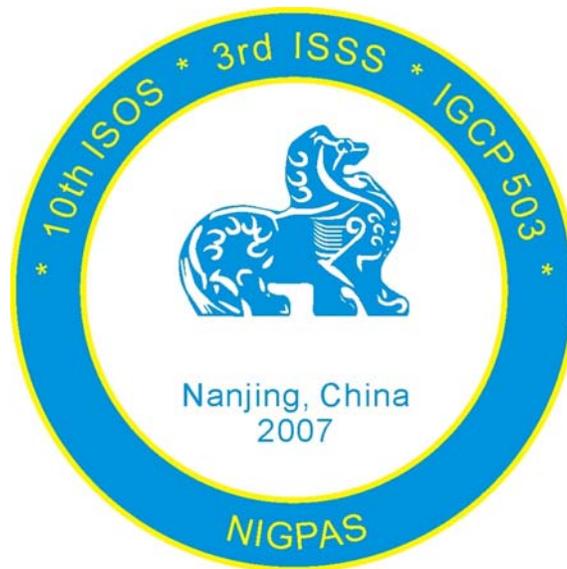
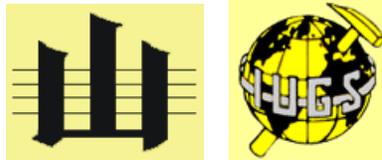


ORDOVICIAN NEWS

SUBCOMMISSION ON ORDOVICIAN STRATIGRAPHY
INTERNATIONAL COMMISSION ON STRATIGRAPHY



N° 23

2006

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URL:

<http://www.ordovician.cn>

<http://seis.natsci.csulb.edu/ISOS>

Cover: The logo for the next Yangtze Conference, China, 2007.

NOTE FOR CONTRIBUTORS

The continued health and survival of *Ordovician News* depends on YOU to send in items of Ordovician interest such as lists and reviews of recent publications, brief summaries of current research, notices of relevant local, national and international meetings, etc. As more geological software becomes available, details of this would also be welcomed by many of us. Also please ensure the SOS's Secretary (responsible editor) is notified of any changes in address, telephone or fax number and e-mail address.

EDITOR'S NOTE

Welcome to the new issue of *Ordovician News* in hard and soft versions, the eight one since I am serving as editor. Current number (23, 2006) is assembled as webpage for easier downloading of required information from the page of contents. We are still mailing a few hard copies; in particular, for those Ordovician friends who are not able to get into the network. Our previous electronic distributions were very successful, particularly by dramatically diminishing costs of printing and postage, as well as by allowing us to have the newsletter in the personal computer for permanent and easy access. In case members of the Ordovician community have any comment on this issue, the secretary would be pleased to hear from them. I would like to thank all of you for the many contributions for the current number.

Several important international meetings and field trips, particularly related to Ordovician stratigraphy and paleontology, are included. Recent advances on proposed stratotypes, and names for the global Ordovician subdivisions, are documented. Also you will find information on several new international projects, scientific reports and honorary notes. Present number incorporates the renewed list of titular members, after seven members of the SOS retired in August at 32° IGC, Florence, Italy. Finally, as always, your personal contributions on current research, publications, and updated addresses, are herein published.

I am particularly grateful for the technical support provided by Fan Juanxuan (Nanjing Institute of Geology and Palaeontology, China), who uploaded current issue of *Ordovician News* in its internet web site.

I appreciate very much your confidence in my service to the secretariat of the Subcommission.

GUILLERMO L. ALBANESI

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CHAIRMAN'S REPORT

In the past year, the Subcommittee made big progress on the GSSPs projects in particularly to the following stages and levels:

a. The Wangjiawan section, Yichang, China, has been elected as GSSP for the base of the Hirnantian Stage, the uppermost stage of the Upper Ordovician Series, defined at the level of the FAD of the graptolite *N. extraordinarius*. The proposal has been approved by the ICS and submitted to the IUGS executive for final ratification.

b. The Black Knob Ridge section, Oklahoma, USA, has been elected as GSSP for the base of the middle stage of the Upper Ordovician Series (the 6th Stage, Katian) defined at the level of the FAD of the graptolite *D. caudatus*. The proposal has been approved by the ICS and submitted to the IUGS executive for final ratification.

c. Three stage names for the 2nd, 5th and 6th stages have been approved by the Subcommittee as the Floian, Sandbian and Katian. The proposal has been approved by the ICS and submitted to the IUGS executive for final ratification. In the year of 2006, the Subcommittee will focus on two GSSP proposals for the boundary remaining to be defined, the base of the Middle Ordovician Series, and its lower stage (the 3th Stage, yet to be named), were submitted for final consideration. These proposals refer to the level of the FAD of the conodont *B. ? triangularis* in the Huanghuachang section in China, and the level of the FAD of the conodont *C. aranda* in the Niquivil section in Argentina. Formal reports of these two candidates have been published in Episodes. I will distribute a circular for asking the voting members whether they are prepared to vote for the base of the Middle Ordovician.

d. The Subcommittee provides successfully a website to the Subcommittee members and friends. In the Leuven meeting, the ICS members recognized that discussing the GSSP candidates on the Subcommittee website as the ISOS is a good way for promoting the GSSP works. In the year of 2005, the Subcommittee supported the IGCP503 project conference and encourages the members for participate the 2006 conference in Glasgow. The Subcommittee sponsored the symposium session "Global Ordovician Earth System" in 2004 IGC, whose results will be published in a special paper of the Geological Society of America possibly in 2006. The Ordovician News will be continuously supported by the Subcommittee. It would be greatly appreciated if all Ordovician members and friends keep communication by using the Subcommittee website. I would like very much for receiving your comments in all aspects all the time.

CHEN XU

SOS ANNUAL REPORT FOR 2005

1. Name of constituent body:

Subcommission on Ordovician Stratigraphy (SOS).

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Chairman, SOS

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

The Subcommittee promotes international cooperation in 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), and the nomenclature of the subdivisions.

b. To promote regular international meetings on 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 (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.

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 paleontology, all subdisciplines of stratigraphy (bio-, litho-, chemo-, and magneto-), sedimentology, geochemistry, and tectonics. With active participants from more than 25 countries, the Subcommittee 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>P. acuminatus</i> (GSSP-Dob's Linn)
			← <i>N. extraordinarius</i> (Wangjiawan North*)
			← <i>D. caudatus</i> (Black Knob Ridge*)
	MIDDLE	DARRIWILIAN	← <i>N. gracilis</i> (GSSP-Fågelsång)
			← <i>U. austrodentatus</i> (GSSP-Huangnitang)
	LOWER		← <i>B. triangularis</i> (C), or <i>P. aranda</i> (C) (in discussion)
TREMADOCIAN		← <i>T. approximatus</i> (GSSP-Diabasbrottet)	
			← <i>I. fluctivagus</i> (C) (GSSP-Green Point)

*already voted by ISOS

4. Organization

a. Subcommittee Executive
Chairman, Chen Xu (P.R.China)
Vice Chairman, Juan Carlos Gutiérrez-Marco (Spain)
Secretary, Guillermo L. Albanesi (Argentina)
16 other Voting Members
Over 100 Corresponding Members
Subcommittee website: www.ordovician.cn
http://seis.natsci.csulb.edu/ISOS (remains active for facilitating discussion of GSSP proposals).

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 was proposed 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 objective is 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.) of the Ordovician biodiversification, the end-Ordovician extinction, and the Silurian radiation.

6. Chief accomplishments and products in 2004

a. The Wangjiawan section, Yichang, China, has been elected as GSSP for the base of the Hirnantian Stage, the uppermost stage of the Upper Ordovician Series, defined at the level of the FAD of the graptolite *N. extraordinarius*. A final report will be submitted to the ICS for final ratification and approval by the IUGS executive.

b. The Black Knob Ridge section, Oklahoma, USA, has been elected as GSSP for the base of the middle stage of the Upper Ordovician Series (the 6th Stage, yet to be named) defined at the level of the FAD of the graptolite *D. caudatus*. The officers of the ISOS proceeded to submit this result to the

International Commission on Stratigraphy for final ratification and approval by the IUGS executive.

c. Two GSSP proposals for the boundary remaining to be defined, the base of the Middle Ordovician Series, and its lower stage (the 3th Stage, yet to be named), were submitted for final consideration. These proposals refer to the level of the FAD of the conodont *B. ? triangularis* in the Huanghuachang section in China, and the level of the FAD of the conodont *C. aranda* in the Niquivil section in Argentina.

d. A discussion page on the Subcommittee's website was further developed to allow for wide dissemination of the GSSP proposals and for extensive discussion of them.

e. The Subcommittee sponsored the symposium session "Global Ordovician Earth System" at the 32nd International Geological Congress in Florence, Italy in August 2005, whose results will be published in a special paper of the Geological Society of America.

f. *Ordovician News No. 22* was produced and posted on the Subcommittee web site in June 2005.

7. Chief problems encountered in 2005

Most subcommittee members requested that additional study and evaluation be given to the GSSPs for the base of the Middle Ordovician Series, which were accomplished during 2005, before final discussions and voting.

As always, the lack of travel support limits the participation of Voting Members in field meetings to evaluate potential stratotype sections. Although the Subcommittee supports investigations of potential GSSPs, the amount available is so limited that most of these investigations must be supported by other sources.

8. Summary of expenditures in 2004 (anticipated through March 2005)

Support to the production of newsletter (Albanesi): 500USD

Support to the development of new website (Fan Junxuan): 300USD

Support the additional work on the Niquivil section (Albanesi): 200USD

Support the additional work on the Huanghuachang section (Wang Xiaofeng): 200USD

Support to the additional work on the Black Knob Ridge section (Goldman): 200USD

Support to the additional work on the Wangjiawan section (Chen Xu): 100USD

TOTAL: 1500USD

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

a. Voting of Huanghuachang and Niquivil GSSPs for base of Middle Ordovician Series, discussion, and ballot on proposals in mid 2005. Submission of approved GSSP to ICS in second half of 2005 to 2006.

b. Selection of names for 2nd, 3th, 5th and 6th stages of the Ordovician System.

c. Production and internet distribution of *Ordovician News No. 23* in May 2006.

d. Management of the Subcommittee website.

10. Budget and ICS component for 2006

Ordovician News No. 23 production costs: 500USD

Travel subsidies for executive members to attend GSSP dedication ceremonies or conferences: 500USD

Plaques for GSSPs to be dedicated in 2005: 200USD

Support to the preparing work of the organization committee for the 2007 Ordovician conference: 300USD

Management of the Subcommittee website: 300USD

Preparing an Ordovician Time Table: 300USD

TOTAL 2006 BUDGET REQUEST: 2100USD (through Mar, 2007).

Potential funding sources outside IUGS

Already in its second year, IGCP Project 503, "Ordovician Palaeogeography and Palaeoclimate", funded a successful meetings in four meetings (with related field trips) in 2005 (General Meeting in Milwaukee, June; Brachiopod session in Copenhagen, July; Baltic Stratigraphic Symposium in St. Petersburg, August; and the Gondwana 12 meeting, Mendoza, in November 2005). This project will provide 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.

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

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

11. Review chief accomplishments over last five years (2000-2004)

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. Significant progress on definition of series and stages for the Ordovician System with only two GSSPs remaining to be selected and approved by the Subcommittee, following change in strategy for stages of Upper Ordovician Series in August 2003.

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

e. International Symposium on the Ordovician System 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.

e. Publication of *Ordovician News* nos. 17-21 and their posting on the Subcommittee's web site.

f. 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*.

g. 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.

h. Sponsorship at the 31st International Geological Congress of the symposium "Paleontological, stratigraphical, and paleogeographical relations among South America, Laurentia, Avalonia, and Baltica during the Ordovician."

i. Sponsorship at the 32nd International Geological congress of the symposium "The global Ordovician Earth system."

j. 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.

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

12. Objectives and work plan for next 5 years (2005-2009)

a. Selection of GSSPs for base of the Hirnantian Stage, the base of the second Stage of the Upper Ordovician and the base of the Middle Ordovician Series.

b. Selection of names for 2nd, 3rd, 5th and 6th stages of Ordovician System

c. Completion of selection of GSSPs for all stages.

d. Publication of papers presented at "The global Ordovician Earth system" symposium at the 32nd IGC.

e. Refocusing of Subcommittee to address the global Ordovician Earth system.

f. Development of a new website with transfer of subcommittee executive to new chair.

g. 10th International Symposium on the Ordovician System to be held in Nanjing, China in summer 2007.

h. Editing of a new Ordovician Time Table.

INTERNATIONAL SYMPOSIA, CONFERENCES AND FIELD MEETINGS

Journées Georges Ubaghs

The research team Biogéosciences (Dijon), the French Palaeontological Association (APF), and the French Palaeozoic Working Group (GFP) are very pleased to invite you to a two-days international meeting (30-31 January, 2006) held at Dijon University (Burgundy, France), in tribute to the late Prof. Georges Ubaghs (1916-2005), who was one of the greatest specialists of Palaeozoic echinoderms. Twenty-nine scientific communications (24 oral presentations, 5 posters) will be presented (9 of them are dealing with Ordovician echinoderms). For further details, contact Bertrand Lefebvre (bertrand.lefebvre@u-bourgogne) or visit the meeting website at: <http://www2.u-bourgogne.fr/biogeo/P1T.html>

BERTRAND LEFEBVRE

The 1st International Conodont Symposium – ICOS 2006

The dates and provisional itinerary and costs for ICOS 2006, including excursions and social events, are now available on the conference website, accessible via: www.conodont.net. The deadline for booking and abstract submission is May 31

Booking and abstract submission will be through online forms and credit card payment.

MARK A. PURNELL

The 6th Baltic Stratigraphical Conference

On August 23-25, the 6th Baltic Stratigraphical Conference was held in St. Petersburg (Russia). The meeting was organized by the All-Russian Geological Institute (VSEGEI) and St. Petersburg State University. Altogether more than 30 Ordovician specialists from 8 countries attended the Conference and about 20 talks were given on two-day joint Ordovician-Silurian and IGCP project 503 scientific sessions in VSEGEI. One of the talks was dedicated to V.V. Lamansky who monograph published 100 years ago has made a great impact on the study of East Baltic Ordovician. During the pre-conference field excursion 9 geological objects including quarries, old mines and natural outcrops were visited. The trend from siliciclastic deposits in the Cambrian and Tremadoc through cold-water carbonates in the Lower and Middle Ordovician to the tropical carbonates in the Upper Ordovician was demonstrated and recent advances in biostratigraphy, paleoichnology, sequence stratigraphy, facies and sea-level changes interpretations were discussed. The Field Guide for the BSC-6 geological excursion contains updated information on palaeontology, stratigraphy and sedimentology of the region. It is a contribution to the IGCP project 503 "Ordovician Palaeogeography and Palaeoclimate" and bore the logo of the project.

ANDREI DRONOV

WOGOGOB 2007

The 9th WOGOGOB meeting (WOrking Group on the Ordovician Geology Of Baltoscandia) will take place in Sweden in 2007. Preliminary dates are August 16th to 20th, including a pre-meeting field trip in the Siljan District on the 17th, and a post-meeting field trip to Jamtland on the 20th. Thus the meeting will return to the place it started now nearly 20 years ago. There will be two days of technical sessions, to be held in Raetvik in the Siljan area. Further information will be posted on an upcoming web page. For further inquiries, please e-mail: WOGOGOB2007@pal.uu.se.

On behalf of the organizing committee
JAN OVE R. EBBESTAD

Changing Palaeogeographical and Palaeobiogeographical Patterns in the Ordovician and Silurian, IGCP503 Annual Meeting, University of Glasgow,

Scotland

30 August – 1 September 2006

First circular & call for papers: This conference is the main meeting for 2006 of IGCP 503 which aims to develop a better understanding of the environmental changes that influenced the Ordovician biodiversification, the end-Ordovician extinction and the Silurian radiation (<http://sarv.gi.ee/igcp503/>). The project encourages the application of a range of disciplines to understand the Ordovician and early Silurian Earth System and the patterns of biotic change.

Oral and Poster sessions: Two and half days (30 August – 1 September) of presentations are scheduled. Whilst the main emphasis of the conference is on palaeogeography and palaeobiogeography, contributions on any topic relevant to the aims of IGCP 503 will be welcome. Thematic sessions are envisaged on:

- Ordovician palaeobiogeography and plate tectonics
- Early Palaeozoic plankton
- Ocean dynamics
- Early Palaeozoic climate reconstructions

There will also be a session dedicated to a sister project, IGCP 497 'The Rheic Ocean: its origin, evolution and correlatives' for which contributions on topics that relate to the understanding of the patterns and drivers of biotic change during the Ordovician and Silurian are also invited. If there is sufficient interest, a selection of papers from the conference will be published as rapidly as possible in a thematic set in an international journal.

Excursions:

- Pre-conference day excursion (29 August) - to the Scottish Southern Uplands, including the Ordovician-Silurian boundary stratotype section at Dob's Linn.
- Post-conference (2-4 September) - to the classical Ordovician and Silurian successions in southern Scotland at Girvan and in the Pentland Hills.

There will also be a half-day excursion on 31 August from Glasgow to see some of the geology and scenery of the southern edge of the Scottish Highlands

Social Events: The programme includes receptions, a whisky tasting and a conference dinner.

Conference location: The conference will take place at Glasgow University (<http://www.gla.ac.uk/>) in the west end of this vibrant and friendly city (<http://www.seeglasgow.com/>). The area around the University includes a great variety of places to eat and drink, the botanic gardens and the City Museum & Art Gallery and is a short journey on the Underground from the city centre with its many cultural and gastronomic delights. The city has excellent rail and motorway links to the rest of the UK. The nearby international airports are served by a wide range of carriers, including budget airlines. Glasgow Airport is 7 miles (11 km) from the University and there is an airport bus to the city

centre. Prestwick Airport is 22 miles (35 km) away and has a rail connection to the city centre.

Abstracts: Abstracts should be e-mailed to the conference organiser as MS Word or RTF files by 1 May 2006. They should not exceed 500 words and should not include illustrations or tables. Please indicate the affiliations of all co-authors and the e-mail address of the senior author. Also indicate whether you would prefer an oral or poster presentation and whether you are interested in submitting a contribution for consideration for publication in a thematic set of papers from the meeting. Members of the Scientific Committee decide on the balance between oral and poster presentations after the receipt of abstracts and reserve the right to accept or refuse any submission. Participants will be informed in June whether their presentation has been accepted for an oral or poster presentation.

The registration form: for the conference and field excursions will be included in the Second Circular the end of February along with information on booking hotel accommodation in Glasgow. There will be a reduced registration rate for students and, as part of the normal IGCP arrangements, some funds will be available to assist participation by scientists from developing countries.

Conference Scientific Committee: D.A.T. Harper (Copenhagen, Denmark), J. Li (Nanjing, China), A. Munnecke (Erlangen, Germany), A.W. Owen (Glasgow, Scotland, UK), Rong, J. (Nanjing, China), P. Sheehan (Milwaukee, USA), T. Servais (Lille, France), C. Xu (Nanjing, China).

Conference organiser and contact address: Dr Alan Owen, Department of Geographical and Earth Sciences, University of Glasgow, Gregory Building, Lilybank Gardens, Glasgow G12 8QQ, Scotland, U.K. [e-mail: a.owen@ges.gla.ac.uk].

OLLE HINTS

IGCP Project 503 Ordovician Palaeogeography and Palaeoclimate

30 August – 1 September 2006, Glasgow, Scotland

The third annual meeting of the project will take place at the University of Glasgow and is being organised by Alan Owen (a.owen@ges.gla.ac.uk). It will focus on the changing palaeogeographical and palaeobiogeographical patterns in the Ordovician and Silurian but contributions on any topic relevant to the aims of IGCP 503 will be welcome. The main part of the conference will comprise two and a half days of lecture and poster presentations (30 August – 1 September), a half-day local mid-conference excursion and various social events including a whisky tasting. There will also be a pre-conference day excursion to the Scottish Southern Uplands, including the Ordovician-Silurian boundary stratotype

section at Dob's Linn and a three day post-conference trip to the classical Ordovician and Silurian successions in southern Scotland at Girvan and in the Pentland Hills. See the IGCP 503 website (<http://sarv.gi.ee/igcp503/>) for the latest information on the conference.

ALAN OWEN

The 4th European Meeting on Palaeontology and Stratigraphy of Latin America

4EMPSLA will take place in Madrid in September 2007.

ENRIQUE DÍAZ-MARTÍNEZ

The Symposium “Paleogeography and Global Correlation of the Ordovician Events” (PGCOE)

It is planned to be held on the basis of the Institute of Petroleum Geology, SB RAS (Siberian Branch of Russian Academy of Science), Novosibirsk, with the participation of the Paleontological Institute of Russian Academy of Science, Moscow in 2006.

In parallel with the symposium there's planned a post-symposium field trip onto the unique continuous carbonate succession of Lower, Middle and Upper series of Ordovician System on the Kulyumbe River (Siberian Platform). The succession on the Kulyumbe River to be shown therewith is well characterized by macrofauna and microfossils (trilobites, brachiopods, conodonts, graptolites, ostracods, crinoids, bryozoans etc.)

The time for both the Symposium “PGCOE” and the post-symposium follow-up field trip is scheduled for August 1 - 15, 2006. The expenses of attending the symposium in Novosibirsk-city during two days are supposed to be borne by the participants all by themselves (the hotel rates are about \$ 45-90 per night (single room), meals can cost \$10 – 40 a day). The field trip expenses (12 days \$ 60 each) in total amount to \$ 720 per person and are to be paid to the Institute of Petroleum Geology by each individual in advance. Anyway, it does not cover the accommodations in Novosibirsk and Noril'sk.

It should be understood that \$720 constitute only part of the expenses to be covered by the Institute to arrange the excursion and include three meals a day, traveling expenses (by train or plane) from Novosibirsk to Krasnoyarsk, boat trip (with cabins for two persons) down the Yenisey river up to Igarka port, transportation on a helicopter from Igarka to the field camp on the Kulyumbe river, the stay in the camp equipped with tents for two persons and sleeping bags, then helicopter flight back to Igarka

and, finally flight from Igarka to Noril'sk. It also might be possible to fly (by helicopter) directly from the field camp site to Noril'sk.

Accommodation costs (approximately \$50-90 single room per night) and meals (\$20-50) in Noril'sk-city are to be paid by the participants themselves. It should also be noted that 10 persons is a minimal number of the group in the excursion whereas 20 people is maximum.

The participants will have to take care of the departure from Noril'sk to Moscow (by plane, with booking tickets in advance) themselves.

Costs (in US Dollars)

Registration fee \$100

It will cover the following:

Attendance at all scientific sessions

Abstract volume

Coffee or tea breaks twice a day

Accommodations (hotel in Novosibirsk) \$135-270 (per 3 nights and advance reservation, without breakfast) \$45-90 per day

Accommodations (hotel in Noril'sk) \$50-90 (per 1 nights and advance reservation, without breakfast)

Meals (in Akademgorodok) \$30-90 (per 3 days) average cost of meals in Novosibirsk: \$10-30 per day

Meals (in Noril'sk) \$20-40 (per 1 day) average cost of meals in Noril'sk: \$20-40 per day

Field excursion \$ 720 (60 USA & per day)

Accommodation in field camps

Field/Camp meals

Transportation

Guide book

Total (minimum) \$1055 (15 days) (approximately \$70 per day).

The Program Committee of the Symposium:

Kanygin A.V. (Institute of Petroleum Geology, SB RAS, Novosibirsk)

Sennikov N.V. (Institute of Petroleum Geology, SB RAS, Novosibirsk)

Rozhnov S.V. (Paleontological Institute, RAS, Moscow)

Koren' T.N. (Russian Geological Research Institute (VSEGEI), St. Petersburg)

The Symposium is supposed to be held in view of the following International projects and organizations:

- 1) Subcommission on Ordovician Stratigraphy (SOS);
- 2) IGCP Project 503 "Ordovician Palaeogeography and Palaeoclimate";
- 3) Interdepartmental Stratigraphic Committee of Russia (ISC);
- 4) Complex Scientific Program n° 25 of the Presidium of Russian Academy of Science "The Origin and Evolution of Biosphere";
- 5) Russian Foundation for Basic Researches (RFBR);
- 6) Presidium of the Siberian Branch of Russian Academy of Sciences.

In view of the planned Symposium the Program Committee with gratitude will take into

account all your possible corrections as well as your opinion on the title and scheduled time of the symposium as well as your advice on the persons indicated in the Committees and the organizations that could support the symposium financially or in other ways.

The Chairman of Program Committee

ALEXANDER KANYGIN

The 12th International Echinoderm Conference

A special session on "Early Paleozoic Echinoderms" will be organized within the next IEC held at Durham (New Hampshire, 07-11 August, 2006). This session corresponds to a workshop of the "echinoderm clade team" associated with IGCP Project 503. More information should be soon available at: <http://www.iec2006.unh.edu/>

The 9th Argentine Congress on Paleontology and Biostratigraphy

You are cordially invited to attend the 9th Argentine Congress on Paleontology and Biostratigraphy that will be held in Córdoba city, Argentina, on September 18-23, 2006. For more information, please, visit the website of the Congress and their several symposia: www.congresopaleo.com.ar, Further information: info@congresopaleo.com.ar

Primitive Life, Ancient Radiations

The "primitive life, ancient radiations" symposium is organised as part of the 21st RST (Earth Science Meeting), which will be held in Dijon in December 2006. The RST meeting is the main Earth Sciences conference organised every two years in France. It covers most fields in Earth Sciences, from deep earth geology to surface and environmental geology, from Archean to Quaternary, from continental and marine sedimentology and tectonics to exogeology. It is usually attended by 500 to 800 scientists, mostly PhD students, post-docs but also experienced researchers. As part of the 21st RST meeting, a special international symposium is organised on the theme "Primitive Life and Ancient radiations". The scope of this 2 days-symposium (7-8 December, 2006) is to bring together fresh and contradictory ideas on the major biological events that marked the first four billion years of the Earth history. In particular, the following themes will be tackled: early life, microbial communities, the appearance of eucaryotic cell, multicellularity, Vendian faunas, and Cambro-Ordovician radiations. This symposium will permit to present the most

recent results, as well as the most novel and puzzling hypotheses, in a domain, which has known an important mutation for a decade. It will integrate the following approaches: palaeontology, microbiology, palaeoecology, genetics, molecular phylogeny, geochemistry and biomineralization.

