordovician ostracods: palaeo-continental or climatic controls? pp. 275-276, in: *Programme & Abstracts. Third international Palaeontological Congress, London, 2010, June 28- July 3. : The Third International Palaeontological Congress, IPC3; London; June 28 to July 3, 2010.*
- Mergl, M. 2010. Nový nález trilobita *Holoubkovia klouceki* (Růžička, 1926) (Lichida) v mílinském souvrství (tremadok) v Barrandienu. *Zprávy o geologických výzkumech v roce 2009*, 156–157.
- Mergl, M. 2010. Discinoid brachiopod life assemblages: Fossil and extant. *Bulletin of Geosciences* 85(1), 27-38.
- Mergl, M. 2010. A review of Silurian discinoid brachiopods from Gotland, Sweden. *Bulletin of Geosciences* 85(3), 367–384.
- Mestre, A. 2008. Revisión bioestratigráfica del techo de Formación San Juan (Ordovícico Inferior), en la sección del Monumento a Buenaventura Luna, Precordillera Central, San Juan. *Acta Geológica Lilloana* N° 20 (2), 127-136. ISSN 1514-4186 - ISSN on-line 1666-9479
- Mestre, A. 2009. Primeros conodontes de la Formación Tambolar (Facies Pachaco), Silúrico de la Precordillera Argentina, y sus implicancias bioestratigráficas. *Ameghiniana* 46(3), 469-479.
- Mestre, A. & Heredia, S. 2009. La Subzona de *Periodon gladysi* (Conodonta) en el Ordovícico Medio de Precordillera: su evaluación. *Serie Correlación Geológica* 25, 105 – 110.
- Mikulas, R., Kanygin, A.V., Sennikov, N.V. & Dronov, A.V. 2010. A few puzzles for the systematic ichnology from the Ordovician of the Kulyumbe section (Central Siberia). // IV Workshop on Ichnotaxonomy. Abstracts. June 21-26, 2010. Moscow - St.-Petersburg. – Moscow: PIN RAN, p.37-39.
- Modie, B.N. & Le Herisse, A. 2009. Late Paleozoic palynomorph assemblages from the Karoo Supergroup and their potential for biostratigraphic correlation, Kalahari Karoo Basin, Botswana. *Bulletin of Geoscience* 84(2), 337-358.
- Modliński Z. & Podhalańska T. 2010. Outline of the lithology and depositional features of the lower Paleozoic strata in the Polish part of the Baltic region. *Geological Quarterly* 54(2), 109-121.

- Mohibullah, M., Afzal, J., Williams, M., Meidla, T., Siveter, D.J. & Zalaziewicz, J.A. 2010. Ostracods from Upper Ordovician (Katian) carbonate lithofacies in southwest Scotland. *Geological Magazine* 147(6), 919-939.
- Munnecke, A., Calner, M. & Harper, D.A.T. 2010. How does sea level correlate with sea-water chemistry? A progress report from the Ordovician and Silurian (Editorial). *Palaeogeography, Palaeoclimatology, Palaeoecology* 296(3-4), 213-216.
- Munnecke, A., Calner, M., Harper, D.A.T. & Servais, T. 2010. Ordovician and Silurian sea-water chemistry, sea level, and climate: A synopsis. *Palaeogeography, Palaeoclimatology, Palaeoecology* 296, 389-413.
- Nardin E., Godd ris Y., Donnadi u Y., Le Hir G., Blakey R.C., Puc at E. & Aretz M. in press. Modeling long-term climatic trend of the early Palaeozoic, *GSA Bulletin*, doi:10.1130/B30364.
- Nardin E. & Lefebvre B. 2010. Influence of extrinsic factors (palaeogeography and palaeoclimate) on the diversity dynamics of blastozoan echinoderms in early Palaeozoic times, *Palaeogeography, Palaeoclimatology, Palaeoecology* 294, 142-160
- Nestor, H., Copper, P. and Stock, C.W. 2010. *Late Ordovician and Early Silurian stromatoporoid sponges from Anticosti Island, eastern Canada: crossing the O/S mass extinction boundary*. NRC Research Press, Ottawa, 163 pp., 28 text-figs., 28 pls.
