

The Newsletter of the International Association of Sedimentologists

Issue 07, 2024



Dear IAS Members,

Welcome to the July IAS Newsletter. It was great to meet many of you at the 37th International Meeting of Sedimentology (IMS) in Aberdeen last month. In this Newsletter we celebrate the recipients of the IAS awards bestowed in Aberdeen, as well as the successful recipients of the spring 2024 round of IAS research grants. Our focus now turns towards next year's **38th IMS** which will be held in Huelva, southern Spain. See below for preliminary information. Preparations are also gathering pace for the **22nd ISC**, to be held in Wellington, New Zealand, in January 2025.

Also in this edition we provide an update on the **new IAS website**, we have a meeting report and details of several forthcoming IAS-sponsored meetings, the latest contents of our journals, and a reminder that applications for the autumn round of IAS research grants close on 30th September (applications are made through the IAS portal which can be accessed by logging in to the new website). We had a successful first round of applications for the **North Sea Core initiative**, providing core samples for teaching. The sixteen bids are being evaluated and applicants will be contacted soon. Meanwhile, the second round of applications is open with a closing date of 31st December. Please see below for details.

Finally, we have a winner for the **IAS photo competition** for the 37th IMS that was run through IAS social media and also advertised in the May Newsletter.

As always, **please share this Newsletter with your colleagues and students**. IAS membership is fantastic value for minimal outlay, so do encourage them to join our worldwide community.

With best regards,

Gonzalo Veiga

IAS General Secretary

IAS President's Message



It is several weeks since the 37th IMS in Aberdeen. We were treated to lots of fantastic scientific presentations, a Great Debate, world-class geology both in the field and in the workshops, and some vigorous Scottish dancing. It was an honour to introduce our medal winners for their keynote presentations, and also to hear our keynote speakers present their work on subjects as diverse as sedimentology on Mars, the Early Jurassic of southern Africa, geobiosphere interactions and the Energy Transition. A huge thank you to Alex Brasier and his team at University of Aberdeen for organising such a stimulating meeting, with a truly international delegation of over 500 sedimentologists. Thank you too to all our speakers, poster presenters and the Early Career scientist committee for your contributions. A full report on the IMS will appear in a future Newsletter.

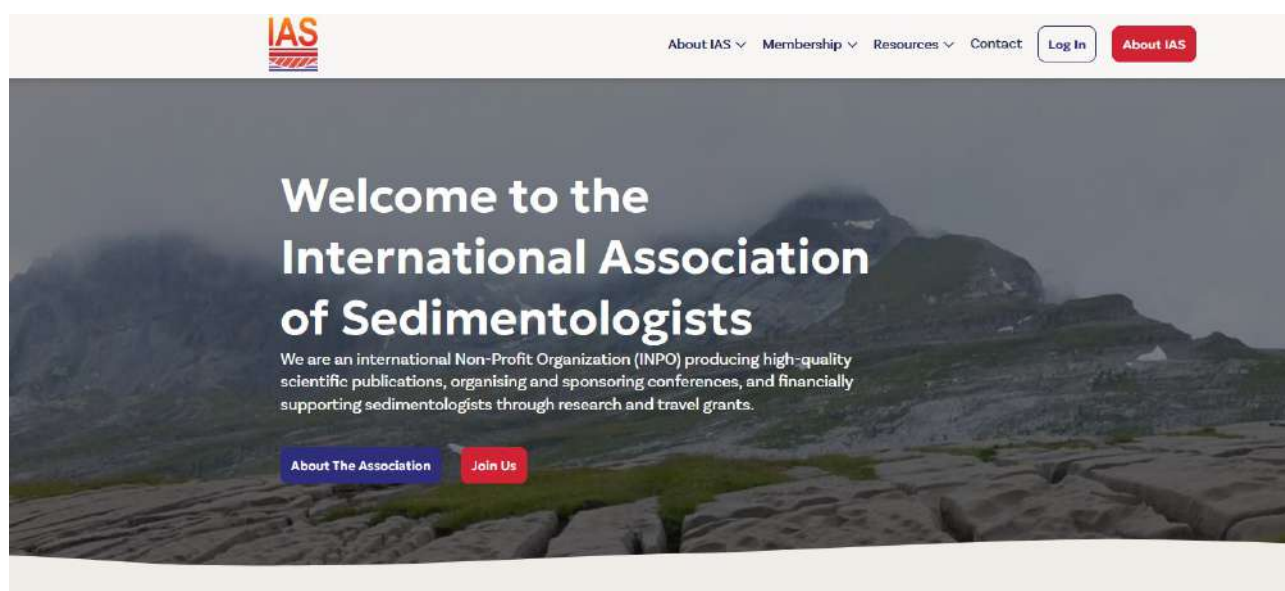
At the Extraordinary General Assembly in Aberdeen Gonzalo Veiga was voted in as the new IAS General Secretary. I wish Gonzalo every success in this key role and I reiterate my thanks to Stephen Lokier his predecessor for all the time and effort he put into it.

Activities are now winding down a little in the northern hemisphere for summer holidays and fieldwork, but preparations are already underway for the 38th IMS in Huelva in 2025. We hope you all have 26-28th June 2025 in your diaries – there will be more information coming soon from Juan Antonio Morales and his team at University of Huelva on arrangements for next year's meeting. Registrations and the call for abstracts will open soon and the abstract submission deadline is 8th November, so it's time to start planning. More information is on the [meeting website](#).

Thank you for your continued support and please do not hesitate to contact me with any questions, comments or queries through the IAS website [contact form](#).

Cathy

New IAS Website Launched



The [new IAS website](#) formally went live the day before the Aberdeen IMS and is now fully active although some of the legacy content remains to be uploaded to it (e.g., past conference proceedings, newsletters, and research reports). Please have a look at it and feedback any comments, suggestions and ideas – it will be a work in progress for some time as we want to get it just right then keep it live and topical.

If you are an existing member, when you log in for the first time you will be sent an email verification link, and then you will have to change your password. Membership renewals will begin in the autumn as usual so there is no need to make any payments yet.

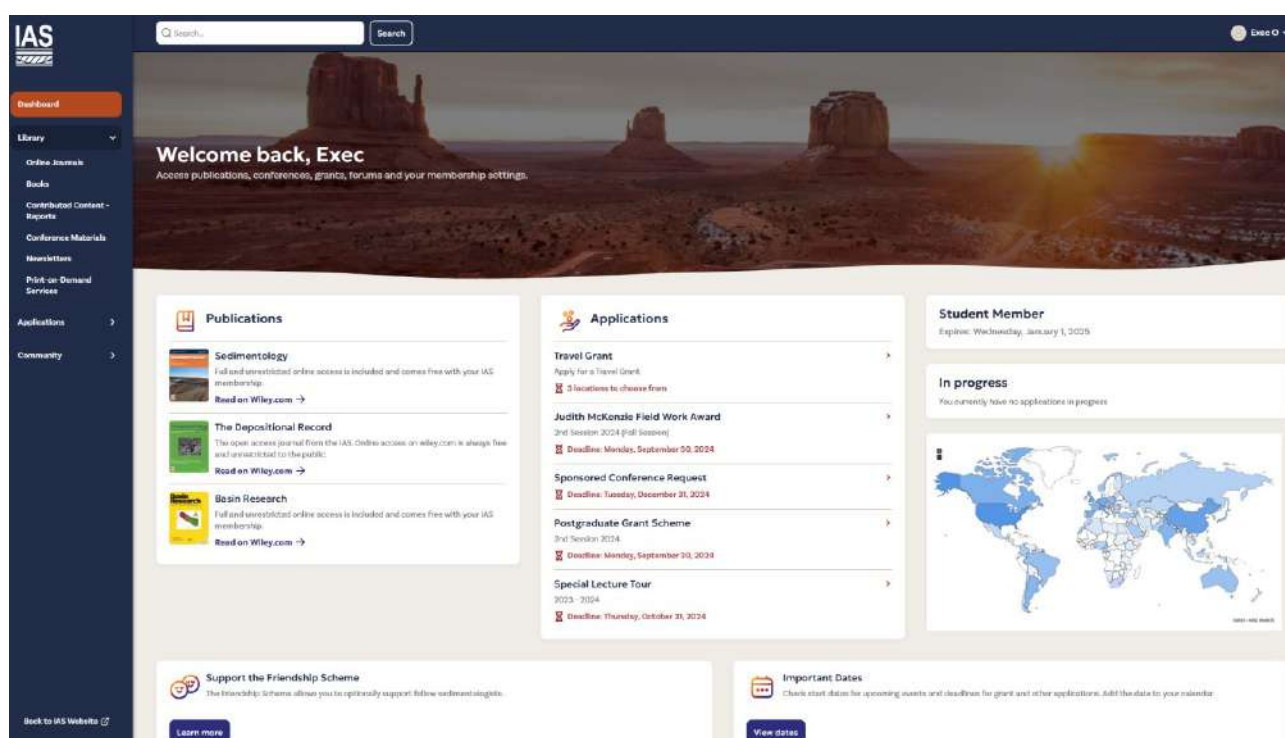
However, please do complete and update your **profile** so that you can be found on the membership directory. Of course there is no



obligation to fill in all the details, but completing your research information will open up networking and collaboration opportunities. Be assured that your data are held in compliance with IAS's [privacy policy](#).

Note that you can now select multiple research specialisation areas and include all your social media (X, Facebook, LinkedIn, Instagram, Bluesky) as well as professional (ORCID, Google Scholar, Research Gate) links. In due course we hope to have our own IAS research blog as well as greater interconnectivity between the IAS website and IAS social media.

When logged in, your **dashboard** will show upcoming deadlines, have the links to your free member access to IAS publications, and (as of the autumn 2024 round) notes of any grants that you have applied for.



If you wish to **join** the IAS just click [Join Us](#) on the home page and then scroll down to select the appropriate membership category. You will need to create a log-in profile first before proceeding to pay your membership dues with your credit or debit card details. IAS membership dues are unchanged at an amazingly cheap 10 Euro for students and 25 Euro for ordinary members – for which you get a large range of **benefits**. Membership works on a calendar year basis.

Please be aware that not all the information from the previous membership database has been migrated to the new membership portal, in particular past receipts for membership payments and historical membership records are not currently available through the website. If you need any of these for a specific and important purpose (for example to support a research funding bid) please [contact us](#).

We continue to be on the lookout for **spectacular sedimentology photographs** to grace the website and other IAS publicity, so do let us know if you have one you would like to share. Action shots are especially good, but please remember that anybody appearing in them needs to give their permission for the photograph to be used publicly.

IAS Award Winners Celebrated in Aberdeen

As announced in the **April IAS Newsletter**, at the 37th IMS in Aberdeen the following prestigious IAS Awards were presented. The recipients all gave very well received keynote presentations at the conference. The Johannes Walther Medal was awarded to **Professor Chao Li**, the Early Career Scientist Award to **Dr Marta Marchegiano**, the Sun Shu Prize (China) to **Professor Jitao Chen**, and the Sun Shu Prize (International) to **Dr David Kemp**.



Follow the IAS on Social Media

Follow the IAS on **Facebook**, **Twitter/X**, **WeChat**, **Bluesky** and **LinkedIn** to keep up to date with all of the latest news, announcements and happenings.

