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Contents

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SUPER SEDIMENTOLOGICAL EXPOSURES

Seismic scale cross-section of a Pennsylvanian carbonate platform: the Sierra del Cuera outcrops (NW Spain)

Introduction

Continuous outcrops of a high, steep-margined Pennsylvanian carbonate platform are present in the Sierra del Cuera area, Cantabrian Zone, NW Spain. Due to the nearly vertical orientation of the bedding, caused by tectonic rotation during the Variscan orogeny, aerial photographs show a 2D cross section of the carbonate platform margin, which is continuously exposed from inner-platform to toe-of-slope depositional environments. This seismic-scale cross section provides valuable information on the relationship between anatomy (stratal patterns) and lithofacies distribution of the depositional system, which is characterized by a highly productive microbial boundstone factory extending from the platform break to nearly 300-350 m depth.

Geologic setting

Forming the NE part of the Iberian Massif (Fig. 1A), the Cantabrian Zone displays a thick Palaeozoic succession deformed by thin-skinned tectonics during the Variscan orogeny. Later, some Variscan structures were reactivated during Alpine times. At least during the Pennsylvanian (Bashkirian-Moscovian) period, the Cantabrian Zone constituted a wide (a few 100´s km) marine foreland basin mostly filled by thick clastic wedges. Nevertheless, in the weakly subsiding distal parts of the basin, an extensive (more than 15000 km^2) and thick (1500 m) carbonate platform was developed. During the Variscan orogeny, the carbonate platform was dismembered into a number of thrust-sheet units (Fig. 1B), which comprise some spectacular, near-dip direction,

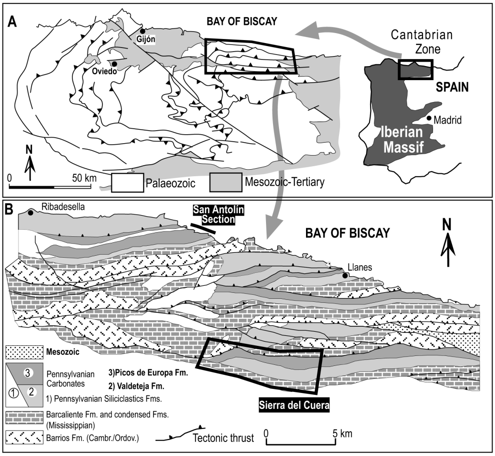


Figure 1.- A) Location map of the Cantabrian Zone. B) Schematic geological map including the outcrops of Sierra del Cuera and the San Antolín Section.

cross-sections of the western margin of the platform (Fig. 2A).

The Sierra del Cuera outcrops

The Sierra del Cuera represents the most complete and intact cross-section of the carbonate platform, which has been studied in detail during last years (see Kenter et al., 2003; Bahamonde *et al.,* 2004; Della Porta *et al.,* 2004; and references therein). The sierra is an E-W trending mountain range, around 20 km long and towering up to 1315 m (Turbina peak), which lies parallel and close (less than 10 km) to the coast of the Bay of Biscay (Fig. 1B). The internal structure of the platform in the Sierra del Cuera outcrops is relatively well preserved, with only minor strike-slip faults slightly affecting it locally (Fig. 2B).

The platform succession conformably overlies the basinal carbonates of the Serpukhovian Barcaliente Formation and consists of two formations, the Bashkirian Valdeteja Formation and the mainly Moscovian Picos de Europa Formation (Fig. 1B). The Valdeteja Formation ranges from 750 to 850 m in thickness and records the evolution from a low-angle ramp with microbial mud mounds to a flat-topped carbonate shelf (Kenter et al., 2003) which prograded quickly westwards, towards the orogen, into a starved basin (Fig. 2B). The overlying Picos de Europa Formation reaches a thickness close to 1000 m and represents a continuation of the former carbonate shelf with a predominantly aggradational style. The succession is truncated by a thrust at the top, in such way that only a 1500 m thick Bashkirian-lower Moscovian (Kashirsky) interval is exposed (Fig. 2B).

Visitors can easily recognize the depositional fabrics of the different facies belts. The most interesting

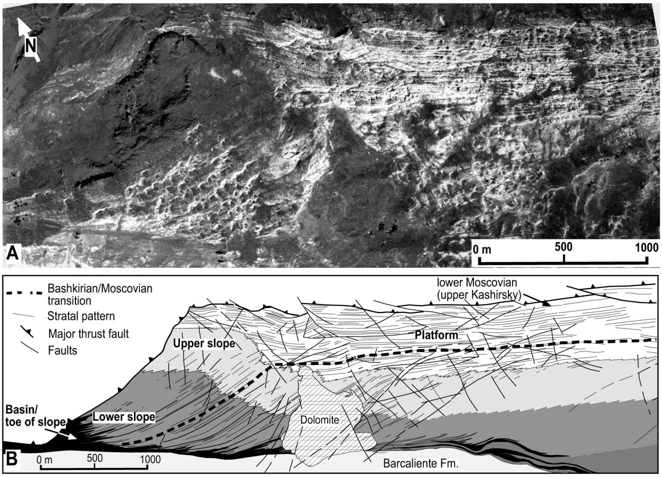


Figure 2.- A) High-altitude aerial photograph of the Sierra del Cuera outcrops, which represent a cross-section of the carbonate platform margin rotated along a dip section parallel axis (slope angles are maximum). B) Lithofacies zonation and stratal domains of the platform margin including some biostratigraphical data.