- 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, 32.
- Obut O.T. & Sennikov N.V. 2010. Application of data on radiolarians and other pelagic groups as indicators of oceanic sedimentary environments for Lower Paleozoic terrigenous-siliciclastic sequences of Gorny Altai, Altay-Sayan Folded Area // International Workshop on Geodynamic Evolution, Tectonics and Magmatism of the Central Asian Orogenic Belt. Abstract Volume. Novosibirsk, p. 87-89.
- Percival, I.G., Brock, G.A., Valentine, J.L., Wright, A.J. & Strusz, D.L. 2010. 6th International Brachiopod Congress, Excursion E4: Ordovician – Silurian – Devonian brachiopods of central New South Wales. *Association of Australasian Palaeontologists Field Guide No. 3*, 94 pp. Geological Society of Australia, Sydney.
- Pi arra J. & Sequeira A.J.D. 2010. Grapt litos do Sil rico do Sinclinal de Bu aco: Paleontologia e Bioestratigrafia. VIII Congresso Nacional de Geologia, Braga. *E-Terra*, <http://e-terra.geopor.pt>, vol. 17, n  15.
- Plusquellec, Y., Chauvel, J.J., Darboux, J.R., Gourvenec, R., Hallegouet, B., Le Herisse, A., Morzadec, P., Paris, F. & Vidal, M. 2010. *Curiosit s g ologiques de la Presqu' le de Crozon, Guide*. BRGM Editions, 110p.
- Podhalańska T. 2009. The Late Ordovician Gondwana glaciation – a record of environmental changes in the depositional succession of the Baltic Depression (Northern Poland). *Prace Państwowe Instytutu Geologicznego*, 193, 1-96 (in Polish with English summary).
- Popov, L.E., Bassett, M.G., Holmer, L.E., Skovsted, C.B. & Zuykov, M.A. 2010. Earliest ontogeny of Early Palaeozoic Craniiformea: implications for brachiopod phylogeny. *Lethaia* 43, 323–333. doi: 10.1111/j.1502-3931.2009.00197.x

- de la Puente G.S. 2010a. Quitinozoos del Floiano (Ordovícico Inferior) del área de Santa Victoria, Cordillera Oriental, noroeste argentino. Sistemática. *Ameghiniana* 47(2), 217-238.
- de la Puente G.S. 2010b. Quitinozoos del Floiano (Ordovícico Inferior) del área de Santa Victoria, Cordillera Oriental, noroeste argentino. Parte 2: Implicancias bioestratigráficas, paleobiogeográficas y paleoambientales. *Ameghiniana* 47(3), 317-330.
- Rábano, I., Sá, A.A., Gutiérrez-Marco, J.C. & García Bellido, D. 2010. Two more Bohemian trilobites from the Ordovician of Portugal and Morocco. *Bulletin of Geosciences* 85(3), 415-424.
- Rasmussen, C.M.Ø., Ebbestad, J.O.R. & Harper, D.A.T. 2010. Unravelling a Late Ordovician pentameride (Brachiopoda) hotspot from the Boda limestone, Siljan district, central Sweden. *GFF* 132, 133-152.
- Repetski, J.E., Ryder, R.T., Weary, D.J., Harris, A.G. & Trippi, M.H. 2008. Appalachian basin thermal maturity patterns (CAI and %Ro) in Upper Ordovician and Lower-Middle Devonian rocks: A major revision of USGS Map I-917-E using new subsurface collections. *U.S. Geological Survey, Scientific Investigations Map 3006*; 131 ms p. + 11 figs., on CD
- Reyes-Abril, J., Villas, E. & Gutiérrez-Marco, J.C. 2010. Orthid brachiopods from the Middle Ordovician of the Central Iberian Zone (Spain). *Acta Palaeontologica Polonica* 55(2), 285-308.
- Rickards B.R., Booth, G.A., Paris, F., Heward, A. 2010. Marine flooding events of the Early and Middle Ordovician of Oman and the United Arab Emirates and their graptolite, acritarch and chitinozoan associations. *GeoArabia* 15, 81-120.
