

The Newsletter of the International Association of Sedimentologists

Issue 12, 2020



Dear IAS Members,
Welcome to the last IAS Newsletter of 2020.

For many in our global sedimentology community, 2020 has been a very challenging year. Throughout the pandemic, the IAS has worked hard to support our members, and the wider geological community. We have increased the number of IAS grants to MSc and PhD students, post docs and institutions – support that has been critical in helping members of the sedimentology community cope with changes to their research plans. During 2020 the IAS initiated new long-term sponsorship agreements with a number of exciting initiatives to benefit our community. Most recently, [AntarcticGlaciers \(www.AntarcticGlaciers.org\)](http://www.AntarcticGlaciers.org) joined [CarbonateWorld \(carbonateworld.com\)](http://carbonateworld.com) and [Seds Online \(sedsonline.com\)](http://sedsonline.com) to benefit from IAS support. The IAS journals (Sedimentology, The Depositional Record, Basin Research) have seen unprecedented manuscript submissions with our editorial boards working overtime to cope with the demand. We are not resting on our laurels, as 2020 draws to a close, we can look forward to announcing many exciting new activities and initiatives in the early days of 2021.

Remember, to take advantage of all that the IAS has to offer, you need to keep your membership up to date. We are delighted that membership fees have again been frozen this year. We are not for profit – we are for you!

Finally, on behalf of the Society, I wish you and your families good health and all the best for the New Year.

Stephen Lokier, *General Secretary*

The 35th International Meeting of Sedimentology, Prague 2021 NOW 5 days of Sedimentology!

Stop Press...Stop Press...Stop Press...Stop Press...Stop Press... Stop Press...Stop Press...Stop Press...Stop Press...
Registration fees for IAS Student Members presenting as first authors at the 35th IMS will be paid by the IAS! More details will be coming soon – keep an eye on the conference website and IAS Social Media!

The 35th International Meeting of Sedimentology will be held between 21st-25th June 2021 in Prague, Czech Republic.

Everything that you need to know about the meeting is contained in the Second Circular that is now available on the [conference website](#).



Have you renewed your IAS membership for 2021?

The IAS is the home of Sedimentology.

We are very proud of our ability to keep our membership fees so much lower than most other professional societies.

IAS membership runs on an annual basis (1st January – 31st December) so, please do be certain to invest 5 minutes to renew your membership for 2021.

You can find a complete list of the benefits of membership of the IAS [website](#).

You may also consider becoming a full member for 5 years at a cost of only €100 – effectively getting one year's membership for free. We also offer 'lifelong' membership for just €400.

STUDENT	FULL
STARTING FROM 10€	STARTING FROM 25€ /year
INCLUDED	INCLUDED
Annual membership fee	Annual membership fee
Online Sedimentology Online Basin Research Online Special Publications (5+ years)	Online Sedimentology Online Basin Research Online Special Publications (5+ years)
Travel Grants Postgraduate Grants J. McKenzie Field Work Award Conference Sponsorship Request	Post-doctoral Grants Institutional Grants Conference Sponsorship Request
Printed Sedimentology at favourable rates Reduction for IAS Conferences Printed thematic books discounts	Printed Sedimentology at reduced fee Reduction for IAS Conferences Printed thematic books discounts
Special Lecture Tour hosting	Special Lecture Tour hosting
Newsletter Contributed Content Members Directory	Newsletter Contributed Content Members Directory
OPTIONAL	OPTIONAL
Printed Sedimentology +20€ Online Petroleum Geology +45€ Online + Printed Petroleum Geology +50€ Friendship Scheme Sponsor +15€	Multiple years membership at reduced fee Lifelong membership at reduced fee Printed Sedimentology +20€/year Online Petroleum Geology +45€/year Online + Printed Petroleum Geology +50€/year Friendship Scheme Sponsor +15€/year

The IAS pays 100% of the Article Processing Charges (APC) for papers accepted in The Depositional Record!



The Depositional Record is a fully open access journal publishing high quality articles from across the field of Sedimentology. The journal covers all timescales, from Ancient to Modern, 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.