@sedimentology and IAS沉积学之家



All the **IAS Journals** are also active on "X" (former Twitter). Stay up to date on the latest news and papers in **@sedimentology** by following the IAS journals: **@JSedimentology**, **@DepositRecord**, **@BasinResearch**.

Seds Online Great Debate

At the Aberdeen IMS, Seds Online, which is sponsored by IAS, hosted a Great Debate on the slightly provocative topic “Mud, it’s just pointless”. Stephen Lokier chaired the proceedings in characteristically energetic style. Alex Brasier and John Reijmer argued for the motion but Meg Baker and Will McMahon against it.

But who won? Does mud have a future?

You can find out if mud retained its relevance by **watching the video** of the debate. Look out for Alex Brasier’s creative redefinition of limestone classifications....



First Announcement - 38th International Meeting of Sedimentology, Huelva, Spain



Having enjoyed meeting together in Aberdeen, we are already focusing on our next IAS flagship conference. The 38th International Meeting of Sedimentology will be in Huelva (SW Spain) from 26th to 28th of June 2025. It will be held by the University of Huelva and organized by a team led by Juan A. Morales. The organization is currently at an early stage, but you can already **visit the meeting website** to follow the progress as the meeting comes together. You will also find a promotional video, key dates, and details about the city of Huelva, the University Campus and possibilities of travel and accommodation.

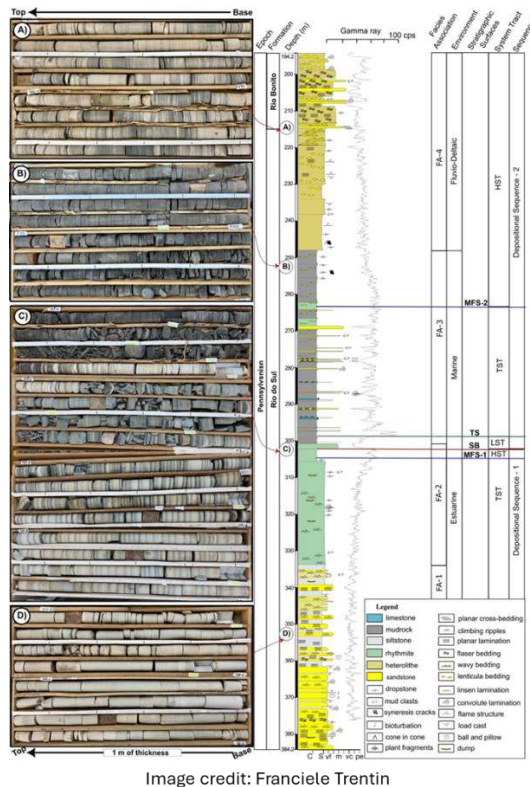
We currently request IAS members to submit proposals for Special Sessions and workshops – please use the [IAS website contact form](#) for this.

Further updates will appear in the next IAS Newsletters but please note that **registration will open on 2nd September** and the **abstract deadline is 8th of November** so start planning your submissions soon!

See you in Huelva!



IAS Research Grants

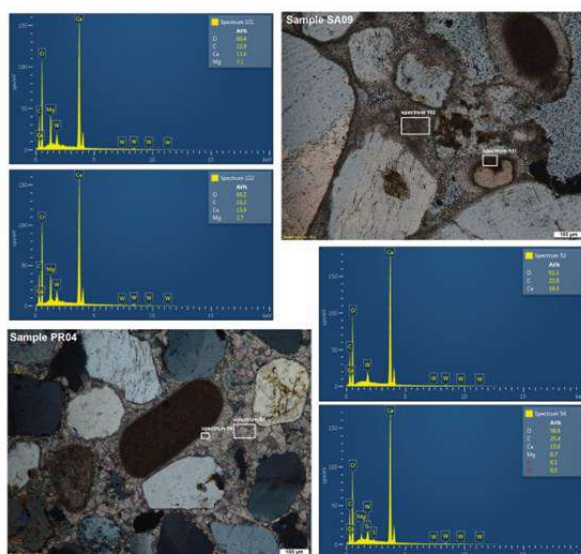


The IAS offers **research grant opportunities** to its Student Members on sedimentological MSc or PhD programmes, and to sedimentology postdoctoral researchers early in their career. There are two calls each year, with a typical annual total of 43,000 Euro awarded. These are ideal for **pilot studies** or **ancillary analytical work that isn't covered by bursaries and other funding sources**. The **application process is simple** and **success rates are high** compared to many other funding sources. Each grant has its own set of guidelines and all applications are submitted via the IAS website. Only one of each grant type may be awarded to a given applicant, but unsuccessful applicants for Postgraduate and Postdoctoral Grants are provided feedback and permitted to re-apply in a subsequent round if they are still eligible. Typical success rates of applications for these grant rounds are from about 30 – 60% (and higher for Judith McKenzie Fieldwork awards). **Well-written and justified applications for original and interesting sedimentological projects stand a strong chance of being funded.**

Grants are always paid after the research has been completed and a concise scientific report and a financial statement with itemised receipts are submitted to the IAS. This is expected to be within 1 year of the award date. Please note that where a personal grant is awarded the IAS will pay it to the Member's own bank account. It is not possible to make payments to Institutional accounts, nor is it possible for the grants to be offset in any way against institutional overhead costs. Advance payments also are not permitted.

The deadline for all Research Grant applications is 30th September 2024 at 24h00 CET (UTC+1).

Postdoctoral Research Grants



IAS Post-Doctoral Research Grants provide seed funding to help **Early-Career Post-Doctoral Researchers** who are **Full Members of IAS** to establish a proof of concept, to support applications to national research funding bodies, or to fund areas of a project that were not included in the original project scope. Applicants must have obtained their Ph.D. within the previous 7 years.

Up to 4 grants, each of up to €2,500, are awarded biannually. The application involves submission of a research proposal, CV, itemised budget, and a letter of support from the researcher's supervisor, line manager or Head of School. **Applications are submitted via the IAS website** where the specific guidelines and application forms can be found.

Postgraduate Research Grants

IAS Postgraduate Research Grants are ideal for funding analyses or field data collection that are related to, but not covered by, the applicant's existing PhD bursary. They are often used for testing new ideas that have arisen from the PhD research, visiting other institutes to use specialized facilities, or for collecting supplementary data. **Up to 10 grants, each of up to €1,000,** are awarded biannually to **IAS Postgraduate Student Members**.

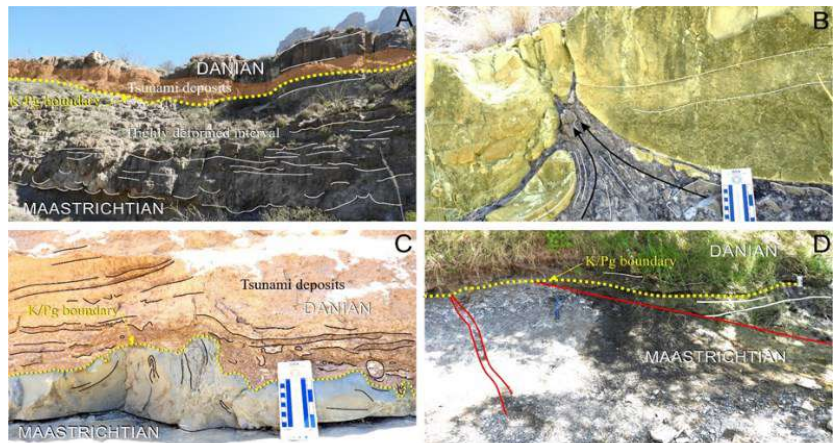


Image credit: Hermann Bermudez

Applications involve a short research proposal, CV, proposed budget, and the PhD supervisor's supporting recommendation. **They are submitted via the IAS website** where the scheme's guidelines and application forms can be found.

Judith McKenzie Fieldwork Awards

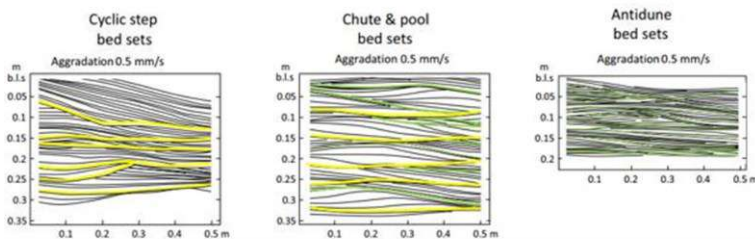


Image credit: Luthfi Saifudin



The **Judith McKenzie Field Work Awards** promote sedimentological fieldwork skills and observations for the newest generation of Earth Scientists – MSc Students. Thus, funding is specifically for fieldwork that forms part of a Master's dissertation. **Up to 5 grants of €300 each** are awarded biannually to **IAS Student Members** who are **active MSc students**. Applications consist of a short fieldwork proposal and budget (written by the student), CV, a signed letter of support from the student's supervisor, and proof of MSc student enrolment. **Submission of applications is via the IAS website**, where guidelines and application forms can be found.

IAS Research Grant Recipients – Spring 2024

We are pleased to announce the following successful applicants for the spring 2024 IAS Research Grants and Fieldwork Awards:

Postdoctoral Research Grants

Romain Gougeon	Institut Universitaire Européen de la Mer	The deep-time roots of the <i>Skolithos</i> and <i>Cruziana</i> ichnofacies
Chaojin Lu	University of Miami	Elucidating microbial-associated dolomitization by using sulfur and dual clumped Isotopes
Cole McCormick	Pennsylvania State University	Advancing carbonate U-Pb geochronology through high-temperature dolomitization experiments
Maximiliano Rodriguez	Universidad Nacional de Río Negro	Microbial activity in modern and ancient tidal flats and creeks

Postgraduate Research Grants

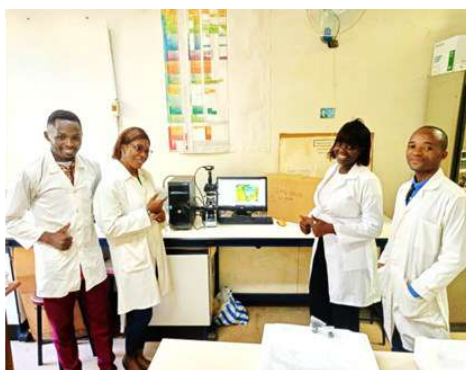
Christina Antoniou	University of Edinburgh	Quantitative dating and correlation of Pleistocene shallow-marine and fluvial terrace deposits in the Polis and Paphos regions of western Cyprus
Zije Gao	University of Kansas	From Source to Sink: Investigating Pleistocene Himalaya-sourced megaturbidites from IODP Expedition 354 in the distal Bengal Fan using optically-infrared stimulated luminescence (OSL/IRSL) dating
Stefano Giunti	Institute of Geological Sciences, Warsaw	SPHYSE – Spherulites in Hydrocarbon Seeps
Reina Harding	Dartmouth College	Investigating the ambiguous origin of a carbon isotope excursion at the Ediacaran—Cambrian boundary in NW Canada
Carl Huynh	University of Edinburgh	Resolving the local Last Glacial Maximum in southernmost Patagonia
Luciano Morel	Universidad de Buenos Aires	Tectono-climatic and depositional environmental controls of the first Pacific marine transgression in the Mesozoic La Ramada Basin, SW Gondwana (32°SL, Argentina)
Juan Ignacio Musacchio	Universidad de Buenos Aires	Paleoenvironmental significance of phosphates and black shales: A comprehensive study in the Vaca Muerta-Quintuco System, Neuquén Basin, Argentina
Manuel Rojas	Instituto de Ciencias de la Tierra y Ambientales de La Pampa, Mendoza	Trace fossil distribution, stratigraphic surfaces, and architecture in a wet aeolian system
Ricarda Wohlschlaegl	University of Vienna	Understanding the nature of a Late Palaeozoic glacial unconformity in an unstudied area of the Karoo Basin, South Africa
Masud Sharifi Yazdi	University of Vienna	Reconstruction of the paleoenvironmental, paleoclimatic, and paleoceanographic conditions during the Early to Middle Miocene, Qom Basin, Central Iran

Judith McKenzie Fieldwork Awards

Rose Bainbridge	University of Cambridge	Characterizing the unusual sedimentology of two geological boundaries in North Wales using Britain's oldest burrows
Lukas Eder	University of Vienna	The sedimentological anatomy of a landslide in Embach, Salzburg
Sam Van Duivenvoorde	Vrije Universiteit Amsterdam	The distribution of Sahara Desert dust over the Atlantic Ocean in the Northern Hemisphere summer: How one of the most important sources of minerals spreads across the Atlantic Ocean in the months of June-July

Congratulations to all the grant recipients and best wishes for successful and exciting research projects!