- Rong Jiayu, Chen Xu, Zhan Renbin, Fan Juanxuan, Wang Yi, Zhang Yuandong, Li Yue, Huang Bing, Wu Rongchang & Wang Guangxu. 2010. New observation on Ordovician-Silurian boundary strata of southern Tongzi County, northern Guizhou, Southwest China. *Journal of Stratigraphy* 34(4), 337-348 (in Chinese with English abstract).
- Rong Jiayu, Zhan Renbin, Xu Honggen, Huang Bing & Yu Guohua. 2010. Evidences and dynamics of the expansion of the Cathaysian Oldland through the Ordovician-Silurian transition. *Science China: Earth Science* 40(1), 1-17 (in Chinese).
- Rong Jiayu, Zhan Renbin, Xu Honggen, Huang Bing & Yu Guohua. 2010. Expansion of the Cathaysian Oldland through the Ordovician-Silurian transition: Emerging evidence and possible dynamics. *Science China: Earth Science* 53(1), 1-17.
- Rubinstein, C., Garcia Muro, V.J., & Steemans, P. *Edad de las esporas de la Formacion Los Espejos, Silurico de la Precordillera de San Juan, Argentina*. Paper presented at XIII Simposio Brasileiro de Paleobotanica e Palinologia, Salvador, Bahia, Brasil. (2010, November).
<http://hdl.handle.net/2268/78493>
- Rubinstein, C.V., Gerrienne, P., de la Puente, G. S., Astini, R. A. & Steemans, P. 2010. Early Middle Ordovician evidence for land plants in Argentina (eastern Gondwana). *New Phytologist*, 188, 365-369.
<http://hdl.handle.net/2268/72757>
- Sá, A.A., Gutiérrez-Marco, J.C. & Meireles, C. 2010. Cronoestratigrafia do Ordovícico em Portugal: que escala utilizar?. *e-Terra* 21(13), 1-4.
- Sánchez, T.M. & Astini, R.A. 2010. A new species of the Gondwanan genus *Cardiolaria* Munier-Chalmas in the Sandbian of Northwestern Argentina: Paleobiogeographic considerations. *Journal of South American Earth Sciences*. DOI: 10.1016/j.jsames.2010.11.005

- Schmitz, B., Bergström, S. M. and Wang, X. 2010. The middle Darriwilian (Ordovician) $\delta^{13}\text{C}$ excursion (MDICE) discovered in the Yangtze Platform succession in China: Implications of its first recorded occurrences outside Baltoscandia. *Journal of the Geological Society, London* 167, 249-259.
- Sennikov N.V. 2010. Late Ordovician and Early Silurian stages in development of reef structures in the Altai basin // Contributions to Conference “Biota as geomorphological and geochemical factor: reefal formations and reefs in evolution of biosphere”. Moscow: Paleontological Institute of RAS, p.74-78.
- Sennikov N.V. & Bukolova E.V. 2010. Dynamics of the Ordovician graptolites taxonomic diversity from the Altai and salair basins // Contributions to LVI session of the Russian Paleontological Society “Evolution of the Organic world and biotic crises”. St-Petersburg, p.100-102. [in Russian]
- Sennikov N.V., Obut O.T. & Bukolova E.V. 2010. Ordovician graptolites and chitinozoans and their leading role in formation of complicated Paleozoic pelagic biota structure // 3rd International Palaeontological Congress. Programme and abstracts. London, p.350.
- Sennikov N.V., Obut O.T., Bukolova E.V. & Tolmacheva T.Yu. 2010. Global Late Cambrian – Early Ordovician sedimentary events and their appearance in the Altai shelf and Paleo-Asian oceanic basins // Contributions to meeting “Geodynamic evolution of the Lithosphere of the central-Asian mobile fold. From ocean to continent”. Vol. 8 (2). Irkutsk: Institute of Geography SB RAS Press, p.78-80.