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For more information, consult <http://www.u-bourgogne.fr/RST-DIJON/>

BERTRAND LEFEBVRE

The Yangtze Conference on Ordovician and Silurian

June, 2007

The international Symposia on the Ordovician and Silurian Systems will be convened together. Additionally, the IGCP 503 annual meeting will be held in conjunction with them. The Organizing Committee, representing the relevant Chinese governmental agencies and scientific institutions, under the scientific sponsorship of the International Subcommittee of Ordovician Stratigraphy (ISOS) and International Subcommittee of Silurian Stratigraphy (ISSS) and the IGCP 503, cordially invites you to participate in

The 10th International Symposium on the Ordovician System

The 3rd International Symposium on the Silurian System

The IGCP 503 4th Annual meeting Nanjing, China 27-30 June, 2007

A series of scientific sessions including plenary and special sessions, general and topical symposia, workshops and special group meetings, in addition, pre-, post-conference and mid-conference field excursions will be organized. Social events and programs will also be arranged.

Hosts

Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences (NIGPAS)
State Key Laboratory of Palaeobiology and Stratigraphy (LPS)

Co-Chairmen

CHEN Xu
RONG Jiayu
Thomas SERVAIS

Secretary-General

LI Jun,
Deputy Secretary-General
ZHAN Renbin,
ZHANG Yuandong
WANG Haifeng

Webmaster

FAN Junxuan

Scientific Sessions

Some thematic sessions and workshops are outlined below. However, we welcome any suggestions for alternative or additional themes to the formal sessions or workshops. Each formal session will invite co-conveners and chairpersons to assist in assembling an attractive program. You are welcome to recommend conveners and chairpersons for the formal sessions.

1, Biostratigraphy, Chronostratigraphy and Stratotypes

2, Event-stratigraphy

3, Geochemistry and Magnetism

4, Geochronology

5, IGCP 503 Session: Palaeogeography, Palaeobiogeography, Palaeoclimate and sea-level changes

6, Palaeontology and Biodiversification

7, Quantitative Palaeontology and Stratigraphy

8, Sedimentology and Basin Analysis

Field Excursions

Field trips are arranged for pre-, mid-, and post-conference excursions according to the responses from participants. These trips will provide opportunities to visit classical Ordovician and Silurian sections of South China, to collect Ordovician and Silurian fossils and samples (However, some localities of the GSSP sections should be applied in advance), and to visit famous Chinese cultural relics and natural parks. Field guidebooks will be available and detailed arrangements and a day by day schedule will be given in the second circular.

For more and updated information, including illustrations and photos, please access the following links: <http://www.ordovician.cn/down/nanjing2007/FirstCircular.pdf>;

<http://www.ordovician.cn/down/nanjing2007/FirstCircular.pdf>;

<http://sarv.gi.ee/igcp503/pdfs/nanjing2007.pdf>;

<http://www.nigpas.ac.cn/new/other/circular-1.pdf>

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The 10th International Symposium on the Ordovician System
The 3rd International Symposium on the Silurian System
The IGCP 503 4th Annual meeting

第十届国际奥陶系、第三届国际志留系、IGCP 503项目
联合大会

27 - 30 June, 2007, Nanjing, China
Pre-conference field trip: 22-26, June, 2007, Zhejiang, China
Post-conference field trip: 1-10, July, 2007, Guizhou and
the Yangtze Gorges

International Subcommittee on Ordovician Stratigraphy
International Subcommittee on Silurian Stratigraphy
IGCP Project 503
Nanjing Institute of Geology and Palaeontology, CAS
State Key Laboratory of Palaeobiology and Stratigraphy

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PROJECTS

All data about **IGCP project 503** are continuously updated (at least once a week) on our webpage: <http://sarv.gi.ee/igcp503/>

THOMAS SERVAIS

SCIENTIFIC REPORTS

Proposed names for three Ordovician global stages

Although The International Subcommittee on Ordovician Stratigraphy has made considerable progress in the establishment of a new chronostratigraphic classification of the Ordovician System, only three of the recognized seven stages have so far been named. These are the lower stage of the Lower Ordovician (Tremadocian or 1st Stage), the upper stage of the Middle Ordovician (Darriwilian or 4th Stage), and the upper stage of the Upper Ordovician (Hirnantian or 7th Stage). In order to promote discussion and in due time facilitate the use of the new global stage classification, we find it desirable to propose three additional stage names at this time even if the precise level of the base of the Middle Ordovician Series has not yet been established by the Subcommittee. The stratigraphic scope of each of these three stages does not correspond closely with that of any previously used regional stage or series units. In our opinion, significant redefinition of the scope of previously used, more or less well-known, chronostratigraphic units will 1) cause confusion, especially among non-stratigraphers, and 2) make them hard to use in the regions and on the successions for which they were originally defined. It is therefore much preferable to introduce new stage designations and it is our experience that such terms, if properly defined and found useful by geologists, will be generally accepted in a relatively short time.

The three new stage names proposed herein for consideration by the Subcommittee are all brief and simple to pronounce and to the best of our knowledge, they have not been used previously as a designation of a stratigraphic unit. Following the common practice of the International Commission on Stratigraphy, each new stage designation is based on the name of a geographical feature in the region of the GSSP. Our proposed Ordovician stage classification is shown in Figure 1 and each of the proposed stage names is briefly discussed below.

1. The upper stage of the Lower Ordovician Series (2nd Stage of the Ordovician System): FLOIAN STAGE.

The ratified GSSP of this stage is at Diabasbrottet in southern Sweden. In a recent paper describing this section in some detail, Bergström et al. (2004)

proposed the designation ‘Floian Stage’ which is here substituted by Floian Stage. It includes the stratigraphic interval from the base of the *T. approximatus* Zone to a yet to be decided stratigraphic level that is likely to be at, or near, the base of the *B. triangularis* Conodont Zone, which appears to be at essentially the same level as the base of the *I. victoriae victoriae* Graptolite Zone. The designation ‘Floian’ is derived from the Village of Flo, which is located about 5 km S.E. of the GSSP.

2. The lower stage of the Upper Ordovician Series (5th Stage of the Ordovician System): SANDBYAN STAGE.

The ratified GSSP of this stage, as well as the base of the Upper Ordovician Series, is at Fågelsång in southernmost Sweden. This section is located in the Community of S. Sandby (South Sandby), and it is appropriate to recognize this fact by introducing the designation Sandbyan Stage. This stage includes the stratigraphic interval from the base of the *N. gracilis* Zone to the base of the *D. caudatus* Zone. Parts of this interval can be studied in outcrops at and near the GSSP (Lindström, 1954), and the entire stage is present in the Koägen drill-core that was drilled just west of the Fågelsång area and described by Nilsson (1977).

SYSTEM	GLOBAL SERIES	GLOBAL STAGES	KEY GRAPTOLITE/ CONODONT(C) BIOHORIZONS	
ORDOVICIAN	UPPER	HIRNANTIAN	← <i>P. acuminatus</i> (GSSP-Dob's Linn)	
		KATYAN	← <i>N. extraordinarius</i> (Wangjiawan North)	
		SANDBYAN	← <i>D. caudatus</i> (Black Knob Ridge)	
	MIDDLE	DARRIWILIAN	← <i>N. gracilis</i> (GSSP-Fågelsång)	
		UN-NAMED	← <i>U. austrodentatus</i> (GSSP-Huangnitang)	
	LOWER	FLOIAN	← <i>B. triangularis</i> (C), or <i>P. aranda</i> (C)	
		TREMADOCIAN	← <i>T. approximatus</i> (GSSP-Diabasbrottet)	
				← <i>I. fluctivagus</i> (C) (GSSP-Green Point)

3. The middle stage of the Upper Ordovician Series (6th Stage of the Ordovician System): KATYAN STAGE.

The GSSP of this stage, approved by the Ordovician Subcommission and awaiting a vote by the ICS and ratification by IUGS, is on Black Knob Ridge, about 5 km N.E. of Atoka in S.E. Oklahoma (Goldman et al., 2005). The proposed name of the stage is derived from Katy Lake (now drained) which is (or was) located near the southern end of Black Knob Ridge about 2 km S.W. of the GSSP. The Katyan Stage includes the stratigraphic interval from the base of the *D. caudatus* Zone to the base of the *N. extraordinarius* Zone. Most, if not all, of the stage is excellently exposed over wide areas on Black Knob Ridge which is sparsely vegetated and has little soil cover.

Approval of formal names for the 2nd, 5th and 6th stages of the Ordovician Series will leave only one stage yet to be named. That is the 3rd Stage that is also the lower stage of the Middle Ordovician Series. A formal name of this stage must await selection and approval of a GSSP by the Subcommission.

References

- Bergström, S.M., Finney, S.C., Chen Xu, Pålsson, C., Wang Zhi-hao, and Grahn, Y., 2000. A proposed global boundary stratotype for the base of the Upper Series of the Ordovician System: The Fågelsång section, Scania, southern Sweden. *Episodes*, v. 23, p. 102-109.
- Bergström, S.M., Löfgren, A., and Maletz, J., 2004. The GSSP of the Second (upper) Stage of the Lower Ordovician Series: Diabasbrottet at Hunneberg, Province of Västergötland, southwestern Sweden. *Episodes*, v. 27, p. 265-272.
- Goldman, D., Leslie, S.A., Nolvak, J, and Young, S., 2005. The Black Knob Ridge section, southeastern Oklahoma, USA: A possible Global Stratotype-section and Point (GSSP) for the base of the Middle Stage of the Upper Ordovician Series. Unpublished proposal submitted to the International Subcommission on Ordovician Stratigraphy. 44 pp.
- Lindström, M., 1953. On the lower Chasmops beds in the Fågelsång district (Scania). *Geologiska Föreningens i Stockholm Förhandlingar*, v. 75, p. 125-148.
- Nilsson, R., 1977. A boring through Middle and Upper Ordovician strata at Koängen in western Scania, southern Sweden. *Sveriges Geologiska Undersökning*, C733, p. 1-58.

STIG M. BERGSTRÖM, STANLEY C. FINNEY, CHEN XU,
DANIEL GOLDMAN, AND STEPHEN A. LESLIE

Addendum

At the time present number of **Ordovician News** was under edition, the titular members of the SOS agreed with the recommendation by the ICS-IUGS to change the endings of the words Sandbian and Katyan by –ian, so that the names of respective stages are emended to as **Sandbian** and **Katian**.

GUILLERMO L. ALBANESI

Gondwana 12 Conference (Mendoza, Argentina, November 6-11, 2005)

During the Gondwana 12 meeting a single-minded domination of the “discussion” period consumed the available time, avoided discussion of critical data, and precluded an opportunity for consideration of alternative interpretations. We had several observations to share with you regarding the origin and tectonic setting of the Argentine Precordillera, and to provide a simple and clear presentation of our interpretation, the so-called Astini and Thomas model.

Everyone seems to be agreed that the Precordillera terrane, as we originally understood it (Astini et al., 1995, *GSA Bulletin*; Thomas and Astini, 1996, *Science*), is allochthonous. The disagreement arises with regard to the original site, as well as the timing and the mechanism of transfer. We will consider these issues here.

Our work began with the recognition that a large block of continental crust and sedimentary cover was rifted from southern Laurentia in Early Cambrian time (Thomas, 1991, *GSA Bulletin*), an interpretation based entirely on data from Laurentia. Continental rifting and opening of the Iapetus Ocean along the Appalachian sector of eastern Laurentia dates from ~565 Ma (synrift volcanics), and passive-margin transgression began at the beginning of Cambrian time. A later rifting episode extracted an initially unidentified block from the Ouachita embayment of southeastern Laurentia. The time of rifting is well documented by ages of synrift volcanics (539-530 Ma), ages of sedimentary fill of synrift intracratonic grabens (Early to early Late Cambrian), post-rift subsidence history, and time of passive-margin transgression (Thomas and Astini, 1999, *GSA Bulletin*).

Judging from the location and surrounding geology of Laurentia, the geologic composition of the rifted block can be predicted from the well-known characteristics of adjacent Laurentia. The crystalline basement is of Grenville age, comparable to the

basement rocks exposed in central Texas. The sedimentary cover includes a Lower Cambrian clastic succession, containing quartzose sandstones and conglomerates, redbeds, carbonates, and evaporites. The clastic sequence grades upward into a massive carbonate succession; however, the age of upward transition varies from Middle to Late Cambrian, depending of location with respect to synrift grabens and horsts. The passive-margin shelf succession (Upper Cambrian and Lower Ordovician) is more than 1 km thick. The Lower Cambrian beds are characterized by an *Olenellus* fauna, and also contain *Salterella* (Astini et al., 2004, PPP). The block is approximately 800 km on each side. The original eastern margin (present coordinates in Laurentia) was an active rift margin sometime(s) within the age range of 750 to 543 Ma, by analogy with the Blue Ridge rifted margin of Laurentia to the north, where synrift volcanic and plutonic rocks provide age data (e.g., Aleinikoff et al., 1996, American Journal of Science). The original transform north margin and rifted west margin are dated at 539-530 Ma from synrift volcanic rocks in the Southern Oklahoma leaky transform system. Following breakup at ~530 Ma, the block drifted along the Alabama-Oklahoma transform as the incipient ocean opened; the trailing corner of the block separated from the Laurentian crust at ~512 Ma; and the spreading ridge migrated past the corner of Laurentian crust at ~500 Ma, as indicated by the time of the latest extensional movement on synrift graben faults inboard from the transform margin and transition to a passive margin along all of southern Laurentia (Thomas, 1991, GSA Bulletin). The present trace of the transform along the Laurentian margin is buried beneath thick younger sediment, and geophysical models characterize the transform margin of Laurentian crust (Keller et al., 1989, Geology; Harry and Londono, 2004, GSA Bulletin). No rock samples are available to document details; however, the tectonic history suggests that synrift igneous rocks as young as 500 Ma may be localized along the last active segment of the continent-continent transform.

Recognizing that a block of continental crust was orphaned from Laurentia (Thomas, 1991) requires either that it must be found somewhere on Earth or that it somehow disappeared. Considering that it must be somewhere, only two candidates are known to have the essential characteristics of the unknown but very distinctive block: northwest Scotland and the Argentine Precordillera. The tectonic history and paleomagnetic data from northwest Scotland show that it was part of Laurentia through the assembly of Pangaea, and that it was orphaned on the margin of Baltica during the breakup of Pangaea and opening of the Atlantic Ocean. The Argentine Precordillera remains as the only reasonable candidate for the block rifted from the Ouachita embayment of southeastern Laurentia. Our next step was to combine our observations of Laurentian rifting and of the the

coeval history of the Argentine Precordillera (Astini et al., 1995; Thomas and Astini, 1996).

We now turn to the present location and tectonic setting of the Precordillera. East of the Precordillera on the western margin of Gondwana, the Famatina volcanic arc was active from ~490 to 460 Ma, indicating subduction beneath a continental margin arc. The sierras east of the Precordillera are marked by strongly deformed rocks with top-to-west ductile shear zones dated at 465 Ma. Rocks along that system include high-pressure assemblages indicating depths of 40 km, and implying substantial thickening of the crust (Roeske et al., 2005, Gondwana 12). Clearly some crust was subducted beneath an upper-plate continental-margin arc on western Gondwana, and the Precordillera is currently in the position of that crust. Metasedimentary rocks in the lower part of the top-to-west structures seem equivalent to the basal part of the cover sequence of the Precordillera (Van Staal et al., 2005, Gondwana 12). These relationships indicate that the Precordillera was part of the crust that was subducted during the Ordovician. Although a component of sinistral strike-slip has been recognized, the arc and crustal thickening indicate a dominant component of subduction.

Now we ask whether the stratigraphic cover of the Precordillera bears a record of the subduction of the terrane. K-bentonites are numerous in the Precordillera Ordovician stratigraphy. Two episodes of volcanism are documented in Famatina. An early volcanic episode in late Tremadoc to early Arenig is not represented in bentonites in the Precordillera. A later volcanic episode in late Arenig to early Llanvirn is recorded in more than 100 separate bentonite beds in the Precordillera (Huff et al., 1998, GSL Spec. Publ. 142; Fanning et al., 2004, JGSL). Conodont biostratigraphy indicates that the Precordillera was isolated from both Laurentia and Gondwana in early Arenig time (Lehnert et al., 1997, GSA Bulletin; Albanesi and Barnes, 2000, J. Paleontology). Brachiopods in the early Llanvirn show the first connection to Famatina (Benedetto, 2004, Gondwana Research). Both the air-fall volcanics and the faunas show the approach of the Precordillera continental terrane to the subduction zone, where oceanic crust of the leading edge of the plate was being consumed.

A synorogenic clastic wedge beginning in the late Arenig completes the record of subduction of the Precordillera. A diachronous upward transition from shallow-water shelf carbonates (San Juan Formation) to black shale (Gualcamayo Shale) documents the progress of tectonic loading and foreland subsidence from east to west across the Precordillera. Much of the record has been obscured by several episodes of post-Ordovician erosion and by Andean thrusting; nevertheless, biostratigraphic data and bentonite marker beds document an east-to-

west progression of initiation of black shale deposition, consistent with a relative westward advance of the tectonic load and foreland subsidence. The easternmost preserved black shale is as old as latest Arenig, whereas the carbonate-to-shale upward transition is as young as late Llanvirn to Llandeilo farther west. Persistence of late-stage carbonates in a catch-up sequence on the west marks the position of a peripheral forebulge associated with foreland flexure (presently exposed in the westernmost thrust sheets of the carbonate stratigraphy of the Central Precordillera, e. g., Mogotes Azules Formation).

Paralleling the westward progression of initial black shale is a pattern of progradation of coarser clastic turbidities of the Las Vacas Formation and Trapiche Group; however, the coarse clastic wedge does not extend as far west as the present location of the Central Precordillera. The coarsest clasts in Las Vacas conglomerates are in the east, and the sediment fines westward very irregularly. The turbidite succession includes characteristic graded beds and includes fine muddy interbeds between the coarse clasts. The clasts include volcanic to hypabyssal igneous rocks and metaquartzites, as well as limestones. The provenance clearly included igneous and metamorphic rocks in a “basement” provenance, but erosion of the shelf carbonates indicates a complex source terrain, possibly including both sedimentary and metamorphic thrust sheets, in other words, an orogenic belt. Inserted within the conglomerates are large (10+ m) olistoliths of San Juan Limestone and Gualcamayo Shale, indicating a stratigraphically restricted source of proximal clasts, suggesting a thrust sheet detached in the basal San Juan (Thomas and Astini, 2005, Gondwana 12). Some of the clasts are tightly folded, indicating that the upper part of the shelf carbonate and overlying black shale were compressionally deformed by Middle Ordovician time when the clasts were deposited in the Las Vacas Formation. Paleocurrent orientations show a classic pattern for an evolving foredeep, transverse in the east and changing gradually to longitudinal toward the west. The paleocurrents are consistent with a single foredeep basin, but are incompatible with multiple drainage directions required in a block-faulted system, either in extension or strike-slip.

Analyses of detrital zircons from the passive-margin cover and from the synorogenic clastic wedge have been obtained by several laboratories; however, the data are interestingly consistent. The implications for provenance in the synrift to passive-margin cover differ from those in the synorogenic clastic wedge. The synrift deposits have potential sources from the interior of the parent craton, as well as from synrift igneous rocks; and the passive-margin cover has potential sources from the local basement and synrift rocks. In contrast, the synorogenic clastic wedge has potential provenance components in the orogenic belt (tectonic load) which may include the basement and

cover of both the lower plate and upper plate; however, any of those components may have been excluded because of lack of exposure, lack of integration of a drainage network, or structural barriers that partition the proximal foreland.

In the lower part of the sedimentary cover, the population of detrital zircons in the Cerro Totorá is similar to that in the Lower Cambrian Rome Formation, a synrift graben fill in southern Laurentia (Thomas et al., 2004, *Geology*). In another similarity, Sr isotopic ratios of evaporites in the Cerro Totorá and Rome are indistinguishable, consistent both with a similar Early Cambrian age and similar depositional systems (Thomas et al., 2001, *J. Geology*). Zircons in sandstone interbeds in the La Laja Formation (the lowermost part of the carbonate platform of the Precordillera) include Grenville ages, as well one grain of ~530 Ma, suggesting the latest stages of synrift volcanism along the Alabama-Oklahoma transform. The older grains indicate cratonic sources in Laurentia; however, the zircons may have been recycled from older synrift deposits which do contain a variety of zircon ages along the Appalachians.

In the synorogenic clastic wedge, detrital zircons in sandstones, as well as zircons in both igneous and metaquartzite clasts, show a remarkably consistent pattern. The populations are dominated by a range of Grenville ages, but they generally include a few older ages and some younger ones. The Grenville ages do not constrain provenance because of the wide availability. The older ages are consistent with recycling from synrift rocks along the eastern rifted margin of the Precordillera (by analogy with the Blue Ridge). The younger ages fall into several groups. Zircons around 750 Ma may be from the older synrift rocks along the eastern rifted margin (again, by analogy with the Blue Ridge). Zircons of around 630 Ma, including igneous clasts in Las Vacas, may reflect igneous events along the western margin of Gondwana, the rocks from which are incorporated in the thrust stack east of the Precordillera; alternatively, detrital grains around 600 Ma may be from synrift volcanics. The rare 530 Ma zircons are consistent with synrift igneous rocks along the Alabama-Oklahoma transform. In summary, all of the detrital zircon grains in the synorogenic clastic wedge are consistent with rocks seen now in the metamorphic thrust sheets east of the Precordillera. Interestingly, no synorogenic zircons from Famatina have been found in the clastic wedge, even though Famatina bentonites with dated zircons are interbedded in the clastic wedge (similar to the record of detrital zircons in Taconic, Acadian, and Alleghanian forelands of the Appalachians). Nd data from the clastic wedge in the Precordillera are consistent with recycling from Grenville basement rocks (Gleason et al., 2005, *Gondwana 12*).

In summary, the carbonate shelf stratigraphy and Lower Cambrian fauna of the Argentine

Precordillera represent a unique combination found elsewhere only in Laurentia and the Laurentian fragment in northwest Scotland. Similarities in detail include, for example, the final transition to a passive margin along southern Laurentia is coeval with the end of the La Laja Formation Grand Cycles and beginning of deposition of the Zonda Formation in the Argentine Precordillera. We conclude that the Precordillera was rifted from the Ouachita embayment of southeastern Laurentia. A subduction complex, including a continental-margin arc, east of the Precordillera, along with a record of synorogenic foreland subsidence and clastic-wedge deposition, indicates subduction of the Precordillera beneath the upper-plate western margin of Gondwana in Ordovician time. Our constraints in the width of the terrane and the extent of the carbonate bank in the Precordillera implies that a great amount of the terrane has either been eliminated or reworked. This seems consistent with the great crustal thickening and pre-Devonian exhumation recorded from basement to the east. Early exhumation and involvement of the leading edge of the terrane through shortening and inversion must have eliminated the supracrustal components which seemed to be largely involved within the Ocoyic clastic wedge. The top of the synorogenic clastic wedge is truncated beneath an unconformity with a diachronous cover, and the late orogenic history, as well as the maximum depositional thickness of the clastic wedge, is unknown. Above the unconformity in the eastern Precordillera, Hirnantian glacial deposits (unique to Gondwana) document the ultimate attachment of the Precordillera to Gondwana before the end of Ordovician time.

The allochthony of the Precordillera is well accepted, and nearly all recent interpretations have considered the Precordillera to be a Laurentian terrane for the reasons we have summarized here. Differences of interpretation have centered around the specific mechanism of transfer, and our interpretation of an isolated microcontinent seems to have become the standard interpretation for comparison. Now, Stan Finney and his colleagues are vigorously presenting an alternative, that the Precordillera was originally located along the Gondwana margin and moved to the present location by large-magnitude dextral strike-slip displacement from an original site near the present southern tip of South America and then-adjacent Antarctica. That interpretation requires explanations for a large body of data that support similarities of the Precordillera to Laurentia, and a Gondwanan origin must satisfactorily explain many observations: chiefly, the *Olenellus* fauna, the Cambrian-Ordovician carbonate platform, the Grenville basement with Pb isotopic signature like that of Laurentian Grenville, and the detrital zircon ages in both the passive-margin and synorogenic clastic-wedge stratigraphy. First, the *Olenellus* fauna, which is unique to Laurentia is explained by Finney et al. as a result of oceanic

currents in low latitudes transporting larvae from Laurentia to the Precordillera on the margin of Gondwana, an interpretation that is contrary to previous research on the distribution of *Olenellus*. Even if we accept the possibility of such dispersal of *Olenellus*, we ask why the ocean currents carried *Olenellus* (and eventually *Salterella*) larvae so selectively to the Precordillera while completely excluding all other parts of the Gondwanan margin which are along the same latitudes and adjacent to the palinspastic site of the Precordillera in the map by Finney et al. If *Olenellus* was so transported to a Gondwanan Precordillera, why is *Olenellus* (and *Salterella*) not common along the rest of the Gondwanan margin? For example, the Cambrian volcanic/sedimentary succession in the Ellsworth Mountains has a thin interval of limestone containing the typical Paradoxides fauna. Similarly, the thick Cambrian-Ordovician carbonate platform succession on the Precordillera is similar to that of Laurentia and is in strong contrast to the coeval stratigraphy of western Gondwana. If the Precordillera were originally on the Gondwanan margin, why was a thick carbonate-platform succession deposited selectively on the Precordillera to the exclusion of the adjacent parts of the Gondwanan margin? The Grenville age of basement rocks of the Precordillera is well established; Finney et al. seek to discredit the data but without offering justification. Nevertheless, a Grenville age alone does not discriminate between alternative locations of rocks of that age. The common lead isotopic ratios of Precordillera basement, however, are similar to those of Laurentia and differ from those of Gondwana (Kay et al., 1986, *J. Geology*). A range of ages of detrital zircons has been reported from various stratigraphic levels in the Cambrian and Ordovician of the Precordillera. Most of these ages do not discriminate between alternatives; however, the discriminants discussed by Finney et al. are generally invalid. For example, zircons with ages of ca. 530 Ma are inferred by Finney et al. to represent a Pampean source. That, however, does not support their palinspastic reconstruction of the location of the Precordillera. The Precordillera is now adjacent to the Pampean basement of the Sierras Pampeanas, but it was not there in the Cambrian when 530-Ma sources supplied sediment to the Precordillera platform (La Laja Formation). Instead the Precordillera, according to Finney et al., was then adjacent to Antarctica along the Gondwana margin. Therefore, another source for the ~530-Ma zircons must be found, and we suggest that it is represented in the late-stage synrift igneous rocks along the rift and transform margin of the Laurentian palinspastic location of the Precordillera.