IAS International Institutional Grants



The IAS offers twice-yearly **International Institutional Grants** to assist Earth Science departments in low and lower-middle income countries (as defined by the World Bank) to obtain

sedimentological equipment for teaching and research, and/or tools that can be used by all geology students.

These grants are **up to a maximum of 10,000 Euro each**. The IAS purchases the equipment and pays for its shipping. Guidelines for applications can be found on the IAS website along with the list of eligible countries. Successful grant applications will clearly demonstrate how the grant will increase the recipient's capacity to teach sedimentology at undergraduate level in a sustainable way. Applications must be from active IAS Members and submitted via the IAS website, and it is very important to follow the guidelines and provide all the information required. More information is available via IAS Regional Correspondents for applicant's countries or via the **website contact form**.

These grants are a fantastic opportunity to build capacity in Earth Science departments where institutional funding may be limited. **They are usually under subscribed so there is a high chance of success for well-prepared applications that meet the criteria and guidelines!**

For an excellent example of how the grants are used please see the item by Dr Eric Ekoko Bokanda from the University of Buea, Cameroon in the **May Newsletter**.

The deadline for Institutional Grant applications is 30th September 2024 at 24h00 CET (UTC+1).








22nd International Sedimentological Congress, Aotearoa New Zealand



On behalf of the International Association of Sedimentologists (IAS), the local organizing committee warmly invites you to join us for the 22nd International Sedimentological Congress (ISC) to be held in Te Whanganui-a-Tara Wellington in January 2026. [Click here](#) to register your interest and receive updates. The theme of the Congress is **Sedimentation on active plate margins through time and space** and we envisage encompassing a range of topics related to active margin sedimentation as well as a wide variety of other sedimentology themes – whatever your sedimentological interests, from modern into deep time, terrestrial to deep marine, glacial to tropical, and from mega- to micro-scale there will be plenty for you to enjoy.

You can follow developments on the [conference website](#), where there is a [welcome video](#) from the Committee and you can join a [mailing list](#). We also recommend the [100% Pure New Zealand website](#) and the [WellingtonNZ website](#) for ideas of activities and locations in Aotearoa New Zealand to complement your trip to the ISC. If you are interested in becoming a [sponsor or exhibitor](#) at the ISC please email isc2026@confer.co.nz to receive a copy of the sponsorship and exhibition prospectus.

Do make a note of these [Key Dates](#)

-  **Session/Workshop Submission Deadline:** 25 October 2024
-  **Session/Workshop Acceptance Notification:** 29 November 2024
-  **Abstract Submission Opens:** January 2025
-  **Registration Opens:** March 2025
-  **Abstract Submission Deadline:** 16 May 2025
-  **Authors Acceptance Notification:** 15 August 2025
-  **Early Registration Deadline:** 19 September 2025



If you want to know more about the geology of New Zealand please see the item in the [April Newsletter](#).

We look forward to welcoming all of you to New Zealand in 2026!

Email:

isc2026@confer.co.nz

Website:

<https://confer.co.nz/isc2026/>



Photo Competition Result



We are delighted to announce that the winner of the IAS photo competition at the 37th IMS is Romain Vaucher – his spectacular contribution is presented below. Congratulations Romain!

“The *Vélodrome* is a complex fold of Oligocene-Miocene molasse located near Esclangon in the Alpes-de-Haute-Provence, France”.



North Sea Core for Teaching – Second Round Closing Date 31st December



NORTH SEA CORE

The IAS in collaboration with North Sea Core CIC is pleased to sponsor the distribution of core samples for teaching from a range of depositional environments to academic institutions that do not necessarily have the funds to acquire these themselves. The scheme is open to **IAS Ordinary Members**,

who apply on behalf of their institutions. Any core samples granted will remain the property of the institution to be used exclusively for teaching. Twenty (20) sets of core samples will be awarded each year, with shipping costs covered by the scheme.

Expressions of interest should initially be made using the [website contact form](#). The IAS will then send an information sheet and a short application form with a reply-to address. There are two calls for applications, closing at midnight CET on 30th June and 31st December respectively. Applicants will be able to select from three possible packages:

1. HAND SAMPLES

A set of hand samples allows students to appreciate the nature of core samples and to do a basic interpretation of lithology, colour, density, and depositional environment. Each set will consist of:

- Seven (7) pieces of half cut core – for example aeolian sandstone, fluvial conglomerate, deep-water sandstone, deep marine mudstone, pelagic chalk, oil-stained sandstone, anhydrite
- A poster providing some details on the cores
- A recycled core box to store the cores

2. RESINATED SLABS

A set of resinated slabs allows students to perform a more in-depth interpretation of sedimentary features of a range of depositional environments. Each set comprises:

- Three (3) resinated slabs (up to 50 cm in length) showing depositional environments such as fluvial, deep-water, aeolian, shallow marine or deltaic sedimentation
- Accompanying digital data (composite well logs, core reports, seismic lines)

3. COMBINATION

A combination of hand samples and resinated slabs is also possible. This will consist of up to two (2) slabs and four (4) hand samples, plus supporting information about the cores.



Applications will be evaluated by a sub-committee of the IAS Council of Management and NSC. Strong preference will be given to institutions that are financially or logistically unable to acquire these sets or similar materials themselves, and where the core samples will be most extensively utilised and strongly benefit the teaching programme.

If you are interested in applying on behalf of your institution please [get in contact with us](#) now! Please put **“North Sea Core”** in the title box of the web form.

Report: Cyclostratigraphy Intercomparison Project 2 Workshop

The study of astronomical climate forcing and the application of cyclostratigraphy have experienced a spectacular growth over the last decades. In the field of cyclostratigraphy a broad range in methodological approaches exist. However, comparative studies between the different approaches are rare. Different cases demand different approaches, but with the growing importance of the field questions arise about reproducibility, uncertainties and standardization of results. To satisfy this need in cyclostratigraphy, we initiated a comparable framework for the cyclostratigraphic community. The aims are to investigate and quantify reproducibility of, and uncertainties related to, cyclostratigraphic studies and to provide a platform to discuss the merits and pitfalls of different methodologies, and their applicability.

After a successful first CIP workshop in 2018 ([see published report](#)) activities shifted somewhat online during covid-19 with the development of the www.cyclostratigraphy.org website that hosts a suit of cyclostratigraphy-related educational and communication materials. Now we were happy to organise a second in-person workshop at the Belgian Royal Academy of Sciences in Brussels, 08-10 July 2024. The group consisted of about 30 participants representing over 20 institutions from over 10 different countries globally. Participants were asked to analyse real cyclostratigraphic data before the workshop. The compiled results were presented and discussed during the workshop, as well as a series of state-of-the art keynote lectures and topical debates. We thank IAS for supporting student travel expenses, as well as the Science Foundation Flanders (FWO), Le Fonds de la Recherche Scientifique (FNRS) and the International Commission of Stratigraphy for additional funding.

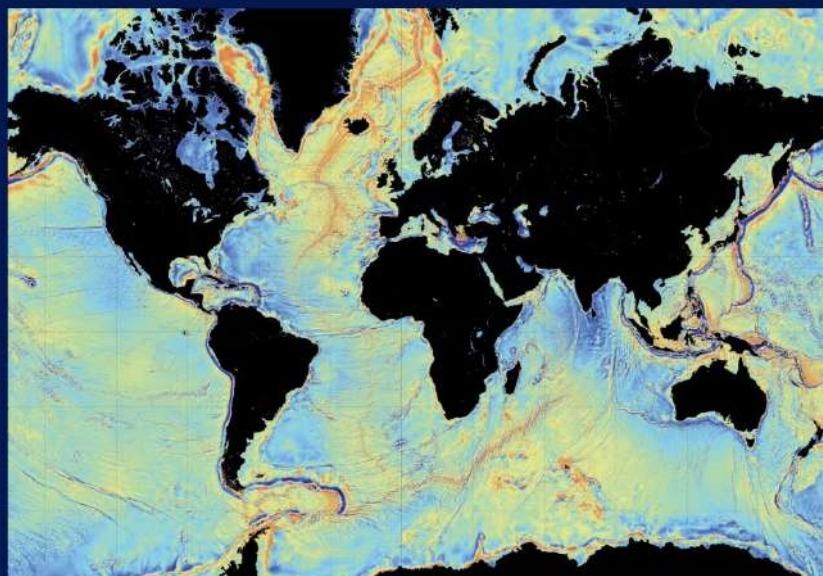


Group picture of the 2024 CIP2 workshop participants in the Belgian Royal Academy of Sciences.

Matthias Sinnesael, Trinity College Dublin

Announcing 1st Advanced Course on Deepwater Sedimentary Systems 23rd – 28th September 2024, Granada, Spain

This course aims to provide conceptual approaches and state-of-the-art information on these systems to update knowledge through **theoretical classes**, practical exercises including **core and seismic workshops**, and **two fieldwork days**. Do not miss it!



1st Advanced Course on Deepwater Sedimentary Systems

23rd – 28th September 2024
Granada (Spain)

It is specially designed for PhD and post-doctoral researchers, industry professionals, consultants, university faculty, government agency personnel and deepwater practitioners around the world seeking to understand the state-of-the-art for deepwater sedimentary systems. Students currently working on Deepwater Sedimentary Systems research will have the opportunity to briefly present their work to industry partners.

Detailed information and registrations can be found at <https://sedimentarysystems.es/>. Note the registration deadline is 31st August.



Venue

Parque de las Ciencias (Science Park): *Tecnoforo Hall*

www.parqueciencias.com



Javier Hernández, on behalf of the Organizers.

Announcing the 13th International Symposium on Fossil Algae

2nd – 6th September 2024, La Castella, Italy

The 13th International Symposium on Fossil algae of the IFAA (International Fossil Algae Association) will be held in Le Castella (Calabria, southern Italy), from 2nd to 6th September 2024, following the 12th International Symposium held in Lucknow (India) in 2019. The scientific topics will cover any aspects of calcareous algae and microbialites, including biological evolution, present-day and past biogeography, stratigraphic significance, paleoecology, and sedimentogenic role. Because of the central role of calcareous algae in the global carbon budget, especially welcome are contributions aimed at the identification and delimitation in space and time of marine habitats dominated by calcareous algae, across latitudinal gradients and in different (paleo)environmental settings.