- Sennikov N.V., Obut O.T., Izokh N.G., Bakharev N.K., Rodina O.A. & Bukolova E.V. 2010. Stages of the pelagic biota development in the Paleozoic basins on South of West Siberia // Contributions to LVI session of the Russian Paleontological Society “Evolution of the Organic world and biotic crises”. St-Petersburg, p.103-104. [in Russian]
- Sennikov N.V., Tolmacheva T.Yu., Bukolova E.V. & Melnikova L.M. 2010. Sedimentary and faunal peculiarities of the Late Ordovician sediments at north-east of the Gorny Altai. // Contributions to 8th Uralian Lithologic Meeting “Actual lithologic question”. Ekaterinburg, p.284-286. [in Russian]
- Servais, T. & Owen, A.W. (eds). 2010. Early Palaeozoic palaeoenvironments. *Palaeogeography, Palaeoecology, Palaeoclimatology* 294(3-4), 95-248.
- Servais, T. & Owen A.W. 2010. Early Palaeozoic Palaeoenvironments and the ‘explosion’ of diversity in marine species, genera and families. *Palaeogeography, Palaeoecology, Palaeoclimatology* 294(3-4), 95-98.
- Servais, T., Owen, A.W., Harper, D.A.T., Kröger, B. & Munnecke, A. 2010. The Great Ordovician Biodiversification Event (GOBE): the palaeoecological dimension. *Palaeogeography, Palaeoclimatology, Palaeoecology* 249, 99-119.
- Sha Jingeng, Pan Yanhong, Wang Yaqiong, Zhan Renbin, Zhang Yuandong, Zhang Haichun, Wang Xiangdong, Yuan Wenwei, Cai Huawei, Mu Lin, Wang Bo, Lin Wei & Peng Bo. 2010. Report on advances in mega-invertebrate palaeontology. 83–95, 196–198. In: Palaeontological Society of China, ed., *Report on Advances in Palaeontology*. Beijing: Chinese Science and Technology Publishing House. 210 pp (in Chinese with English abstract).
- Sorrentino, L., Benedetto, J.L. and Carrera, M.G. 2009. Diversidad taxonómica y distribución de morfotipos de braquiópodos en la Zona de *Ahtiella argentina* (Ordovícico Medio), Formación San Juan, Precordillera Argentina. *Ameghiniana* 46, 241-253.

- Stemans, Ph., Breuer, P., Javaux, E., Le Herisse, A., Marshall, C., De Ville De Goyet, F. 2009. Description and microscale analysis of a new Givetian enigmatic palynomorph from Libya. *Palynology* 33, 101-112.
- Stemans, P., Javaux, E., Breuer, P., Le Hérisse, A., Marshall, C. & de Ville de Goyet, F. 2009. Description and microscale analysis of some enigmatic palynomorphs from the Middle Devonian (Givetianà of Libya). *Palynology* 33, 101-112.
<http://hdl.handle.net/2268/21503>
- Stemans, P., Le Herisse, 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, 353.
<http://hdl.handle.net/2268/15579>
- Stemans, P., Lepot, K., Marshall, C. P., Le Hérisse, A. & Javaux, E. 2010. FTIR characterisation of the chemical composition of Silurian miospores (cryptospores and trilete spores) from Gotland, Sweden. *CIMP Poland 2010 General meeting*.
<http://hdl.handle.net/2268/73850>
- Stemans, P., Lepot, K., Marshall, C.P., Le Hérisse, A. & Javaux, E., 2010. FTIR characterisation of the chemical composition of Silurian cryptospores from Gotland, Sweden. *Review of Paleobotany and Palynology* 162, 577-590.
- Stemans, P., Wellman, C. & Gerrienne, P. 2010. Palaeogeographic and palaeoclimatic considerations based on Ordovician to Lochkovian vegetation. *Geological Society, London, Special Publications* 339, 49-58.
<http://hdl.handle.net/2268/71594>
- Stewart, L.A., Elias, R.J. & Young, G.A. 2010. Stromatoporoids and colonial corals hosting borers and linguloid brachiopods, Ordovician of Manitoba, Canada; *In* O. Kossovaya and I. Somerville (eds.), *Fossil Corals, Archaeocyaths and Sponges: Proceedings of the 10th International Symposium on Fossil Cnidaria and Porifera*. *Palaeoworld* 19, 249-255.
- Strullu-Derrien, C., Ducassou, C., Ballèvre, M., Dabard, M.-P., Gerrienne, P., Lardeux, H., Le Hérisse, A., Robin, C., Stemans, P. & Strullu, D.-G. 2010. The early land plants from the Armorican Massif: sedimentological and palynological considerations on age and environment. *Geological Magazine* 147(6), 830-843.