Article publication charges are still fully covered by the IAS but this will have to change soon, so [submit your paper today!](#)

Follow the IAS on Social Media

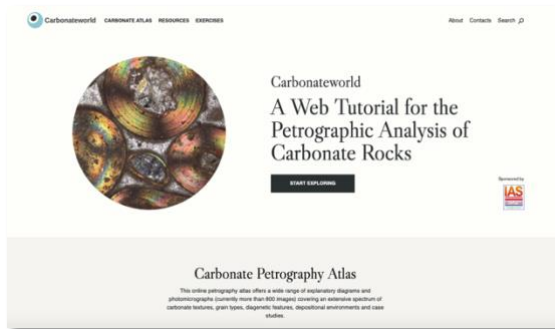
Follow the IAS on [Facebook](#), [Twitter](#), [WeChat](#) and [LinkedIn](#) to keep up to date with all of the latest news, announcements and happenings.

@sedimentology and IAS沉积学之家



Online resources sponsored by the IAS....

The IAS proudly sponsors several online resources.



Carbonateworld is an online atlas containing more than 800 images covering an extensive spectrum of carbonate textures, grain types, diagenetic features, depositional environments and case studies. The images are organised in categories and subcategories (e.g., carbonate rock classification, skeletal grains, ooids, corals, burial diagenesis etc.) and are frequently updated with new material.

<https://carbonateworld.com/>



Seds Online is an exciting free, online initiative that provides an interactive, adaptable and accessible online platform for anyone with an interest in the field of sedimentology. **Seds Online** welcomes members at any career stage, from both industry and academia!

<https://sedsonline.com>: Twitter [@Seds_Online](https://twitter.com/Seds_Online)



The **Antarctic Glaciers website** is a fabulous resource for anyone interested in global glacial processes, landforms and sedimentology – despite the name, this site goes way beyond Antarctica!

www.AntarcticGlaciers.org

IAS Regional Correspondents

IAS **Regional Correspondents** are your local hotline to the IAS.

Check out the **News Feed** to see what is happening in your local community. At this link you will also be able to select your correspondent and even elect to receive information from multiple correspondents.

IAS **Regional Correspondents** are IAS Members who have volunteered to act as a representative between sedimentologists in their region and the IAS. If you know of any sedimentology events going on in your region, then please get in touch with your Regional Correspondent and let them know. Similarly, if your region lacks a Regional Correspondent ([see the map here](#)) and you would like to propose an IAS Member (Full or Student), or yourself, for this position then please send an email to the **General Secretary**.



Open – Applications for Institutional Grants (Spring 2021 Session)

Twice a year, IAS awards an **Institutional Grant** of maximum 10,000 Euro, which is intended to support capacity building initiatives in less developed countries (LDCs). Grants will allow earth science departments in LDCs to acquire durable sedimentological equipment for teaching and research, or tools that can be used by all geology students. The grant application should thus clearly demonstrate how the grant will increase the recipient's capacity to teach sedimentology at undergraduate level in a sustainable way.



Applications have to be submitted via the [IAS website](#). Application deadline for the Spring 2021 Session is **31st March 2021 24h00 Brussels Time (CET, UTC+1)**.

More information about the Institutional Grant Scheme and guidelines on how to apply can be found on your membership profile.

Grant Reports on the IAS web site

The IAS supports postgraduate and post-doctoral researchers via our various grant schemes.

You can read recent and past Grant Reports from IAS members who have benefited from [Post-Doctoral](#) or [Post-Graduate](#) grants [here](#).

 POSTGRADUATE REPORT Marie Motzner — Provenance and Diagenesis of the Upper Miocene Sandstones from the South-Western Part of the Pannonic Basin System, Croatia Posted 23 June 2020 READ REPORT	 POSTGRADUATE REPORT Emma Graf — Source to sink: documenting the journey of landslide sediment following the 2015 Gorkha (Nepal) earthquake Posted 22 June 2020 READ REPORT
 POSTGRADUATE REPORT Pawel Gdlewski — Application of macroscopic and microscopic proxies for interpretation of submarine gravity flows characteristics in deep-marine Corgova Beds (Polgorens), lower Pysch Carpathians of Poland and Slovakia Posted 25 May 2020 READ REPORT	 POSTGRADUATE REPORT Dawei Liu — Reconstructing the provenance of Glacial Lake Outburst Floods (GLOFs) in Chilean Patagonia Using Sr and Nd isotopes Posted 25 May 2020 READ REPORT
 POSTGRADUATE REPORT Hamad Kholm — Diagenetic studies of the Samana Sub Formation (middle Jurassic) in the Nazara basin and its adjoining areas: implications of fluid flow evolution on reservoir heterogeneities Posted 25 May 2020 READ REPORT	 POSTGRADUATE REPORT Luzong Dou — Paleosols in Outcrops of Red Beds Formed in the Late Cretaceous Mid-latitude Terrestrial Climate Posted 2 April 2020 READ REPORT