The Symposium will be organized by the University of Milano-Bicocca, Department of Earth and Environmental Sciences, in collaboration with the Crotone Province, managing the Marine Protected Area of “Capo Rizzuto”, the Museum Pélagos, and the

Aragonese Fortress of Le Castella, where all scientific sessions will be held. Le Castella is a seaside village on the Ionian coast of Calabria, a region with extraordinary environmental richness and a unique archaeological heritage.

The Crotona basin is situated within the Ionian forearc basin and nestled within the Calabrian accretionary wedge, recording the geological evolution of the area from the Serravallian/Tortonian to the entire Quaternary. The destinations of our post-symposium field trip are the Pliocene cold-seep microbial carbonates occurring in the area of Belcastro and the Pleistocene marine terraces, rich in red calcareous algae, cropping out in the Crotona Peninsula.



Image credit Fabrizio Mauri

Further information about the symposium can be found [at this link](#) and on the circular appended to the end of this Newsletter.

Daniela Maria Basso, on behalf of the Organizers.

Forthcoming IAS International Meetings and IAS Sponsored Meetings

In **2025** the **38th IMS** will be on 26th – 28th June in **Huelva**, Spain

In **2026** the **22nd ISC** will be on 25th – 30th January in **Wellington**, Aotearoa - New Zealand.

In **2027** the **39th IMS** will be On 14th – 16th June in **Çeşme/Izmir**, Türkiye.

In **2028** the **40th IMS** will be in Patras, Greece (dates to be confirmed)

The IAS Council of Management have received a proposal to organise the 2029 IMS but welcome offers to host the next ISC in **2030**. if you are interested and wish to discuss further please use the [contact form](#) to let us know.

Sponsored Meetings

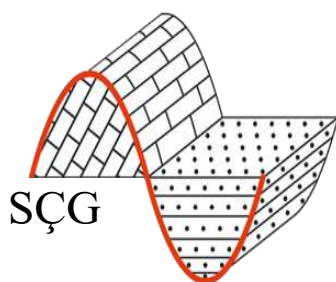
So far in 2024 the IAS is sponsoring the following meetings, either via Travel Grants to IAS Student Members or direct (logistical)sponsorship:



13th International Symposium on Fossil Algae

2nd – 6th September 2024, La Castella, Italy.

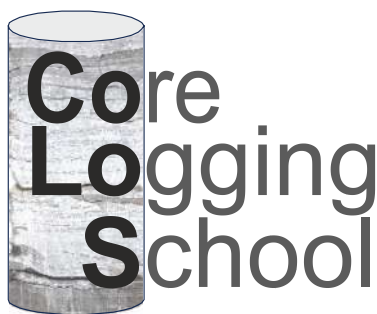
Registration deadline 25th August 2024.



Turkish Sedimentology Working Group Workshop 2024

5th – 8th September 2024, Munzur University, Tunceli, Türkiye.

The Turkish Sedimentology Working Group meets every year and welcomes international participants. This year's meeting is sponsored by the IAS and is on the theme of **Strategic Sedimentary Raw Materials**. The deadline for abstract submission is 01 July 2024. Join us for an enriching experience as we delve into the fascinating world of sedimentology in Tunceli, one of the best historical and natural places in Anatolia.

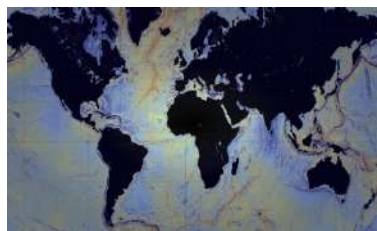


Core Logging School COLOS

15th – 18th September 2024, European Centre for Geological Education, Holy Cross Mountains, Poland

Registration is now closed.

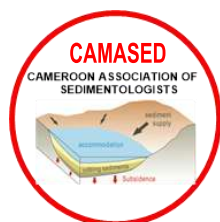
This School is held by the Polish Geological Society with lectures in the **European Centre for Geological Education** in Checiny and practical activities in the **Central Core Depository** in Chmielnik. The COLOS Programme integrates theoretical background of sedimentological borehole core logging, examples of applications and hands-on exercises.



1st Advanced Course on Deep Water Sedimentary Systems

23rd – 28th September 2024, Parque de las Ciencias, Granada, Spain.

Registration deadline 31st August 2024.



Sedimentology Without Borders (CAMASED 2)

24th- 26th October 2024, University of Buea, Cameroon

Student Travel Grants are available – closing date 26th September 2024. Please contact the **Meeting Organiser** directly for the Guidelines document and Application form (these are not available through the IAS website).

Proposing a Sponsored Meeting

Any IAS Member organising a sedimentological conference or international workshop, short course or field excursion on a sedimentology-related theme is entitled to apply for IAS sponsorship.



This is typically provided as Travel Grants to assist Student Members to participate in the meeting, plus publicity / marketing via the IAS Newsletter, social media channels and website. Application is a simple process, made through your profile on the IAS website. [Guidelines and application forms can be found here.](#)

Applications for IAS sponsorship must be received at least 6 months before the meeting registration deadline. Please be aware that meetings overlapping the dates of an IMS / ISC are unlikely to be supported.

In certain circumstances it is possible to apply for direct sponsorship, especially when the meeting will be a significant outreach event to help grow the Association. In such cases we recommend contacting the IAS in advance.

IAS Journals – Current Contents

Sedimentology Current Issue (August 2024)



Autogenic evolution of valley-confined deltas during sea-level rise: Insights from numerical and physical modelling

Ru Wang, Wonsuck Kim, Luca Colombero, Nigel P. Mountney, Yunhyeong Lee, Jaehyung Lee

Organic matter influence on ooid formation: New insights into classic examples (Great Salt Lake, USA; Triassic Germanic Basin, Germany)

Yu Pei, Pablo Suarez-Gonzalez, Jan-Peter Duda, Joachim Reitner

Origin, evolution and significance of giant buried sediment mounds near the Sahara Slide Complex, North-west African margin

Wei Li, Sebastian Krastel, Tiago M. Alves, Song Jing, Michele Rebesco, Felix Gross, Morelia Urlaub, Aggeliki Georgiopolou

Late-Holocene counterpoint deposition in the Lower Rhine River

Lisa Boterman, Jasper Candel, Bart Makaske, Jakob Wallinga

Eocene monsoon climate expansion in East Asia: Evidence from orbital-cycle driven terrestrial successions in the Jiangnan Basin, Central China

Yuan Cai, Xiangxin Kong

Testing magnetic tracers as indicators of sediment transport in a wave flume experiment

Soraia Romão, João Cascalho, Caroline C. Ferreira, Eric Font, Rui Taborda, Paulo A. Silva, João F. Duarte, Franziska Staudt

High-frequency palaeoenvironmental changes in the mixed siliciclastic–carbonate sedimentary system from a lower Permian restricted basin (West Gondwana, southern Brazil)

Ailton S. Brito, Afonso C. R. Nogueira, Renan F. Dos Santos, Rômulo S. Angélica, René Rodrigues

Carbonate microbialites and chemotrophic microbes: Insights from caves from south-east China

Min Ren, Brian Jones, Xiaomin Nie, Xin Lin, Chuang Meng

Morphodynamics and depositional architecture of mid-channel bars in large Amazonian rivers

Renato P. Almeida, Cristiano P. Galeazzi, Jim Best, Marco Ianniruberto, Ariel H. Do Prado, Liliane Janikian, Carlos E. M. Mazoca, Larissa N. Tamura, Andrew Nicholas

The hidden biotic face of microbialite morphogenesis – a case study from Laguna de Los Cisnes, southernmost Patagonia (Chile)

Clément G. L. Pollier, Alejandro N. Guerrero, Jorge Rabassa, Daniel Ariztegui

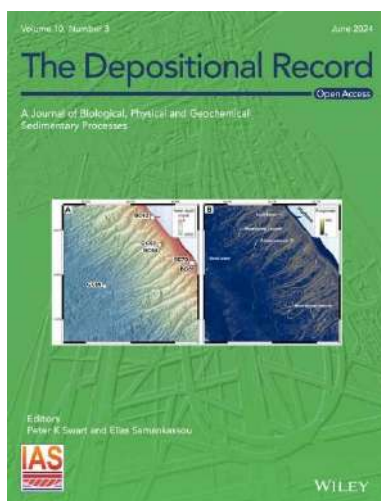
Evolving fill-and-spill patterns across linked early post-rift depocentres control lobe characteristics: Los Molles Formation, Argentina

Aurélia M-L. J. Privat, Jeff Peakall, David M. Hodgson, Ernesto Schwarz, Christopher A-L. Jackson, Jonatan A. Arnol

Grain-size component dependent storage threshold of orbital cycles in alluvial stratigraphy caused by autogenic dynamics

Daming Yang, Yongjian Huang, Xiang Li, Jianlei Gao, Shitao Yin, Chengshan Wang

The Depositional Record Current Issue (June 2024)



Chronostratigraphy and tectono-sedimentary history of the Eastern South Pyrenean foreland basin (Ripoll Syncline, North-East Spain)

Philémon Juvany, Miguel Garcés, Miguel Lopez-Blanco, Carles Martín Closas, Elisabet Beamud Amorós, Josep Tosquella, Susanna Emilia Bekkevold

Evolution of a late Quaternary succession by interpretation of high-resolution seismic and bathymetric data, Adriatic Sea

Federico Da Col, Massimo Zecchin, Dario Civile, Luca Baradello, Michele Deponte, Flavio Accaino

Changes in mesophotic carbonate-platform export across the end of the last glacial cycle (Saya de Malha Bank, western Indian Ocean)

Or M. Bialik, Christian Betzler, Juan Carlos Braga, John J. G. Reijmer, Jesus Reolid, Sebastian Lindhorst

The Depositional Record is a **fully open access journal** publishing high quality articles from across the field of sedimentology. It has an impact factor of 1.9 (2023) and 51 days average submission to first decision. The journal covers all timescales, from Ancient to Modern Earth and welcomes articles that emphasise the application of sedimentary processes to the study of paleoclimate, changes in the chemical environment, ocean acidification, extra-terrestrial sedimentology, and the application of genetic methods to understanding sedimentological processes.



Papers are solicited for forthcoming **Special Issue** of The Depositional Record: **Carbonate depositional environments: Past and future questions—A Tribute to the career of E.A. Shinn**

The renowned carbonate geologist, Eugene “Gene” Shinn (USGS, retired) just celebrated his 90th birthday. Under the mentorship of Bob Ginsburg and through a long succession of highly creative field and experimental studies, Gene emerged as one of the most influential sedimentary geologists of the 20th century. His work on the deposition, textural development

and lithification of tidal flat sediments; origin of dolomite in supratidal environments, Pleistocene and Holocene history of coral reefs in Florida and the Bahamas, impacts of African dust on Caribbean ecosystems, and on the origin of lime mud significantly expanded our knowledge of modern and ancient carbonate environments and provides a solid baseline for 21st century researchers to assess the impact of human activity on these environments of high natural and societal value.