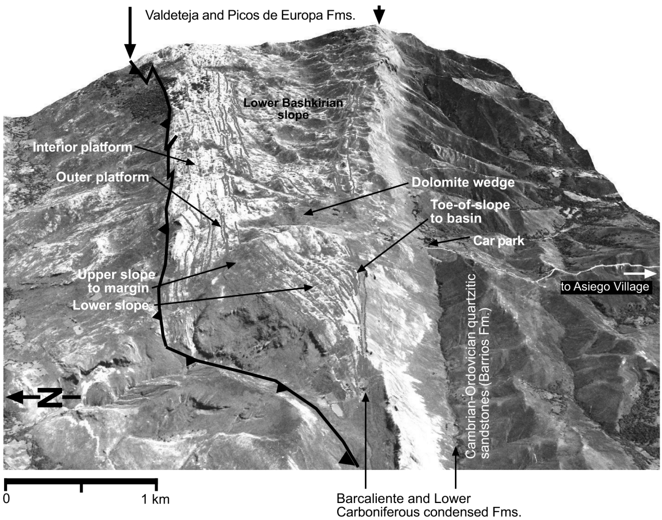
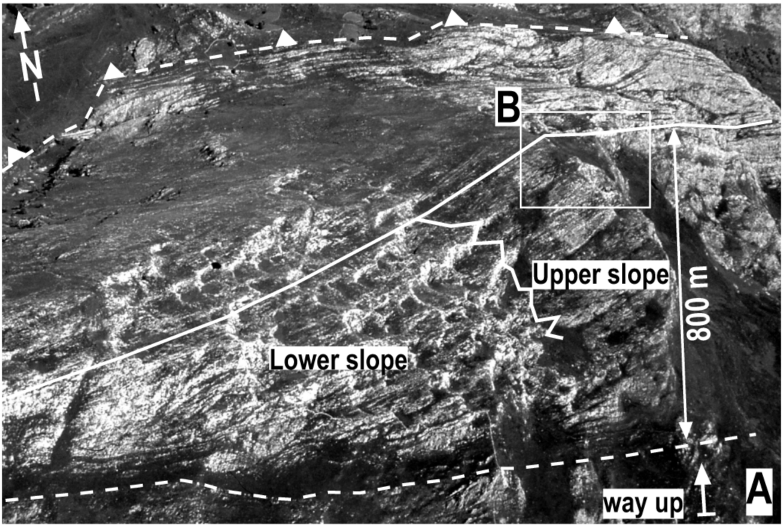


Figure 3.- Digital elevation model (DEM) of the Sierra del Cuera area developed by Klaas Verwer and Jeroen Kenter. Stratal patterns tracked by RTK DGPS are shown in black (red). Best exposures to visit the different facies associations are indicated by black arrows.



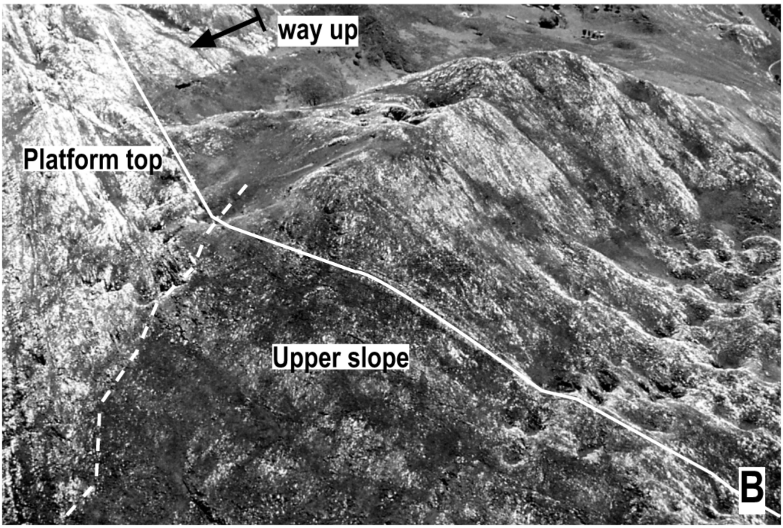


Figure 4.- Depositional slope of the platform. A) Oblique, low-altitude aerial photograph showing a view towards the north (depositional up) of the slope and basin-floor areas. The dashed, dashed with triangle ornaments and continuous lines represent the base of the platform (bottom of the photograph), a thrust fault (top of the photograph), and a correlation surface also represented in Fig. 4B, respectively. Rectangles mark the location of the Fig. 4B. B) Oblique, low-altitude aerial photograph showing a view in SE direction of the transition between platform top and upper slope. Notice the abrupt termination of the platform beds at the platform break (dashed line) and the massive aspect of the uppermost part of the slope.

stops permit to examine the cyclical character of the platform top succession, the depositional slope and the toe-of-slope to basin transition (Fig. 3).

