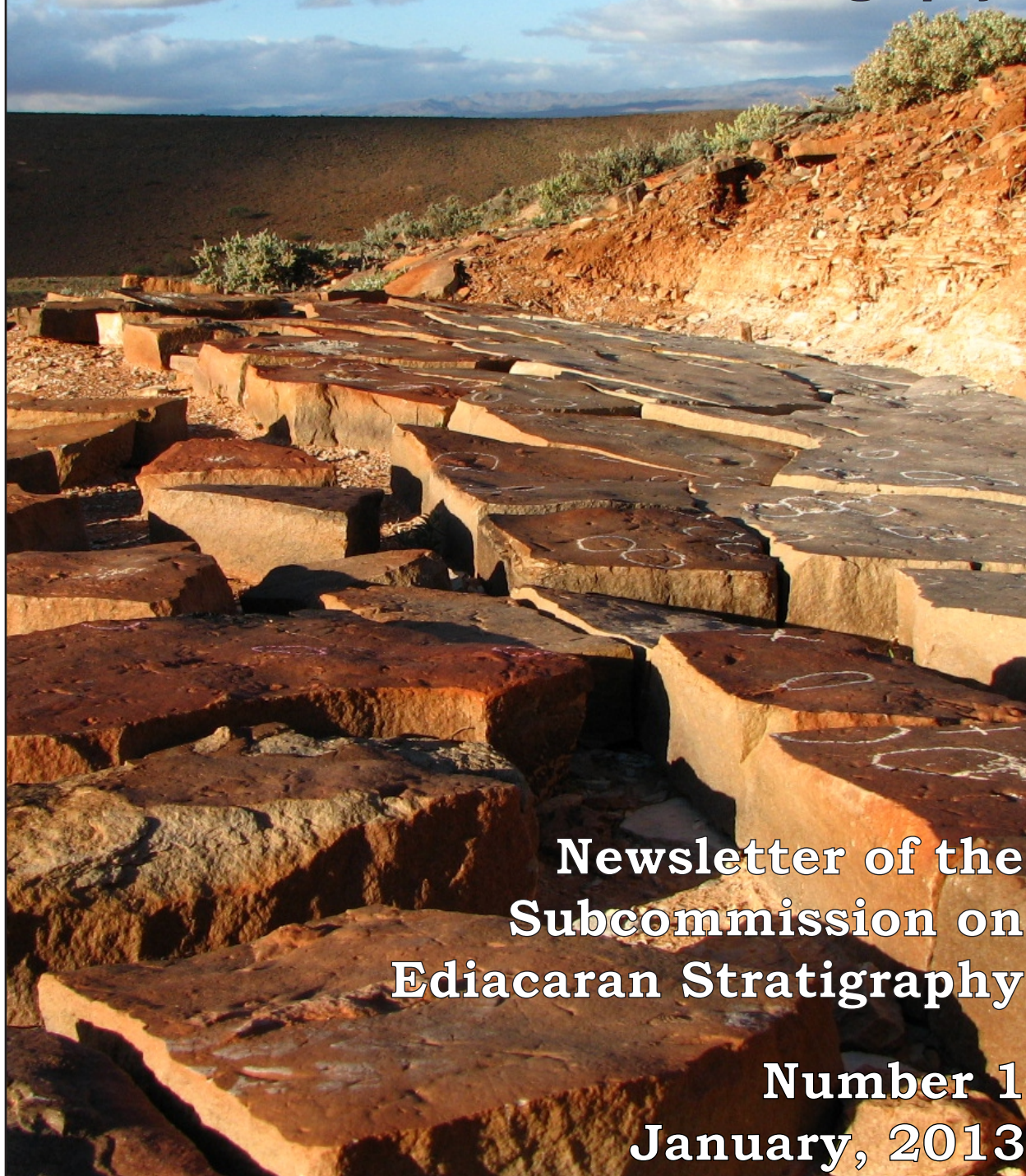




Edies

*International Commission on Stratigraphy
Subcommission on Ediacaran Stratigraphy*



**Newsletter of the
Subcommission on
Ediacaran Stratigraphy**

**Number 1
January, 2013**

Edies Newsletter #1, January 2013

Opening Remarks from the Chair

By Shuhai Xiao

In November 2011, the Subcommittee of Neoproterozoic Stratigraphy (SNC) voted to break up into two subcommittees. The proposal was submitted to the International Commission on Stratigraphy (ICS) and was approved in July 2012. I was asked to chair the newly proposed Subcommittee of Ediacaran Stratigraphy (SES), with Dr. Dima Grazhdankin as the vice chair, and Dr. Marc Laflamme as the secretary. The SES executives and membership were approved by the ICS at the 2012 International Geological Congress in Brisbane, Australia.