We are honoring Gene’s career and contributions with a special issue of the Depositional Record. We envision an issue that devotes space to both overviews of the state of knowledge and technical contributions on current research on those problems Gene found most interesting and vexing, including the origin of whittings, modern dolomite, stromatolites, beachrock, coral reef demise, karst and carbonate aquifers, deepwater reefs, carbonate island development and paleoshorelines and sea-level change.

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Please note: For reasons that were explained in the [May Newsletter](#), the IAS Council of Management have taken the very tough decision to cease covering the APCs for all papers published in The Depositional Record as from July 2024. However, most European and many non-European universities have **transformational agreements (TAs) with Wiley which mean that the APC is covered. Where first authors don’t have access to these TAs, and cannot fund their APC via a grant, the IAS will continue to supply an annual budget to support APCs on the basis of need and a first come / first served basis.**

Basin Research Current Issue (July - August 2024)



Late syn-rift to early post-rift basin fill dynamics of a mixed siliciclastic-carbonate succession banked to a basement high, Hornsund, southwestern Spitsbergen, Arctic Norway

Anders Dahlin, Kasper H. Blinkenberg, Alvar Braathen, Snorre Olaussen, Kim Senger, Aleksandra Smyrak-Sikora, Lars Stemmerik

Geomorphological traits of landscapes in continental rifts—From fault-elastic rebound to sedimentary sinks

Alvar Braathen, Ivar Midtkandal, Per Terje Osmundsen

New insights into the structural and stratigraphic evolution of the Malay Basin using 3D seismic data: Implications for regional carbon capture and storage potential

Iain de Jonge-Anderson, Ana Widyanita, Andreas Busch, Florian Doster, Uisdean Nicholson

Characterization and mapping of continental breakup and seafloor spreading initiation: The example of the northern rifted margin of the South China Sea

Cuimei Zhang, Gianreto Manatschal, Brian Taylor, Zhen Sun, Minghui Zhao, Jiazheng Zhang

Unravelling controls on multi-source-to-sink systems: A stratigraphic forward model of the early–middle Cenozoic of the SW Barents Sea

Amando P. E. Lasabuda, Domenico Chiarella, Tor O. Sømme, Sten-Andreas Grundvåg, Anthony G. Doré, Grandika Primadani, Tom Arne Rydningen, Jan Sverre Laberg, Alfred Hanssen

Miocene sequences and depocentres in the Roer Valley Rift System

Alexandra Siebels, Johan ten Veen, Dirk Munsterman, Jef Deckers, Cornelis Kasse, Ronald van Balen

Spatial distribution of bedforms and related flow processes around canyon mouths: Insights from the Rovuma Basin (offshore Mozambique)

Yuhang Chen, Yintao Lu, Xiaofeng Wang, Guozhang Fan, Lin Li, Xiaoyong Xu, Guoping Zuo, Dali Shao, Quanbin Cao

Initiation and evolution of an epicontinental shelf-slope margin in an actively contracting deep-water basin: The Eocene Aínsa Basin, southern Pyrenees (Spain)

Ashley J. M. Ayckbourn, Rhodri M. Jerrett, Matthew P. Watkinson, Miquel Poyatos-Moré, Ian A. Kane, Stephen Covey-Crump, Kevin G. Taylor

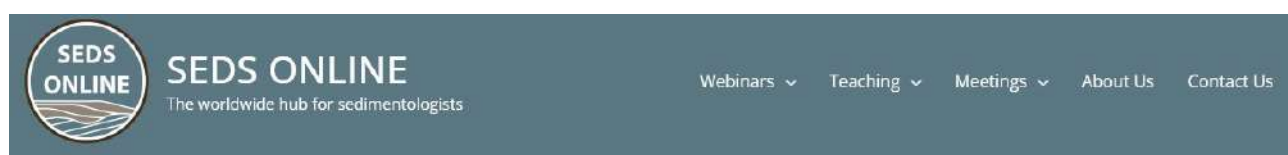
New insights into the structure of the Yinggehai Basin and its tectonic implications, South China Sea: Evidence from scaled physical models

Gengxiong Yang, Hongwei Yin, Dong Jia, Hongbin Wang, Wei Wang, Wenqiao Xu

Tectono-sedimentary evolution of high-displacement crustal-scale normal faults and basement highs on rifted margins: Klakk Fault Complex and Frøya High, Mid-Norwegian Margin

Jhon M. Muñoz-Barrera, Rob Gawthorpe, Tim Cullen, Sofia Pechlivanidou, Gijs Henstra, Atle Rotevatn, Ian Sharp

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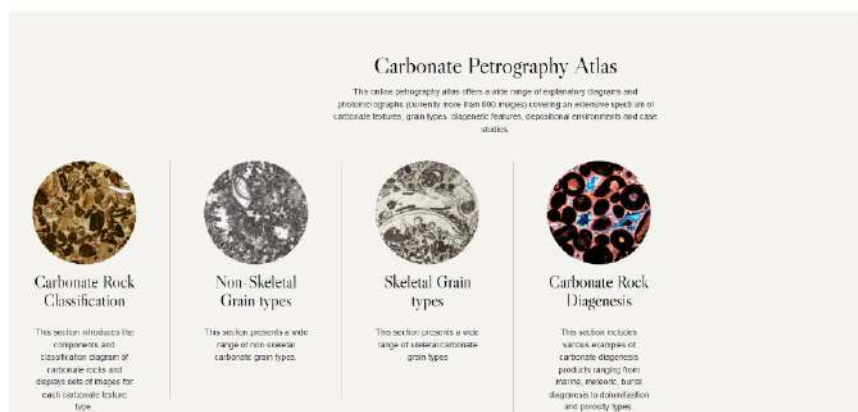
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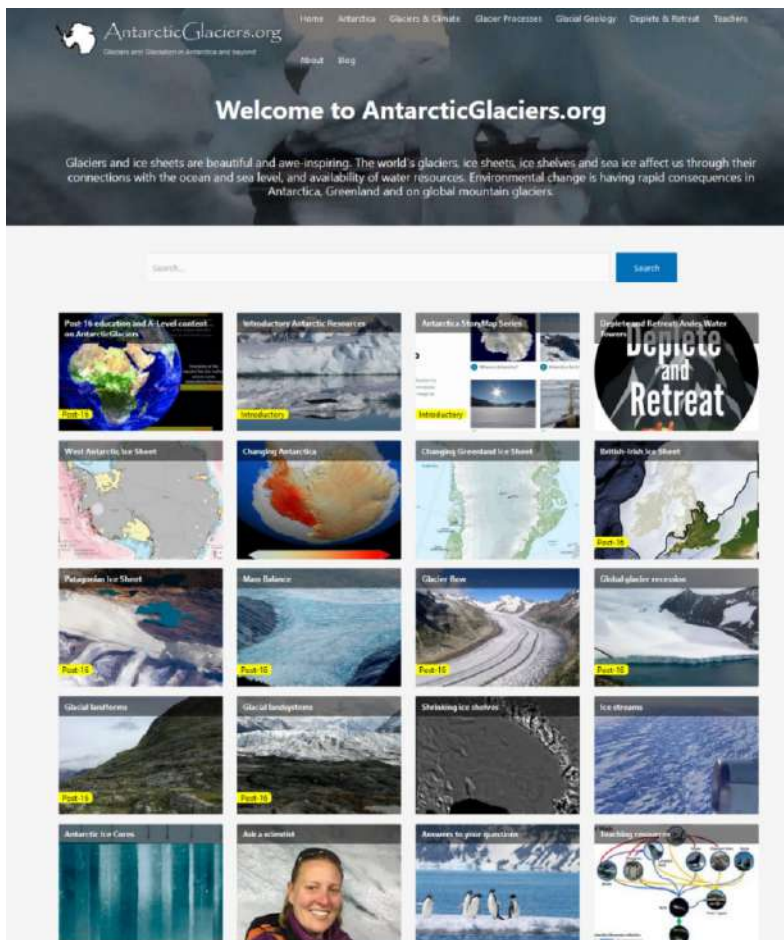
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Antarctic Glaciers is a fabulous resource for anyone interested in global glacial processes, landforms, and sedimentology – despite the name, this site extends way beyond Antarctica. It includes a wealth of educational resources, information on climate change and sea level rise, Antarctic data sets, a blog and opportunities to “ask a scientist” about anything to do with Antarctica and glacial systems.

<https://www.antarcticglaciers.org/>

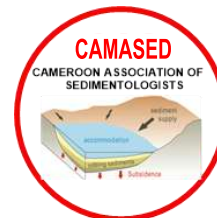
The **Tidalites Scientific Group** is a loose association of individuals who are specifically interested in the dynamics of the water-level variations and water fluxes that are generated by tides, and also in the morphological features of modern and ancient sedimentary

deposits that are produced by tidal currents. The community is represented by academia, research centres, government agencies, industry, and other institutions, with scientific or professional interest in Tidal Dynamics and Sedimentology of modern and ancient environments.

Among the activities the Group aims to promote are the endorsement of thematic conferences, seminars, laboratory activities, PhD opportunities and annual field courses focused on modern and ancient tidal environments, including the organization of the Tidalites congress every four years.

The IAS supports the Tidalites initiative by promoting its activities and welcoming proposals for publications arising from its events. Joining the Tidalites community is free – please follow [this link](#) to subscribe.





UNIVERSITY OF BUEA, DEPARTMENT OF GEOLOGY
2nd EDITION OF CAMASED (CAMEROON ASSOCIATION OF SEDIMENTOLOGIST)
and
National conference on SEDIMENTOLOGY WITHOUT BORDERS
25th -26th October 2024

ABOUT THE CONFERENCE

We cordially invite you to the **2nd Edition of the Cameroon Association of Sedimentologists (CAMASED-2024)** and the **National Conference on "Sedimentology without Borders"**. The conference will be from **25th to 26th October 2024 at the University of Buea, Cameroon**. We will dwell on 8 major themes that incorporate diverse sedimentology disciplines, illustrating multidisciplinary approaches. Our main goal is to bring experts, researchers, academicians, and professionals from the various field of sedimentology to share their innovative research, ideas, and experiences related to sedimentary processes, environments, and resources. The conference will feature plenary sessions, keynote speeches, invited talks, oral presentations, and poster sessions on the identified themes. The conference is expected to contribute to the advancement of sedimentological research, promote sustainable utilization of sedimentary resources, and enhance our understanding of sedimentary processes and environments in Sedimentology, a multidisciplinary field that plays a crucial role in understanding Earth's history, identifying and managing energy and mineral resources, addressing environmental issues, mitigating geological hazards, studying climate change, and supporting civil engineering and construction projects. Sedimentology is vital in providing understandings into the processes that shape our planet and contribute to the knowledge of paleo science and sedimentary ore deposits. Please visit our website: <https://camased.com>

ABSTRACTS DETAILS

The conference will consist of oral presentations, poster presentations, and invited talks by renowned scientists and experts from industries and research institutions. Abstracts on the proposed conference themes should be maximum 500 words, formatted in A4 paper size, Times New Roman, 12 point, and 1.5 line spacing with normal margins on all sides, and sent to the Organizing Secretary via emails (ericekoko@gmail.com/fosso.menkem@gmail.com) by 10th October 2024. Poster templates should include the title, author(s) with affiliation(s) and email, followed by introduction, objective, methodology, results, conclusions and/or discussion, references, and acknowledgement. Accepted abstracts will be published in the pre-conference abstracts volume and made available to registered delegates.