Platform-top lithofacies

The inner platform succession is characterized by a cyclical character. The cycles consist of a thin transgressive interval (grain- to packstones with oncoids and lithoclasts) and a thick regressive unit composed of a lower resistant part (subtidal open marine facies consisting of algal skeletal pack- to wackestones). A characteristic feature of these cycles is the absence of well-developed subaerial exposure surfaces at the cycle boundaries and of peritidal carbonates.

In contrast, no clearly rhythmic lithofacies alternations are observed in the outer platform, where deposits are dominated by thickly bedded to massive micritic boundstones associated with dm- to m-thick crinoid sand bodies and ooid-coated grain-skeletal grainstones. The change from the inner to the outer platform deposits is gradual, whereas the change from the latter into the slope facies is abrupt (Fig. 4B) and no apparent relief or mound-building and wave resistant structures were observed (Della Porta *et al.,* 2004).

Slope lithofacies

The slope is sub-divided into a steeper (30-40º) and nearly planar upper slope, dominated by *in-situ* accumulation of microbial carbonates; and a slightly gentler (20-26º) and concave-upward lower slope, characterized by clast-supported resedimented deposits (Bahamonde *et al.,* 2004). Upper-slope boundstones and lower-slope breccias interfinger between 250 and 450 m palaeowater depth (assuming 0 m at the platform break) (Fig. 4A).

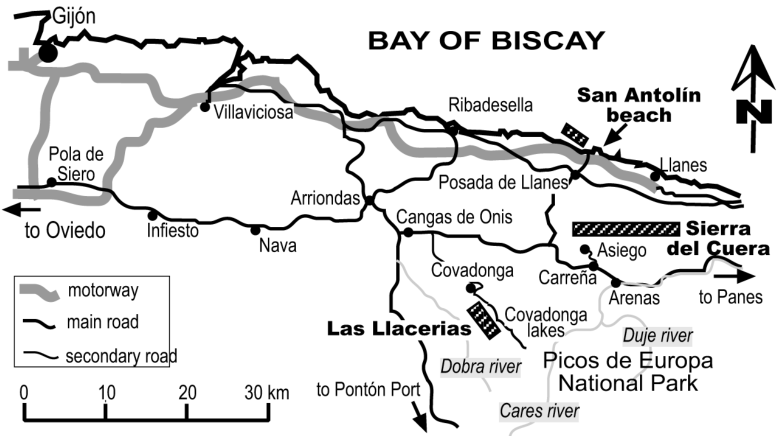


Figure 5.- Schematic road map (E of Asturias) including the Sierra del Cuera area (accessible from Carreña - Asiego villages), location of the San Antolín section (in the coast) and location of Las Llacerias section (between Covadonga Sanctuary and Covadonga lakes).

Microbial (cement) boundstones consist of carbonate mud and microspar with a clotted peloidal microfabric, dense micritic crusts, a fossil assemblage of calcareous algae and bryozoans, and abundant early marine cement (botryoidal aragonite and radiaxial fibrous calcite). Red layers recording condensation and sparse boundstone production during stages of relative sea-level rise are present in the upper slope. These red layers consist of well-bedded pack- to wackestones (including red-stained micrite and a very diverse biota association) with irregular seams and patches of greyish bryozoan-skeletal biocementstones.

During the active boundstone accretion and when the angle of repose was exceeded, microbial-boundstone layers slid off and formed boundstone-derived breccia tongues, which accumulated down-slope.

Toe-of-slope deposits

Below 600-700 m water depth, slope angles decrease basinward from approximately 26° to 5° and bedding tends to become horizontal distally. This low-angle toe-of-slope zone is characterized by alternations of thin-bedded calciturbidites (pack- to grainstone and rudstone beds containing reworked, platform-derived grains) with thick-bedded breccias, which sharply pinch out onto the basin floor. Basinal deposits consist of spiculitic lime mudstones and shales containing abundant siliceous sponge spicules, fragments of thin-walled bivalves, crinoids and intraclasts. Slumps structures are occasionally observed and chert is common.

Progradation vs. aggradation

At the Bashkirian-Moscovian transition, there is an overall change from a progradational to an aggradational style in the platform growth. This change affected the stratal patterns and facies distribution on the platform and slope, and is attributed to an increasing rate of subsidence of the foreland basin and to a decreasing boundstone accumulation in the platform margin.

Prograding and aggrading platform-to-slope transitions are characterized by distinguishing features for lithologies and stratal patterns, which are described in detail by Della Porta et al. (2004).