RICARDO ASTINI
BILL THOMAS

HONORARY NOTES

Georges Ubaghs (1916-2005)

With the death of Professor Georges Ubaghs, aged 88, on 31st January 2005, the palaeontological community has lost one of the greatest specialists of fossil echinoderms (particularly Palaeozoic forms) of the XXth century. His most important legacy is probably his major contribution to the *Traité de Paléontologie* (1953) and to the *Treatise on Invertebrate Paleontology* (1966-1978), in both of which he was - by far- the main contributor to chapters devoted to echinoderms, with respectively 199 pages (54%) and 516 pages (22%). Moreover, all the people who had the chance to meet and know him personally will regret not only the great scientist, but also the man. Everybody will remember his extreme courtesy and kindness, his discretion, his modesty, and his great open-mindedness. For these two reasons, the whole echinoderm community feels a bit orphaned. Georges, Jean, Charles Ubaghs was born in Angleur (Liège, Belgium) on 29th February 1916. After brilliant studies at the University of Liège, Georges Ubaghs obtained a PhD in Zoological Sciences in 1939. He had not yet performed his national service, when World War II began. For this reason, he was not mobilized and did not participate to the dramatic fights, which took place in Belgium in May 1940. His very first scientific contribution dealt with dendroid graptolites from the Lower Carboniferous of Belgium. However, his center of interest rapidly moved onto echinoderms, and especially Palaeozoic ophiuroids and crinoids. During war time, he produced his first echinoderm paper (devoted to the anatomy and systematics of *Mespilocrinus*, a Lower Carboniferous crinoid of Belgium), but he was also involved in several contributions dealing with regional geology and Famennian outcrops of Liège area. Immediately at the end of the war, Georges Ubaghs was nominated as Professor of Palaeontology at Liège University (1945).

This extremely rapid promotion was largely the consequence of the arrest of Charles Fraipont, former Professor of Palaeontology in Liège, for "incivic behaviour" (collaboration) during the war. From 1945 to the late 1950s, Georges Ubaghs was involved in two main projects. The first one concerned Palaeozoic crinoids, with several key-papers devoted to the description of various forms from the Devonian of Belgium, France, Germany and Bohemia, and from the Silurian of Gotland and Germany. These contributions (as well as later ones) are remarkable by the quality and accuracy of both observations and hand-drawings. Very rapidly, Georges Ubaghs became one of the best specialists of Palaeozoic crinoids, and he was very logically contacted by Jean Piveteau to write the chapter dealing with crinoids in the third

volume of the French *Traité de Paléontologie* (1953). However, the contribution of Georges Ubaghs to the *Traité* is not limited to crinoids, as he was also in charge of two other chapters devoted to "stelleroids" (sea-stars and ophiuroids), and ophiocystioids (a group of Palaeozoic echinoderms related to both echinoids and holothurians). During the 1950s, Georges Ubaghs was also involved in a eight years project devoted to the stratigraphy of foraminiferans collected in cores made in Angola by the oil company Petrofina (modern Total). His works for this private company have not been published. The year 1959 was pivotal in the scientific career of Georges Ubaghs, with the beginning of the re-examination of "carpoid" echinoderm faunas from the Lower Ordovician of Montagne Noire (southern France). "Carpoids" are flattened Palaeozoic echinoderms, with no sign of five-fold symmetry (e.g. cinctans, solutes, stylophorans). The exquisite preservation of the Montagne Noire material (within silico-aluminous concretions) and the elaboration of a new technique of casting (using latex) allowed him to observe numerous previously undocumented aspects of carpoid morphology, and to propose new interpretations of their anatomy. For example, Georges Ubaghs demonstrated that *Lingulocystis* and *Rhipidocystis*, two forms long interpreted as "carpoids", were indeed eocrinoids. Later on, he began to investigate the atypical morphology of stylophorans (cornutes, mitrates), with the description of the Montagne Noire mitrate *Chinianocarpus thoralis*. In his first paper on stylophorans, Georges Ubaghs followed their traditional interpretation as bizarre, stemmed, asymmetrical echinoderms. However, soon after, new observations made on the Montagne Noire cornute *Phyllocystis blayaci*, as well as his great knowledge of the anatomy of both crinoids and "stelleroids" lead him to propose a new interpretation for the articulated appendage of these fossils. He suggested that their appendage was not a stem made of columnals, but that it rather corresponds to a feeding device bearing a single ambulacral groove protected by two series of moveable cover plates: the "aulacophore". Later on, the description of new cornutes and solutes from the Upper Cambrian of Nevada allowed him to support the view that the long, articulated appendage of solutes was probably not homologous with that of stylophorans. After these major advances in the knowledge of carpoid and eocrinoid anatomy, almost all papers produced by Georges Ubaghs focused on Cambro-Ordovician echinoderms, and he rapidly became one of the leader specialists in the field.

During the 1960-1970s, he produced several key-papers on the morphology and systematics of various eocrinoids, "carpoids", and primitive crinoids. However, during these years, most of his energy was devoted to the *Treatise on Invertebrate Paleontology*. He contributed to all three volumes of the *Treatise*

devoted to echinoderms, as he was in charge of the chapters dealing with ophiocistoids (volume "U"; 1966), general characters echinoderms, eocrinoids, stylophorans, cinctans, and "haplozoans" (volume "S"; 1967), and finally skeletal morphology and origin of crinoids, camerate crinoids, and classification of echinoderms (volume "T"; 1978). His enormous contribution to the Treatise on Invertebrate Palaeontology probably represents his major legacy and scientific achievement. The Treatise provided Georges Ubaghs a powerful agent for the expansion of his new interpretations (otherwise poorly known, as most of his papers were written in French): not only those concerning the anatomy of the various groups of "carpoids", but many other key advances, such as the evidence -for the first time- of the fundamental difference between "arms" (as in crinoids) and brachioles (as in blastoids, cystoids and eocrinoids). When he retired in 1984, Georges Ubaghs was nominated Honorary Professor at Liège University. He then had plenty of time to devote to the study of Early Palaeozoic echinoderms. His last contributions were greatly enhanced by two very fruitful collaborations. The first one, with R. Robison (Lawrence, Kansas), provided him the opportunity to describe beautifully-preserved Middle Cambrian faunas of both "carpoids" (solutes, stylophorans) and eocrinoids from Utah. The second collaboration was with Daniel Vizcaïno (Carcassonne, France), and concerned Cambro-Ordovician echinoderm faunas from Montagne Noire and Spain. However, strongly affected by the decease of his wife in March 1999, Georges Ubaghs survived her five years. He died peacefully on 31st January 2005 in Liège. The legacy of Georges Ubaghs to our knowledge of echinoderms (and especially crinoids, eocrinoids, and "carpoids") is invaluable. The exceptional quality of his works was recognized by several distinctions: he was appointed Member of the Royal Academy of Belgium and Commander of the Order of the Crown.

His absence will be all the more missed that he did not transmit his great experience and knowledge of echinoderms to any PhD student. However, in a certain way, the contribution of Georges Ubaghs has influenced so deeply our current knowledge of various groups of echinoderms that, even if his work has left few traces in his own country, his ideas - often ahead of their time- are more alive than ever in the worldwide echinoderm community.

BERTRAND LEFEBVRE AND EDOUARD POTY

Godfrey Nowlan was the 2005 recipient of the J. Willis Ambrose Medal of the Geological Association of Canada. The medal is awarded for sustained, distinguished service to the Earth Sciences in Canada

through outstanding accomplishments in one or more of the following realms: education; research; management and administration; promotion; and institutional, society or professional affairs.

MISCELLANEA

Books

The Skiddaw Group Memoir describes the mainly Arenig/Llanvirn turbidite sandstone/mudstone sequence in Northern England. It details the stratigraphy, palaeontology, micropalaeontology, sedimentology, provenance, structure and metamorphism. It is now available from the British Geological Survey bookshop <http://shop.bgs.ac.uk> price £35. The following is the link to it <http://shop.bgs.ac.uk/Bookshop/product.cfm?id=EM022>.

ANTHONY COOPER

A book on "Mass Extinctions and Recoveries: Evidences from the Palaeozoic and Triassic of South China" (in Chinese with English summary), co-edited by Rong Jiayu and Fang Zongjie was published by University of Science and Technology of China Press in Nov. 2004. Another book on "Origination and Radiation: Implication of the Chinese Fossil Record" co-edited by Rong Jiayu and his colleagues will be published by the Science Press next year.

RONG JIAYU

Comments

Latest evidence in the Central Andes of Peru, Bolivia and northern Argentina points to a Llandovery age of glaciation, as in Brazil, instead of the previously assumed Hirnantian age. Nevertheless, more work needs to be done. In the Argentinian Precordillera, the Hirnantian age is better constrained.

ENRIQUE DÍAZ-MARTÍNEZ

I retire from paid employment at the NHM in London on 14 February 2006. I shall be keeping my office as Emeritus for at least two years. In May 2006 I take up the Presidency of the Geological Society of London, which will be a busy job, especially as the Bicentenary of the Society is in 2007. I have also been commissioned to write another book. With all these commitments, and with no paid support, I shall

have to cut back on other obligations. Reluctantly, I shall have to hand over the editing of the Trilobite Treatise to Bruce Lieberman in Kansas. It will also be time to retire from the Ordovician Subcommittee. My last book *The earth: and intimate history* was shortlisted for the Aventis Prize in 2005.

RICHARD FORTEY

Question to all ISOS members voted for the Wangjiawan GSSP: If you ever had a detailed look on this section, can you explain me the highly visible disturbed sediment layers (15cm fault!) in the midst of the main part of this (future) global standard profile and, considering that, how make you sure the completeness of this GSSP? Thanks

SOEREN MEISEL

Replies

No, The Wangjiawan GSSP section is continuously deposited. There is no fault or disturbed layers either in the Wangjiawan North, Wangjiawan South or the Wangjiawan river bank sections. There is a small fault or disturbed layer at the north end of the Wangjiawan exposure (the north end of the extension part of the Ordovician-Silurian rocks). Obviously, it is nothing to do with the GSSP section. The Wangjiawan section has been studied by many colleagues from different countries since 1983. We have not heard from them with the same comments from the proposed section.

CHEN XU, RONG JIAYU AND WANG XIAOFENG

I have seen the section and it is continuous beds with no disruption.

STANLEY C. FINNEY

CURRENT RESEARCH

ACEÑOLAZA, FLORENCIO G. (Argentina). My research continues on the Cambro-Ordovician strata of W and NW Argentina, testing the Parautochthonous/allochthonous dilemma on the origin of the Cuyania Terrane (western Argentina). Research is done in collaboration with Alejandro Toselli (Tucumán), Hubert Miller (München) and Silvio Peralta (San Juan).

ACEÑOLAZA, GUILLERMO F. (Argentina). I am currently working on the Cambro-Ordovician biostratigraphy of the siliciclastic sequences of NW Argentina, focusing on the trace fossil associations and their environmental and ecological significance. A multi-disciplinary project has been initiated in the

Sierra de Zenta (Jujuy province), with the collaboration of Juan Pablo Milana, Susana Heredia, Silvio Peralta (San Juan), Franco Tortello (La Plata), Susana Esteban and Maria del Milagro Vergel (Tucumán). In addition, few new lines of research have been approved to work with Juan Carlos Gutiérrez-Marcos (Madrid, Spain) and José Manuel Picarra (Beja, Portugal).

ALBANESI, GUILLERMO L. (Argentina). I continue working on diverse projects regarding lower Paleozoic conodont faunas from west and northwest Argentine basins. An integrated conodont-graptolite biostratigraphic chart is being assembled for the Ordovician and Silurian systems of Argentina in cooperation with G. Ortega. I am collaborating with colleagues from universities of Argentina, Spain, UK, USA, and Canada, on related topics of historical geology and paleontology from the lower Paleozoic. Our working group has recently presented a proposal on a global stratotype (GSSP) for the base of the Middle Ordovician Series in the Argentine Precordillera. New supported projects on high resolution biostratigraphy, sequence stratigraphy, events, and paleothermometry on the lower Paleozoic of Eastern Cordillera and Precordillera, Argentina, began current year, participating colleagues from different universities, as well as two new graduate students under my supervision.

ALDRIDGE, RICHARD J. (UK). My activities in the Ordovician centre on the Soom Shale Lagerstätte of South Africa, in collaboration with Hannes Theron, Sarah Gabbott and Rowan Whittle. A paper on the bromalites of the Soom has been accepted by Palaeontology, and should be published soon. We had an extended field season in 2005, and we were rewarded by several additional specimens of a naked agnathan, some new arthropods and some novel enigmatic fossils. A paper on Soom brachiopods is near completion in collaboration with Mike Bassett and Leonid Popov.

ARMSTRONG, HOWARD A. (UK). Following the completion of the second edition of *Microfossils*, work largely (and by necessity!) turned away from fossils for much of 2005. Projects on the earth system changes associated with the Ordovician glaciation are ongoing in Libya, Jordan and Wales (with Tom Challands). Collaboration with Geoff Abbott (Univ. Newcastle) has expanded this work into: Ordovician biomarkers and water column conditions during deglaciation; Ordovician SSTs and pCO₂ levels. A new PhD student starts in May 2006 to work on GC IRMS of Ordovician biomarkers. Conodont work re-surfaced occasionally with projects on bias and completeness, histology and functional morphology of *Panderodus* nearing completion.

BARNES, CHRIS (Canada). The final papers based on extensive field-based Lower Paleozoic stratigraphic and conodont studies in the Canadian Cordillera with

Leanne Pyle have been published or are in press. Work with Shunxin Zhang is 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. Several joint papers have appeared recently with others in press, which deal with Ordovician (and Silurian) conodont taxonomy, evolution, paleoecology, cladistic analyses and the response of the conodont communities to eustatic change. Other studies just published include one on Late Ordovician conodonts from the Mithaka Formation, Georgina Basin, Australia (with Tyler Kuhn) and one on Cambro-Ordovician conodonts from the Famatina Terrane, Argentina (with Guillermo Albanesi and Mario Hunicken). The geochemistry of conodonts is being pursued further in collaboration with Julie Trotter (Australian National University and CSIRO). Other work in press includes: Ordovician-Silurian conodonts from Hudson Bay (with Shunxin Zhang); Late Ordovician-Early Silurian conodonts from the Edgewood Group, Missouri-Illinois (with Tyler Kuhn and Felicity O'Brien); Late Ordovician-Early Silurian conodonts from the Kolyma Terrane, NE Russia (with Shunxin Zhang); conodonts Other work hopefully nearing completion includes: Ordovician-Silurian conodonts from Hudson Bay (with Shunxin Zhang); Late Ordovician conodonts from southern Ontario (with Shunxin Zhang and Glen Tarrant); Ashgill-Wenlock conodonts from the Canadian Arctic with David Jowett; and Ashgill conodonts from the Whitland section, South Wales with Annalisa Ferretti.

BENEDETTO, JUAN L. (Argentina). I'm currently working on the taxonomy and biogeographic significance of upper Arenig-lower Llanvirn brachiopods from the top of the San Juan Formation. The varied open-shelf assemblages are dominated by plectambonitoids including some new genera. A study of upper Cambrian and lower Tremadoc rhynchonelliformean brachiopods from northwest Argentina has been completed and accepted for publication. In another paper I focused the biostratigraphic applications of these taxa on the basis of the recognition of phylozones. I have also submitted a paper on the phylogeny of lower Ordovician species of *Productorthis* from Precordillera and Famatina supporting, on the basis of ontogenetic evidence, its origin by heterochrony from *Panderina*. In the coming year I will start, together with members of the Centro de Investigaciones Paleobiológicas –CIPAL of the Córdoba University and other colleagues, the project 'The Ordovician Radiation in western Gondwana' supported by CONICET and Agencia Nacional de Promoción Científica of Argentina (more information in the CIPAL website www.cipal-unc.com.ar). Particular interest is being devoted to the early diversification and phylogeny of orthoids and plectorthoids, and their

bearing on the taxonomy of basal rhynchonelliformean brachiopods.

BERESI, MATILDE S. (Argentina). I continue working on Ordovician biostratigraphy from several carbonate and siliciclastic sequences of Mendoza and San Juan Provinces, western Argentina. I am involved in ongoing collaborations with Susana Heredia (conodonts) on biostratigraphy, microfacies, conodonts biofacies and sedimentary environments of the carbonate sequences of the Las Chacritas Formation (Darriwilian) of the Central Precordillera and the San Juan Formation (Arenig-Lower Llanvirn) in the Villicúm Range, Eastern Precordillera of San Juan. In the Mendoza Province, we are working at the Ponon Trehué area, San Rafael block and at the San Isidro locality, Precordillera. Recently we have published three papers on these topics. I am describing an Ordovician nautiloid fauna of the San Juan Precordillera.

BLIECK, ALAIN (France). Working on a few Late Ordovician vert remains from the Asian part of Russia, in collaboration with V.N. Karatajute-Talimaa and Z. Zigaite (Vilnius, Lithuania). Collaborating with Thomas Servais on Ordovician topics, in the frame of IGCP 503.

BOGOLEPOVA, OLGA K. (Sweden). I'm continue to work on the Lower Palaeozoic palaeontology, biostratigraphy and palaeogeography of the Eurasian high Arctic. These studies are related to the on-going INTAS - NEMLOR (Northern Eurasian Margin & Lomonosov Ridge) project. However, in the coming three years my time will be mostly occupied by the 33rd International Geological Congress Science Committee (and Arctic Consortium) activities; this committee is established in Uppsala under the head of David G. Gee.

BRENCHLEY, PATRICK J. (UK). I am currently working on sea-level changes in the Ordovician of Anglesey, North Wales U.K. aiming to differentiate between eustatic and tectonically influenced changes and attempting to make estimate the magnitude of the sea-level rises and falls. I am currently taking part in a project to record regionally significant geological sites (RIGS) in the Lower Palaeozoic of North Wales, U.K. with the aim to preserve the sites and maintain their accessibility.

BRUSSA, EISEL D. (Argentina). I am actively working with Ordovician and Silurian graptolites from Argentina. I am also involved in the paleobiogeographic analysis of other Gondwana regions (Bolivia, Chile and Peru) with Chuck Mitchell, Jörg Maletz and Blanca Toro. We finished with Blanca the re-examination of the Rusconi collection of the Empozada Formation and now we are involved in the study of new material from the Cordillera Oriental and Puna. I am also collaborating with Patrick Racheboeuf in the study of the Ordovician phyllocarids from Argentina and Bolivia.

BUATOIS, LUIS A. (Argentina/Canada). Progress is being made in the study of Cambrian-Ordovician clastic rocks of northwest Argentina. Our approach is based on the integration of sedimentologic and biostratigraphic data within a sequence stratigraphic framework in an attempt to provide a more accurate stratigraphic picture of Cambrian-Ordovician units in northwest Argentina. This work is being done in cooperation with a team of biostratigraphers from the University of Cordoba. Some results of this project have been published in *Latino American Journal of Sedimentology and Basin Analysis*. Additionally, I am collaborating with Gabriela Mángano in her studies of lower Paleozoic ichnofaunas. A comparison of brackish-water ichnofaunas through geologic time, containing information on Ordovician estuarine ichnofaunas, was published in *Palaios*.

CARRERA, MARCELO G. (Argentina). I'm actively working on the Early Paleozoic sponges of Western Argentina and their contribution to the evolutionary history of the Phylum Porifera. New discovered specimens from the Early Ordovician limestones of the Precordillera have been studied and the results, descriptions and evolutionary implications, are in press now. As a follow up of the Ordovician data base compiled for the GOBE project, I will go back to the Cambrian trying to finish a data base for the spicular sponges. First results are exposed synthetically in the abstract of the Gondwana 12.

CHEN XU (China). I am actively working on the Upper Darriwilian to Sandbian graptolites of China with Dan Goldman and Stan Finney. The result of this work will be a monography since abundant material including 3D material collected from different Ordovician blocks of China. I will complete a book of a reconstruction of the phanerozoic global climatical evolution (Chinese version) with A.J. Boucot and C.R. Scotese this year. The third project is that I am working with Stig Bergstrom on the Upper Ordovician conodont biozonation of the Yangtze region. Also, I am working with Stig on the Tarim Ordovician rocks with their oil and gas potential. Finally, my colleagues and I just submitted our final report on the proposal of the Hirnantian Stage.

CINGOLANI, CARLOS A. (Argentina). I am actively working on sedimentary provenance and tectonic setting of some Ordovician units from Precordillera Terrane. Provenance studies include petrography, geochemistry (trace, REE and isotopes) and geochronology of heavy minerals. I am a leader of the research group that includes postgraduate students and fellowships, in active collaboration with isotopic research laboratories from Brazil.

COCKS, ROBIN (UK). I have had a productive year finalising the Ashgill Boda Limestone strophomenate brachiopods, which was published in the autumn, and also in writing with Richard Fortey a short Geology paper on mid-Ashgill global warming, which we have christened The Boda Event. There were two visits to

Trondheim to continue working with Trond Torsvik on the successive palaeogeography of Siberia and peri-Siberia through the Palaeozoic, a useful two weeks in Nanjing, China, working with Rong Jia-yu on the earliest Llandovery (Rhuddanian) brachiopod radiation worldwide after the Hirnantian Ice Age, and a guest lecture at Lausanne as a pretext to working with Gerad Stampfli on souther European Palaeozoic palaeogeographical problems. I also finished a short review paper on the changing palaeogeography of the British Isles during the Palaeozoic.

COOPER, ROGER (New Zealand). With Peter Sadler I am currently working on the analysis of the CONOP global graptolite composite of 1400 Ordovician and Silurian species from 256 stratigraphic sections from around the world. The composite was used to construct the Ordovician and Silurian timescales (Gradstein et al. 2004). We have derived a global graptolite species diversity curve and are currently analysing species longevity as related to graptolite ecology. Other projects include editing a monograph on the New Zealand Geological Timescale (with 21 other contributors).

COPE, JOHN C. W. (UK). During the past year I have had to divide my loyalties and have spent time finishing the Jurassic chapter for the forthcoming 2nd Edition of the *Geology of England and Wales*, and spent time on Cretaceous matters with a review of Late Cretaceous palaeogeography of Britain for the Jake Hancock Memorial part of the proceedings of the Geologists' Association. I hope to get back to Ordovician bivalve faunas in the near future.

COUTO, HELENA (Portugal). I'm working on the study of Palaeozoic stratigraphy and palaeontology and economic geology in Baixo-Douro area (North Portugal). Concerning the Ordovician of Valongo Anticline. Detailed study of the Lower Ordovician volcano-sedimentary layers that exert a control of gold mineralization. Detailed study of the black layers and ironstones of Ordovician and their relationship with the auriferous mineralization.

DÍAZ-MARTÍNEZ, ENRIQUE (Spain). I have continued working on the glacial record present in the Central Andes of Peru and Bolivia, and in the Iberian Massif (Spain).

DRONOV, ANDREI V. (Russia). In the year 2005 I moved from St. Petersburg to Moscow (for details of my new address and other contacts see below) but I continue half-time professorship in St. Petersburg University and my studies of the Ordovician of Baltoscandia. My work focuses on the following aspects: 1) sedimentology and lithostratigraphy of St. Petersburg region, 2) carbonate sequence stratigraphy and sea-level changes. Together with Dimitri Kaljo, Tõnu Meidla, Leho Ainsaar, Mark Harris, Rein Einasto, Linda Hints, Olle Hints, Heldur Nestor, Jaak Nõlvak, Madis Rubel, Tõnis Saadre, Oive Tinn, and Tatiana Tolmacheva we are trying to elaborate refined sea-level curve for the Ordovician of Baltoscandia

based on drill core materials from the East Baltic, 3) trace fossils and ichnofabrics (together with R. Mikuláš). Currently I am also involved into organization of the new project on the Ordovician of the Moscow Basin.

DUBININA, SVETLANA (Russia). I continue working on Lower to Upper Ordovician conodonts from various rock complexes of the Ordovician convergent margin investigated in the Southern Urals structure. For comparative analysis I am working on the Ordovician conodonts in cherts of the Burubaital Formation of Central Kazakhstan. In this topic I continue to collaborate with structural geologist Aleksei Ryazantsev, Moscow, GIN RAS. Besides, I am working in cooperation with Andrei Dronov (Moscow, GIN RAS) on conodonts across the Aseri-Lasnamagi-Uhaku regional stages in the Mishina Gora Section (Pskov Region).