SCIENTIFIC THEMES

1. Sedimentary Geochemistry, 2. Paleosedimentary History
3. Diagenesis, 4. Basin Analysis and Geophysics, 5. Petroleum Geology; 6. Sedimentary Ore Deposits, 7. Heavy Metal Origins in Sediments and water, 8. Carbonate Sedimentology, 9. Special theme: Interrelationship Between Sedimentology, Rock Deformation and Ground Water.

WORKSHOPS AND SHORT COURSES OFFERED

1. Alluvial Mineral Deposits: Geology, Geochemistry and Genesis. Case study: Cameroon Alluvial Gold Deposits
1. Sources of Metals Related to Gold Occurrence
2. State-of-the-Art Geophysics as Key for Basin Analysis and Groundwater Prospection
3. Sedimentary Provenance: Methodological Tools
4. Waters Resources in Cameroon

ACCOMMODATION: The organizing committee will provide information on hotels and guest houses located near the conference venue, and participants can avail themselves of accommodation on a self-payment basis.

VENUE: The Conference will be held at the Department of Geology, University of Buea. This is located in Molyko, about 500 m from the Mile 17 motor park. Taxi fair to the entrance of the University is 200 CFA average cost.

ORGANIZING COMMITTEE

Chief Patron: Prof. Agyingi Christopher, UB; Prof Ekomane Emile, UY1; Prof Gabriel Ngeutchoua, UY1; Prof John Eyong Takem, UBa.

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REGISTRATION

Registration fees for the conference are 7,500 CFA for students and 15,000 CFA for non-students. Please use the online registration form on the website.

The International Association of Sedimentologists is sponsoring the conference by offering a number of travel grants to cover some of the costs of participating. IAS Student Members who wish to apply for these should contact Dr. Bokanda Ekoko (details below) for application forms and guidelines. Travel grant recipients must be presenting a talk or poster at the conference. The closing date for applications is 25th September 2024.

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eric_ekoko@yahoo.com/+237675091692

Dr. Elie Fosso Menkem

fosso.menkem@gmail.com/+237 674830015

IAS Research Grant Reports

Postgraduate Research Grant Scheme

Sedimentary architecture of an exceptionally exposed channellevee complex from the Taza Guercif Basin (late Tortonian, NE Morocco) – **Daniele Invernizzi**

Determination of lithological variability and origin of the rocks of Istebna Formation on the example of Karolówka, Silesian Beskid (Polish Outer Carpathians) – **Monika Szczuka**

Sedimentary architecture of an exceptionally exposed channel-levee complex from the Taza Guercif Basin (late Tortonian, NE Morocco)

Daniele Invernizzi (Università Statale di Milano)

INTRODUCTION AND AIMS:

Over the past decade, significant progress has been made in the sedimentological understanding of deep-water turbidite channels (McHargue et al., 2011; Talling et al., 2012; Janocko et al., 2013; Fonnesu and Felletti, 2019; Hubbard et al., 2020; Tek et al., 2020; Reguzzi et al., 2023; Zuffetti et al., 2023). Interest has been given to the definition and composition of the architectural elements of turbidite channel-levees (Pizzi et al., 2023; La Marca et al., 2023; Lewis et al., 2023; McArthur et al., 2024), which are relatively coarse-grained sedimentary deposits found on both continental slopes and basin plains (Janocko et al., 2013). These architectural elements, characterized by favourable porosity and permeability properties, are appealing targets for various applications, such as CO₂ sequestration, groundwater exploitation and other resources (Weimer et al., 2000; Pettingill & Weimer, 2002; Marshall et al., 2016).

Understanding their sedimentary heterogeneity is crucial as it can help assess reservoir volumes, connectivity, and optimize fluid production or storage. Additionally, recent studies (Pohl et al., 2020) highlight the role of channels in transferring pollutants from the continent to the deep sea (e.g., chemical substances, microplastics), making their understanding important for mitigating environmental issues.

The Tachrift Project (Felletti et al., 2023), in collaboration with the University of Taza (Morocco) and the Turbidite Research Group (TRG, University of Leeds), aims to fill this knowledge gap by characterizing channel-levee complexes belonging to the Tachrift system (late Tortonian; Fig. 1) in the Taza-Guercif Basin (NE Morocco).

GEOLOGICAL SETTING:

The Taza-Guercif Basin (NE Morocco; Fig. 1A) is a remnant portion of the Rifian Corridor (Capella et al., 2018), an ancient seaway that connected the Atlantic Ocean with the Mediterranean Sea during the Late Miocene (Bernini et al., 2000; Gelati et al., 2000). The basin lies on a Cretaceous – Early Miocene unconformity resulting from tectonic inversion of Jurassic rift faults of the Middle Atlas (Bernini et al., 2000; de Lamotte et al., 2009). The marine transgression within the basin began during the late Tortonian period (Krijgsman et al., 1999; Fig. 1B), marked by sedimentation of the Ras el Ksar Formation, a shallow marine deposit up to 500 metres thick. Continued transgression

led to the deposition of the Melloulou Formation, characterized by interbedded hemipelagic marlstones and turbidites, records the deepening and sedimentation rates during the Tortonian (Krijgsman et al., 1999; Bernini et al., 2000; Gelati et al., 2000; Sani et al., 2000; Fig. 1B). In the early Messinian, a tectonically controlled regression resulted in deposition of the Gypsiferous marlstones and the sand/mud alternation of the Kef Ed Deba Formation (Gelati et al., 2000; Sani et al., 2000; Fig. 1B). Continued uplift from 6.7 Ma resulted in termination of marine sedimentation (Krijgsman et al., 1999; Capella et al., 2018). The Tachrift System, along with the El Rhirane System, constitutes the two turbiditic sub-Units within the Melloulou Formation, exposed to the east and west of the Zobzit River, respectively (Fig. 1B). The Tachrift System were mapped as nine vertically stacked channel-levee turbidite complexes (Felletti et al., 2020, 2023; Fig. 1B), each separated by hemipelagic marlstone packages. These deposits span a period of around 0.5 million years.

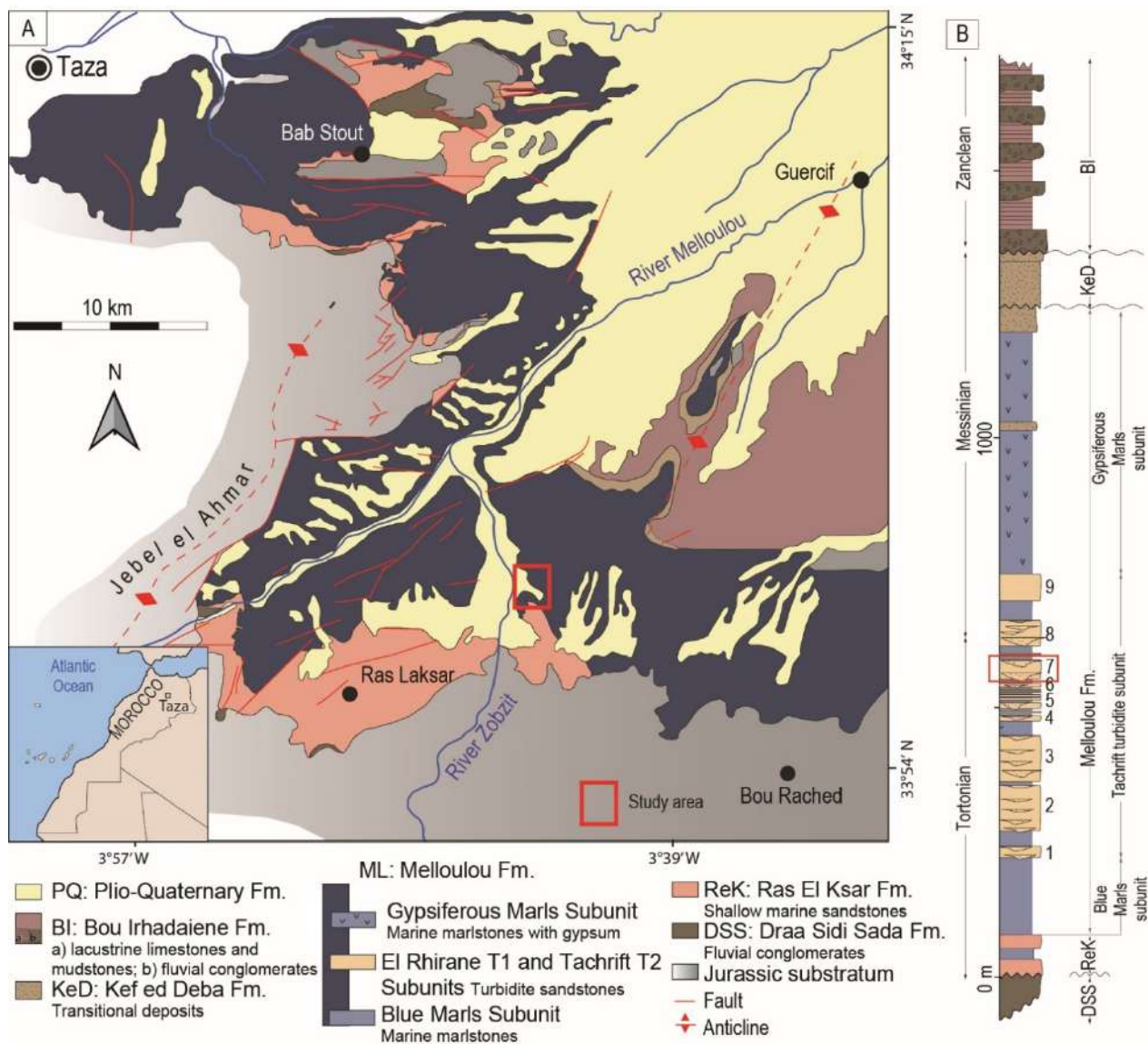


Fig. 1: A) Geological map of the Taza-Guercif Basin (TGB) with study area in red box (modified, after Bernini et al., 1994); B) Stratigraphy of the Zobzit section, and the nine channel-levee complexes of Felletti et al. (2020) (modified, after Krijgsman et al., 1999b).

METHODS:

The c.a. 500-metre-wide portion of outcrop of Complex 7, was investigated through the acquisition of thirty-six detailed stratigraphic logs (Fig. 2). To achieve high resolution and precision, the logs were measured at an average interval of 25 metres and geolocated using a Garmin GPS. Correlations between logs were traced physically by walking-out beds and tracing beds in photo-panels. In the very rare absence of lateral outcrop continuity, correlations were achieved by comparison of common stratigraphic patterns and compatible facies association tied with general palaeoflow direction.