The massive character of the Lower Bashkirian slope (Fig. 3) derives from the absence of alternation of different lithofacies, due to the continuous growth of the upper-slope boundstones and the scarcity of skeletal intervals shed from the platform top. In contrast, in the Moscovian upper slope the alternation of massive sheet-like boundstone units with red-stained micrite layers and thin skeletal intervals of platform-derived grains clearly defines the geometry of the clinoforms.

Accessing the outcrops

Outcrops are reached by 4WD cars from Asiego village (see Fig. 5). From this point, take a gravel/concrete road and drive some 10 min until its end (see Fig. 3: car park). There, a 25 min walk along a moderately steep and rough mountain path will take the visitors to the base of the platform. Every facies belt of the carbonate platform is

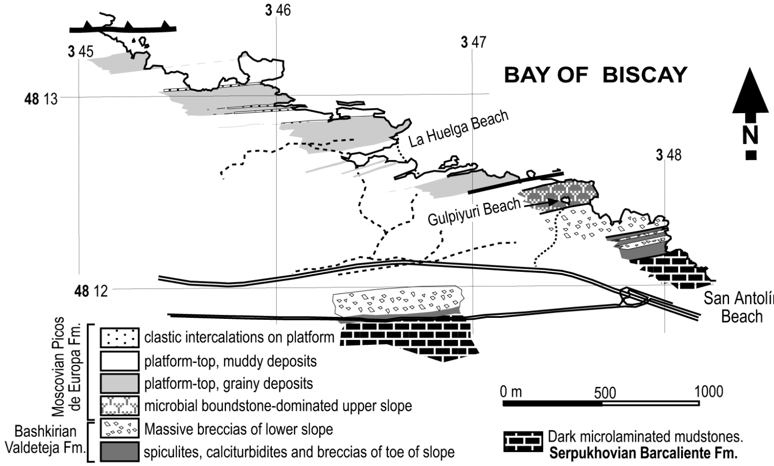


Figure 6.- Geological sketch of the San Antolín Section showing the different lithofacies belts.

accessible by walking along the trails. This is a solitary area where only few stone cabins exist, but they are locked and unoccupied all year. Springs are notably lacking. Visitors must be aware of these conditions and take along with them enough water and food supply. During the summer the area supports a large population of cows, goats and sheeps grazing in green mountainous meadows.

Other complementary outcrops

The Picos de Europa National Park is a wild mountainous area, which lies some 5 km to the south of the Sierra del Cuera. Most of this protected area is constituted of a spectacular calcareous massif corresponding to the stacking of several thrust-sheet units where the carbonate shelf is exposed. The Las Llacerias section is the most complete and best-preserved cross section of the western margin of the carbonate platform in this area (Bahamonde et al., 2000). The section is located to the SW of the paved road that climbs from the Covadonga Sanctuary to the Covadonga Lakes (see Fig. 5 for location), which lie in the mountain. Two trails leaving from the road cut the platform section. The lower trail starts in the Kasimovian succession that unconformably overlies the platform top and displays a continuous section towards the base of the succession. The higher trail mainly cuts the depositional slope of the platform. During summer, the area is reached by a lot of tourists, who visit the Covadonga Sanctuary and the Covadonga Lakes.

A platform fragment is exposed in cliff sections along the coast (San Antolín section, see Fig. 1B for location) where lacks the superb stratal relationship visible on aerial photographs in the Sierra del Cuera. However, coastal section provides high quality 10´s of meters outcrops showing the various lithofacies types (Fig. 6).

Selected references

Bahamonde, J.R., Vera, C. and Colmenero, J.R. (2000) A steep-fronted Carboniferous carbonate platform: clinoformal geometry and lithofacies (Picos de Europa Region, NW Spain). *Sedimentology*, **47**, 645-664.

Bahamonde, J.R., Kenter, J.A.M., Della Porta, G., Keim L., Immenhauser A. and. Reijmer J.J.G. (2004) Lithofacies and depositional processes on a high, steep-margined Carboniferous (Bashkirian-Moscovian) carbonate platform slope, Sierra del Cuera, NW Spain. *Sedim. Geol*., **166**, 145-156.

Della Porta, G., Kenter, J.A.M. and Bahamonde, J.R. (2004) Depositional facies and stratal geometry of an Upper Carboniferous prograding and aggrading high-relief carbonate platform (Cantabrian Mountains, NW Spain). *Sedimentology*, **51**, 267-295.

Kenter, J.A.M., Hoeflaken, F., Bahamonde, J.R., Bracco Gartner, G.L., Keim, L., Besems, R.E. (2003) Anatomy and lithofacies of an intact and seismic-scale Carboniferous carbonate platform (Asturias, NW Spain): analogs of hydrocarbon reservoirs in the Pricaspian basin (Kazakhstan). In: *Paleozoic Carbonates of the Commonwealth of Independent States (CIS): Subsurface Reservoirs and OutcropOutcrop Analogs* (Eds W.G. Zempolich and H.E. Cook), *SEPM Spec. Publ.,* **74**, 181-203.