<http://hdl.handle.net/2268/74444>
- Tammekänd, M., Hints, O. & Nõlvak, J. 2010. Chitinozoan dynamics and biostratigraphy in the Vão Formation (Darriwilian) of the Uuga Cliff, Pakri Peninsula, NW Estonia. *Estonian Journal of Earth Sciences* 59(1), 25-36.
<http://dx.doi.org/10.3176/earth.2010.1.02>
- Taylor, J.F., Brezinski, D.K., Repetski, J.E., and Welsh, N.M., 2009, The Adamstown Submergence Event: faunal and sedimentological record of a Late Cambrian transgression in the Appalachian region. *Memoirs of the Association of Australasian Palaeontologists* 37, 641-667.
- 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* 294, 202–219.
- Vandenbroucke, T.R.A., Armstrong, H., Williams, M., Paris, F., Sabbe, K., Zalasiewicz, J., Nolvak, J., Verniers, J. & Servais, T. 2010. Polar front shift and atmospheric CO₂ during the glacial maximum of the Early Paleozoic Icehouse. *Proceedings of the National Academy of Sciences of the United States of America*

- (*PNAS*) 107 (no. 34), 14983–14986.
- Taylor, P.D., Vinn, O. & Wilson, M.A. 2010. Evolution of biomineralization in "lophophorates". *Special Papers in Palaeontology* 84, 317-333.
- Tinn, O., Meidla, T., Ainsaar, L. & Kivioja, K. 2010. Rich and heterogeneous fossil ostracod fauna in the Ordovician sediment intrusions at Osmussaar Island, Estonia, reveals an ancient impact event. *GFF* 132(3-4), 201-211.
- Tinn, O., Meidla, T. & Sohar, K. 2010. Intraspecific variation and polymorphism in the ostracode *Conchoprimitia socialis* (Brogger, 1882) from the early Middle Ordovician Baltoscandian Palaeobasin. *Bulletin of Geosciences* 85(4), 603-616.
- Toro, B.A., de la Puente, G.S. & Rubinstein, C.V. 2010. New graptolite, chitinozoan and acritarch records from the Pascha-Incamayo area, Cordillera Oriental, Argentina. *Comptes Rendus Palevol* 9, 23-30.
- Turner, S., Burrow, C.J., Schultze, H.-P., Blicek, A., Reif, W.-E.†, Rexroad, C.B., Bultynck, P. & Nowlan, G.S. 2010. False teeth: conodont-vertebrate phylogenetic relationships revisited. *Geodiversitas* 32(4), 545-594.
- Uriz, N.J., Cingolani, C.A., Chemale Jr., F., Macambira, M. B., Armstrong, R. 2010. Isotopic studies on detrital zircons of Silurian–Devonian siliciclastic sequences from Argentinean North Patagonia and Sierra de la Ventana regions: comparative provenance. *Int J Earth Sci (Geol Rundsch)* DOI 10.1007/s00531-010-0597-z.
- 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, 216–236. Doi 10.1017/s0016756808005815.
- Vandenbroucke, T., Armstrong, H.A., Williams, M., Paris, F., Sabbe, K., Zalasiewicz, J.A. & Nolvak, J. 2010. Epiplagic chitinozoan biotopes map a steep latitudinal temperature gradient for earliest Late Ordovician seas: Implications for a cooling Late Ordovician climate. *Palaeogeography, Paleoclimatology, Palaeoecology* 294, 202-219.
- Vandenbroucke, T. R. A. Armstrong, H. A., Williams, M., Paris, F. Zalasiewicz, J.A., Sabbe, K., Nolvak, J., Challands, T.J., Verniers, J. & Servais, T. 2010. Polar shift and atmospheric CO₂ during the glacial maximum of the Early Paleozoic Icehouse. *PNAS* 107, 14983-14986.
- Vaccari, N.E., Toro, B.A., de la Puente G.S. & Rubinstein, C.V. 2010. Nuevos aportes al conocimiento del Paleozoico inferior del área de Salar del Rincón, Puna occidental, Argentina. *Resúmenes del 2° Simposio de bioestratigrafía y eventos del Paleozoico inferior. X Congreso Argentino de Paleontología y Bioestratigrafía. VII Congreso Latinoamericano de Paleontología*. La Plata, Argentina: 56.