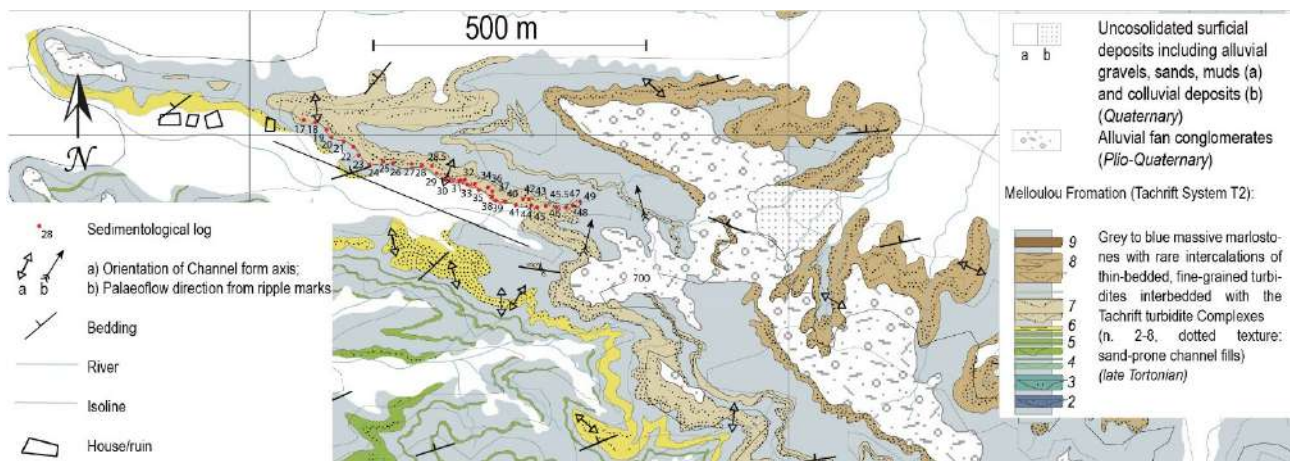


Fig. 2: Geological map (modified after Felletti et al., 2020) showing the studied outcrop of Complex 7 with location of collected sedimentary logs.

PRELIMINARY RESULTS:

Sedimentary facies

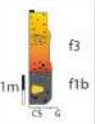
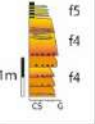
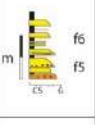
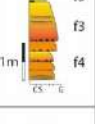
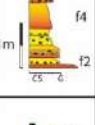
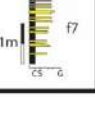
Ten distinct sedimentary facies were identified based on lithology, grain size, sedimentary structures, bed thickness and sand/mud ratio (Tab. 1). Among these facies three are characterized by chaotic deposits (f1a, f1b and f1c), one by a poorly sorted conglomerate (f2), five facies are consisting of sandstones and sandstone dominated heterolithics (from f3 to f7), and mudstone (f8).

Facies	Code	Name	Thickness [cm]	Grain size	Sedimentary features	Process	Facies	Code	Name	Thickness [cm]	Grain size	Sedimentary features	Process
	f1a	Sandy chaotic	50-100	/	Plastically deformed sandy beds, granules to cobbles, polygenic intra-clast brecciation and shell fragments.	Deposition due to a cohesive, plastic, laminar sand-dominated debris flow (Lowe, 1982)		14	Thick to medium bedded amalgamated sandstones	S:50-150 M:0-20	MS-S	Medium to coarse grained sandstones, typically amalgamated. Mud clast breccias are observed near erosive bases. Bioclastic fragments. At the top, plane parallel laminae.	Loss of capacity along with a lack of flow steadiness, of a medium-density turbidity current allowed deposition of this facies (Lowe, 1982; Muller & Alexander, 2001)
	f1b	Muddy chaotic	150-300	/	Mud clasts, polygenic granules to pebbles, clasts and biogenic fragments. Occasional sandstone boulders.	Deposition due to a cohesive, plastic, laminar flow of mud dominated debris flow (Lowe, 1982)		15	Medium bedded sandstones	S:15-50 M:0-20	IS-MC3	Fine parallel and low angle laminations. Flute and groove marks. Pervasive bioturbation, oxidation, and bioclastic fragments.	Deposition related to a waning, low to high density turbidity currents (Lowe, 1982; Muller & Alexander, 2001)
	f1c	Debrisites	10-50	/	Ungraded, extremely bioturbated and oxidized. Wood, coal fragments, and ostracods.	Deposition due to an massive flow of a cohesive flow. During deposition the grains of different sizes were not segregated by differential settling (Talling et al., 2012b)		16	Thin bedded laminated sand/mud couplets	S:5-20 M:1-5	VS-MMS	Plane parallel lamination. Bioturbated mud clasts. Ripples are rarely observed at the top of beds.	Deposition from low density waning flow (Lowe, 1982)
	f2	Poorly sorted conglomerate	1-100	vs-Cobbles	Poorly sorted, clast-supported granule to pebble-grained conglomerate. Polygenic debris. The cobbles are punctate and rarely linear. Well-rounded with high sphericity clasts. Fossil fragments.	The deposition is attributed to traction carpet sedimentation from a largely bypassing high-density turbidity current (Muller & Alexander, 1997)		17	Very thin bedded sand/mud couplets	S:2-10 M:2-10	VS-M	Rarely plane parallel lamination and oxidation.	The deposition is attributed to slow deposition from low density turbidity currents (Lowe, 1982; Muller & Alexander, 2001)
	f3	Very thick bedded massive amalgamated sandstones	S:100-300 M:0	MC-S-S	Massive sandstones. Coarse-grained lenses. Normal grading. Traction carpets. Remotely coals and shell fragments. Mud clast breccias near their erosive bases.	Rapid deposition from an unsteady but fully turbulent sand-rich high-density turbidity current (Lowe, 1982; Talling et al., 2012b)		18	Massive mudstone	S:0 M:1-1000	Mud	Grey in color. Massive. Fossil fragments. Bioturbation.	The facies is interpreted as hemipelagic background sedimentation and also from deposition from the less concentrated portion of a low density turbidity current (Muller, 1992)

Tab. 1: Summary of sedimentary facies recognized within the channel-levee Complex 7.

Facies associations

Six distinct facies associations have been identified and grouped in three categories based on their distinct depositional styles (Tab. 2 and Fig. 3): 1) erosional channel fill elements (FA1 and FA2); 2) lateral accreting elements (FA3, FA4 and FA5); 3) and overbank elements (FA6).

	Log	Element	Facies	NTG	Basal grainsize	Amalgamation %	Thickness [m]	Width [m]	Interpretation
FA 1		EROSIONAL CHANNEL FILL ELEMENTS	f1a; f1b; f3	100	mcS	100	1.5-9	100-200	Channel axis
FA 2			f4; f5	80-100	mcS	90-100	1.5-6	50-150	Channel margin
FA 3		LATERAL ACCRETING ELEMENTS	f1c; f5; f6	30-40	fmS	30-40	0.3-0.8	150-200	Top set
FA 4			f2; f3; f4; f5	80-100	mS	80-100	1.5-2.5	150-450	Middle set
FA 5			f4; f2	90-100	cS	90-100	0.6-1	90-150	Toe set
FA 6		OVERBANK ELEMENTS	f6; f7	20-30	fS	0-20	1-4	>500	Overbank (levee/ crevasse/ terrace)

Tab. 2: Main features of the six facies associations recognized in this work.

CONCLUSIONS AND PERSPECTIVES:

The studied outcrop represents an exceptionally exposed portion of the fill of a long-lived depositional pathway that accumulated 30 m of mostly sandstone in a deep-marine slope setting, within the Taza-Guercif Basin. Based on physical correlations along a NW-SE oriented continuous outcrop transect of 500 metres, mostly perpendicular to the main palaeocurrent direction, the studied portion of Complex 7 has been divided into six distinct facies association. The facies associations are grouped in three categories based on their distinct depositional styles: (i) erosional channel fill elements, (ii) lateral accreting elements and (iii) overbank elements. Each of these depositional elements have distinct sedimentary features which can affect reservoir attributes (connectivity and continuity).

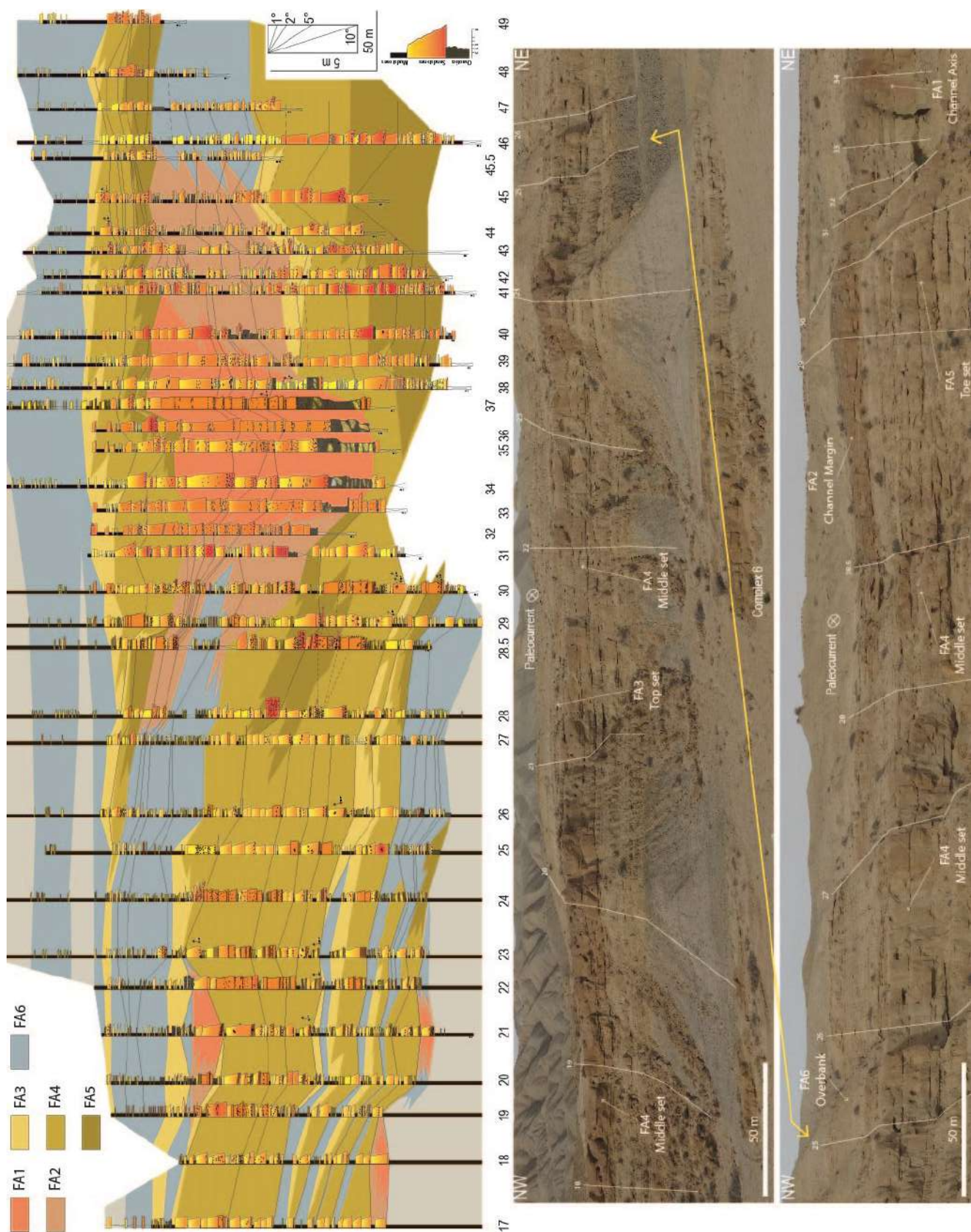


Fig. 3: Correlational panel showing the subdivision in facies association of the outcrop. The two panoramic pictures below show the distribution of the facies association in outcrop view.