EBBESTAD, JAN OVE R. (Sweden). Since the start of my current project "Gastropod biodiversity, biogeography, and ecology of the North Atlantic Region in the Lower Palaeozoic" in 2001 I have been spending a great deal of time in museum collections, as well as with large uncharted collections of material at hand from Avalonia, Baltica, and Laurentia, with a touch of material from Peri-Gondwana and other terranes. Reports and papers now finally begin to emerge from this effort. Next year I will co-organize the 9th WOGOGO meeting (WORKING GROUP ON Ordovician Geology of Baltoscandia) to be held in Sweden. I am also clade team leader for the gastropod clade team and regional team leader for the Baltic group for the IGCP project 503 "Ordovician Palaeogeography and Palaeoclimate".

ELIAS, BOB (Canada). In 2005, I received the Gilbert Harris Award "in recognition of excellence in contributions to systematic paleontology" from the Paleontological Research Institution [see http://www.priweb.org/Research/awards/awards_home.html]. At the Second International IGCP503 Symposium on Ordovician Palaeogeography and Palaeoclimate, held in Milwaukee, Wisconsin, I gave a talk on "Cincinnatian rugose corals of cratonic Laurentia: biogeographic, ecologic, and morphologic patterns" [see <http://sarv.gi.ee/igcp503/pdfs/MilwaukeeIGCP503Abstracts.pdf>]. At the North American Paleontology Convention in Halifax, Nova Scotia, Boo-Young Bae and Dong-Jin Lee (Andong National University, Korea) and I presented papers on "Multivariate morphometrics of Manipora, an early tabulate chain coral" (Bae, Elias & Lee), "Two tabulate chain-corals: growth characteristics and responses to micro environmental conditions" (Bae, Lee & Elias), and "Colony integration in some early favositoid tabulate corals" (Lee & Elias) [see <https://vs4.korax.net/~armcenty/NAPC05/abstracts.php?session=quantitativefossilmodels>]. In 2004, Adam Melzak finished a Ph.D. dissertation on Late Ordovician to earliest Silurian rugose corals of

Anticosti Island, Quebec. M.Sc. and Ph.D. projects are available on Ordovician corals, paleoecology and stratigraphy [see <http://www.umanitoba.ca/geoscience/faculty/elias/elias.html>].

FAN, JUNXUAN (China). I am recently working on three aspects: paleobiology database and biodiversity changes through Phanerozoic (with Profs. Rong Jiayu and Chen Xu), end-Ordovician mass extinction, chemostratigraphy of the strata during the Ordovician-Silurian transition (with Profs. Chen Xu, Rong Jiayu, M. J. Melchin, C. E. Mitchell etc.).

FENG, HONGZHEN (China). In cooperation with Erdtman B. D. at Technical University Berlin (TUB) and Zhang Yuandong at Nanjing Institute of Geology and Palaeontology (NIGP), I will continue to carry out "Biological Zonation, Cladistic Evolution and Environmental Response of Late Tremadoc Graptolites from Jiangnan Slope", a project of three years supported by the Natural Science Foundation of China (NSFC). A large number of specimens have been collected from the Yiyang section located near the north border of the Jiangnan Slope, South China, and generic and specific diagnoses are now in progress.

FINNEY, STANLEY C. (USA). 1) Working with Chuck Mitchell, Mike Melchin, Tania Koren, Petr Storch, and Chris Holmden on a multidisciplinary research project titled "Robust estimation of biodiversity dynamics: Global versus regional patterns in the end Ordovician mass extinction of graptolites". Project involved recollecting interval of *pacificus* to *extraordinarius* in Vinini Creek, Nevada section for graptolites and carbon isotope chemostratigraphy. 2) Continue working on stratigraphic succession in Argentine Precordillera, primarily analyzing U-Pb geochronology of detrital zircons in order to interpret provenance of sandstones and thus to evaluate geotectonic and paleogeographic models. 3) Continue to map structure and stratigraphy of strata, primarily Vinini Formation, in upper plate of Roberts Mountains thrust of central Nevada. 4) As vice chair of International Commission on Stratigraphy, organized and chaired the "Second Conference on Future Directions in Stratigraphy", an ICS workshop in Leuven, Belgium, September 2-5, 2005. 5) Also as vice chair of ICS, I am editing a book with the title "Stage and Boundaries", which will provide summaries of all GSSPs for all ratified stages of the Phanerozoic. It is being prepared for distribution at the 33rd IGC to be held in Oslo, Norway in 2008. 6) Am in final stages of the editing the book "Ordovician Earth Systems". 7) Petr Storch has been awarded a Fulbright Fellowship for an eight-month visit to Long Beach, beginning October 2006, to work with me on a project to monograph the Late Ordovician graptolites of the Vinini Formation of Nevada. 8) Was awarded Honorary Membership, Pacific Section of SEPM (Society of Sedimentary Geologists), April 2005.

FORTEY, RICHARD (UK). I have been completing various papers in the run up to my retirement, some of which have been sitting in drawers for a long time. I have written up an interesting Caradocian deep water trilobite fauna from western Wales. I have exhumed some of the unpublished materials from the Ordovician of Spitsbergen, notably the Kirtonryggen Formation, which underlies the Valhallfonna Formation, the fauna of which has been richly monographed. I hope to write this up with David Bruton over the next year. With Alan Owen I have put in for a research grant to study the supposed Late Ordovician global warming event which I believe precedes the glaciation.

GANIS, G. ROBERT (USA). I am working on the timing (using graptolites) of Taconic allochthon ("Hamburg sequence") emplaced in the Late Ordovician Martinsburg Formation in Pennsylvania, USA. I continue to prospect the allochthons for Early to Middle Ordovician graptolite occurrences. A synthesis of the Taconic event in the Pennsylvania section of the Appalachians is in progress with Don Wise.

GONCUOGLU, M. CEMAL (Turkey). I'm continuing with my work on the Ordovician of the İstanbul-Zonguldak Terrane, where we obtained (with V. Sachanski and I. Lakova, BAS - Sofia) new data on Early Ordovician. In the Ordovician of the Taurides, we (with G. Sarmiento - Madrid) are working on the carbonate-rich Darriwilian sediments

HEREDIA, SUSANA (Argentina). I am working on conodont biostratigraphy in the upper Lower Ordovician from Northwestern Argentina (with Guillermo Aceñolaza and Gilberto Aceñolaza). I am working with colleagues (Silvio Peralta and Stan Finney) on the Middle and Upper Ordovician biostratigraphy and basin analysis from the San Juan and Mendoza Precordillera and San Rafael basin. A study with Matilde Beresi on the biostratigraphy of the Salagasta area (Mendoza Precordillera) is in progress. I am also supervising two PhD students (Carla Rosales and Ana Mestre) who are working on Darriwilian conodonts from several sections of the San Juan Precordillera (taxonomy and biofacies). Since August 2004 I am working at the INGEO (Universidad Nacional de San Juan) with much changes on many issues.

HINTS, OLLE (Estonia). I'm continuing studies on Ordovician-Silurian jawed polychaetes (scolecodonts) and other organic-walled microfossils. Part of my work is devoted on analysing frequency patterns of various microfossil groups -- together with several colleagues we have focused on Llandovery-Wenlock boundary interval, but also on Middle-Upper Ordovician transition. Together with Mats Eriksson (Lund, Sweden) we have compiled an updated and extended review on the biogeography and diversification history of Ordovician jaw-bearing polychaetes (paper in press). Together with Jaak

Nõlvak we recently finished a small project on a find of Tremadocian scolecodonts and diverse chitinozoans from North Estonia (paper in press) and seek for additional material. I am concerned about the Ordovician stratigraphy, especially what is related to the Baltic region. A review paper together with colleagues on the current state of Ordovician stratigraphy in Estonia is currently in press. Beginning from 2006 I am also the head of the Estonian Commission on Stratigraphy which is affiliated with the Geological Society of Estonia. In addition I am continuing development of collections management database at the Institute of Geology at TUT, which holds data on a great deal of Ordovician fossils and Estonian geological sites as well (accessible at <http://sarv.gi.ee>). In this field I am also heading a working group that aims at uniting all Estonian natural history collections, including the geological ones, into one virtual national collection (network).

HÖGSTRÖM, ANETTE (Sweden). I am keeping a somewhat low profile at the moment and have for a while as a result of having our first child almost 2 years ago and our second coming soon. But working actively on e.g. material from the Boda limestone (Dalarna, Sweden), Lower Ordovician of the Great Basin, and also with preparations for the upcoming WOGOGOB 2007 meeting in Sweden.

HUFF, WARREN (USA). I'm putting the final touches on a manuscript with Kathleen Histon, Peter Klein, and Hans Peter Schönlaub entitled, Lower Paleozoic K-bentonites from the Carnic Alps (Austria). Ninety-five K-bentonite levels have been recorded to date from the Upper Ordovician (Ashgill) to Lower Devonian (Lochkov) sequences of the Carnic Alps. They occur in shallow to deep-water fossiliferous marine sediments which suggest a constant movement from a moderately cold climate of approximately 50° southern latitude in the Upper Ordovician to the Devonian reef belt of some 30° south. The reconstructed distribution of the various litho- and biofacies indicates a SW-NE directed polarity from shallow water environments to an open marine and deep-sea setting. I'm working with my doctoral student, Funda Ozlem Toprak on a different approach to Ordovician K-bentonites. Recent studies have shown that the high concentration of crystalline silica is present in the respirable fraction of the volcanic ash and long-term exposure presents a potential respiratory health hazard to humans. Volume fraction of respirable silica crystals and the proportions of respirable ash particles in representative samples of modern and ancient fallout ash deposits will be determined using a new approach that utilizes a kinetic modeling of crystal size distribution theory. A manuscript has just been submitted to Geology which reports the first example of the use of crystal size distribution theory to acquire information on the magmatic processes that produced an ancient

pyroclastic deposit. We have attempted to gain knowledge on the pre-climactic magmatic conditions of a very large silicic tephra deposit, the Ordovician Millbrig K-bentonite, using crystal size distribution (CSD) analyses of primary quartz crystals. CSDs were used to examine the nature and history of crystal growth and the possible origin of multiple ash beds in the Millbrig. The quartz growth appears to be size-dependent, surface-controlled crystal growth. Multiple ash beds in the Millbrig appear to be a product of a series of separate eruptions that represent separate magma layers or batches, each with slightly different crystal growth conditions.

KEY, MARCUS (USA). I am currently working on high spatial resolution C and O isotope stratigraphy of Middle Ordovician rocks in Estonia and Ireland. We are quantifying the relative isotopic signals within and between carbonate sources including bryozoans, brachiopods, matrix, cements, veins, etc. I am also working on a systematic paper with Andrej Ernst on the Ordovician bryozoans from southern France.

KIIPLI, TARMO (Estonia). I am still working on chemical correlation of Silurian and Ordovician bentonites. I was one of supervisors of PhD study, successfully finished in Dec. 19.2005: Enli Kiipli, 2005: Modelling Seawater Chemistry of the East Baltic Basin in Late Ordovician - Early Silurian. Institute of Geology, Tallinn University of Technology, Thesis on Natural and Exact Sciences B42, pp 158.

KRAFT, JAROSLAV (Czech Republic). I continue studies on Ordovician graptolites (including dendroids) and stratigraphy, especially in the Bohemian Ordovician.

KRAFT, PETR (Czech Republic). I continue researches of Ordovician stratigraphy, graptolites and other fossils, especially from Bohemian Ordovician. I also study early history of the Prague Basin in framework of the IGCP project no. 497 (co-operation with J. Fryda and O. Lehnert).

LEFEBVRE, BERTRAND (France). I keep working on stylophorans (cornutes, mitrates) and other "bizarre" Cambro-Ordovician "carpoid" echinoderms. In 2005, my activities were mostly focusing on the description of new stylophorans from the Lower Ordovician of Morocco (several papers submitted and/or in prep.). Since May 2005, I am also working with Aaron W. Hunter, who is currently doing a one-year postdoctoral research project on Ordovician asterozoans from Brittany, Montagne Noire, and Morocco. In collaboration with Serge Régnault (Muséum d'Histoire naturelle de Nantes), Aaron and I have already submitted a paper reporting the oldest known mixed ophiuroid-stylophoran assemblage (Middle Ordovician of Brittany). I also co-supervised two MSc students working on the relationship between trilobite assemblages and sedimentology in the Kermeur Formation (Caradoc) of Crozon peninsula in W. Brittany (Guillaume Châtain; co-supervisor: Muriel

Vidal), and on the morphological variability of the rhombiferan *Macrocyrtella bohémica* from the Lower Ordovician of Anti-Atlas, Morocco (Sylvain Malbec; co-supervisor: Elise Nardin). Finally, I devoted much of my time to the preparation of two meetings, both organized in 2006 in Dijon (France): the "Journées Georges Ubaghs" (an international specialized session on Palaeozoic echinoderms, in tribute to the late Pr. G. Ubaghs; 30-31 January 2006), and the symposium "Primitive life, ancient radiations" (an international conference on Precambrian life and Cambro-Ordovician diversification events; 07-08 December 2006).

LEGRAND, PHILIPPE (France). I have finished to write my paper: "The Late Ordovician glaciation of North African Gondwana: the present stage of knowledge" for a Special Publication of the Geological Society of America. I am actively working on the final description of the Oued In Djerane Ordovician Silurian graptolites (Algeria) and I continue to work on Lower Ordovician graptolites and Caradocian fauna of Algerian Sahara.

LENZ, ALFRED (Canada) and Dennis Jackson (UK) have completed a study of Arenig graptolites from Yukon and Northwest Territories, Canada, and we plan to submit the paper soon. The abstract for the paper is as follows: *Abstract-* Fifty-four graptolite species are recorded from the Arenigian portion of the Road River Group in the Richardson and Mackenzie Mountains in Yukon and Northwest Territories. The sequence of zones discussed in ascending order are; *Tetragraptus approximatus*, *Pendeograptus fruticosus*, *Didymograptus bifidus* and *Parisograptus caduceus australis* (new). Fifteen species and subspecies are recorded for the first time, namely, *Didymograptus?* cf. *adamantinus*, *D. asperus*, *D. dilatans*, *D.* cf. *kurcki*, *D. validus communis*, *Holmograptus* aff. *leptograptoides*, *H.* sp. A, *Isograptus* sp. nov. A, *Keblograptus geminus*, *Pseudisograptus manubriatus harrisi*, *P. m. koi*, *P. m. janus*, *P.* cf. *tau*, *Xiphograptus lofuensis* and *Zylograptus* cf. *abnormis*.

LI, JUN (China). I continue working on Ordovician acritarchs from China. In June, I participated annual meeting of IGCP 503 in Milwaukee, USA and the pre-conference excursion in Cincinnati. I gave a talk in the meeting. In August, I participated the 6th Baltic Conference in St. Petersburg, Russia and gave a talk as well. Apart from busy in researching, with my colleague's help, I start organizing the 10th ISOS, 3rd ISSS and IGCP 503 conference 2007, Nanjing. The first circular of the conference has been sent to colleagues via emails. If any colleagues have not received the circular, please contact me, or download it from the following websites:

<http://www.ordovician.cn/home.asp>;

<http://www.silurian.cn/home.asp>;

<http://sarv.gi.ee/igcp503/>

LÖFGREN, ANITA (Sweden). I continue to work on cordylodids from the lowermost Ordovician in northern Sweden (with help from Viive Viira, I hope) and on Microzarkodina (with Tania Tolmacheva). Not so much work has been done this year due to a stroke, but I shall continue at a lower pace for some more years, I hope.

MALETZ, JÖRG (Germany). I am currently working on a number of projects on Ordovician and Silurian graptolite and radiolarian faunas. Together with Edsel Brussa and Chuck Mitchell I am working on Middle Ordovician graptolite faunas and biogeography from Bolivia and Peru, based on the distribution of isograptids. A project on integrated biostratigraphy using graptolites, conodonts, chitinozoans and radiolarians in the Cow Head Group of western Newfoundland is in progress with Chuck Mitchell, Aicha Achab and Svend Stouge. Middle Ordovician sedimentology and graptolite biostratigraphy is covered in a project on the Middle to Upper Ordovician succession of Norway, a conjoined effort with Sven Egenhoff and a number of students from Freiberg University. Work in the Trail Creek succession of Idaho (with Dan Goldman and Steve Leslie) is centered on Early to Middle Ordovician (Arenig), as well as on Early Silurian graptolite faunal successions. More recently, I developed interest in Ordovician radiolarian faunas, commonly encountered with graptolites in western Newfoundland, but also in other graptolite-bearing sequences and useful for correlation of deep water successions. A revision of the Spitsbergen radiolarians of Fortey & Holdsworth (1971) and Holdsworth (1977) is in progress. I am highly interested in early radiolarian evolution and looking for new material.

MÁNGANO, M. GABRIELA (Argentina/Canada). My research is focused on the evolutionary, paleoecologic and paleoenvironmental implications of Cambrian-Ordovician ichnofaunas. In particular, I am studying a number of lower Paleozoic ichnofaunas from NW Argentina trying to articulate trace fossil and facies analyses with paleoecology and biostratigraphy, within a sequence stratigraphic framework. This work is being done in cooperation with several colleagues from the University of Cordoba. Part of my ichnologic research is focused on trilobite trace fossils and is developed in cooperation with trilobite specialist Beatriz Waisfeld. PhD student Pamela Such is working on her dissertation in Lower Ordovician volcanoclastic rocks of NW Argentina. Results of our research on Ordovician ichnofaunas were published in *Palaios*, *Ichnos* and *Ameghiniana* last year. Papers dealing with stratigraphic aspects of lower Paleozoic rocks of northwest Argentina were published in *Geologica Acta* and *Latin American Journal of Sedimentology and Basin Analysis*.

MÄNNIK, PEEP (Estonia). I am actively working on evolution, taxonomy and palaeoecology of Ordovician and Silurian conodonts, conodont-based high

resolution stratigraphy, bioevents and palaeogeography. In the last years my studies have been mainly concentrated on the Baltic region and Russian Arctic (Severnaya Zemlya, Novaya Zemlya, Timan-northern Ural region, etc.).

MCCRACKEN, SANDY (Alexander D.) (Canada). I continue to work on Middle to Upper Ordovician, Silurian, Devonian, and Carboniferous conodonts from various locations in Canada. Much of my time is now assigned to outreach and paleontological databases.

MEISEL, SÖREN (Germany). As before, I am eager to learn about the late Ordovician glaciation, its triggering processes, its effects on life and their "footprints" released especially in sedimentary rocks concurrently set up. My field works in 2006 will focus prospectively (again) on the log of late Ordovician / early Silurian successions of the central Himalayas (Nepal etc.).

MIKULÁŠ, RADEK (Czech Rep.). I'm working on ichnofabrics and systematic ichnology of the Lower and Middle Ordovician of the St Petersburg Region, with the help of Russian colleagues, chiefly with Andrei Dronov.

MITCHELL, CHARLES E. (USA). David Sheets, Mike Melchin, Chris Holmden, Stan Finney, and I are conducting an NSF funded study of the species turnover dynamics and biogeography of graptolite mass extinction at the end of the Ordovician (project summary attached). We have recently completed a detailed study of the extinction patterns in SE China by Chen et al. (2005b). We now are expanding our scope to sections in Siberia, Scotland, the Canadian Arctic, Nevada, and the Prague Basin. Our goal is both to better understand this event and to develop further the analytical techniques that are available to study species distributions in time and space. We plan to incorporate both collection effort and taphonomy in our comparative scheme. Finally we will quantitatively compare the species turnover histories among regions and employ geochemical data (much of it new) through the Late Ordovician to better understand the underlying causes of the mass extinction and graptolite responses.

I am also collaborating with Pete Sadler, Scott Samson, and Steve Leslie on a project aimed at improving the geochronologic dating and integration of the graptolite and conodont zonations of the Mohawkian Series in eastern and central North America. Graphic correlation via CONOP9 is our starting point in this task. We expect to gather considerable new data on dates from K-bentonites in this interval as well as new biostratigraphic data. We aim to use these data and the complex facies relations of the Mohawkian strata as a test case for developing more efficient and more accurate algorithms for automated sequence of chronostratigraphic events. This work will also add to our understanding of the Taconic foreland basin history and Ordovician

chronostratigraphy.

We would very much like to support a bright, motivated student who has good math skills as well as a background in paleontology (not necessarily graptolites, although this would be helpful, of course!) to work with us on the graptolite mass extinction project. Some of the field work is already done, but we plan to recollect the famous Mirny Creek section in Eastern Siberia this summer, and this work and the following analyses will be part of the student's project. We can provide a full tuition scholarship and a graduate research assistantship plus health benefits for the next four years to support this student's study in Buffalo, NY. UB is an affirmative action, equal opportunity employer and applicants from outside the US are welcome.

MODZALEVSKAYA, TATIANA (Russia). I'm actively working mainly on Silurian Stratigraphy and Paleogeography of Russian Arctic. Late Ordovician-Silurian hypostratotypes of North-East of Russia and Mountainous Altaj were prepared at the end of last year. The manuscript of earliest terebratulids is accepted to publish in *Palaeontology*.

NARDIN, ELISE (France). My primary research deal with the radiation of blastozoan echinoderms during the cambro-ordovician period (PhD subject with Bertrand Lefebvre and Bruno David, Univ. Dijon). My current activities focus on the morphology of the eocrinoid group and its phylogenetic relationships with the other classes of blastozoa (e.g. rhombiferans, diploporans, paracrinoids, ...). I am also working on the description of numerous new specimens of eocrinoids, diploporans and rhombiferans from the Ordovician of Morocco (some submitted papers). Bertrand Lefebvre and I co-supervised two master students on the intraspecific variability and the ontogeny of the genus *Macrocystella* from the Lower Ordovician of Morocco (Sylvain Malbec and Adina Frantescu). I am collaborating with Goncuoglu, M. Cemal (Turkey) of the oldest cystoid from the Middle Ordovician of Turkey, and with Bertrand Lefebvre, Aaron Hunter and Serge Régnault on the description of an echinoderm assemblage from the Late Ordovician of Morocco.

NICOLL, ROBERT S. (Australia). I have been working on a range of conodont related studies ranging from the Cambrian to the Triassic. Cambro-Ordovician projects have included a review of the conodont faunas of the Arafura Basin on the northern margin of Australia. Also a study of Amadeus Basin samples in central Australia of Cambrian and Ordovician conodonts reworked into the Devonian Brewer Conglomerate. A small Ordovician fauna from the Carnarvon Basin of Western Australia is also being prepared.

NÖLVAK, JAAK (Estonia). I am continuing my work on biostratigraphy of chitinozoans in Baltoscandia mainly from borehole core sections. My coworking with polish colleagues continues with materials from

Ordovician and Silurian boundary beds, and with D. Goldman we concentrate to middle Ordovician graptolites and chitinozoans from one Latvian core section.

NOWLAN, GODFREY (Canada). My work on conodonts has been severely curtailed for the last three years as I continue to work on public geoscience education in northern Canada. I am working slowly on a few projects: 1. Conodont biostratigraphy and paleoecology of the Ordovician and Silurian rocky shoreline exposed on the shore of Hudson Bay near Churchill, Manitoba. Work is joint with Graham Young (Manitoba Museum) and Bob Elias (University of Manitoba). 2. The Nd isotope ratios and Sm/Nd ratio and conodont paleoecology of late Ordovician strata in the subsurface of Saskatchewan. Work is joint with Chris Holmden (University of Saskatchewan) and Fran Haidl (Saskatchewan Industry and Research). 3. Early Cambrian embryos and small shelly fossils from the Wernecke Mountains, Yukon. Joint work with Leanne Pyle (University of Victoria) and Guy Narbonne (Queens University). Manuscript is in press. 4. Service reports for clients of the Paleontology Laboratory at the Geological Survey of Canada.

ORTEGA, GLADYS (Argentina). I am currently working on Ordovician graptolite faunas from Eastern Cordillera and Famatina System of NW Argentina in the framework of two major projects. I have recently published works on Tremadocian graptolites from those geological provinces. I continue studying Middle and Late Ordovician graptolites from the Argentine Precordillera. A new paper on graptolite faunas from the Empozada Formation has been submitted, and new works regarding the Upper Ordovician *Diplacanthograptus caudatus* Zone at La Invernada Range, Central San Juan Precordillera is in progress. A graduate student is working on Ordovician graptolite faunas from Eastern Cordillera of Argentina under my supervision.

OWEN, ALAN (UK). I continue working on trilobite biodiversity change, especially in Avalonia, in the context of IGCP 503 ('Ordovician Palaeogeography and Palaeoclimate') for which I am one of the co-leaders and the organizer of the 2006 annual meeting here in Glasgow (<http://sarv.gi.ee/igcp503/>). Work still continues slowly on the Ordovician palaeobiogeography and terrane evolution of the Caledonides of Britain and Ireland. My student Sarah Stewart obtained her PhD on the obscure and neglected components in the Ordovician faunas of the Girvan and has several papers in various stages of preparation for publication. Another former student, Simon Peers, is writing papers jointly with me from his thesis on the taxonomy, phylogeny and palaeobiogeography of encrinurid and pliomerid trilobites. I am also joint supervisor of Tom Challands who is working with Howard Armstrong in Durham and staff at the British Geological Survey on upper

Ordovician successions in Wales to investigate biosphere and geosphere dynamics during late Ordovician climate change.