Guide books

Merino, O.A., Bahamonde, J.R., Fernández, L.P. and Colmenero, J.R. (2004) Anatomy and lithofacies of a steep-fronted Carboniferous carbonate platform and architectural style of the overlaying synorogenic deposits (Variscan foreland basin of the Cantabrian Zone, Asturias, NW Spain). In: Duarte, L.V. and Henriques, M.H. (eds.): *Carboniferous and Jurassic Carbonate Platforms of Iberia*. 23rd IAS Meeting of Sedimentology, Coimbra, 2004, Field Trip Guidebook Vol. 1, 5-43.

Accommodation

Hotel Picos de Europa, Carretera General s/n, 33554-Arenas de Cabrales, Asturias (Spain)
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Hotel Villa de Cabrales, Carretera General s/n, 33554-Arenas de Cabrales, Asturias (Spain)
Tel: +34 985846719

Restaurants

Rio Cares, Carretera General s/n, 33554-Arenas de Cabrales, Asturias (Spain)
Tel:+34 985846618

Web-page: http://www.cantabrico.com/picos.php

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ANNOUNCEMENT

SEA LEVEL CHANGES:

Records, Processes, and Modeling

Aix-en-Provence and Giens (France)
25-29 September, 2006

Scientific themes

Major scientific themes considered for this Symposium will include records, sedimentary processes, and modeling of sea level changes (amplitude-timing) on carbonate margins, siliciclastic, and mixed margins, deep sea settings etc.

The Symposium will be structured around four themes corresponding to distinctive modes of the Phanerozoic Earth System:

1. Quaternary sea level changes
   (Keynote speaker : Kurt Lambeck, ANU, Canberra, Australia).
2. Icehouse Earth sea level changes -last 33 Ma-
   (Keynote speaker : Gregor Eberli, RSMAS, Miami, USA).
3. Paleozoic sea level changes
   (Keynote speaker : TBN).
4. Greenhouse Earth sea level changes –250/33 Ma-
   (Keynote speaker : A. Hallam, Univ. of Birmingham, UK).

A conference opened to the general public on Recent Sea Level Changes in Response to Global Warming by Anny Cazenave (CNES, France) will be organized in Aix-en-Provence on Saturday September 23rd.

Style of the Symposium

To avoid parallel sessions and to provide enough time for debates, the meeting will consist of one session per day which will include 1 keynote (30 minutes + questions/discussion) to introduce the theme and 8 talks related to the theme (20 minutes each + questions/discussion). Talks will be selected by the Convenors and the Scientific Committee of the Symposium based on the abstract submission. All other scientific contributions will be presented in poster format. Posters will remain on display during the whole duration of the Symposium. The highlights of each poster session will be presented by the Chairs of the particular session at the end of the plenary morning session.

A series of workshop(s) will be organized at the end of each day.

Workshops

Workshops on current knowledge, future issues, and controversies regarding sea level records, processes, and modeling, as well as the strategy to address sea level changes within international programs of Earth Sciences (IODP, IMAGES, PAGES, MARGINS etc.) will be organized each day. The results of those workshops will be summarized and discussed during a plenary session on Friday afternoon with the objective of producing a synthesis volume.

Participants are kindly invited to suggest themes for those workshops. The final themes will be selected by the Scientitic Committee.

Meeting location and accommodation

The proposed site for the Symposium is located near Hyères on the French Riviera, between Nice and Aix-en-Provence.

The «La Badine» Village (Presqu'île de Giens) is located in an exceptional setting in a pine grove facing the island of Porquerolles ; the site has a magnificent view on the Mediterranean sea. This center can accommodate the scientific activities related to the Symposium, lodging, and meals. For lodging accommodation, the «La Badine» village includes 99 single and 262 double rooms with hotel service, in small buildings spread out in 34 hectares of parkland.

Convenors

G. Camoin, CNRS, Aix-en-Provence, France,
A. Droxler, Rice University, Houston, USA,
C. Fulthorpe, University of Texas, USA,
K. Miller, Rutgers University, USA.

Scientific Committee

J. Anderson, Rice University, Houston, USA
J. Austin, University of Texas, Austin, USA
E. Bard, Collège de France, Aix-en-Provence, France
G. Karner, LDEO, Palisades, USA
C. Kendall, University of South Carolina, USA
Ph. Lapointe, TOTAL, Pau, France
G. Mountain, Rutgers University/LDEO, Palisades, USA
H. Posamentier, ANADARKO, Calgary, Canada

Important dates

* Distribution of the Second Circular : September 2005
* Deadline for abstract submission and workshops suggestions : 1st March 2006
* Notice of acceptance of abstracts : 1st April 2006
* Deadline for payment of all fees : 1st June 2006

Contact and pre-registration

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Europôle Mediterranéen de l'Arbois, B.P. 80
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email: gcamoin@cerege.fr

Symposium web site : http://www.cerege.fr/news/actualite.htm

REPORT

IGCP 447 Field Conference on Neoproterozoic Carbonates

«Molar-Tooth Structure Downunder»

Journey through the Australian Neoproterozoic

In June of this year a 2-week long IGCP 447 field excursion journeyed through the Australian red centre from Adelaide to Alice Springs. Against a backdrop of truly stunning outback scenery, we enjoyed *vigorous* discussions on a wide range of themes, *surprising* culinary feats, *dubious* singing talents and above all superb camaraderie.