- Varela, R., Basei, M.A.S., González, P.D., Sato, A.M., Naipauer, M., Campos Neto, M., Cingolani, C.A. & Meira, V.T., 2010. Accretion of Grenvillian terranes to the southwestern border of the Río de la Plata craton, western Argentina. *Int J Earth Sci (Geol Rundsch)*. DOI 10.1007/s00531-010-0614-2
- Vento, B.A. & Toro, B.A. 2009. Resultados preliminares del estudio taxonómico de los graptolitos del Paleozoico Inferior del Noroeste de Argentina. Reunión Anual de Comunicaciones de la Asociación Paleontológica Argentina, Buenos Aires. *Ameghiniana* 46 (Suplemento), 95-96R.
- Vento, B.A., Toro, B.A. & Maletz, J. 2010. New insights for the paleobiogeographic analysis of the Early Ordovician graptolite fauna of Northwestern Argentina. *Resúmenes del 2° Simposio de bioestratigrafía y eventos del Paleozoico inferior*.

- X Congreso Argentino de Paleontología y Bioestratigrafía. VII Congreso Latinoamericano de Paleontología*. La Plata, Argentina, pp.56-57.
- Videt, B., Paris, F., Rubino, J-L., Boumendjel, K., Dabard, M.P., Loi, A., Ghienne, J.F., Marante, A. & Gorini, A., 2010. Biostratigraphical calibration of third order Ordovician sequences of the northern Gondwana platform. *Palaeogeography, Palaeoclimatology, Palaeoecology* 296, 359-375.
- Villas, E., Gutiérrez-Marco, J.C., Chacaltana, C., Carlotto, V., Cárdenas, J. & Monge, R. 2010. Braquiópodos ordovícicos del Perú: revisión de antecedentes, diversidad y aspectos paleobiogeográficos. In: Macharé Ordoñez, J. (Ed.), *XV Congreso Peruano de Geología. Sociedad Geológica del Perú, Publicación Especial 9*, 249-252.
- Vinn, O. 2010. Adaptive strategies in the evolution of encrusting tentaculitoid tubeworms. *Palaeogeography, Palaeoclimatology, Palaeoecology* 292, 211-221.
- Vinn, O. 2010. Shell microstructure of *Cornulites semiapertura* Öpik, 1930 and other early cornulitids from the Ordovician of North Estonia. *GFF* 132, 129-132.
- Vinn, O. & Wilson, M.A. 2010. Early large borings from a hardground of Floian-Dapingian age (Early and Middle Ordovician) in northeastern Estonia (Baltica). *Carnets de Geologie CG2010_L04*
- Voldman, G.G., Albanesi, G.L. & Ramos, V.A. 2010. Conodont geothermometry of the lower Paleozoic from the Precordillera (Cuyania terrane), northwestern Argentina. *Journal of South American Earth Sciences* 29(2), 278-288.
- Voldman G.G., Bustos-Marún, R.A. & Albanesi, G.L. 2010. Calculation of the conodont Color Alteration Index (CAI) for complex thermal histories. *International Journal of Coal Geology* 82, 45-50.
- Wang Yi, Rong Jiayu, Xu Honghe, Wang Chengyuan & Wang Genxian, 2010. On the Late Silurian stratigraphy of the Zhangjiajie area, Hunan Province, with a discussion on age of Xioxi Formation. *Journal of Stratigraphy* 34(2), 113-126.
- Webby, B.D., compiler. 2010. Glossary of terms applied to the hypercalcified Porifera. *Treatise Online* no. 4, 1-21. [Part E, Revised Volume 4, chapter 8, *Treatise on Invertebrate Paleontology*, Lawrence, Kansas].
- Wu, R.C., Percival, I.G. & Zhan, R.B. 2010. Biodiversification of Early to Middle Ordovician conodonts: a case study from the Zitai Formation of Anhui Province, eastern China. *Alcheringa* 34, 75-86.