PARIS, FLORENTIN (France). My investigations on the Late Ordovician glaciation and its impact on the chitinozoan assemblages from Northern Gondwana are still carried on within the activities of one ECLISPE French team led by J.F. Ghiene (sections in Morocco, Algeria, Turkey) and granted by the French CNRS. These activities are also a contribution to IGCP n° 503. My main purposes are now to depict the actual post-glacial forms from the Late Ordovician individuals reworked within the same deposits, and to locate the very first evidences of the onset of the Late Ordovician glaciation. Another project is developed in collaboration with Blaise Videt (TOTAL S.A. post doctoral grant). It deals with the sea-level variations during the Early Palaeozoic. A peculiar interest was given in 2005 to the Ordovician of the northern Gondwana regions. The Ordovician part of the project is now close being fully completed. Chitinozoan data from Morocco, Algeria, Libya, Saudi Arabia and southwestern Europe are used to calibrate the recorded sea-level variations (at third order level).

PÄRNASTE, HELJE (Estonia). I am currently working on Lower Ordovician trilobite distribution and zonation of the Baltic region (paper submitted), and also continuing my study on systematics of cheirurid and illaenid trilobites (with Jan Bergström and David Holloway)

PERALTA, SILVIO H. (Argentina). Currently I'm devoted to the tecto-sedimentary study of the Ordovician siliciclastic basins of Cuyania (=Precordillera) Terrane. This task is carried out together with Dr. Stanley Finney (California State University, Long Beach), Dr. James Gleason (Michigan University), George Gehrels (University of Arizona), Cathy Marsaglia (California State University, Los Angeles), and Dr. Susana Heredia (National University of San Juan). Several aspects of the Ordovician basin, such as sedimentology, stratigraphy, biostratigraphy (mainly graptolites and conodonts), U/Pb geochronology, Nd isotope, sedimentary petrography, are addressed to provide objective data looking for a reliable interpretation to the paleogeographic and geotectonic evolution of the Cuyania Terrane and its significance in the Late Proterozoic-Early Paleozoic evolution of the Western margin of Gondwana. In spite some papers related to the Lower-Middle? Devonian Los Sombreros Formation are included in this report, it is so because the significance of such unit, early thought as Middle-Upper Ordovician in age. Currently, the geologist Carlos Villegas (San Juan University) is carrying out his Ph.D. Thesis, addressed to the study of Upper Ordovician conglomerate distributed all over Precordillera, with the aims to recognize the nature of the sources, and the paleogeographic and geotectonic significance of these deposits, in concern to the

evolution of Precordillera. On the other hand, Middle Ordovician trilobites faunas are under study together with Franco Tortello (La Plata University, Argentina), mainly that from the Gualcamayo Formation and its time-equivalente Las Chacritas Formation, both of them located in the Central Precordillera of San Juan Province. Also, Lower-early Middle Conodont faunas of the carbonate succession of the San Juan Formation, are being studied through the Ph.D. developed by geologist Carla Rosales (National University of San Juan). In the La Dehesa range, Central Precordillera of San Juan Province, the Ph.D. student, Geologist Estela Pereyra, carry out stratigraphic and sedimentologic studies on the Lower-early Middle Ordovician carbonate succession of the San Juan Formation. Finally, isotope studies are carried out, together with Alcides N. Sial (Univesidad Stadual Pernambuco, Recife, Brasil), on the Upper Cambrian and Lower Ordovician Carbonate Sequences of the Argentine Precordillera. As result of these studies, the Steptoean C-Isotope Positive Excursion (Spice) has been recognized.

PERCIVAL, IAN (Australia). During the past year I again enjoyed a fruitful collaboration with my colleague Yong-Yi Zhen (Australian Museum, Sydney), supporting his studies on Early Ordovician conodonts from South China; in turn he joined me in preparing a paper on latest Cambrian to Early Ordovician conodonts from the Koonenberry Belt of far-western New South Wales, and in co-operative work (also with John Pickett) on a Late Ordovician fauna (including conodonts, corals and stromatoporoids of Eastonian age, and Bolindian nautiloids) from the south-central part of the state. My own studies into the biostratigraphic zonation of conodonts in Ordovician cherts from the Lachlan Orogen of central New South Wales made progress, with a contribution on conodont biostratigraphy of the south coast (Narooma) region being published. I also returned to brachiopods, with one paper published on an Early Silurian trimerellide, and two presentations on Ordovician faunas delivered at the IGCP 503 conference in June at the Milwaukee Public Museum. In mid 2005, my office and laboratory relocated to Londonderry on the western outskirts of Sydney. Updated contact details are given in the address section.

PODHALAŃSKA, TERESA (Poland). I am actively working on biostratigraphy, graptolites, trace fossils, facies, microfacies and chemostratigraphy related to eustatic changes in the Late Ordovician and Early Silurian in Poland. Recently I deal with the litho- and biostratigraphy as well as the lithofacies and biofacies in the Ordovician and Silurian of the Pomeranian part of the Trans-European Suture Zone and the Ordovician and Silurian palaeogeography.

PÖLDVERE, ANNE (Estonia). I continue as editor of the journal *Estonian Geological Sections*. The journal was started in 1998 with the aim of providing detailed

information on the geology of selected most representative drill core sections of Estonia (www.egk.ee/egk/?r=r2&ra=r2_1_1&t_id=83). The sections range from the Proterozoic (Palaeoproterozoic–Neoproterozoic) to Palaeozoic (Cambrian–Devonian). For each section we give the lithological description of the core together with the profile and the generally accepted legend with the information on the mineral composition and other characteristics of the rock. The distribution of macro- and microfossils (mainly chitinozoans, conodonts, ostracods, acanthodians) is described and illustrated with range charts. The results of stable isotope and volcanic ash bed study are given. The chemical composition and physical properties of the rock are analysed. Photos and descriptions of selected intervals and thin sections, laboratory data, and drawings illustrating the relationship of rock types and sedimentary structures in combination with fossil distribution and stratigraphic scale are added (in the last two issues on CD-ROM). The work is carried out by the geologists of the Institute of Geology at Tallinn University of Technology, Institute of Geology of the University of Tartu and Geological Survey of Estonia. Some colleagues from abroad (S. Bergström, W. Huff, D. Kolata, S. Stouge and J. Valiukevičius) have participated as well. Six issues of the journal have been published; the seventh is under preparation and will appear in 2006. The forthcoming one will focus on the Kerguta (565) drill core in northern Estonia. The 2005 issue deals with the Mehikoorma (421) drill core in southeastern Estonia. Contributions were provided by 15 authors: Linda Hints, Toivo Kallaste, Tarmo Kiipli, Anne Kleesment, Elga Mark-Kurik, Janika Lääts, Tõnu Martma, Kaisa Mens, Peep Männik, Mati Niin, Jaak Nõlvak, Ivo Paalits, Alla Shogenova, Vladlen Shogenov (all from Estonia) and Juozas Valiukevičius (Lithuania).

POPOV, LEONID (UK). Currently I continue to work on the Ordovician faunas, and biostratigraphy of Central Asia (Kazakhstan, Kyrgyzstan and Uzbekistan) and Iran and on more general aspects of the Ordovician biogeography and biofacies.

PYLE, LEANNE (Canada). I am currently working on Paleozoic stratigraphy in various hydrocarbon exploration areas of the Northern Canadian mainland sedimentary basin (Peel Plateau and Plain, northern Mackenzie Mountains, Northwest Territories and Yukon).

REPETSKI, JOHN E. (USA). I am still working chiefly on biostratigraphy, CAI, biogeography, and systematics of Ordovician and Cambrian conodont faunas, with some work on other phosphatic problematica and some faunas of other ages. In the eastern U.S., I am preparing Ordovician and Devonian thermal maturation (CAI and %Ro) maps for several oil- & gas-producing states (with various good colleagues); studying Late Cambrian through Middle Ordovician shelf, shelf-edge, and slope faunas across

the central Appalachians (with J. Taylor, D. Brezinski, and R. Ryder); trying to unravel the history of the Hamburg “klippe” terrane in E. Penna. (w/Bob Ganis & J. Taylor); and age-dating metamorphosed sedimentary units in Vermont and in the Great Smoky Mountains (Tennessee) to support mapping projects there. I am still working on Cambrian-Ordovician faunas in western US (w/J. Taylor, J. Loch, R. Ethington, R. Ripperdan, & P. Myrow), Sonora, Mexico, and southwestern US (w/A. Harris), and Alaska (w/several colleagues). I continue providing age-dating support for projects in the U.S. Midcontinent, Alaska, and elsewhere. Finally, I am working on several taxonomic projects, mostly on Upper Cambrian to Middle Ordovician conodonts, but also on some [other] fish, larval arthropods, and some phosphatized embryos, mostly with various colleagues.

RONG, JIAYU (China). I have worked on the earliest Silurian brachiopod survival and recovery following the end Ordovician mass extinction from South China and two papers will be published in *Lethaia* and *CJGS* (see: *miscellanea*, books).

ROSALES, CARLA (Argentina). I am working in my PhD on darriwilian conodonts from Argentina, in this moment preparing taxonomic studies. I am also working with Susana Heredia, Silvio Peralta and Stan Finney in Middle and Upper Ordovician biostratigraphy and basin analysis from Precordillera.

RUBINSTEIN, CLAUDIA V. (Argentina). I am actively working on Ordovician and Silurian acritarchs and miospores from the Central Andean Basin, northwestern Argentina, as a part of a multi-disciplinary approach (sedimentology, palynology, graptolites and trilobites). Two papers are now in press, one of them dealing with lower Silurian acritarchs and graptolites from the Cordillera Oriental (Geobios) and the other dealing with the refinement of the Upper Tremadoc biostratigraphy and faunas of the Cordillera Oriental (Ameghiniana). I have also finished and submitted for publication a paper on acritarchs and chitinozoans from the Famatina System, northwestern Argentina, a peri-Gondwana active volcanic arc during Ordovician times, in collaboration with Aicha Achab and R. Astini. I'm currently supervising the PhD project on Ordovician chitinozoans from northwestern Argentina, carried on by Susana de la Puente in the Paleopalynology Unit of Mendoza. For the next future, I will continue research on marine and terrestrial palynomorphs of the Ordovician and Silurian from western Argentina, especially focused on biodiversification patterns, biostratigraphy, paleobiogeography and paleo-environments. Financial support for these projects is provided by the CONICET and the National Agency of Scientific Research, Argentina. In 2006, together with Thomas Servais, we will start with a new project entitled "Evolution of the Ordovician palynomorph biodiversity in the Gondwana margin: biofacies vs.

paleogeography and paleoclimate", in the framework of the scientific cooperation programme between Argentina and France (SECyT-ECOS). This joint project also includes Florentin Paris and Marco Vecoli as participants. I will also participate, as coordinator for Cambrian, Ordovician and Silurian chapters, in the book entitled "Pre-Quaternary palynostratigraphy of South America" It is planned to be published in 2007 by the American Association of Stratigraphic Palynologists, with Mercedes Di Pasquo (Buenos Aires, Argentina) as Editor in Chief.

SALTZMAN, MATTHEW (USA). My primary interests are in the chemical evolution of the oceans during the Late Ordovician (Mohawkian through Hirnantian). Together with Stig Bergstrom, Ken Foland and Seth Young (PhD student) at Ohio State, we are studying the carbon isotope composition of carbonates and organic matter, as well as more recently the strontium and neodymium isotope records in carbonates. We are also working collaboratively with Tim Lyons and his student Ben Gill (Univ Calif – Riverside) on sulfur isotopes during the Hirnantian and Lee Kump (Penn State) in modeling efforts of Ordovician biogeochemistry.

SÁNCHEZ, TERESA M. (Argentina). I am continuing work on the Tremadoc and Arenig bivalves from northwestern Argentina and Bolivia 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. A paper on the earliest record of estuarine bivalves (Arenig of northwestern Argentina) has been submitted for publication. Together with B. Waisfeld, M. Carrera, J. Benedetto and N. Cech I am working on Gondwana diversification patterns compared with global Ordovician trends.

SERVAIS, THOMAS (France). I changed from deputy head (2002-2005) to head of department (2006-2009) of the UMR 8014 CNRS unit at Lille. This will bring some more administration on my desk. Research is focused on leading the IGCP 503 project (Ordovician Palaeogeography and Palaeoclimate, 2004-2008) and the co-organisation of related meetings (June 2006: session at the 2nd IPC at Beijing; August 2006: IGCP503 meeting at Glasgow; December 2006: session at the RST at Dijon, France). The main scientific question of the ongoing research is to understand the relation between phytoplankton biodiversity changes and the Ordovician Biodiversification Event. At a larger scale, I participates in the PhytoPal project, to understand the phytoplankton diversity during the Phanerozoic (<http://www.le.ac.uk/geology/glm2/phytopal.html>). In 2005, a revision of the Late Cambrian genus *Nellia* was published (Stricanne et al.), and a comparison of the palaeogeographical distribution of the Ordovician

acritarchs with other groups (graptolites, chitinozoa, etc.) with the main aim to declare that planktonic groups may be as important as benthic fossils. Projects in collaboration with Marco Vecoli (Lille), Li Jun (Nanjing) and Lena Raevskaya (St. Petersburg) continue. A new collaboration project with C. Rubinstein (Mendoza) has just been accepted and will run from 2006 and 2008. Since October 2005, I supervise a new PhD project by Vincent Lefebvre (Lille) to modelise the atmospheric pCO₂ at the Ordovician/Silurian and the Frasnian/Famennian together with L. François (Liège).

SMITH, PAUL (UK). Work is continuing on the Ordovician of Greenland and NW Scotland, the latter in collaboration with my PhD student, Rob Raine. The work on the Durness Group of NW Scotland encompasses sedimentology and sequence stratigraphy through to conodont and mollusc palaeontology. Work also continues on Ordovician fish and conodonts, including the Harding Sandstone and its equivalents and a Darriwillian conodont fauna from Saudi Arabia (with Dick Aldridge).

STOUGE, SVEND (Denmark). I am working on Late Precambrian to Lower Palaeozoic stratigraphy of Greenland and comparing this with Scotland, Ireland and Newfoundland. Some of this work has focus on late Precambrian and late Ordovician glaciations. I'm also involved with stratigraphy - with focus on Ordovician - of Baltoscandia. In China and in collaboration with colleagues in Yichang, I'm working on the global lower to middle Ordovician series boundary; also I'm working on the Ordovician succession of the Tarim basin of NW China together with colleagues in Kuerle, NW China. Also, I'm in progress working on selected Mid Ordovician sections in Australia (with I. Sansom and others). In corporation with B. Schmidt (Lund, Sweden) and colleagues from China we are tracing a late Arenig-early Llanvirn horizon with meteorite remains recorded first in Sweden. Otherwise much time is spent on editing *Lethaia*.

TORO, BLANCA (Argentina). I am currently working overseas (USA), teamed up with colleagues from the State University of New York at Buffalo. I continue with my research activity supported by the Argentine research agencies (CONICET and ANPCYT) on the taxonomic, biostratigraphic and paleobiogeographic aspects of the Ordovician and Silurian graptolites from Argentina and South America. Middle and Late Ordovician graptolite collections from Argentine Precordillera are being studied in cooperation with Chuck Mitchell. I am currently reviewing extensive collections from different localities of the northwest Argentine basins with Jörg Maletz. Emphasis has been placed on new graptolite forms and their evolutionary and paleogeographical implications. Additionally, new biostratigraphic and paleobiogeographic data from graptolite faunas from the Cordillera Oriental and Puna were recently

presented with Argentine co-workers and a doctoral student, in the 12 Gondwana symposium and in the Argentine Paleontological Association annual meeting.

VANMEIRHAEGHE, JAN (Belgium). I am finishing the study of the Ordovician chitinozoans and sediments of the Belgian Condroz Inlier and Brabant Massif and will now compile the data to try to reconstruct the development of a part of the basin at the northern edge of the Midlands Microcraton. Recently, the chitinozoan work done on the Upper Ordovician rocks of the Puagne Inlier (western Condroz) was complemented with a microfacies (by Alain Pr at, Universit  Libre Bruxelles) and a $\delta^{13}\text{C}_{\text{carb}}$ isotope study (by Johan Yans, Facult  Polytechnique Mons), demonstrating a Hirnantian age for an interval of about 100m thick, containing two conglomeratic levels (preliminary results published in Notebooks of Geology, see publications). This section was recently (16/11/04) visited by the French *Groupe Eclipse Ordovicien* and a part of the IGCP 503 group. Other studies focused on the Llanvirn and Caradoc sediments of the Huy, Sart-Bernard, Vitruval-Bruy re and the newly discovered Ri des Chevreuils Formation (all in the Condroz Inlier). Chitinozoans of these rocks are surprisingly well preserved and will aid to set up an Avalonian chitinozoan biozonation for the Ordovician.

VECOLI, MARCO (France). My research activity focuses on the study of organic-walled microfossils (acritarchs, crypto- and miospores, chitinozoans) and their application to a variety of geological (biostratigraphy, terrane analysis, palaeogeography) and palaeobiological (evolution of oceanic plankton, origin of land plants) problems. Ongoing main projects include: 1) The revision of Gondwanan Cambro-Ordovician palynostratigraphy for the establishment of a formal acritarch zonation, and its relations to the existing chitinozoan zonation (collaboration with Thomas Servais, Lille, France; and Florentin Paris and his postdoc Blaise Videt at Rennes, France). For this project, I am going to spend three weeks in 2006 as visiting scientist at the CONICET-IANIGLA in Mendoza (Argentina) working with Claudia Rubinstein, a collaboration sponsored by the bilateral program ECOS-SUD. 2) The study of acritarch dynamics in response to the end-Ordovician glaciation and extinction event. This study is being conducted in collaboration to the ECLIPSE program of the CNRS: *Glaciations and biotic crisis: the end-Ordovician event* (coordinator Jean-Fran ois Ghienne, Strasbourg, France). Some key-sections around the globe are being re-sampled for detailed palynological (and coupled biogeochemical) analyses. 3) The invasion of land by plants and its impact on global biogeochemical cycles. This is a new project that is starting now; it will have a multidisciplinary approach, combining palynology and biogeochemistry; during 2005 I have been collecting

suitable material, contacting various people, and searched for funding for the necessary analyses. I have been successful in obtaining a first grant from the University of Lille that will permit to perform various analyses. A collaboration with Axel Munnecke and Michael Joachimsky (Erlangen University, Germany) has been established to work on this project. Another grant obtained from a bilateral Franco-British program will permit a collaboration with Charlie Wellman at Sheffield during 2006. The co-supervision (together with Thomas Servais) of a PhD thesis on Devonian megaspores being conducted at Lille by Caroline Arioli is also part of this project. Other ongoing collaborations are with Prof. Iginio Dieni, University of Pavia, Italy (revision of palynological material from the South Alpine basement, Italian Alps); Dr. Javier Alvaro, University of Zaragoza, Spain (Cambrian stratigraphy of the Montagne Noire, France); Dr. Enrique Vilas, University of Zaragoza, Spain (Hirnantian of Spain); Dr. Gary Mullins, Leicester, U.K. ("Phytopal project", aiming at investigating the relationships between acritarch evolution and diversity, and palaeoclimate during the Palaeozoic).

VIIRA, VIIVE (Estonia). I am actively working on Lower and Middle Ordovician conodonts and quietly on Upper Silurian conodonts.

VOLDMAN, GUSTAVO G. (Argentina). I am currently working on conodont paleothermometry (CAI) from lower Paleozoic sequences of the Argentine Precordillera. I am carrying out the 2nd year of my PhD and my short term objectives are to correlate the conodont CAI with other low grade geothermometers. The main focus of my study is addressed to the geotectonic evolution of the Precordillera through conodont geothermometry. My studies are supervised by G.L. Albanesi and V. Ramos, and I am also collaborating with G. Ortega in high resolution biostratigraphy.

WITZKE, BRIAN J. (USA). The Upper Ordovician Galena Group of northeast Iowa and the Upper Mississippi Valley was the focus of the fall 2005 annual field conference of the Great Lakes Section of Society for Sedimentary Geology (SEPM), and the 156 page guidebook with numerous contributed papers on Ordovician geology and biostratigraphy can be downloaded at <http://www.igsb.uiowa.edu/gsbpubs/pdf/gb-24.pdf>. I have been doing much field mapping in the northeast Iowa Ordovician outcrop belt these past two years, with a series of new geologic maps underway (the Decorah Quadrangle is available at <http://www.igsb.uiowa.edu/gsbpubs/pdf/ofm-2005-1.pdf>). I am please to note that my long-term project on the conodonts, biostratigraphy, and stratigraphy of the widespread St. Peter Sandstone has now been published in the *Bulletins of American Paleontology* no. 369. Conodonts were found to be abundant and moderately diverse in the

western subsurface of the St. Peter, primarily in interbedded organic shale units. Of particular note, Paul Liu, Bob McKay, and Jean Young recently discovered a remarkable lagerstätte in a shale unit within the St. Peter Sandstone near Decorah, Iowa, including conodont assemblages (some with possible soft-bodied integument), ostracoderms, eurypterids, phyllocarids, and other fossils. A preliminary report is currently in review.

YOUNG, GRAHAM (Canada). I am continuing to work on Paleozoic paleoecology, and on the Ordovician diversity of corals and other cnidarians. A research collaboration with Bob Elias, Dave Rudkin, Godfrey Nowlan, and others assesses paleoenvironments and biotas adjacent to Early Paleozoic islands in the Churchill area, northern Manitoba. I am also studying soft-bodied medusae and other unusual fossils from an Ordovician locality in central Manitoba. A recently completed collaboration with Steve Kershaw examines skeletal banding in Paleozoic stromatoporoids and colonial corals.

ZEBALLO, FERNANDO J. (Argentina). I am carrying out the second year of my PhD about biostratigraphy and paleoenvironments of Ordovician sequences at Quebrada de Humahuaca, norwestern Argentina, based on conodonts and graptolites. I am being supervised by Guillermo Albanesi and Gladys Ortega in the framework of a major research project.

ZHAN, RENBIN (China). For about five years, I, together with Prof. Jiayu Rong, have been working on the Ordovician brachiopod radiation of China, particularly South China. Prof. Jisuo Jin (University of Western Ontario, Canada) and Prof. David A. T. Harper (University of Copenhagen, Denmark) are involved in our project. We have remeasured 7 Lower to Middle Ordovician classical sections in Upper Yangtze Platform (South China) and obtained more than 40,000 specimens of all major groups, amongst which about 80 per cent are brachiopods. Primitive systematic study on these materials, as well as a general revision on those former publications, reveals that the brachiopod α -diversity change of South China got its first acme during the late Early Ordovician (the graptolitic *Didymograptellus eobifidus* Biozone) but their β -diversity change lags behind for several biozones. According to the arrangement, we are now systematically studying the Early-Mid Ordovician brachiopods of South China one fauna after another. In the meantime, we are also trying to discuss the synecological and palaeobiogeographical significance of these faunas.

ZHANG, YUANDONG (China). I am continuously working on: (1) Ordovician Bio-radiation—response of graptolites in South China. This work has started since 5 years ago, and in 2005 my work is concentrated on the evolution of graptolite diversity during Ordovician based on data from South China. The future work (2006-2008) will focus on the integrated study of graptolite diversification with that

of other ecologically distinct key fossil groups including trilobites, brachiopods, cephalopods and acritarch, and their biogeography. Sedimentological and geochemical works will also be integrated. This work has been supported by a grant from NSFC. (2) Cladistic study on the origins of the three major groups of Ordovician and Silurian graptolites: dichograptids, diplograptids and monograptids, based mainly on data from South China (with Chen Xu, Feng Hongzhen, Fan Juanxuan and Richard Fortey etc.). (3) the preparation of the pre-symposium field trip to the Zhejiang-Jiangxi-Anhui border area in 2007.

ZHEN, YONG YI (Australia). I have been working on the Ordovician conodonts from Australia and China in association with Dr. Ian Percival from The Geological Survey of New South Wales and Dr. Jianbo Liu from Peking University.

ZUYKOV, MICHAEL (Russia). I am continuing my work on a project related to the Ordovician brachiopods of NW Russia, Estonia, Lithuania, Sweden, and eastern part of USA.

RECENT ORDOVICIAN PUBLICATIONS

Abre, P., Cingolani, C.A., Zimmermann, U. and Cairncross, B., 2005. Espinelas cromíferas detríticas en la Formación Pavón (Ordovícico): indicadores de corteza oceánica en el Terreno Precordillera, Argentina. *Actas XVI Congreso Geológico Argentino, La Plata*, 1:17-24.

Abre, P., Cingolani, C., Zimmermann, U. and Cairncross, B., 2005. Detrital chromian spinels from the Ordovician Pavón Formation (Precordillera), as oceanic crust indicators. *Gondwana 12*, abstracts y poster, p. 32. *Academia Nacional de Ciencias*.

Abre, P., Zimmermann, U., Cingolani, C.A. and Cairncross, B., 2005. Petrography and geochemistry of the Yerba Loca Formation, Ordovician of the western Precordillera (Argentina). *Gondwana 12*, abstract y poster, p. 33. *Academia Nacional de Ciencias*.

Aceñolaza F.; Aceñolaza, G.; Hünicken, M, Rossi, J., and Toselli, A.J. (eds.) 2004. Simposio Bodenbender. *Insugeo, Serie Correlación Geológica*, 19.

Aceñolaza, G.F. 2005 (ed.). Ordovician Revisited: reconstructing a unique Period in Earth History. *Geologica Acta*, 3 (3).

Aceñolaza G.F. 2005. *Spirodesmos milanai* n isp. A shallow-water spiral trace fossil from the Cambrian of the Eastern Cordillera, Northwest Argentina. *Ichnos* 12: 59-63. *Canadá*.

Aceñolaza, G.F., Heredia, S. and Milana, J.P., 2005. Patrones evolutivos tempranos en la "estratigrafía de Cruziana": Trazas de tipo Silúrico en el Ordovícico Inferior del Norte Argentino. *Reunion de Comunicaciones de la APA. Madryn*.