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Determination of lithological variability and origin of the rocks of Istebna Formation on the example of Karolówka, Silesian Beskid (Polish Outer Carpathians).

IAS Postgraduate Grant Report (2nd session 2021)

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Introduction

The Carpathians is a mountain range covering i.e. the area of Poland, Czech Republic, Slovakia, and Romania with a length of over 1,300 km. Geographically, this range is divided into the Western, Eastern and Southern Carpathians (Gawęda et al. 2022). In Poland, the main range is the Western Carpathians, traditionally divided into the internal Central Carpathians and the external Outer Carpathians, separated by the Pieniny Klippen Belt (e.g., Oszczytko, 2004, 2006). They were created due to the collision of several microplates with the North European platform during the Cretaceous-Neogene period. The Western Outer Carpathians are composed of nappes and thrust sheets containing a sequence of Carpathian clastic deposits of flysch character (e.g., Golonka et al., 2019; Książkiewicz, 1977; Ślaczka et al., 2006), that were deposited on the crystalline basement from Late Jurassic to Early Miocene. During the Late Oligocene and Miocene stages of the Alpine orogeny, the nappes have been detached from the basement, were overthrust each other and next, on the North European Platform and the Carpathian Foredeep (Golonka et al., 2006a, 2006b, 2009, 2011; Ślaczka et al. 2006). The nappes consist of Magura Nappe, Fore-Magura Nappe, Silesian Nappe, Subsilesian Nappe and Skole Nappe (Gawęda et al., 2019). The nappes were formed as a result of filling the Carpathian basins with deposits originating e.g. from erosion of the Silesian Ridge.

Silesian Ridge was an elongated structure stretching through the Carpathian part of Tethys Ocean. The Silesian Ridge, also known as the Silesian Cordillera, was one of the most important paleogeographic elements in this part of the Tethys Ocean (e.g. Książkiewicz, 1965; Unrug 1968; Golonka et al., 2003, 2014). It was a large, stable structure which separated two sedimentary domains with different sedimentation regimes: the Magura Basin, located on the south, and the Silesian Basin, located on the north (Golonka et al., 2014, 2019). The Silesian Ridge was subject to periodic uplifts and depressions. The optimum stage, connected with the maximum form uplifting and the emergence of its peak areas of the western part, took place in the Late Cretaceous and Paleocene interval (Unrug 1968). The emerged zones were subject to advanced erosion, which led to the gradual exposure of the deeper and internal structures of the Silesian Ridge. In the Late Cretaceous and Early Paleogene, during advanced erosion, eroded material was successively moved to the deeper parts of adjacent basins as clasts. Initially, it was deposited on the narrow shelves of the Ridge and next transported by gravity currents into inner basinal areas (Książkiewicz, 1962, 1977; Unrug 1963, 1968). Nowadays, direct analysis of the Silesian Ridge is not possible because it was buried and/or destroyed, and covered by deposits during the Alpine orogeny. The Tethys Ocean was closed, and the Outer Carpathian basins were

folded and uplifted, since the Miocene, they have been part of the Carpathian mountain chain (e.g. Golonka et al., 2019).

The deep water deposits (sedimentary fillings of basins) are exposed in the folded surface structures. Due to the lack of direct access to the structure of the Ridge, it is possible to recreate it using material from recycled sediments.

Materials and methods

Concerning the study of the Istebna Formation rocks, part of which are samples from Karolówka, the most important unit is the Silesian Nappe. That unit is represented by sedimentary rocks formed in the Early Jurassic–Paleogene. The older complex (Early Jurassic – Late Cretaceous) consists of clay-shale deposits with a complex of limestones and calcareous sandstones, while the Early Cretaceous - Paleogene sediments are mainly thick sandstone complexes (Paul et al. 1996). Istebna Formation was created as a result of the destruction of the Silesian Ridge, which was formed in the Jurassic time span and functioned until the Late Paleogene (e.g., Unrug 1968, Golonka et al., 2003). The most exotic-bearing part of the Istebna Formation is the Upper Istebna Sandstone, from the samples are originating.

The research material was collected from a rock formation located behind the fork of the Olza river into the two streams (N49°34'39.5", E18°58'12.5") at the base of the Karolówka mountain, near the village of Kamesznica in the Silesian Beskid (Western Outer Carpathians, Poland; Starzec et al. 2017). Samples were taken within the conglomerate and sandstone layers. These are exotics with sizes ranging from a few to a dozen centimeters. The collected material consisted of clasts: gneiss, crystalline schists, phyllites, quartzites and granitoids.

Petrographic analyses of thin sections were performed using Nikon Eclipse LV POL 100 microscope at the Department of Geology, Geophysics and Environmental Protection at the AGH University of Krakow. This microscope was used to constrain textural and microstructural relationships and to determine the possible presence of heavy minerals (zircon, apatite and rutile). The petrographical observations were used to select representative samples for heavy minerals separation and subsequent U-Pb dating, which is not a part of this project.

Zircon, rutile and apatite crystals will be separated using standard density separation techniques (crushing, sieving, washing and panning). This separation will be carried out at the Institute of Geological Sciences, Polish Academy of Sciences, Kraków, Poland. The zircon, rutile and apatite crystals will be hand-picked under a binocular microscope, cast in 25 mm diameter epoxy resin mounts, and then ground and polish to expose the grain interiors. Mineral textures will be imaged then using back-scattered electron (BSE) and cathodoluminescence (CL) detectors on a FET Philips 30 scanning electron microscope with a 15 kV accelerating voltage and a beam current of 1 nA at the Faculty of Natural Sciences, University of Silesia in Katowice, Poland.

Due to the failure of the mineral separation equipment, it was not possible to perform this part of project. It also made impossible to observe the heavy minerals under a scanning microscope.

Results

During field research, 12 samples were taken from the outcrop, of which 5 samples were selected for further analysis.

Sample Kar-B is a phaneroblastic, light gray, coarse-grained leucogneiss with clearly visible quartz crystal, feldspars, biotite and muscovite. Sample Kar-1 is a light gray, phanocrystalline granitoid with feldspars, quartz, biotite and muscovite. Sample Kar-2 is a coarse-grained, gray gneiss with visible lenticular texture. Main minerals are quartz, feldspars, biotite and muscovite. Sample Kar-4 is a light gray, layered gneiss. Main minerals are quartz, feldspars and muscovite. Sample Kar-7 is a fine-grained, gray gneiss with visible folding of layers and lenticular texture. Main minerals are quartz, feldspars, elongated biotite and muscovite.

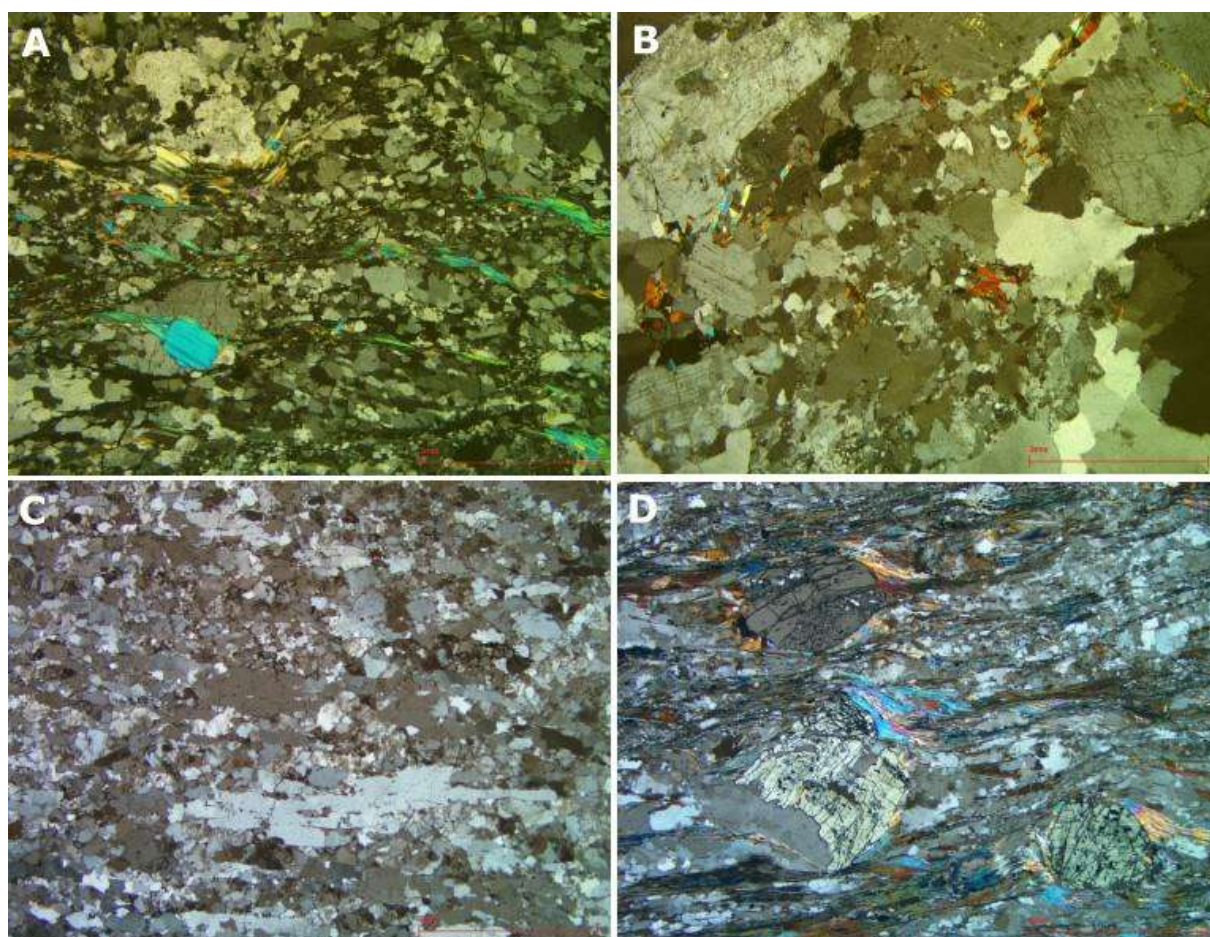


Figure 1. Photographs of the studied exotic blocks from Karolówka section: A – microtexture of the leucogneiss Kar-B; B - microtexture of the granitoid Kar-1; C – microtexture of the gneiss Kar-4; D – microtexture of the gneiss Kar-7.

Summary

Comparing the analyzed material to the samples previously examined by me, I can state with high probability that the initially examined samples may constitute material originating from the erosion of the Silesian Ridge. This is evidenced by a similar lithological inventory of the rocks: quartzites, schists, gneisses, granitoids and sandstones commonly found in the surroundings of exotic rocks. In the locations I previously analyzed: Kamesznica (Szczuka et al. 2022) and Targoszówka (article in the publication process), there was a similar lithological inventory, and the heavy minerals separated from samples - zircons, apatites and rutiles

indicated that the Silesian Ridge was composed of Meso-Variscan granitoid rocks. surrounded by metamorphic rocks, while the protolith was sedimentary.

In conclusion, the researched material can complement previous analyses of the Silesian Ridge unit and confirm the previously stated theses.

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