Day one was a Sunday. Everyone arrived according to plan: a miracle! At 3 o'clock, five Australians, four Chinese, three Americans, two Canadians, two French and two Koreans assembled at the South Australian Museum where Dr Jim Gehling obligingly provided us with an expert behind-the-scenes tour of the Ediacaran fossil treasures of South Australia. Still reeling from the exquisite quality and the sheer numbers (in the case of *Dickinsonia*) of these surprisingly large fossils, considering their great age, we retired to the pub to whet our whistles and look forward to our excursion.

Day two. After a hearty breakfast we set off northwards to the Clare Valley wine-growing region for our first *taste* of the Australian Neoproterozoic. We made it to Rawnsley Park around nightfall where we set up camp in the shadows of the Rawnsley Quartzite, which as well as hosting the famous Ediacaran fossils, forms the cliff tops in this area. This being our very first night, some tents had to be put up three times in the dark until all the pieces fit, and we soon discovered that no-one quite fries an egg like Dr Gao Linzhi!

Day three saw us exploring the salt diapirs and pre-Ediacaran units of the Flinders Ranges National Park, and especially the approximately 730 Ma Sturtian and 635 Ma Marinoan glacial levels. We examined the Sturtian level off the beaten track where it was represented in part by a haematite-rich siltstone unit, the Hollowillena

Ironstone, which contains striated, and faceted dropstones. After lunch, a long walk along the Enorama Creek took us through the exquisite stromatolites of the Trezona Formation to the Marinoan diamictites of the Elatina Formation and its enigmatic «*cap carbonate*»: the Nuccaleena Formation. The Ediacaran Period is now defined at a level just above the base of the Nuccaleena Formation in Enorama Creek and its shiny, new Golden Spike made this outcrop an obligatory photo stop. Consensus was achieved (I think) that the «*pseudo-tepees*» of the Nuccaleena Formation, which are typical of Marinoan-age cap carbonates worldwide, do indeed resemble sediment megaripples (Allen and Hoffman, Nature v. 433, p. 123-127; see also discussion in v. 436), implying unusually high wind strengths in the aftermath of Marinoan glaciation. We were very lucky throughout the day to have the expert guidance of Bob Dalgarno who has almost half-a-century of experience of Australian geology. Camping this night was a joy, even despite variously successful musical offerings around the campfire!

The rains caught up with us on day four and were never to leave us for long from that day onward, but fortunately they arrived only after we had driven through the Brachina Gorge Geological Trail and seen the now familiar *Dickinsonia* fossils, this time *in-situ.* After finally crossing the Precambrian-Cambrian boundary, we sped off along the Oodnadatta track, an old aboriginal trading route that follows a line of springs, marking the edge of the Great Artesian Basin. Anne Gore's (James Cook University) exhaustive guidebook notes on the region's history made the long journey to Cooper Pedy seem much shorter where we set up camp inside a disused opal mine.

Day five began with a mine tour during which we were introduced to the ancient art of dowsing to locate faults underground. This activity divided the group firmly into two camps, seemingly along national lines: the gullible souls (me included) and the skeptics, for which the rods simply refused to work their magic. Uluru (Ayers Rock) came into view too late to enjoy its famous sunset colour change so we had to wait until day six to discuss the origin of this most homogeneous arkosic sandstone as well as that of the much coarser conglomerate at the Olgas. Kings Canyon was the subject of interest on day seven, during which we learned all about «*adhesion warts*», which are here beautifully displayed on rippled bedding surfaces along with what must be some of the oldest terrestrial, invertebrate feeding traces.

After a rest day, days nine and ten were dedicated to the Neoproterozoic Bitter Springs Formation of the Amadeus Basin near Alice Springs, and especially that most enigmatic of Precambrian sedimentary structures: molar-tooth structure, the goal of our venture. Molar-tooth structures (MTS) are crack fills of low-Mg calcite, which exhibit a characteristically blocky crystal texture and uniform grain-size of about 5-15 microns. All MTS occurrences so far reported seem to be from strata that are stratigraphically below the level of the Sturtian glaciation, i.e. >730 Ma and so the disappearance of MTS could be telling us something about the changes in ocean chemistry that accompanied global climate change in the late Precambrian. However, MTS from the Loves Creek Member of the Bitter Springs Formation was originally considered to have formed in lakes. The depositional environment of the Loves Creek Member was the subject of intense discussion throughout.

The Ellery Creek section, west of Alice Springs, possesses a condensed succession of strata spanning the interval 800 Ma – 350 Ma, the lower part of which can be correlated quite convincingly into the Flinders Ranges of South Australia that we visited on days 2-4. MTS here occurs in repeated sequences of buff carbonates to red beds. Diagenetic mottling in the carbonates is so extensive in places that it warrants the name «*dalmation rock*» and was caused by the early lithification of crack fills that rendered surrounding beds impermeable to dolomitising fluids.