- Wu, R.C., Stouge, S., Li, Z. & Wang Z.H. 2010. Lower and Middle Ordovician conodont diversity of the Yichang Region, Hubei Province. *Bulletin of Geosciences* 85, 631-644.
- Wright, A.J. & Cooper, R.A., 2010. Trilobita. Pp 45-49 in: Gordon, D., (ed.) *The New Zealand Inventory of Biodiversity. Volume 2: Kingdom Animalia, Chaetognatha, Ecdysozoa, Ichnofossils*. Canterbury University Press, Christchurch.
- Yan Kui & Li Jun, 2010: The paleoenvironmental implication of Early-Middle Ordovician acritarch communities from South China. *Chinese Science Bulletin* 55(10), 957-964.
- Yan Kui, Li Jun & Servais, T. 2010. The Ordovician acritarchs assemblages in South China and its biostratigraphical implications. CIMP2010, Warsaw, pp.100-101.
- Yan Kui, Servais, T. & Li Jun. 2010. Revision of the Ordovician acritarch genus *Ampullula* Righi 1991. *Review of Palaeobotany and Palynology* 163, 11-25.
- Yan Kui, Servais, T., Li Jun, Wu Rongchang & Tang Peng. 2011. Biodiversity patterns of Early - Middle Ordovician marine microphytoplankton in South China. *Palaeogeography, Palaeoclimatology, Palaeoecology* 299, 318-334.

- Young, S.A., Saltzman, M.R., Ausich, W.I., Desrochers, A. & Kaljo, D. 2010. Did changes in atmospheric CO₂ coincide with latest Ordovician glacialinterglacial cycles? *Palaeogeography, Palaeoclimatology, Palaeoecology* 296, 376-388.
- Zhan Renbin, Jisuo Jin & Chen Pengfei. 2010. Early-Mid Ordovician *Yangtzeella* (Syntrophiidina, Brachiopoda) and its evolutionary significance. *Palaeontology* 53(1), 77–96.
- Zhan Renbin, Jisuo Jin, Rong Jiayu, Zhu Xuejian & Han Nairen. 2010. Late Cambrian brachiopods from Jingxi, Guangxi Province, South China. *Alcheringa* 34(2), 99–133.
- Zhan Renbin & Liu Jianbo. 2010. The great Ordovician biodiversification in South China: A synopsis. In: Long Manyuan, Gu Hongya & Zhou Zhonghe, eds, *Darwin's Heritage Today*. Beijing, Peking University Press. pp.270–284.
- Zhan Renbin, Liu Jianbo, Percival, I.G., Jin Jisuo & Li Guipeng. 2010. Biodiversification of Late Ordovician Hirnantia Fauna on the Upper Yangtze Platform, South China. *Science China: Earth Sciences* 40(9), 1154–1163 (in Chinese).
- Zhan Renbin, Liu Jianbo, Percival, I.G., Jisuo Jin & Li Guipeng. 2010. Biodiversification of Late Ordovician Hirnantia Fauna on the Upper Yangtze Platform, South China. *Science China Earth Sciences* 53(12), 1800–1810.
- Zhan Renbin, Wang Guangxu & Wu Rongchang. 2010. Late Ordovician *Foliomena* fauna (Brachiopoda) of South China. *Journal of Earth Science* 21(special issue), 64–69.
- Zhan Renbin & Zhang Yuandong. 2010. Report on advances in the Great Ordovician Biodiversification Event. 47–54, 190–191. In: Palaeontological Society of China, ed., *Report on Advances in Palaeontology*. Beijing: Chinese Science and Technology Publishing House. 210 pp (in Chinese with English abstract).
- Zhang Yuandong, Zhan Renbin, Fan Junxuan, Cheng Junfeng & Liu Xiao. 2010. Principal aspects of the Ordovician biotic radiation. *Science China: Earth Sciences* 53(3), 382–394.
- Zhen, Y.Y., Burrett, C.F., Percival, I.G. & Lin, B.Y., 2010. A Late Ordovician conodont fauna from the Lower Limestone Member of the Benjamin Limestone in central Tasmania, and revision of *Tasmanognathus careyi* Burrett, 1979. *Proceedings of the Linnean Society of New South Wales* 131, 43-72.