The Journals of the IAS

For a quick overview of the latest issues of **Sedimentology**, **Basin Research** and **The Depositional Record**, follow these links:

- **Sedimentology**: directly at [Wiley](#) or via the [IAS website](#) (after login) for member access
- **Basin Research**: directly at [Wiley](#) or via the [IAS website](#) (after login) for member access
- **The Depositional Record**: directly at [Wiley](#) or via the [IAS website](#)

The Depositional Record
[@DepositRecord](#)

Sedimentology
[@JSedimentology](#)

Basin Research
[@BasinResearch](#)

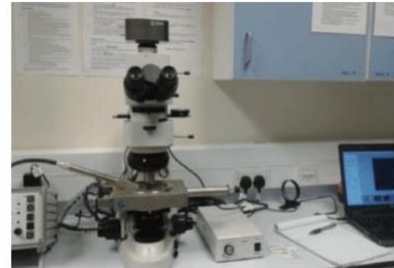
All of the journals of the IAS are active on Twitter. Stay up to date on the latest news and papers in [@sedimentology](#) by following the IAS journals: [@JSedimentology](#), [@DepositRecord](#), [@BasinResearch](#).

Open – Applications for Post-Graduate Research Grants (Spring 2021 Session)

Up to [10 research grants](#), each to a maximum of €1,000, are awarded twice a year to **IAS Post-Graduate Student Members**. This grant scheme is designed to support PhD students in their studies and research. Post-Graduate Research Grants can be used to (co-)finance fieldwork, acquisition and analysis of data, visits to other institutes to use specialized facilities, etc.

Applications must be submitted via the [IAS website](#). Application deadline for the Spring 2021 Session is **31st March 2021 24h00 Brussels Time (CET, UTC+1)**.

More information about the Post-Graduate Grant Scheme and guidelines on how to apply can be found on your membership profile.



Open – Applications for the Judith McKenzie Field Work Award (Spring 2021 Session)

The [Judith McKenzie Field Work Award](#) aims to promote sedimentological field observations for the newest generation of Earth Scientists – MSc Students.



Up to 5 awards of €300 each, will be awarded twice per year to IAS student members. Since the award is only available for MSc students, proof of student status will be required. The awardee shall also receive a one-year IAS student membership, upon submission of their MSc thesis.

Applicants should apply for the Judith McKenzie Field Work Award via the [IAS website here](#). The application requires submission of a grant proposal (written by the student) with budget and CV (template provided on the submission webpage), and a signed letter of recommendation from the student's supervisor.

Application deadline for the Spring 2021 Session is **31st March 2021 24h00 Brussels Time (CET, UTC+1)**.

Open – Applications for IAS Post-Doctoral Research Grants (Spring 2021 Session)

IAS Post-Doctoral Research Grants are intended as a seed to assist Early-Career post-doctoral researchers in either establishing a proof of concept, in order to support applications to national research funding bodies, or to fund areas of a project that were not included in the original project scope.

Up to 4 grants, each to a maximum of €2,500, are awarded twice per year to Early Career IAS members.

The application requires submission of a research proposal with budget and CV (template provided on the [submission webpage](#), and a letter of support from the researcher's supervisor, line manager or Head of School. More details about the application procedure can be found on your membership profile.

Application deadline for the Spring 2021 Session is **31st March 2021 24h00 Brussels Time (CET, UTC+1)**.

Eligibility:

- Applicants must be full members of the IAS.
- Applicants must have secured their Ph.D. within the previous 7 years.
- Applicants can only benefit from a Post-Doctoral grant on one occasion.