The Ross River sections were equally enlightening. Highlights included convoluted beds caused by salt evacuation and MTS (and MTS-like cavity fills between stromatolite laminae) within the underlying Gillen Member. This is the first time that MTS has been reported from the lower Bitter Springs Formation. Together with new geochemical and petrographic evidence presented later in Alice Springs, its presence throughout the Bitter Springs Formation tends to support a marine origin for MTS here consistent with MTS worldwide.

The IGCP 447 conference took place at the Northern Territory Geological Survey (NTGS) in Alice Springs during days 11, 12 and 13. A total of 17 presentations spotlighted research relating to molar-tooth structure from China, Australia, Canada, India, USA and Norway. Darrel Long (Laurentian University) gave a most memorable talk with 3-D rotating images of molar-tooth structure from the Muskwa Assemblage of NE British Columbia, Canada. Using this novel approach, he was able to demonstrate that molar-tooth blobs and ribbons are in fact interconnected, which had been suspected because of the significant fluid flow required to transport enough ions to precipitate MTS calcite. Participants' attentions were directed briefly back to our field experiences during an examination of a drillcore (Wallara-1), which lead to some vociferously defended interpretations of the Loves Creek Member red beds, ranging from subtidal marine to playa!

On the last day we ended the conference with a discussion of the chemical genesis of MTS calcite, which included speculation about the apparent coincidence between the timing of the last MTS occurrence and the first occurrence of calcified bacterial sheaths (from the Little Dal Group, Canada), both of which might represent the sedimentary response to changes to the coupled marine-atmosphere carbonate system, specifically a lowering of the calcium carbonate saturation state of seawater during the mid-Neoproterozoic.

After fond fairwells, it only remained for us to reflect on how the IGCP 447 project had evolved during four years that have seen field excursions in China, USA, Norway and now Australia. All credit to the participants for putting up with mediocre weather, long journeys and that unforgettable evening when Darrel and I decided to cook English food. Anne Gore, in particular, needs to be congratulated for her tireless organization. Full proceedings of the conference can be obtained from graham.shields@jcu.edu.au, while papers will be submitted to a major international earth science journal by the end of 2006. We invite contributions from anyone involved in molar-tooth structure research.

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IAS Postgraduate Grant Scheme

IAS has established a grant scheme designed to help PhD students with their studies. We are offering to support postgraduates in their fieldwork, data acquisition and analysis, visits to other institutes to use specialised facilities, or participation in field excursions.

About 10 grants, each of up a maximum of 1000 Euros, are awarded twice a year.

These grants are available for IAS members only, and only for postgraduates. Students enrolled in MSc programs are not eligible for grants. The application must include a short CV and a budget. A letter from the supervisor supporting the application must be sent directly to the Treasurer of the IAS.

An application form is on our website (http://www.iasnet.org). Moreover, the application form can be requested from the Treasurer's Office (IAS, Office of the Treasurer, Ghent University, Department of Geology and Soil Science, Krijgslaan 281/S8, B-9000 Gent, Belgium; E-mail: *Patric.Jacobs@UGent.be*)

Application deadlines:	**1st session:**	**March 31**
	2nd session:	September 31
Recipient notification:	**1st session:**	**before June 30**
	2nd session:	before December 31

CALENDAR

10TH FRENCH CONGRESS OF SEDIMENTOLOGY

October 11-13, 2005
Presqu'île de Giens,
France

Pr. Marc Floquet
Université de Provence, Centre de Sédimentologie-Paléontologie, FRE CNRS 2761 «Géologie des Systèmes Carbonatés»
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THE NONMARINE PERMIAN

October 21-29, 2005
Albuquerque,
New Mexico, USA

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LESSONS IN TECTONICS, CLIMATE AND EUSTACY FROM THE STRATIGRAPHIC RECORD IN ARC COLLISION ZONES A GEOLOGICAL SOCIETY OF AMERICA PENROSE MEETING*

October 11-14, 2005
Price, Utah,
USA

Contact: Peter D. Clift
Department of Geology and Geophysics
MS 22, Woods Hole Oceanographic Institution
Woods Hole,
MA 02543, USA
E-mail: pclift@whoi.edu
Web site: http://www.whoi.edu/pclift/ArcPenroseMeeting.html

GONDWANA 12 CONFERENCE

November 6-11, 2005
Mendoza
Argentina

Carlos W. Rapela | crapela@cig.museo.unlp.edu.ar
Luis A. Spalletti | spalle@cig.museo.unlp.edu.ar
Centro de Investigaciones Geológicas,
Universidad Nacional de La Plata - CONICET
Calle 1# 644, B1900TAC La Plata.
Argentina. Phone/Fax: 54 221 4215677
Web site: http://cig.museo.unlp.edu.ar/gondwana/