The ultimate goal of the SES is to define the basal boundaries of Ediacaran epochs (series) and ages (stages) through the establishment of global stratotype sections and points (GSSP's). We have come a long way toward achieving this goal through symposia, workshops, and field trips organized by the SNC under the leadership of Dr. James G. Gehling, and through research by SES members and other Ediacaran workers. Numerous field trips have been organized to examine Ediacaran successions in Newfoundland, Russia, South Australia, Western Australia, South China, Namibia, and northern India. A couple of workshops were devoted to the taxonomy of Ediacaran acritarchs. Major monographs have been published on Ediacaran acanthomorphs from Australia, Siberia, and East European Platform. A number of special journal volumes are devoted to Ediacaran regional geology and chemostratigraphy. And several surveys have been conducted to gather opinions on correlation criteria and interests in further field trips. These achievements establish a solid foundation of our future work toward our goal.

However, we still have a long way to go to achieve our ultimate goal. I am fully aware of the challenges we are facing, but I am optimistic that we will succeed. Progress is being made in Ediacaran biostratigraphy, chemostratigraphy, paleoclimatology, and geochronology. For example, several groups are working to update the taxonomy and to document the diversity of Ediacaran acanthomorphs in South China, northern India, and southern Norway. New discoveries of Ediacaran macrofossils will strengthen the basis for biostratigraphic correlation of the upper Ediacaran System. New successions are being explored to test the potential stratigraphic significance of chemostratigraphic, environmental, and climatic events. These rapid developments will sharpen our multidisciplinary tools for subdivision and correlation.

I am encouraged by the enthusiasm of the Ediacaran community to lead, organize, and participate in workshops and field trips. Detlef Walde at Universidade de Brasília is preparing a field trip Brazil in the summer of 2013. Please see announcement and preliminary itinerary attached to this newsletter, and contact Detlef at walde.detlef@gmail.com if you need more information. My Chinese colleagues and I have been working on a possible field trip in South China planned for 2013, although this may need to be rescheduled in 2014 due to schedule conflicts (e.g., STRATI 2013; GSA-GSC conference in China). If any of you are interested in organizing Ediacaran field trips to key successions in 2013 or 2014, please contact one of the SES executives. We particularly need more focused workshops and field trips directly relevant to Ediacaran subdivision and correlation.

Finally, I would like to take this opportunity to thank Marc Laflamme for putting

Edies Newsletter #1, January 2013

together this newsletter, and Subcommittee members for supplying information for the newsletter.

Notes from the Secretary

By Marc Laflamme

In order to give our subcommittee a sense of community, and to give our members a voice within this community, we felt that a good place to start would be to have a semiannual newsletter. We hope this newsletter will serve as a synopsis of relevant publications, local and regional news, conference reports, upcoming field trip and symposium announcements, scientific discussions, and even enigmatic fossil images submitted by our members. The quality of this newsletter will be strongly dictated by the participation of our members, so please do not hesitate to alert us to important upcoming events. We also hope members will consider using this venue as a place to disseminate your thoughts on relevant topics of interest.

Annual report 2012

Submitted by S. Xiao, Chairman

Mission statement

The Subcommittee is the primary body for facilitation of international communication and scientific cooperation in Ediacaran stratigraphy, defined in the broad sense of multidisciplinary activities directed towards better understanding of the evolution of the Earth and life during the Ediacaran Period (circa 635 – 542 Ma). Its first priority is the unambiguous definition, by means of agreed GSSPs, of a hierarchy of chronostratigraphic

units that provide the framework for global correlation.

Goals

The main goals of this Subcommittee are:

- (a) To search for criteria useful in the subdivision and correlation of Ediacaran strata;
- (b) To define the basal boundaries of Ediacaran epochs (series) and ages (stages) through the establishment of global stratotype sections and points (GSSP's);
- (c) To facilitate international collaboration in research on Ediacaran stratigraphy and Earth history through subcommittee sponsored field trips, workshops, and meetings;

In addition, the Subcommittee is committed to further communication with a wider public through grassroots initiatives to conserve important Neoproterozoic geological sites, to support International Geoscience Programme projects, and to encourage the wider dissemination of research findings on the internet or in popular science publications.

Fit within IUGS Science Policy

The objectives of the Subcommittee relate to three main aspects of IUGS policy:

- (1) The development of an internationally agreed scale of chronostratigraphic units, fully defined by GSSPs where appropriate (Series and Stages), and related to a hierarchy of units (Standard Zones, Subzones etc.) to maximize relative time resolution within the Ediacaran period

Edies Newsletter #1, January 2013

(2) Establishment of frameworks and systems to encourage international collaboration in understanding the evolution of the Earth during the late Neoproterozoic interval, in particular, cooperating with the **Precambrian Subcommittee (M. Van Kranendonk, chair)** and **Cryogenian Subcommittee (Graham Shields-Zhou, chair)** to subdivide the late Precambrian.

(3) Working towards an international policy concerning conservation of geologically and paleontologically important sites such as GSSPs and important fossil localities. This relates to, *inter alia*, the IUGS Geosites Programme.