Sediment characteristics of turbid carbonate island reefs of the Pilbara, Western Australia

Shannon Dee

Curtin University, School of Molecular and Life Sciences

Twitter: @5hannondee

Website: <https://www.reefislandfutures.org/>

Introduction

Low lying islands are some of the most threatened landforms in the face of predicted climate change (Perry et al. 2011). Low-lying carbonate islands are dynamic systems formed by unconsolidated sediments that are composed of skeletal remains of reef biota as a result of reef breakdown through mechanical and biological erosion (Morgan and Kench 2014). In this sense, surrounding reefs act as carbonate sediment factories that build and maintain these islands, and understanding local sediment dynamics is key to assessing future island stability. To do this effectively we need to assess the temporal and spatial reef sediment dynamics, composition, processes, and flux volume. In doing so, we can determine if reef generated sediments are being re-incorporated back into the reef framework, transferred to infill lagoons, or exported from the reef system.

The Pilbara coast in Western Australia is the most cyclone effected coastline in Australia and holds the countries' largest sand island archipelago. These nearshore carbonate reef islands are directly exposed to physical erosion as well as sediment deposition and resuspension through high-energy hydrodynamic processes. It is currently unclear whether the low-lying islands of the Pilbara rely on sediments produced directly from their reef platform or are being primarily supported by sediment exports from larger, clear water reef systems. I propose to investigate the temporal and spatial reef sediment dynamics and composition within and surrounding these reef island systems.

This project is a significant component of my PhD, which aims to form a site-specific carbonate budget for these low-lying reef islands. Detailed investigations into carbonate production and removal commenced in late 2018 with the deployment of reef habitat assessments around two of these islands. Currently, data is being analysed from long term *in situ* experiments focussing on coral growth rates, secondary carbonate production (e.g. crustose coralline algae), and bioerosion. Sediment data will complete the carbonate budget story, with the aim of: 1) understanding the origin of sediments within the reef system, 2) Quantify the rates at which sediments are moving on to and over the reef, 3). identify areas of the reef that are accreting or eroding, and 3). improve knowledge of inshore reef island ecology and sediment dynamics. Subsequently, a detailed quantitative carbonate budgets of these islands may provide a key tool in future monitoring and management for the Pilbara archipelago.

Methods

During the months of September and October in 2018, 2019, and 2020, direct sediment samples were gathered at 15 sites around each of two reef islands, Eva and Fly (Fig. 1). These samples were dried and weighed with 5g of the dry sample being removed to assess carbonate percentage. This was done by carbonate digestion with 5% HCL solution. The remainder of the original sample was sieved into eight size fractions (<60, 60-125, 125-250, 250-500, 500-1000, 1000-2000, 2000-4000, >4000 μ m). Each fraction was individually weighed, and 100 grains were identified under microscope to further assess sediment origin.

Sediment tube traps were deployed at 4 sites (2 inshore and 2 offshore) around each of the two islands in September 2019 (Fig. 1, Fig. 2). Traps were collected and redeployed every 4-6 weeks over the following 12 months, except for the period between March and May 2020 where Covid-19 travel restrictions did not allow us to travel to the Pilbara, and traps were left *in situ* for 12 weeks. The contents of each trap was dried, weighed, and carbonate percentage was assessed following carbonate digestion methods stated above.