2005 AMERICAN GEOPHYSICAL UNION CONFERENCE

5-9 December, 2005
San Francisco,
California, USA

AGU Meetings Department
2000 Florida Avenue, NW
Washington, DC 20009 USA
Phone: +1-800-966-2481, ext. 333
Fax: +1-202-328-0566
E-mail: fm-help@agu.org (subject: 2005 Fall Meeting)
Web-page: http://www.agu.org/meetings/fm05

INTERNATIONAL CONFERENCE ON DELTAS (BORNEO VENUE): DEPOSITIONAL SYSTEMS AND STRATIGRAPHIC DEVELOPMENT. A JOINT MEETING OF 3RD ANNUAL MEETING OF IGCP-475 'DELTAS IN THE MONSOON ASIA-PACIFIC REGION (DELTAMAP)' AND 2ND MEETING OF CCOP DELSEA PROJECT

January 13-18, 2006
University Brunei Darussalam, Brunei

Contact: Yoshiki Saito (DSc)
Coastal & Urban Geology Research Group
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E-mail: yoshiki.saito@aist.go.jp
Web site: http://unit.aist.go.jp/igg/rg/coast-rg/ADP.html

CLIMATE AND BIOTA OF THE EARLY PALEOGENE

June 12-16, 2006
Bilbao, Spain

Dr. Victoriano Pujalte
Departamento de Estratigrafía y Paleontología
Facultad de Ciencia y Tecnología Universidad del País Vasco
Apdo. 644, 48080 Bilbao, Spain
Fax: +34 601 3500
E-mail: cbep2006@lg.ehu.es
Web site: www.ehu.es/cbep2006

POLISH SEDIMENTOLOGICAL CONFERENCE SEDIMENTATION IN FORELAND BASINS

June 22-23, 2006
(including field-trips June 21-26)
Zwierzyniec, Poland
(field trips also in Ukraine)

Contact: Anna Wysocka
Faculty of Geology
Warsaw University
Zwirki i Wigory Str. 93, 02-089 Warszawa, Poland
E-mail: pokos2@uw.edu.pl
Web-page: http://www.geo.uw.edu.pl/IGP/POKOS2/1.htm

PALAEOPEDOLOGY: NEW PERSPECTIVES ON OLD SOILS*

July 17-20, 2006
Cardiff
UK

Susan B. Marriott
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V. Paul Wright
Department of Earth Sciences Cardiff University
Cardiff CF10 3YE, UK
e-mail: wrightvp@cardiff.ac.uk

17TH INTERNATIONAL SEDIMENTOLOGICAL CONGRESS*

August 27 –
September 1, 2006
Fukuoka
Japan

Ryo Matsumoto
Department of Earth & Planetary Sciences
University of Tokyo
Hongo, Tokyo 113, Japan
E-mail: ryo@eps.s.u-tokyo.ac.jp
Web-page: http://sediment.jp/

Carboniferous Conference Cologne 2006

From Platform to Basin. A research field conference sponsored by SEPM-CES

September 4-10, 2006
Cologne,
Germany

Contact: Dr. Markus Aretz
Institut für Geologie und Mineralogie
Universitaet Koeln
Zuelpicher Str., 49a 50674 Koeln, Germany
Phone: +49 221 470 3532 Fax: +49 221 470 5080
E-mail: markus.aretz@uni-koeln.de
Web site: http://www.ccc2006.uni-koeln.de

Sea Level Changes: Records and Modeling (SEALAIX'06)

Convenors : G.Camoin (CNRS, Aix-en-Provence, France), A. Droxler (Rice University, Houston, USA), C. Fulthorpe (Univ. of Texas, USA), K. Miller (Rutgers University, USA)

September 25-29, 2006
Aix-en-Provence
and Giens,
France

Gilbert Camoin
CEREGE CNRS UMR 6635
Europôle Mediterranéen de l'Arbois B.P. 80
F-13545 Aix-en-Provence cedex 4
E-mail : gcamoin@cerege.fr

Alluvial Fans 2007

18-22 June, 2007
Banff, Alberta,
Canada

Dr. Philip Giles
Department of Geography
Saint Mary's University
Halifax, Nova Scotia, Canada
E-mail: alluvialfans2007@smu.ca
Web-page: http://husky1.smu.ca/~pgiles/AF2007/AlluvialFans2007.htm

4TH INTERNATIONAL LIMNOGEOLOGY CONGRESS (ILIC 2007)

July 11-14, 2007
Barcelona
Spain

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Dpto de Estratigrafia, Paleontologia y G.M.
Facultad de Geologia
Universidad de Barcelona
E-08028 Barcelona
E-mail: lluis.cabrera@ub.edu

25TH MEETING OF SEDIMENTOLOGY (SEDIMENTOLOGY AND ENVIRONMENT)*

September 4-7, 2007
Patras,
Greece

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Department of Geology University of Patras
26500 Patras, Greece
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Mobil Phone: 697 203 4153
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INTERNATIONAL ASSOCIATION
OF SEDIMENTOLOGISTS

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