- Aceñolaza G.F. and Milana, J.P. 2005.** Remarkable Cruziana beds in the Lower Ordovician of the Cordillera Oriental, NW Argentina. *Ameghiniana*, 42 (3): 633-637. Buenos Aires.
- Achab, A. and Paris, F. (in press)** The Ordovician chitinozoan biodiversification and its leading factors. *Palaeogeography, Palaeoclimatology, Palaeoecology*.
- Albanesi, G.L. and Aceñolaza, G.F. 2005.** Conodontes de la Formación Rupasca (Ordovícico Inferior), en el Angosto de Chuculezna, Cordillera Oriental de Jujuy: nuevos elementos bioestratigráficos para una localidad clásica del noroeste argentino. *Ameghiniana*, 42 (2): 295-310. Buenos Aires.
- Albanesi, G.L., Carrera, M.G., Cañas, F.L. and Saltzman, M. 2005.** Definition of a global boundary stratotype section and point (GSSP) for the base of the Middle Ordovician Series: The Niquivil section, Precordillera of San Juan, Argentina. Informe de la International Subcommission on Ordovician Stratigraphy (ICS-IUGS), publicación electrónica: <http://seis.natsci.csulb.edu/ordstrat1>. (Episodes, in press).
- Albanesi G.L., Esteban, S.B., Ortega, G., Hünicken, M.A. and Barnes, C.R. 2005.** Bioestratigrafía y ambientes sedimentarios de las formaciones Volcancito y Bordo Atravesado (Cámbrico Superior - Ordovícico Inferior), Sistema de Famatina, provincia de La Rioja, Argentina. In: J.A. Dahlquist, E.G. Baldo and P.H. Alasino (eds.). *Geología de la provincia de La Rioja: Precámbrico – Paleozoico inferior*. Asociación Geológica Argentina, Serie D: Publicación Especial N° 8: 41-64, figs. 1-8.
- Albanesi, G.L., Ortega, G. and Hünicken, M.A. (in press).** Bioestratigrafía de conodontes y graptolitos silúricos en la sierra de Talacasto, Precordillera de San Juan, Argentina. *Ameghiniana*.
- Albanesi, G.L., Sansom, I.J. and Davies, N. 2005.** *Sacabambaspis janvieri* Gagnier et al.: records and paleogeographic implications for the late Middle Ordovician Gondwanan margin. International Symposium Gondwana 12, Mendoza. Academia Nacional de Córdoba, Abstracts: 37.
- Armstrong, H.A. 2005.** Modes of growth in the euconodont oral skeleton: implications for bias and completeness in the fossil record. In, Purnell, M. A. and Donoghue, P. C. J. (eds) 2005: *Conodont biology and phylogeny - interpreting the fossil record*. Special Papers in Palaeontology 73, 27-38.
- Armstrong, H.A. 2005.** Genome elaboration and the cause of cryptogenesis in panderodontid conodonts. North American Paleontology Convention, Halifax, Nova Scotia. *PaleoBios*, Museum of Paleontology, University of California, Berkeley, volume 25, supplement 2, p. 14.
- Armstrong, H.A. and Brasier, M.D. 2004.** *Microfossils*, 2nd edition. Blackwell Scientific Publications, 296 pp.
- Armstrong, H.A. and Sansom, I.J. (in press).** Developmental disparity and ecospace occupation in the stem gnathostome *Panderodus* (Ethington: Conodonta). *Biology Letters*.
- Armstrong, H.A., Turner, B.R., Makhlof, I.M., Weedon, G.P., Williams, M., Al Smadi, A. and Abu Salah, A. 2005.** Origin, sequence stratigraphy and depositional environment of an Upper Ordovician (Hirnantian) deglacial black shale, Jordan. *Palaeogeography, Palaeoclimatology, Palaeoecology* 220, 273-289.
- Armstrong, H. A., Turner, B. R., Makhlof, I. M. and Weedon, G. P., Williams, M., Al Smadi, A. and Abu Salah, A. 2006.** Reply “Origin, sequence stratigraphy and depositional environment of an upper Ordovician (Hirnantian) deglacial black shale, Jordan” *Palaeogeography, Palaeoclimatology, Palaeoecology* 23, 356-360.
- Barnes, C.R. 2004.** Was there an Ordovician superplume event? p. 77-80. In: *The Great Ordovician Biodiversification Event*. B.D. Webby, F. Paris, M.L. Droser, and I.G. Percival (eds.), Columbia University Press, New York, 484p.
- Barnes, C.R. 2004.** Ordovician oceans and climate. p. 72-76 In: *The Great Ordovician Biodiversification Event*. B.E. Webby, F. Paris, M.L. Droser, and I.G. Percival (eds.), Columbia University Press, New York, 484p.
- Barnes, C.R. 2004.** Ordovician paleoceanography. 32nd International Geological Congress, Florence, Italy. Program with Abstracts CD.
- Barnes, C.R., Zhang, S. and Pyle, L.J. 2004.** Interpreting Laurentian-wide Early Ordovician sea level and tectonic events using the pattern of conodont communities. Joint annual meeting of the Geological Association of Canada and Mineralogical Association of Canada, Program with Abstracts CD.
- Benedetto, J.L. 2005.** Hacia un esquema bioestratigráfico de alta resolución para el Cámbrico tardío y Ordovícico del noroeste de Argentina basado en filozonas de braquiópodos rhynchonelliformes. 16° Congreso Geológico Argentino, Actas 3: 371-378.
- Benedetto, J.L. 2005.** Spatial and stratigraphic distribution of the Ordovician rhynchonelliformean brachiopod *Productorthis Kozłowski*: fast migrations or parallel evolution? In: Harper, D.A.T., Long, S.L., and McCorry, M. (eds.) *Fifth International Brachiopod Congress*, Copenhagen, Abstracts: 35
- Benedetto, J.L. 2005.** Paleobiogeography of Ordovician and Silurian rhynchonelliformean brachiopods from Andean Gondwana and accreted terranes: new data, new insights. In: Pankhurst, R.J. and Veiga, G.D. (eds.), *Gondwana 12*: 67.
- Benedetto, J.L., Niemeyer, H., González, J. and Brussa, E. 2005.** First occurrence of Ordovician brachiopods and graptolites from Cordón de Lila

- (Salar de Atacama), northern Chile: stratigraphic and paleobiogeographic implications. In: Pankhurst, R.J. and Veiga, G.D. (eds.), *Gondwana* 12: 68.
- Beznosova, T., Majdl, T. and Männik, P. 2005.** Yaptiknyrd Formation – a new stratigraphical unit proposed for the uppermost Ordovician strata in the Subpolar Urals. In: Koren, T., Evdokimova, I., Tolmachova T. (eds.). *The Sixth Baltic Stratigraphical Conference*, August 23-25 St. Petersburg, Russia. VSEGEI, St. Petersburg: 14-16.
- Blieck, A. 2005.** La biodiversité au cours du Paléozoïque d'après l'exemple des Vertébrés aquatiques. *Les Amis du Muséum national d'Histoire naturelle*, 221 : 4-7, 2 fig. ; Paris. [In French; includes a paragraph on the Ordovician vertebrates]
- Blieck, A. coord. 2005.** Dossier spécial : Stratigraphie du Paléozoïque. *Ann. Soc. Géol. Nord*, 11 (2e série) (4) : 127-167, 12 fig., 7 articles, 15 auteurs ; Villeneuve d'Ascq. [In French; includes a chapter on the Ordovician]
- Bogolepova, O.K. and Gee, D.G. 2004.** Early Palaeozoic unconformity across the Timanides, NW Russia. In: Gee, D.G. and Pease, V.L. (eds.) *The Neoproterozoic Timanide Orogen of Eastern Baltica*. Geological Society, *Memoirs*, 30: 145-157.
- Brenchley, P.J., Marshall, J.D., Harper, D.A.T. and Buttler, C.J. and Underwood, C.J. 2005.** A late Ordovician (Hirnantian) karstic surface in a submarine channel, recording glacio-eustatic sea-level changes: Meifod, central Wales. *Geological Journal* 40, 1-22.
- Briggs, D.E.G. and Fortey, R.A. 2005.** Wonderful strife: systematics, stem groups and the phylogenetic signal of the Cambrian radiation. In *Macroevolution: diversity, disparity, contingency*. Supplement to *Paleobiology* 31, 94-112.
- Brussa, E.D., Maletz, J., Mitchell, C. and Toro, B. 2005.** Usefulness of graptolites in paleoecologic and paleogeographic interpretations: The South America test. In: Pankhurst, R.J. and Veiga, G. D. (eds.) *Gondwana 12: Geological and Biological Heritage of Gondwana*, Abstracts, Academia Nacional de Ciencias, Córdoba, Argentina, p. 80.
- Brussa, E.D., Mitchell, C.E. and Maletz, J. 2005.** Unusual Middle Ordovician graptolites assemblage from the Consata Region, NW Bolivia. *PaleoBios*, Museum of Paleontology, University of California, Berkeley, v. 25, Supplement to number 2: 23-24. North American Paleontology Convention, Halifax, Nova Scotia, June 19 – 25.
- Brussa, E. D. and Toro, B.A. 2005.** Isograptidos en el Ordovícico de la Puna Oriental Argentina. *Reunión Anual de Comunicaciones de la Asociación Paleontológica Argentina*, p. 37.
- Buatois, L.A., Gingras, M.K., MacEachern, J., Mángano, M.G., Zonneveld, J.-P, Pemberton, S.G., Netto, R.G. and Martin, A.J. 2005.** Calibrating the Brackish-Water Trace Fossil Model Through Geologic Time. AAPG Annual Meeting, Calgary. Abstracts Volume, p. A20.
- Buatois, L.A., Gingras, M.K., MacEachern, J., Mángano, M.G., Zonneveld, J.-P, Pemberton, S.G., Netto, R.G. and Martin, A.J. 2005.** Colonization of brackish-water systems through time: Evidence from the trace-fossil record. *Palaios* 20: 321-347.
- Buatois, L.A. and Mángano, M.G. 2005.** The Cambrian System in Northwestern Argentina: stratigraphical and palaeontological framework. Discussion to G.F. Aceñolaza. *Geologica Acta* 3:65-72.
- Buatois, L.A., Zeballo, F.J., Albanesi, G.L., Ortega, G., Vaccari, E. and Mángano, M.G. 2006.** Depositional Environments and Stratigraphy of the Cambrian-Tremadocian Santa Rosita Formation at the Alfarcito area, Cordillera Oriental, Argentina: Integration of biostratigraphic data within a sequence stratigraphic framework. *Latin American Journal of Sedimentology and Basin Analysis* 13.
- Budil, P., Kraft, P. and Kraft, J. 2004.** Temporary outcrop of the Letna and Vinice formations (Upper Ordovician, Berounian) in the NE part of Prague (Cerny Most). *Geoscience Research Reports for 2004*, Czech Geological Survey: 23-26. [In Czech.]. 111.
- Buick, I.S., Hand, M., Williams, I.S., Mawby, J., Miller, J.A. and Nicoll, R.S. 2005.** Detrital zircon provenance constraints on the evolution of the Harts Range Metamorphic Complex (central Australia): links to the Centralian Superbasin. *Journal Geological Society London*, 162, 777-787.
- Carrera, M.G. 2005.** Cambrian and Paleozoic evolutionary fauna: Gondwanan - Laurentian sponge contributions. In: Pankhurst, R. and Veiga, G. (eds.) *Gondwana 12*, Abstracts S7 p.90, Mendoza, Argentina.
- Carrera, M.G. and Rigby, J.K. 2004.** Sponges. In: Webby, B.D., Paris, F., Droser, M.L. and Percival, I.G. (eds.). 2004. *The Great Ordovician Biodiversification Event*. Columbia University Press, New York, pp.102-111.
- Chen Xu, Fan Jun-xuan, Melchin, M.J. and Mitchell, C.E., 2005.** Hirnantian (Latest Ordovician) graptolites from the Upper Yangtze region, China. *Palaeontology*, 48(2): 235-280.
- Chen, X., F. Jun-Xuan, M.J. Melchin and C.E. Mitchell. 2005a.** Hirnantian (Latest Ordovician) Graptolites from the Upper Yantze Region, China. *Palaeontology*, 48(2):235-280.
- Chen Xu, F. Jun-Xuan, M.J. Melchin and C.E. Mitchell. 2005b.** Graptolites of the Hirnantian Substage (latest Ordovician) from the Upper Yangtze Region, China. *Palaeontology*, 48(2):235-280.

- Chen Xu, Melchin, M.J., Sheets, H.D., Mitchell, C.E. and Fan Jun-xuan. 2005.** Patterns and Processes of latest Ordovician graptolite extinction and recovery based on data from South China. *Journal of Paleontology*, 79(5): 842-861.
- Chen Xu, Rong Jiayu, Li Yue and Boucot, A.J. 2004.** Facies patterns and geography of the Yangtze Region, South China, through the Ordovician and Silurian transition. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 204: 353-372.
- Chen Xu, Zhang Yuandong, Xu Honggen, Yu Guohua, Wang Longwu and Qi Yanxin, 2005.** The progressive study to the Ordovician Darrivilian GSSP section (Huangnitang, Changshan, Zhejiang, China). *Proceedings of Stratigraphy and Palaeontology*, 28: 29-39. (In Chinese with English abstract).
- Chen Xu and Zhou Zhi-yi, 2005.** A study of the Ordovician Global boundary Stratigraphy Sections and Points. *Journal of Stratigraphy*, 29(2): 165-170. (in Chinese).
- Cocks, L.R.M. 2005.** Silurian. pp 184-193 in Selley, R.C., Cocks, L.R.M. and Plimer, I.R. (eds) *Encyclopedia of Geology*. Elsevier, Amsterdam. 5 vols.
- Cocks, L.R.M. 2005.** Presidential Address 2005: where was Britain in the Palaeozoic? *Proceedings of the Geologists' Association*, 116: 117-127.
- Cocks, L.R.M. 2005.** Strophomenate brachiopods from the late Ordovician Boda Limestone of Sweden: their systematics and implications for palaeogeography. *Journal of Systematic Palaeontology*, 3: 243-282.
- Cocks, L.R.M. and Cooper, R.A. 2004.** Late Ordovician (Hirnantian) shelly fossils from New Zealand and their significance. *New Zealand Journal of Geology and Geophysics* 47: 71-80.
- Cocks, L.R.M., Fortey, R.A. and Lee, C.P. 2005.** A review of Lower and Middle Palaeozoic biogeography in west peninsular Malaysia and southern Thailand in its context within the Sibumasu Terrane. *Journal of Asian Earth Sciences*, 24: 703-717.
- Cocks, L.R.M. and Torsvik, T.H. 2005.** Baltica from the late Precambrian to mid-Palaeozoic times: the gain and loss of a terrane's identity. *Earth-Science Reviews*, 72: 39-66.
- Cooper, A.H., Fortey, N.J., Hughes, R.A., Molyneux, S.G., Moore, R.M., Rushton, A.W.A. and Stone, P. 2004.** The Skiddaw Group of the English Lake District. *Memoir of the British Geological Survey* 147pp.
- Cooper, R.A. (ed.). 2005.** The New Zealand Geological Timescale. *Institute of Geological and Nuclear Sciences Monograph* 22, 284 pp.
- Cooper, R.A. and Sadler, P.M., 2004.** Chapter 15, Ordovician in Gradstein, F., Ogg, J.G., Smith, A.G., (eds) *A Geologic Time Scale*. Cambridge University Press.
- Cope, J.C.W. 2005.** Octocorallian and hydroid fossils from the Lower Ordovician of Wales. *Palaeontology*, 48: 433-445.
- Cope, J.C.W. and Donovan, S.K. 2005.** Parablastoid holdfasts from the Lower Ordovician of South Wales. *Geological Journal*, 40: 295-300.
- Cotton, T.J. and Fortey, R.A. 2005.** Comparative morphology and relationships of the Agnostida, in Koenemann, S. and Jenner, R.A. (eds) *Crustacea and arthropod relationships*. *Crustacean Issues* 16, 95-136.
- Couto, H. and Borges, F.S. 2005.** Stratiform Sb and Au mineralizations in the Hercynian Dúrico-Beirã area (North Portugal). *Jingwen Mao & Frank P. Bierlein (Eds.) Mineral Deposit Research: Meeting the Global Challenge. Proceedings of the Eighth Biennial SGA Meeting, Beijing, China, Chapter 2-5, p. 97-99.*
- Couto, H., Borges, F.S., Roger, G. and Gutiérrez-Marco, J.C. 2004.** The Ordovician of Valongo Anticline (Portugal). *Erlanger Geologische Abhandlungen – Sonderband 5. International Symposium on Early Palaeogeography and Palaeoclimate. Abstracts*. p.28.
- Couto, H. and Gutiérrez-Marco, J.C. 2000.** Alguns fósseis raros ou pouco conhecidos da Formação de Valongo (Ordovícico Médio, Norte de Portugal). *Livro de resumos do I Congresso Ibérico de Paleontologia/XVI Jornadas de la Sociedad Española de Paleontología*, I.S.B.N.: 972-778-026-1, 191-192.
- Couto, H., Roger G. and Borges, F.S. 2003.** "Mina das Banjas: contributos para o conhecimento e do Ordovícico do Anticlinal de Valongo" *Ciências da Terra (UNL)*, Lisboa, nº esp. V, CD-ROM, pp. C28-C31
- Couto, H., Roger, G., Moëlo, Y. and Borges, F.S. 2003.** "Mina das Banjas: controlo das mineralizações auríferas pelas alternâncias do Arenigiano" *Ciências da Terra (UNL)*, Lisboa, nº esp. V, CD-ROM, pp. F25-F28.
- Debacker, T.N., Dewaele, S., Sintubin, M., Verniers, J., Muchez, P. and Boven, A. 2005.** Timing and duration of the progressive deformation of the Brabant Massif, Belgium. *Geologica Belgica*, 8/4: 20-34.
- Debacker, T., Sintubin, M. and Verniers, J. 2005.** Avalonia-Moesia: Early Palaeozoic orogens in the Trans-European Suture Zone. *Geologica Belgica* 8 (4). 1-192.
- De la Puente, S., Toro, B.A. Y Rubinstein, C.V. 2005.** Quitinozoos ordovícicos (Arenigiano) de la Formación Acoite, Cordillera Oriental, Argentina. *Calibración con acritarcos y graptolitos. Ameghiniana (Suplemento)*. Buenos Aires.
- Díaz Martínez, E. 2005.** Dichotomous provenance and age of diamictites in the Early Palaeozoic Peru-Bolivia foreland basin of Gondwana. *6th International Symposium on Andean Geodynamics*

- (ISAG 2005, Barcelona), IRD Editions. Extended Abstracts, p. 226-229. ISBN: 2-7099-1575-8.
- Díaz Martínez, E. 2005.** Procedencia y edad de las diamictitas del Paleozoico inferior de la cuenca de Perú-Bolivia (Gondwana occidental). *Geogaceta*, vol. 38, p. 235-238. ISSN: 0213-683X.
- Dronov, A.V. 2004.** Magnitude of sea-level changes in the Ordovician of Baltoscandia. In: Hints, O. and Ainsaar, L. (eds). WOGOGOB-2004 Conference materials. Tartu University Press, Tartu: 21-22.
- Dronov, A.V. 2004.** Ordovician succession of the Mishina Gora quarry. In: Dronov A.V. (ed.) *Ordovician Plateau*. Voentekhnizdat, Moscow: 68-85 (in Russian).
- Dronov, A.V. and Kushlina, V.B. 2004.** Mishina Gora section: results of recent investigations. . In: Hints, O. and Ainsaar, L. (eds). WOGOGOB-2004 Conference materials. Tartu University Press, Tartu: 23-24.
- Dronov, A.V., Kaljo, D., Meidla, T., Ainsaar, L., Einasto, R., Hints, L., Hints, O., Nestor, H., Nõlvak, J., Rubel, M., Saadre, T., Tinn, O. and Tolmacheva, T. 2005.** Sea-level curve for the Ordovician of Baltoscandia: contradictions, problems and approaches. In: Koren', T., Evdokimova, I., Tolmacheva, T. (eds.) *The Sixth Baltic Stratigraphical Conference, August 23-25, Abstracts*. St.Petersburg Cartographic Factory Press, St.Petersburg: 24-26.
- Dronov A.V. and Popov L.E. 2004.** Traces of frost action in the Obolus-Sand: the evidence for subglacial climate in the mid Cambrian to early Ordovician (Tremadocian) of the East Baltic. In: A. Munnecke, T. Servais, C. Schulbert (eds.) *Early Palaeozoic Palaeogeography and Palaeoclimate*. Erlanger Geologische Abhandlungen. Sonderband 5, Nürnberg: 32.
- Dronov, A., Tolmacheva, T., Raevskaya, E. and Nestell, M. (eds.). 2005.** Cambrian and Ordovician of St. Petersburg Region. Guidebook for the pre-conference field trip. 6th Baltic Stratigraphical Conference. August 23-25, St. Petersburg University Press, St. Petersburg:1-62.
- Dubinina, S.V. and Ryazantsev, A.V. 2004.** Ordovician conodonts in different paleogeographical environments of the Southern Urals. *International Symposium on Early Palaeozoic Palaeogeography and Palaeoclimate*. Germany, Erlangen: 32-33.
- Dubinina, S.V. and Ryazantsev, A.V. 2005.** Ordovician conodonts in paleoenvironments of the ensimatic island arc and adjacent basins in the Southern Urals. *Micropaleontology in Russia on a boundary of centuries*. Proceeding vol. XIII Russian Micropaleontological Conference. Moscow, GEOS: 125-126 [in Russian].
- Dubinina, S.V., Ryazantsev, A.V. and Borisenok, D.V. 2004.** Conodont stratigraphy of the Ordovician volcanogenic and volcanogenic-sedimentary rock assemblages of the Southern Urals. In: Hints, O., Ainsaar, L. (eds.). *WOGOGOB-2004 Conference materials*, Tartu University Press, Tartu: 25-26.
- Fan Junxuan, Chen Xu, Melchin, M.J., Sheets, H.D., and Mitchell, C.E. 2004.** Biodiversity, extinction and origination rates during the latest Ordovician graptolite extinction based on the data from South China. In: Rong, J.Y., Fang, Z.J. (eds.). *Mass extinctions and subsequent recoveries – evidence from the Palaeozoic of South China*. Hefei: University of Science and Technology of China Press, 55-70,1039. (in Chinese, with English abstract).
- Feng Hongzhen, Erdtmann, B.D. and Zhang Yuandong. 2005.** Taxonomy and phylogeny of *Staurograptus* Emmons from the base of the Ordovician. *Palaeontology*, 48 (5): 1007-1019.
- Feng Hongzhen, Ling Hongfei, Jiang Shaoyong and Yang Jinghong. 2004.** $^{13}\text{C}_{\text{carb}}$ and C_{anom} excursions in the post-glacial Neoproterozoic and the Early Cambrian in Guizhou, South China. *Progress in Natural Science*, 14 (2): 188-192.
- Finney, S.C. 2005.** Global Series and Stages for the Ordovician System, *Geologica Acta*, v. 3, no. 4, p. 309-316.
- Finney, S.C., Grove, M., Gehrels, G., Peralta, S. and Heredia, S. 2005.** Early Mesoproterozoic zircons from conglomerate clasts and sandstones in Cambrian and Ordovician siliclastic strata of Argentine Precordillera. *Gondwana 12*, R.J. Pankhurst, and G.D. Veiga (eds.) “*Geological and Biological Heritage of Gondwana*”, Abstracts, p. 155. November 6-11, Mendoza.
- Finney, S., Peralta, S., Gehrels, G. and Marsaglia, K. 2005.** The Early Paleozoic history of the Cuyania (greater Precordillera) terrane of western Argentina: evidence from geochronology of detrital zircons from Middle Cambrian sandstones, *Geologica Acta*, v. 3 no. 4, p. 339-354.
- Finney, S.C., Peralta, S., Gehrels, G. and Marsaglia, K., 2005.** U-Pb geochronology of detrital zircons from Middle Cambrian sandstones, Argentine Precordillera and interpretations of sandstone provenance. *Gondwana 12*, R.J. Pankhurst, and G.D. Veiga (eds.) “*Geological and Biological Heritage of Gondwana*”, Abstracts, p. 157. November 6-11, Mendoza.
- Fortey, R.A. and Cocks, L.R.M. 2005.** Late Ordovician global warming - The Boda Event. *Geology*, 33: 405-408.
- Finney, S.C., Peralta, S.H. and Heredia, S. 2005.** Where is the foreland basin at the Cuyania-Gondwana collisional zone? *Gondwana 12*, R.J. Pankhurst, and G.D. Veiga (eds.) “*Geological and Biological Heritage of Gondwana*”, Abstracts, p. 156. November 6-11, Mendoza.
- Fortey, R.A. 2005.** Ordovician, in Selley, R. Cocks, L.R.M. and Plimer, I. (eds) *Encyclopedia of Geology*, vol 4, 175-284.