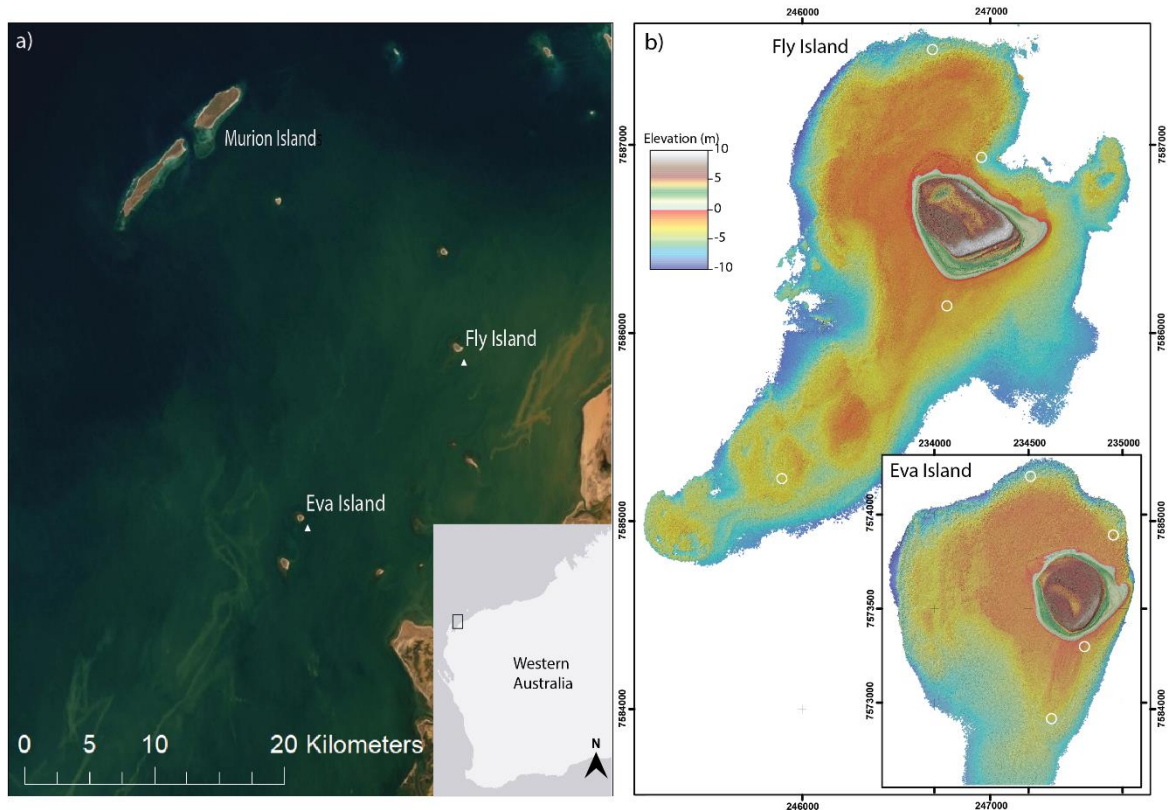


Figure 1: Geographic positioning of Eva and Fly islands in relation to each other is displayed on the left, while the geomorphology of surrounding reefs are shown on the right, with white circles indicating the location of experimental tiles and in situ data loggers for light and temperature. White triangles on the left image show where water quality parameters were tested for additional projects.

Preliminary results

Although insitu experiments are still being carried out and samples are yet to be analysed, we have seen interesting preliminary results from this study. Firstly, sediment tube traps collected greater amounts of sediment over the summer months, particularly at northern offshore sites. This deployment period aligned with the tropical ‘wet’ season, where the Pilbara usually experiences strong winds and ocean swell. In all collections to date, northern sites have collected at least double the weight of sediment than southern sites, suggesting the northern reefs are exposed to higher and more constant wave energy. This is also supported from insitu sediment grabs from the substrate, as samples from northern sites



Figure 2: Sediment tube traps in situ at site Eva north offshore. Two clusters of three traps were deployed at each site.

were found to be sorted towards larger grain size fractions (500-2000, 2000-4000 μm), whereas southern sites were predominantly smaller (250-500 μm) or poorly sorted. Sediment grain identification and carbonate digestion found sediments predominantly originate from corals, molluscs, and foraminifera, which supports an average 90 to 96% calcium carbonate contents. The strong presence of mollusc fragments in the sediment is hypothesis to be supported by high macroalgae and seagrass cover, as well as an abundant population of various tusk fish species feeding in these reef systems.

Conclusions

Although we still have analysis to complete, it is clear that these turbid island reef systems are productive in producing carbonate sediments that may be a continuous source of nourishment for their central island features. From here, we aim to analyse sediments from

the intertidal reef flats, beaches, and dunes, in order to further understand sediment connections and rate of transport between reefs and islands. This study will give an important insight to the mechanisms of carbonate islands, and their future with threats of sea level rise and erosion.

Acknowledgements

I would like to offer great thanks to the International Association of Sedimentology for their support to myself and other students globally. Additionally, I would like to thank the Reef Island Futures lab group at Curtin and the University of Western Australia for their endless efforts in these remote field locations.

References

- Perry CT, Kench PS, Smithers SG, Riegl B (2011) Implications of reef ecosystem change for the stability and maintenance of coral reef islands. 3679–3696
- Morgan KM, Kench PS (2014) A detrital sediment budget of a Maldivian reef platform. *Geomorphology* 222:122–131