- Fortey, R.A. 2005.** *Opipeuterella*, a replacement name for the trilobite *Opipeuter* Fortey, 1974, preoccupied. *Journal of Paleontology* 79, 989.
- Fortey, R.A. and Cocks, L.R.M. 2005.** Fossil evidence supports Lower Palaeozoic oceanic separations. *Courier Forschungsinstitut Senckenberg*, 254, 465-472.
- Fortey, R.A., Zhang, Y.D. and Mellish, C. 2005.** The relationships of biserial graptolites. *Palaeontology*, 48(6):1241-1272.
- Ganis, G.R. 2005.** Darriwilian graptolites of the Hamburg succession (Dauphin Formation), Pennsylvania, and their geologic significance, *Canadian Journal of Earth Sciences*, 42/ 5, p.791-813.
- Ganis, G.R. 2005.** Development of the Martinsburg/Hamburg Foreland Segment, 40th annual meeting Northeastern Section, The Geological Society of America, abstracts with programs, p. 17
- García-Bellido, D. and Aceñolaza, G.F. 2005.** Organismos de cuerpo blando en los estratos Cámbricos del noroeste Argentino. XIII Congreso Geológico Argentino. Actas 3: 467-474. La Plata.
- Gleason, J.D., Finney, S.C., Peralta, S.H., Gehrels, G.E. and Marsaglia, K.M., 2005.** Provenance and source terranes of Middle and Upper Ordovician siliciclastic rocks, Argentine Precordillera. *Gondwana 12*, R.J. Pankhurst, and G.D. Veiga (eds.) "Geological and Biological Heritage of Gondwana", Abstracts, p. 174. November 6-11, Mendoza.
- Glen, R.A., Stewart, I.R. and Percival, I.G. 2005.** The Narooma Terrane: implications for the construction of the outboard part of the Lachlan Orogen. *Australian Journal of Earth Sciences*, 51: 859-884.
- Gutiérrez-Marco, J.C., Rábano, I., Couto, H. and Piçarra, J.M. 2000.** Plumulídeos (*Machaeridia*) de la Formación Valongo (Ordovícico Médio, Portugal). Livro de resumos do I Congresso Ibérico de Paleontología/XVI Jornadas de la Sociedad Española de Paleontología, I.S.B.N.: 972-778-026-1, 193-194.
- Harris, A.G., Page, W.R., Krumhardt, A.P., Repetski, J.E., and Turner, K.J. 2005.** Conodont database and analysis of conodont color alteration (CAI) patterns in the Las Vegas 30' x 60' quadrangle, Clark and Nye Counties, Nevada, and Inyo County, California. U.S. Geological Survey, Open-File Report 2005-1343: 39 + 2 oversize plates. Online-only, at <http://pubs.usgs.gov/of/2005/1343/>
- Harris, M.T., Schultz, T., Sheehan, P.M., Ainsaar, L. Nölvak, J., Hints, L., Männik, P. and Rubel, M. 2005.** The Upper Ordovician of Estonia: facies, sequences, and basin evolution. In: Sheehan, P. M., Servais, T. (eds). Abstracts for the Second International Symposium of IGCP503 on Ordovician Palaeogeography and Palaeoclimate. Milwaukee Public Museum, Milwaukee. Insight, A Milwaukee Public Museum Series in Natural History, 2: 11-12.
- Heredia, S. and Aceñolaza, G.F. 2005.** The Trapezognathus diprion conodont zone and correlation of an outstanding occurrence of the Cruziana rugosa group (trace fossils) in the Lower Ordovician of Western Gondwana. *Gondwana 12*, Academia Nacional de Ciencias, Córdoba. Actas: 194.
- Heredia S.E. and Beresi M.S. 2005.** La Formación Empezada y su relación con la Formación Estancia San Martín (Nov. nom.), Ordovícico de la Precordillera de Mendoza, Argentina. *Revista Asociación Geológica Argentina*, vol. 59 (2):178-192. Buenos Aires.
- Heredia, S. and Beresi, M.S. 2005.** New insights on the Cerro La Ventana Formation (Mesoproterozoic), the crustal basement at the San Rafael Block, Mendoza province (Argentina). 12 Gondwana Conference "Geological and Biological Heritage of Gondwana", Abstracts:198. Mendoza, Argentina.
- Heredia, S., Beresi, M.S. and Peralta, S. 2005.** Darriwilian conodont biostratigraphy of the Las Chacritas Formation, Central Precordillera, San Juan Province, Argentina. *Geologica Acta*, Vol. 3, n°4:385-394.
- Heredia, S., Beresi, M.S. and Peralta, S.H., 2005.** *Geológica-Acta*. Darriwilian conodont biostratigraphy of the Las Chacritas Formation, Central Precordillera (San Juan Province, Argentina). *Geológica Acta*, v. 3, no. 4, pp. 385-394.
- Heredia, S., Rosales, C., Peralta, S. and Beresi, M.S. 2005.** Conodontes de la Formación Las Chacritas (Darriwiliano) y su significado tectosedimentario en el Bloque Sierra de La Trampa-Los Blanquitos, Precordillera de San Juan. XVI Congreso Geológico Argentino. III: 445-450. La Plata.
- Higgins, A.K., Soper, N.J., Smith, M.P. and Rasmussen, J.A. 2004.** The Caledonian thin-skinned thrust belt of Kronprins Christian Land, eastern North Greenland. *Geological Survey of Denmark and Greenland Bulletin*: 6, 41-56.
- Hints, O. 2005.** *Scolecodonts*. In: Dronov, A., Tolmacheva, T. Raevskaya, E., Nestell, M. (eds.). 6th Baltic Stratigraphical Conference. Cambrian and Ordovician of St. Petersburg Region. Guidebook of the pre-conference field trip. VSEGEI, St. Petersburg State University, St. Petersburg: 31-32.
- Hints, L., Nölvak, J., Männik, P. and Oraspöld, A. 2005.** Proposal for the boundary stratotype of the Pirgu Regional Stage (upper Ordovician) in the East Baltic. In: Koren T. Evdokimova I., Tolmachova T. (eds.). The Sixth Baltic Stratigraphical Conference, August 23-25, St. Petersburg, Russia. VSEGEI, St. Petersburg: 34-37.
- Hints, O., Nölvak, J. and Viira, V. 2005.** Microfossil dynamics and biostratigraphy in the Uhaku-Kukruse boundary interval (Ordovician) of

- NE Estonia. In: Koren, T., Evdokimova, I., Tolmacheva T. (eds). The Sixth Baltic Stratigraphical Conference, August 23-25 St. Petersburg, Russia. VSEGEI, St. Petersburg State University, St. Petersburg. 40-42.
- Hints, L., Oraspöld, A. and Nõlvak, J. 2005.** The Pirgu Regional Stage (Upper Ordovician) in the East Baltic: lithostratigraphy, biozonation, and correlation. Proceedings of the Estonian Academy of sciences. Geology. 54: 225-259.
- Holmer, L. E., Popov, L. E., Streng, M. and Miller, J. F. 2005.** Lower Ordovician (Tremadocian) lingulate brachiopods from the House and Fillmore Formations, Ibex Area, Western Utah, USA. Journal of Palaeontology, 79: 884-906.
- Huff, W.D. 2005.** Ordovician K-bentonites: In: Ludvigson, G.A. and Bunker, B.J. (Eds.) Facets of the Ordovician geology of the Upper Mississippi Valley region: Iowa Geological Survey Guidebook Ser. No. 24, Guidebook for the 35th Annual Field Conference of the Great Lakes Section, Society for Sedimentary Geology (SEPM), September 23-25, 2005, p. 50-53.
- Huff, W.D., Bergström, S.M. and Kolata, D.R. (in press).** Ordovician explosive volcanism: In: Finney, S.C. and Berry, W. (Eds.) Earth system during the Ordovician Period, Geological Society of America Special Paper
- Huff, W.D., Müftüoğlu, E., Bergström, S.M. and Kolata, D.R. 2005.** Biotite as a discriminator between the Late Ordovician Deicke, Millbrig, and Kinnekulle K-bentonites: In: Ludvigson, G.A. and Bunker, B.J. (Eds.) Facets of the Ordovician geology of the Upper Mississippi Valley region: Iowa Geological Survey Guidebook Ser. No. 24, Guidebook for the 35th Annual Field Conference of the Great Lakes Section, Society for Sedimentary Geology (SEPM), September 23-25, 2005, p. 62-64.
- Hunter, A.W., Lefebvre, B. and Régnault, S. 2005.** A mixed ophiuroid-stylophoran assemblage (Echinodermata) from the Middle Ordovician (Llandeilian) of western Brittany, France. Abstract Book, Climatic and evolutionary controls on Palaeozoic reefs and bioaccumulations, 7-9th September 2005, MNHN Paris: 35-36.
- Ivanov, K.S., Snigireva, M.P., Männik, P. and Borozdina, G.N. 2004.** Conodonts and biostratigraphy of the Early Palaeozoic volcanogenic-chert deposits in the Ural superdeep borehole SG-4. Litosfera, 4: 89-101. [in Russian].
- Johnson, M. E., Rong Jiayu, and Su Wenbo. 2004.** Paleogeographic orientation of the Sino-Korean Plate based on evidence for a prevailing Silurian wind field. The Journal of Geology, 112: 6711-684.
- Key, M.M., Jr., Wyse Jackson, P.N., Patterson, W.P., and Moore, M.D. 2005.** Stable isotope evidence for diagenesis of the Ordovician Courtown and Tramore Limestones, south-eastern Ireland. Irish Journal of Earth Sciences, 23: 25-38.
- Knell, R. and Fortey R.A. 2005.** Trilobite spines and beetle horns: sexual selection in the Palaeozoic? Biology Letters 1(2), 196-9.
- Kraft, P. and Kraft, J. 2005.** New dendroid graptolites from the Klabava Formation of the Bohemian Lower Ordovician. Journal of the Czech Geological Society, 49, 2004 (3-4): 119-123.
- Lee, D.-J. and Elias, R.J. 2004.** Paleobiologic features of *Trabeculites maculatus* (Tabulata, Late Ordovician, southern Manitoba). Journal of Paleontology, 78: 1056-1071.
- Lefebvre, B., Ghobadipour, M. and Nardin, E. 2005.** Ordovician echinoderms from the Tabas and Damghan regions, Iran: palaeobiogeographical implications. Bulletin de la Société géologique de France, 176: 231-242.
- Lefebvre, B., Rozhnov, S.V. and Fatka, O. 2005.** Lower Palaeozoic "carpoid" echinoderms of Baltica: palaeoecological and palaeobiogeographic implications. In: T. Koren, I. Evdokimova, T. Tolmacheva (eds.). The Sixth Baltic Stratigraphical Conference, August 23-25, St. Petersburg. A.P. Karpinsky All-Russian Geological Research Institute, Saint-Petersburg: 68-69.
- Lehnert, O., Miller, J.F., Leslie, S.A., Repetski, J.E., and Ethington, R.L. 2005.** Cambro-Ordovician sea-level fluctuations and sequence boundaries: the missing record and the evolution of new taxa. Special Papers in Palaeontology, no. 73: 117-134.
- Li Jun, Reed Wicander, Yan Kui and Zhu Huaicheng. 2005.** The paleobiogeographic significance of an Upper Ordovician organic-walled microphyto-plankton assemblage from Dawangou, Xinjiang, northwestern China. In: Peter M. Sheehan and Thomas Servais, (eds.), 2005. Abstracts for the Second International Symposium of IGCP503 on Ordovician Palaeogeography and Palaeoclimate. Insight, A Milwaukee Public Museum Series in Natural History. No. 2, 15-16.
- Li Jun and Yan Kui. 2005.** Radiation of early-middle Ordovician acritarchs in South China. In: Koren, T., Evdokimova, I., Tolmacheva, T. (eds.), The Sixth Baltic Stratigraphical Conference, August 23-25, St. Petersburg, Russian: Abstracts. St. Petersburg, 7-8.
- Li Ming, Feng Hongzhen and Liu Bo. 2005.** Morphologic Differentiation and Taxonomy of *Anisograptus* from the Lower Ordovician. Acta Geologica Sinica, 79 (6): 721-729. (In Chinese with English abstract).
- Löfgren, A. 2005.** A Mid-Ordovician Baltoscandian equivalent to the North American conodont *Oisodus venustus*. GFF, 127: 52.
- Löfgren, A. 2005.** An *Oistodus venustus*-like conodont species from the Middle Ordovician of Baltoscandia. Paläontologische Zeitschrift, 79/4: 481-490.

- Löfgren, A., Viira, V. and Mens, K. 2005.** Conodont biostratigraphy and sedimentary history in the upper Tremadoc at Uuga, Cape Pakri, NW Estonia. *Geologiska Föreningens i Stockholm Förhandlingar*, vol. 127, 283-293.
- Ludvigson, G.A., and Witzke, B.J. 2005.** The emerging record of Late Ordovician climate change. In: *ibid.*: 67-71.
- Maletz, J. 2005.** Early Middle Ordovician graptolite biostratigraphy of the Lovisefred and Albjära wells (Scania, southern Sweden). *Palaeontology*, 48(4): 763-780.
- Maletz, J. and Bruton, D. L. 2005.** The Beothuka terranova (Radiolaria) assemblage and its importance for the understanding of early Ordovician radiolarian evolution. *Geological Magazine*, 142 (6).
- Maletz, J. and Egenhoff, S.O. 2005.** Dendroid graptolites in the Elnes Formation (Middle Ordovician), Oslo Region, Norway. *Norsk Geologisk Tidsskrift*, 85: 217-221.
- Maletz, J., Goldman, D. and Cone, M. 2005.** The Early to Middle Ordovician graptolite faunal succession of the Trail Creek section, Central Idaho, U.S.A. *Geologica Acta*, 3(4): 395-409.
- Maletz, J., Steiner, M. and Fatka, O. 2005.** Middle Cambrian pterobranchs and the question: What is a graptolite? *Lethaia*, 38: 73-85.
- Mángano, M.G. and Buatois, L.A. (in press).** Integrating Ichnology, Sedimentology and Sequence Stratigraphy to Delineate Incised Fluvio-Estuarine Valleys and Shoreface-Offshore Complexes in an Early Paleozoic Basin of Northwest Argentina. AAPG International Conference, Perth.
- Mángano, M.G., Buatois, L.A. and Muniz Guinea, F. 2005.** Ichnology of the Alfarcito Member (Santa Rosita Formation) of northwest Argentina: Animal-substrate interactions in a lower Paleozoic wave-dominated shallow sea. *Ameghiniana* 42.
- Mángano, M.G., Carmona, N.B., Buatois, L.A. and Muniz Guinea, F. 2005.** A new ichnospecies of *Arthropycus* from the Upper Cambrian-lower Tremadocian of northwest Argentina: Implications for the Arthropycid lineage and potential in ichnostratigraphy. *Ichnos* 12:179-190
- Melchin, M., Cooper, R.A. and Sadler, P.M. 2004.** Chapter 16, Silurian System in Gradstein, F., Ogg, J.G., Smith, A.G., (eds) *A Geologic Time Scale*. Cambridge University Press.
- Metelkin, D.V., Vernikovskiy, V.A., Kazansky, A.Yu., Bogolepova, O.K. and Gubanov, A.P. 2005.** Palaeozoic history of the Kara microcontinent and its relation to Siberia and Baltica: paleomagnetism, palaeogeography and tectonics. *Tectonophysics*, 398: 225-243.
- Mikuláš, R. and Dronov, A.V. 2005.** Trace fossils and ichnofabrics of the Obukhovo and Dubovik Formations (Kunda and Aseri, Middle Ordovician) in the St Petersburg Region. In: Koren, T., Evdokimova, I. and Tolmacheva, T. (ed.): *The Sixth Baltic Stratigraphical Conference, Abstracts*, p. 75-76. St Petersburg.
- Mikuláš, R. and Dronov, A.V. 2005.** Trace Fossils. In: A.V. Dronov, T. Tolmacheva, E. Rayevskaya and M. Nestell (eds.): *Cambrian and Ordovician of St Petersburg Region*. – St Petersburg State University and A.P. Karpinsky All-Russian Research Geological institute, pp. 33-38.
- Mitchell, C.E., Adhya, S., Bergström, S.M., Joy, M.P. and Delano, J.W. 2004.** Discovery of the Ordovician Millbrig K-bentonite Bed in the Trenton Group of New York State: implications for regional correlation and sequence stratigraphy in eastern North America. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 210(2-4):331-346.
- Mitchell, C.E., Brussa, E.D. and Maletz, J. 2005.** Oceanographic controls on graptolite species distribution in the Taconic and Central Andean Foreland Basin successions. Northeastern Section, GSA. 40th Annual Meeting. Geological Society of America Abstracts with Programs, Vol. 37, No. 1, p. 18. Saratoga Spring, New York. 14-16 March.
- Molyneux, S.G., Raevskay, E. and Servais, T. (in press).** The messauoudensis-trifidum acritarch assemblage and correlation of the Ordovician Stage 2 boundary. *Geological Magazine*.
- Müller, K.J., Waloszek, D., Maas, A., Braun, A., Clarkson, E.N.K., Siveter, D.J., Kristensen, R.M., Olempska, E., Dong, X.-P., and Repetski, J.E. 2005.** Exceptionally preserved 500 million years old 'Orsten' fossils: Windows on the evolution of life. Section for Biosystematic Documentation, University of Ulm: 10. [two versions published: one in English, one in German].
- Munnecke, A. and Servais, T. (eds.) (in press).** 2006. Lower Palaeozoic Palaeogeography and Palaeoclimate. *Palaeogeography, Palaeoclimatology, Palaeoecology*.
- Nardin, E. 2006.** Nouvelle occurrence du genre *Cardiocystites* (Eocrinoidea, Blastozoa) dans le Caradoc de l'Anti-Atlas Marocain. Colloque jubilaire international ; Bassins africains : biogéosciences et environnement, Niamey, 18-20 Janvier 2006
- Nardin, E. 2006.** A new species of *Gogia* from the Lower Cambrian of Western Anti-Atlas (Morocco). Abstract book. A tribute to Pr. Georges Ubaghs (1916-2005), Dijon, 30-31 janvier 2006, 32-33
- Nardin, E. 2006.** New specimens of *Lingulocystis* from the Early Ordovician of Anti-Atlas (Morocco). Abstract book. A tribute to Pr. Georges Ubaghs (1916-2005), Dijon, 30-31 janvier 2006, 33-34
- Nardin, E. and Lefebvre, B. 2005.** Earliest eocrinoids in the Western Anti-Atlas (Morocco): implications about their palaeogeography and their relationships. Abstract book. Climatic and evolutionary controls on Palaeozoic reefs and

- bioaccumulations, Museum National d'Histoire Naturelle, Paris, 7-9th September 2005, 45-46.
- Nicoll, R.S. and Kelman, A. 2004.** Arrangement of elements in the Early Ordovician Likmas type ramiform-ramiform conodont *Erraticodon patu* Cooper, 1981: interpretation and implications. *Memoirs of the Association of Australasian Palaeontologists* 30, 207-220.
- Nõlvak, J. 2005.** Distribution of Ordovician chitinozoans. In: A. Põldvere (ed.). *Estonian Geological Sections. Bulletin 6. Mehikoorma (421) drill core.* Geological Survey of Estonia. Tallinn, 20-22, App. 26, 27 on CD ROM.
- Nõlvak, J. and Hints, O. 2005.** Ordovician chronostratigraphy in Estonia: current state and future prospects. In: Koren, T., Evdokimova, I., Tolmachova T. (eds). *The Sixth Baltic Stratigraphical Conference, August 23-25 St. Petersburg, Russia.* VSEGEI, St. Petersburg State University, St. Petersburg. 84-85.
- Ortega, G. and Albanesi, G.L. 2005.** Tremadocian graptolite-conodont biostratigraphy of the Cordillera Oriental, NW Argentina. *Geologica Acta.* Vol. 3 (4). 355-371. Barcelona.
- Ortega, G. and Albanesi, G.L. 2005.** The *Anisograptus matanensis* Zone (early Tremadocia) at Eastern Cordillera and Famatina System, northwestern Argentina. *International Symposium Gondwana 12, Mendoza.* Academia Nacional de Córdoba, Abstracts: 276.
- Ortega, G., Albanesi, G.L., Collo, G. and Astini, R.A. 2005.** La Formación Volcancito en Las Angosturas (Ordovícico Inferior), Sistema de Famatina, Argentina. *XVI Congreso Geológico Argentino.* La Plata, T. I: 335-342.
- Ortega, G., Albanesi, G.L. and Frigerio, S.E. (in press).** Graptolite and conodont faunas of early Darriwilian age (Middle Ordovician) in the Cerro Viejo succession, San Juan Precordillera, Argentina. *Palaeogeography, Palaeoclimatology, Palaeoecology.* Elsevier.
- Owen, A.W. 2005.** Biodiversity. pp. 259-265 In: Selley, R. C., Cocks, L. R. M. and Plimer, I. R. (eds). *Encyclopedia of Geology.* Academic Press.
- Owens, R. M. and Servais, T. (in press).** The Ordovician of the Condroz Ridge, Belgium: trilobites from the south-eastern margin of Avalonia. *Palaeogeography, Palaeoclimatology, Palaeoecology.*
- Paris, F. (in press).** Chitinozoans. In MacLeod (ed.). *Paeobase: Microfossils CD.*
- Paris, F., Le Hérisse A., Monod, O. Kozlu, H.Y., Ghienn J-F., Dean W., Vecoli, M. and Günay, M. (in press).** Ordovician chitinozoans and acritarchs from southern and southeastern Turkey. *Revue de micropaleontology.*
- Paris F. and Servais, T. 2005.** Ordovicien. *Annales de la Société Géologique du Nord,* 11: 133-135..
- Paris F. and Verniers, J. 2004.** Microfossils: Chitinozoa. In Selley, R.C. Cocks, L.R.M. and Plimer I.R. (eds.). *Encyclopedia of Geology,* Elsevier, Oxford, 3: 428-439.
- Pärnaste, H. 2006.** The earliest encrinurid trilobites from the East Baltic and their taxonomic interest. *Palaeontology,* 49(1): 155-170.
- Pärnaste, H. 2004.** Early Ordovician trilobites of suborder Cheirurina in Estonia and NW Russia: systematics, evolution and distribution. *Tartu University Press,* Tartu: 1-138.
- Pärnaste, H. 2004.** Revision of the Ordovician cheirurid trilobite genus *Reraspis* with the description of the earliest representative. *Proceedings of the Estonian Academy of Sciences. Geology* 53(2): 125-138.
- Peralta, S.H., 2005.** Formación Los Sombreros. En evento diastrófico extensional del Devónico (inferior?-medio?) en la Precordillera argentina. *XVI Congreso Geológico Argentino, Actas, v. 4,* pp. 322-326. La Plata.
- Peralta, S.H. 2005.** The Lower Emsian?-Middle Devonian? Extensional basins of the Los Sombreros and Rinconada Formations: their tecto-sedimentary significance in the evolution of the Precordillera. *Gondwana 12, R.J. Pankhurst, and G.D. Veiga (eds.) "Geological and Biological Heritage of Gondwana", Abstracts,* p. 288. November 6-11, Mendoza.
- Peralta, S.H. 2005.** Extensional tectonic controlling the Silurian and Lower Devonian basin of San Juan Precordillera, western Argentina. *Gondwana 12, R.J. Pankhurst, and G.D. Veiga (eds.) "Geological and Biological Heritage of Gondwana", Abstracts,* p. 289. November 6-11, Mendoza.
- Peralta, S.H. and Heredia, S.E. 2005.** Depósitos de olistostroma del Devónico (inferior?-medio?), Formación Los Sombreros, en la quebrada de San Isidro, Precordillera de Mendoza, Argentina. *XVI Congreso Geológico Argentino, Actas, v. 4,* pp. 327-332. La Plata.
- Percival, I.G. 2005.** Late Ordovician deepwater (BA 4) brachiopods of circum-Pacific terranes, in *Abstracts for the Second International Symposium of IGCP503 on Ordovician Palaeogeography and Palaeoclimate,* June 15 18, 2005: *Insight (a Milwaukee Public Museum series in Natural History) 2:* 24-25.
- Percival, I.G. and Talent, J.A. 2005.** 30 Myr record of trimerellide brachiopods (Craniata) in eastern Gondwana, in *Abstracts for the Second International Symposium of IGCP503 on Ordovician Palaeogeography and Palaeoclimate,* June 15-18, 2005: *Insight (a Milwaukee Public Museum series in Natural History) 2:* 26 27.
- Percival, I.G. and Wright, A.J.T. 2005.** A new Early Silurian species of *Trimerella* (Brachiopoda: Craniata) from the Orange district, New South

- Wales. Proceedings of the Linnean Society of New South Wales, 126: 111-120.
- Podhalańska T., Masiak M. and Stempień-Salek M. 2005.** Fossil assemblages and stratigraphy of the Ordovician/Silurian transition beds in the southern part of the Holy Cross Mountains, Poland. The Sixth Baltic Stratigraphical Conference, St. Petersburg, Russia, Abstracts: 97-99.
- Põldvere, A. (ed.). 2005.** Mehikoorma (421) drill core. Estonian Geological Sections, 6, 67 pp.
- Pollitt, J.R., Fortey, R.A. and Wills, M.A. 2005.** Systematics of the trilobite families Lichidae Hawle and Corda 1847 and Lichkephalidae Tripp, 1957; the application of Bayesian inference to morphological data. *Journal of Systematic Palaeontology* 3, 225-241.
- Popov, L.E., Egerquist, E. and Zuykov, M.A. 2005.** Ordovician (Arenig–Caradoc) Syntrophiidine brachiopods from the East Baltic region. *Palaeontology*, 48(4): 739–761.
- Pushkin, V.I and Popov, L.E. 2005.** Two enigmatic bryozoans from the Middle Ordovician of the East Baltic. *Palaeontology*, 48: 1065–1074.
- Pyle, L.J. and Barnes C.R. 2003.** Lower Paleozoic stratigraphic and biostratigraphic correlations in the Canadian Cordillera: implications for the tectonic evolution of the Laurentian margin. *Canadian Journal of Earth Sciences*, v. 40, p. 1739-1753.
- Repetski, J.E., Ryder, R.T., Avary, K.L., and Trippi, M.H. 2005.** Thermal maturity patterns (CAI and %Ro) in the Ordovician and Devonian rocks of the Appalachian basin in West Virginia. U.S. Geological Survey Open-File Report 2005-1078: 70.
- Rong Jiayu, Alvarez, F., Modzalevskaya, T.L. and Zhang Yan. 2004.** Revision of the Athyrinininae, Siluro-Devonian brachiopods from China and Russia. *Palaeontology*, 47 (4): 811-857.
- Rong Jiayu, Chen Xu, Fan Juanxuan and Zhan Renbin. 2005.** Restudy of two Silurian GSSPs: the base of the Silurian and the base of the Wenlock Series. *Proceedings of Stratigraphy and Palaeontology*, 28: 40-60. (In Chinese with English abstract).
- Rong Jiayu, Chen Xu, Zhou Zhiyi and Chen Jianqiang. 2004.** Response of major organism groups to global environmental perturbations through the Ordovician-Silurian transition in South China. In Rong Jiayu, Fang Zongjie, eds. *Mass Extinction and Recovery-Evidences from the Palaeozoic and Triassic of South China*. Hefei: University of Science and Technology of China Press. 235-256 (in Chinese), 1049 1050 (English abstract).
- Rong Jiayu and Fang Zongjie. 2004.** Comparative analysis of the three major mass extinctions and their subsequent recoveries in South China. In Rong Jiayu, Fang Zongjie, eds. 2004. *Mass Extinction and Recovery-Evidences from the Palaeozoic and Triassic of South China*. Hefei: University of Science and Technology of China Press. 235-256 (in Chinese), 1078-1087 (English abstract).
- Rong Jiayu, Harper, D.A.T., Zhan Renbin, Huang Youzhuang and Cheng Jinhui. 2005.** Silicified rhynchonelliform brachiopods from the Kuniutan Formation (Darriwilian: Middle Ordovician), Guiyang, South China. *Palaeontology*, 48 (6), 1211-1240.
- Rong Jiayu and Zhan Renbin. 2004.** Late Ordovician brachiopod mass extinction of South China. In: Rong Jiayu and Fang Zongjie, eds., *Biotic Mass Extinction and Recovery Afterwards---Evidences from South China*. 71-96. China University of Science and Technology Press, Hefei. (in Chinese with English abstract).
- Rong Jiayu and Zhan Renbin. 2004.** Survival and recovery of brachiopods in Early Silurian of South China. In: Rong Jiayu and Fang Zongjie, eds., *Biotic Mass Extinction and Recovery Afterwards---Evidences from South China*. 97-126. China University of Science and Technology Press, Hefei. (in Chinese with English abstract).
- Rong Jiayu, Jisuo Jin and Zhan Renbin. 2005.** Two new genera of Early Silurian stricklandioid brachiopods from South China and their bearing on stricklandioid classification and paleobiogeography. *Journal of Paleontology*, 79 (6): 1143-1156.
- Rong Jiayu and Fang Zongjie (eds.). 2004.** *Mass Extinction and Recovery-Evidences from the Palaeozoic and Triassic of South China*. Hefei: University of Science and Technology of China Press. 1-1026 (in Chinese) 1027-1087. English abstract).
- Rubinstein, C.V. 2005.** Ordovician to Lower Silurian palynomorphs from the Sierras Subandinas (Subandean ranges), northwestern Argentina: a preliminary report.- *Carnets de Géologie - Notebooks on Geology*, Brest, Memoir 2005/02, Abstract 09 (CG2005_M02/09), p. 51-56.
- Rubinstein, C.V. and Toro, B.A. 2006.** Aeronian (Llandovery, Lower Silurian) palynomorphs and graptolites from the Lipeón Formation, Eastern Cordillera, north-west Argentina. *Geobios* 39 (1): 103-
- Ryazantsev, A.V., Borisenok, D.V., Dubinina, S.V., Kalinina, E.A., Kuznetsov, N.B., Matveeva, E.A. and Aristov, V.A. 2005.** Total structure of the Sakmara Zone of the Southern Urals in the area of Mednogorsk massive sulfide ore deposits. In: Ruzhentsev, S.V., Degtyarev, K.E. (eds.). *Essays on the Regional Tectonics. Volume 1. South Urals. Collection of Scientific Papers. Transactions of the Geological Institute RAS*, 561. Moscow, Nauka: 84-134 [in Russian].
- Sansom, I.J., Donoghue, P.C.J. and Albanesi, G.L. 2005.** Enameloid in primitive agnathans: histology and affinity of the earliest armoured fish. *Biology Letters*, The Royal Society, London, doi:10.1098/rsbl.2005.0349: 1-4.

- Sansom, I.J., Ritchie, A., Davies, N., Albanesi, G.L., Smith, P., Nicoll, R.S. and Burrow, C. 2005.** The Ordovician radiation of vertebrates –new perspectives from Laurentia and Gondwana. North American Paleontological Conference, Halifax, abstract.
- Sansom, I.J. and Smith, M.P. 2005.** Late Ordovician vertebrates from the Bighorn Mountains of Wyoming, USA. *Palaeontology*: 48, 31-48.
- Schmitz, B., Tassinari M., Häggström, T. and Löfgren, A. 2005.** A rain of meteorites in the mid-Ordovician: evidence from quarries in southern Sweden. *GFF*, 127: 56.
- Servais T., Blicek A., Caridroit M., Chen Xu, Paris F. and Tortello F. 2005** Use and utility of plankton and nekton for Ordovician palaeogeographical reconstructions. *Bulletin de la Société Géologique de France*, 176: 531-543. Paris.
- Servais, T., Blicek, A., Caridroit, M., Chen Xu, Paris, F. and Tortello, M.F. 2005.** The importance of plankton and nekton distributions in Ordovician palaeogeographical reconstructions. In : *Colloque de paléogéographie* (Acad. Sci., Paris, 8-9 Mars 2004). *Bull. Soc. Géol. Fr.*, 176 (6) : 565-577, 5 fig. ; Paris.
- Shergold, J.H. and Cooper, R.A., 2004.** Chapter 14, Cambrian System in Gradstein, F., Ogg, J.G., Smith, A.G., (eds) *A Geologic Time Scale*. Cambridge University Press.
- Sial, A.N, Peralta, S, Ferreira, V.P, Toselli, A.J, Aceñolaza, F.G., Parada, M.A, Gaucher, C, Alonso, R.N. and Pimentel, M.M. (in press).** Upper Cambrian Carbonate Sequences of the Argentine Precordillera and the Steptoean C-Isotope Positive Excursion (Spice). *Gondwana Research*.
- Smith, M. P., Donoghue, P.C.J. and Repetski, J.E. 2005.** The apparatus composition and architecture of *Cordylodus Pander* – concepts of homology in primitive conodonts. *American Bulletin of Paleontology*: 369, 19-33.
- Smith, M.P., Higgins, A.K., Soper, N.J. and Sønderholm, M. 2004.** The Neoproterozoic Rivieradal Group of Kronprins Christian Land, eastern North Greenland. *Geological Survey of Denmark and Greenland Bulletin*: 6, 29-39.
- Smith, M. P., Rasmussen, J. A., Higgins, A. K. and Leslie, A. G. 2004.** Lower Palaeozoic stratigraphy of the East Greenland Caledonides. *Geological Survey of Denmark and Greenland Bulletin*: 6, 5-28.
- Sturesson, U., Popov, L.E., Holmer, L.E., Bassett, M.G., Felitsyn, S. and Belyatskiy, B. 2005.** Neodymium isotopic composition of Cambrian-Ordovician biogenic apatite in the Baltoscandian Basin: implications for palaeogeographical evolution and patterns of biodiversity. *Geological Magazine*, 142: 419-439.
- Such, P., Mángano, M.G. and Buatois, L.A. 2005.** Estratigrafía y facies sedimentarias del Paleozoico Inferior de la región de Azul Pampa (Cordillera Oriental, Provincia de Jujuy, Argentina). XVI Congreso Geológico Argentino, La Plata.
- Such, P., Mángano, M.G. and Buatois, L.A. 2005.** Stratigraphy and sedimentary environments of Cambrian-Ordovician deposits of the Azul Pampa region, Jujuy Province, Argentina. *Gondwana* 12. Mendoza. Abstracts: 348.
- Sweet, W.C. and Albanesi, G.L. 2005.** Graphic Correlation of Argentine Precordillera and North American Lower/Middle Ordovician sections. <http://www.ordovician.cn>. Episodes (in press).
- Swezey, C.S., Hatch, J.R., Hayba, D.O., Repetski, J.E., Charpentier, R.R., Cook, T.A., Klett, T.R., Pollastro, R.M. and Schenk, C.J. 2005.** Assessment of undiscovered oil and gas resources of the U.S. portion of the Michigan basin, 2004. U.S. Geological Survey, Fact-Sheet 2005-3070: 2.
- Saadre, T., Einasto, R., Nölvak, J. and Stouge, S. 2004.** Ordovician stratigraphy of the Kovel-1 well (Volkhov-Haljala) in the Volynia region, northwestern Ukraine. *Bulletin of the Geological Society of Denmark* 51, 47-69.
- Saltzman, M.R. and Young, S.A. 2005.** A long-lived glaciation in the Late Ordovician?: Isotopic and sequence stratigraphic evidence from western Laurentia: *Geology*, v. 33, p. 109-112.
- Sánchez, T.M. 2005.** New Bivalvia and Rostroconchia from the Early Ordovician (Late Tremadoc-Middle Arenig) of northwestern Argentina. *Journal of Paleontology*, 79: 538-547.
- Sánchez, T.M. 2005.** Babinka (Bivalvia, Heteroconchia) en el Ordovícico temprano del Noroeste Argentino. *Reunión Anual de Comunicaciones y Simposio del 50º Aniversario de la Asoc. Paleont. Argentina*. Resúmenes: 68.
- Sánchez, T.M. 2005.** Early bivalve radiation in the Ordovician Gondwanan basins of Argentina. In: Pankhurst, R.J. and Veiga, G.D. (eds.), *Gondwana* 12: 321.
- Sánchez, T.M. and Babin, C. 2005.** Lower Ordovician bivalves from southern Bolivia: paleobiogeographic affinities. *Ameghiniana*, 42: 559-566.
- Seghedi, A., Vaida, M., Jordan, M. and Verniers, J. 2005.** Palaeozoic evolution of the Romanian part of the Moesian platform: an overview. *Geologica Belgica*, 8/4: 99-120.
- Servais, T., Blicek A., Caridroit, C., Chen, X., Paris, F. and Tortello, F. 2005.** Use and utility of plankton and nekton for Ordovician palaeogeographical reconstructions. *Bulletin de la Société Géologique de France*, 176 (6) : 531-543.
- Servais T., Li Jun, G. Mullins, M. Vecoli and R. Wicander. 2005.** The Ordovician phytoplankton database in the Palaeozoic context. In: Peter M. Sheehan and Thomas Servais, (eds.), 2005. Abstracts for the Second International Symposium of IGCP503 on Ordovician Palaeogeography and

- Palaeoclimate. Insight, A Milwaukee Public Museum Series in Natural History. No. 2, 29-30.
- Servais, T. and Vecoli, M. (eds.) (in press).** Advances in Precambrian and Palaeozoic Palynology. Review of Palaeobotany and Palynology.
- Sheehan, P.M and Servais, T. (eds.). 2005.** Abstracts for the Second International Symposium of IGCP 503 on Ordovician Palaeogeography and Palaeoclimate. Insight, A Milwaukee Public Museum Series in Natural History, 2: 1-40. <http://www.mpm.edu/cr/insight>.
- Stott, C.A., Tetlie, O.E., Braddy, S.J., Nowlan, G.S., Glasser, P.M. and Devereux, M.G. 2005.** A new eurypterid (Chelicerata) from the uppermost Ordovician of Manitoulin Island, Ontario, Canada. *Journal of Paleontology*, 79: 1166-1174.
- Stouge, S. 2004.** Ordovician siliciclastics and carbonates of Öland, Sweden. *Field Guide. Erlanger Geologische Abhandlungen Sonderband 5*, 91-111.
- Stouge, S. 2005.** *Barrandegnatus* n.gen. (conodonts) from the Komstad Limestone (lower Mid Ordovician), Scandinavia, and its palaeogeographical significance. *Bulletin of the Geological Society* 52, 245-255.
- Stouge, S. and Nielsen, A.T. 2003.** An integrated biostratigraphical analysis of the Volkhov-Kunda (Lower Ordovician) succession at Fågelsång, Scania, Sweden. *Bulletin of Geological Society of Denmark* 50, 75-94.
- Stricanne, L., Servais, T., Talyzina, N. and Vanguetstaine, M. 2005.** Reevaluation of the Late Cambrian – Early Ordovician acritarch *Nellia acifera* Golub and Volkova. *Neues Jahrbuch für Geologie und Paläontologie, Abhandlungen* 235: 87-112.
- Sun, X. and Nicoll, R.S. 2004.** Cambro-Ordovician conodont biostratigraphy and thermal maturation of the eastern Warburton Basin, South Australia. In: Boulton, P.J., Johns, D.R. and Lang, S.C. (Eds.), *Eastern Australian Basins Symposium II, Petroleum Exploration Society of Australia, Special Publication*, 725-734.
- Tassinari M., Schmitz, B. and Löfgren, A. 2004.** The first fossil meteorite from the mid-Ordovician of the Gullhögen quarry, southern Sweden. *GFF*, 126: 321-324.
- Torsvik, T.H. and Cocks, L.R.M. 2005.** Norway in space and time: a centennial cavalcade. *Norwegian Journal of Geology*, 85: 73-86.
- Trotter, J.A., Eggins, S.M., McCulloch, M.T., Barnes C.R., Nicoll R.S., and Nowlan, G.S. 2004.** Sr Isotopic and Mg Cycling in Early Palaeozoic Seawater: Implications for Tectonic and Climatic Processes. IGCP 503 Opening Meeting, Erlangen, Germany: Early Palaeogeography and Palaeoclimate.
- Turner, B. R., Makhlof, I. M. and Armstrong, H. A. (in press).** Late Ordovician (Ashgillian) glacial deposits in southern Jordan. *Sedimentary Geology*.
- Turner, B.R., Makhlof, I.M. and Armstrong, H.A. 2005.** Late Ordovician (Hirnantian) glaciation in a high latitude east Gondwana setting: a case study from southern Jordan. *Gondwana 12 Meeting*, Mendoza, Argentina.
- Vaida, M., Seghedi, A., and Verniers, J. 2005.** Northern Gondwanan affinity of the East Moesian Terrane based on chitinozoans. *Tectonophysics* 410, 379–387.
- Vandenbroucke, T., Chen Xu and Verniers, J. 2005.** Short note on the preliminary chitinozoan results from the Wangjiawan section, Yichang, China (in Chinese). *Acta Palaeoontologica Sinica*, 44(2), 203-208.
- Vandenbroucke, T.R.A., Rickards, R.B. and Verniers, J. 2005.** Upper Ordovician chitinozoan biostratigraphy from the Type Ashgill Area (Cautley district) and the Pus Gill section (Dufton district, Cross Fell Inlier), Cumbria Northern England. *Geological Magazine*, 142 (6), 783-807.
- Vanmeirhaeghe, J. (in press).** Chitinozoan biostratigraphy and dating of the Upper Ordovician of Faulx-les-Tombes (central Condroz Inlier, Belgium). *Review of Palaeobotany and Palynology*.
- Vanmeirhaeghe, J., Storme, A., Van Noten, K., Van Grootel, G. and Verniers, J. 2005.** Chitinozoan biozonation and new lithostratigraphical data in the Upper Ordovician of the Fauquez and Asquempont areas (Brabant Massif, Belgium) *Geologica Belgica*, 8/4: 145-159.
- Vanmeirhaeghe, J., Storme, A., Van Noten, K., Van Grootel, G. and Verniers, J. 2005.** Local chitinozoan biozonation of the Upper Ordovician of the Fauquez area (Brabant Massif, Belgium). Abstract voor het doctoraatssymposium van de Faculteit Wetenschappen, Universiteit Gent, 3 mei 2005.
- Vanmeirhaeghe, J., Yans, J., Prétat, A., Grassineau, N. and Verniers, J. 2005.** New evidence for the Hirnantian (Upper Ordovician) in Belgium? An integrated isotopic, biostratigraphic and sedimentologic approach. In: Steemans P., Javaux E. (Eds.)- *Pre-Cambrian to Palaeozoic Palaeopalynology and Palaeobotany.- Carnets de Géologie - Notebooks on Geology Brest, Memoir 2005/02 (CG2005_M02): 63-68.* Available on-line!
- Vanmeirhaeghe, J., Yans, J., Prétat, A. and Verniers, J. 2005.** New evidence for the Hirnantian (Upper Ordovician) in Belgium? an integrated isotopic, biostratigraphical and sedimentological approach. Abstract for the PPMB Meeting, Liège, 11 May 2005.
- Vanmeirhaeghe, J., Yans, J., Prétat, A. and Verniers, J. 2005.** New evidence for the Hirnantian (Upper Ordovician) in Belgium? Integrating microfacies, carbon isotope and chitinozoan data. In: Peter M Sheehan and Thomas Servais (Eds.)

- Abstracts for the Second International Symposium of IGCP 503 on Ordovician Paleogeography and Paleoclimate, June 15 - 18, 2005. Insight, A Milwaukee Public Museum Series in Natural History. No. 2, 38p. Milwaukee Public Museum, Milwaukee, WI. USA.
- Van Nieuwenhove, N., Vandenbroucke, T.R.A., and Verniers, J. (in press).** Chitnozoan biostratigraphy of the Upper Ordovician Greenscoe –roadcutting, Southern Lake District, U.K. Review of Palaeobotany and Palynology.
- Verniers, J., Van Grootel, G. and Debacker, T. 2005.** Upper Ordovician lithostratigraphy and structural architecture of the Fauquez area (Brabant Massif, Belgium). *Geologica Belgica*, 8/4: 160-175.
- Viira, V., Löfgren, A. and Mens, K. 2005.** Dynamic stratigraphy in the Early Ordovician at Cape Pakri, northern Estonia. *GFF*, 127: 58.
- Voldman, G.G. and Albanesi, G.L. 2005.** Paleotermometría del Sistema Ordovícico de la Precordillera sobre la base del índice de alteración del color de conodontes. XVI Congreso Geológico Argentino. La Plata, T. I: 3-8.
- Wang, X., Stouge, S., Erdtmann, B., Xiaohong, C., Zhihong, L., Chuanshang, W., Quingluan, Z., Zhiqiang, Z. and Huiming, C. 2005.** A proposed GSSP for the base of the Middle Ordovician Series: the Huanghuachang section, Yichang, China. Episodes.
- Webby, B.D., Elias, R.J., Young, G.A., Neuman, B.E.E. and Kaljo, D. 2004.** Corals. In: Webby, B.D., Paris, F., Droser, M.L. and Percival, I.G. (eds.). *The Great Ordovician Biodiversification Event*. Columbia University Press, New York: 124-146.
- Witzke, B.J. and Ludvigson, G.A. 2005.** The Ordovician Galena Group in Iowa and its regional stratigraphic relationships. In: Ludvigson, G.A., and Bunker, B.J., (eds.). *Facets of the Ordovician Geology of the Upper Mississippi Valley Region; 35th Annual Field Conference, Great Lakes Section, Society for Sedimentary Geology, Iowa Geological Survey, Guidebook Series No. 24: 3-21.*
- Witzke, B.J. and Metzger, R.A. 2005.** Ordovician conodonts and stratigraphy of the St. Peter Sandstone and Glenwood Shale, central United States. *Bulletins of American Paleontology*, no. 369:53-91.
- Yan Kui and Li Jun. 2005.** Ordovician Biostratigraphy of acritarchs from the Meitan Formation of Honghuayuan Section, Tongzi, Guizhou, Southwest China. *Journal of Stratigraphy*, 29(3): 236-256 (in Chinese with English abstract).
- Yan Kui, LI Jun and Liu Jianbo. 2005.** Biodiversity of Early-Middle Ordovician acritarchs and sealevel changes in South China Chinese Science Bulletin. 50 (20): 2362-2368.
- Young, G.A. and Kershaw, S. 2005.** Classification and controls of internal banding in Palaeozoic stromatoporoids and colonial corals. *Palaeontology*, 48(3): 623-651.
- Zeballo F.J., Albanesi, G.L. and Ortega, G. 2005.** Conodontes y graptolitos de las formaciones Alfarcito y Rupasca (Tremadociano) en el área de Alfarcito, Tilcara, Cordillera Oriental de Jujuy, Argentina. Parte 1: Biostratigrafía. *Ameghiniana*, 42 (1): 39-46.
- Zeballo F.J., Albanesi, G.L. and Ortega, G. 2005.** Conodontes y graptolitos de las formaciones Alfarcito y Rupasca (Tremadociano) en el área de Alfarcito, Tilcara, Cordillera Oriental de Jujuy, Argentina. Parte 2: Paleontología sistemática. *Ameghiniana*, 42 (1): 47-66.
- Zeballo, F.J. and Tortello, M.F. 2005.** Trilobites del Cámbrico tardío – Ordovícico temprano del área de Altarcito, Tilcara, Cordillera Oriental de Jujuy, Argentina. *Ameghiniana*, 42 (1): 127-142.
- Zhan Renbin and Jisuo Jin. 2005.** Brachiopods from the Dashaba Formation (Middle Ordovician) of Sichuan Province, Southwest China. *Special Papers in Palaeontology*, 74, 63 pp.
- Zhan Renbin and Jisuo Jin. 2005.** Brachiopods from the Middle Ordovician Shihtzupu Formation of Yunnan Province, China. *Acta Palaeontologica Polonica*, 50 (2), 365-393. Zhan Renbin and Jisuo Jin. 2005. New data on the Foliomena fauna (Brachiopoda) from the Upper Ordovician of South China. *Journal of Paleontology*, 79 (4): 669-685.
- Zhan Renbin, Rong Jiayu, Cheng Jinhui and Chen Pengfei. 2005.** Early-Middle Ordovician brachiopod diversification in South China. *Science in China (Series D, Earth Sciences)*, 48 (5), 662-675.
- Zhang, S., Barnes, C.R. and Jowett, D.M.S. 2004.** Differentiating sea level events across Laurentia in the Early Silurian using the pattern of conodont communities. Joint annual meeting of the Geological Association of Canada and Mineralogical Association of Canada, Program with Abstracts CD.
- Zhang Yuandong, Erdtmann, B. D. and Feng Hongzhen. 2004.** Tremadocian (Early Ordovician) graptolite biostratigraphy of China. *Newsletters on Stratigraphy*, 40 (3): 155-182.
- Zhang, Y.D., Luo, T.T. and Mao, Y.Q. 2005.** Interpretation of the proximal development and branching divisions of some early and middle Ordovician graptolites based on BSE images. *Acta Palaeontologica Sinica*, 44(1):125-137.
- Zhang Yuandong, Wang Zhihao, Feng Hongzhen, Luo Tiantian and Erdtmann, B.D. 2005.** Tremadocian (Ordovician) graptolites biostratigraphy of China- A Review. *Journal of Stratigraphy*, 29 (3): 215-235. (In Chinese with English abstract).
- Zhen, Y.Y., Liu, J.B. and Percival, I.G. 2005.** Revision of two prioniodontid species (Conodontia) from the Early Ordovician Honghuayuan Formation

of Guizhou, South China. Records of the Australian Museum, 57, 303-320.

Zhang, J. and Barnes, C.R. 2004. Late Ordovician conodonts from the Stokes Siltstone, Amadeus Basin, central Australia. In: Second Australian Conodont Symposium, Eds: R.Mawson and J.A.Talent, Courier Forschungsinstitut Senkenberg, Bd. 245, p. 1-38 (2003).

Zhang, S. and Barnes, C.R. 2004. Conodont bioevents, cladistics and response to glacio-eustasy, Ordovician-Silurian boundary through Llandovery, Anticosti Basin, Québec. In: The palynology and micropaleontology of boundaries, A.B. Beaudoin and M.J. Head (Eds.), Geological Society, London, Special Publications 230, 73-104.

Zhang, S. and Barnes, C.R. 2004. Late Cambrian and Early Ordovician conodont communities from platform and slope facies, western Newfoundland: a statistical approach. In: The palynology and micropaleontology of boundaries, A.B. Beaudoin and M.J. Head (Eds.), Geological Society, London, Special Publications, 230, 47-72.

Zhang, S. and Barnes, C.R. 2004. Arenigian (Early Ordovician) sea level history and the response of conodont communities, western Newfoundland. Canadian Journal of Earth Sciences, 41, 843-865.

Zhang, S., Pyle, L.J. and Barnes, C.R. 2005. Evolution of the Early Paleozoic Cordilleran Margin of Laurentia: Tectonic and Eustatic Events Interpreted from Sequence Stratigraphy and Conodont Community Patterns. Canadian Journal of Earth Sciences, 42: 999-1031.

Zuykov, M.A. 2005. Ordovician and Early Silurian Platystrophia-like brachiopods: morphology, taxonomy and stratigraphical significance. St.Petersburg University. PhD thesis: 1-16.

Zuykov M.A. 2005. Rhynchonelliformean brachiopods. In: Dronov A. and Tolmacheva T. (eds.) 6th Baltic Stratigraphical Conference. An Excursion Guidebook. VSEGEI, St.Petersburg: 26-28.

Zuykov M.A. and Egerquist, E. 2005. A new Platystrophia-like brachiopod genus from the Ordovician Boda limestones of Dalarna, Sweden. GFF, 127: 1-5.

Zuykov, M.A. and Harper, D.A.T. 2004. Platystrophia King, 1850 (Brachiopoda, Orthida): proposed conservation of usage by designation of *Porambonites costata* Pander, 1830 (currently *Platystrophia costata*) as the type species of *Platystrophia*. Bulletin of Zoological Nomenclature, 61, 4: 246-250.

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