Accomplishments and products 2012

- On June 26 – July 7, 2012, voting members Shuhai Xiao, Chuanming Zhou, and Ganqing Jiang, as well as ICS chair Stan Finney and vice chair Shanchi Peng, participated in a field workshop on Ediacaran stratigraphy in South China, organized by Xiaofeng Wang at the Wuhan Center of the China Geological Survey. They examined a number of key sections where important fossils and geochemical events have been reported.
- The Ediacaran Subcommittee was established in August 2012 at the 34th IGC in Brisbane, Australia.
- A business meeting was held on August 7, 2012, on the side of the 34th IGC in Brisbane. Participants included voting members Shuhai Xiao, Guy Narbonne, Kathleen Grey, Nicholas Christie-Blick, James Gehling, Malgorzata Moczydlowska-Vidal, and Maoyan Zhu, as well as several corresponding members (Patricia Vickers-Rich, Robert Rainbird, Michael Meyer). At the meeting, members discussed the need to more actively engage members of the community, to start an annual newsletter, and to update the Subcommittee webpage. Other issues discussed at the meeting include potential criteria for Ediacaran subdivision and global correlation, possible field workshops and symposia for 2013, and a timeline toward the establishment of GSSPs.
- On September 19–21, 2012, voting members Shuhai Xiao, Jay Kaufman, Martin Brasier, Guy Narbonne, Chongyu Yin, and Graham Shields-Zhou participated in the Geological Society Fernor meeting in London that focused on the evolution, glaciation, and oxygenation of the Neoproterozoic Era.
- ***The Geologic Time Scale 2012*** was published. Voting members Guy Narbonne, Shuhai Xiao, Graham Shields-Zhou, and James Gehling contributed a chapter on the Ediacaran Period in this volume.
- In October 2012, the Subcommittee webpage has been updated and migrated to a new server at Virginia Tech.
- Corresponding member Alexander Liu is preparing a list of Ediacaran fossil sites in order to promote some of them as UNESCO world heritage sites.
- Planning for 2013 field workshops in Brazil and in China has started.

Objectives for 2013

- Semiannual newsletter will be distributed in the summer of 2013. Secretary Marc Laflamme will solicit information from voting and corresponding members and compile the annual newsletter.

Edies Newsletter #1, January 2013

- Continue to update Subcommittee webpage.

- Field workshops will be organized to examine Ediacaran successions in South China and in Brazil. In 2011, a survey was conducted to solicit community input about field workshops, and NW Canada, South China, Newfoundland, South Australia, Namibia, and northern India were among the sites that attract the most interest.

- Symposia associated with the field workshops will be organized to further discuss criteria for the subdivision and correlation of Ediacaran successions. In 2009, the Neoproterozoic Subcommittee carried out a survey on potential criteria in Ediacaran stratigraphic subdivision and correlation. The results are summarized as follows:

(a) There is very clear consensus that stable carbon isotopes, acritarchs, and Ediacara fossils are the most practical correlation tools. Ediacaran glaciations and oxidation events may be useful. There is very little support for stromatolites or the Acraman impact events as interregional correlation tools.

(b) We should focus on successions with mixed lithologies, geochronological constraints, and chemostratigraphic and biostratigraphic potential.

(c) We should proceed from Series to Stages, rather than from Stages to Series (as practiced in Phanerozoic stratigraphy). The Ediacaran System can be divided into two or more Series.

(d) Although the Series boundary should be unambiguously defined, at the present it is perhaps unrealistic to use the FAD or LAD

of an Ediacaran species (with possible exception of *Cloudina hartmannae*) for global correlation. Thus, we should aim at characterizing the Series using a combination of bio- and chemostratigraphic features (e.g., one or two Series in the lower Ediacaran System characterized by Ediacaran acanthomorphs; one or two Series in the upper Ediacaran System characterized by macroscopic Ediacara fossils and skeletal fossils; alternatively, three Series each characterized with a carbon isotope cycle).

(e) The broad congruency between evolutionary and physical events in the Ediacaran Period is encouraging, but the uncertainties about each individual criterion demand that we should adopt a holistic approach (i.e., using multiple criteria in order to maximize the usefulness of the GSSP).

Specific GSSP Focus for 2013

- Field workshops and symposia to be held in South China and Brazil, with a focus on the search for appropriate criteria for the subdivision of the Ediacaran Period.

- A vote will be called to decide
(1) What criteria will be the most useful in Ediacaran subdivision and correlation? The results from this vote will be used as a basis for subsequent decisions concerning System-level subdivisions.

(2) Whether the Ediacaran System should be divided into two or three series.

Objectives and work plan for next 4 years

The Ediacaran Subcommittee aims to encourage research that will facilitate a consensus subdivision of the Ediacaran System (circa 635 – 542 Ma).

2013: Field workshops and symposia to be held in South China and Brazil, with a focus

Edies Newsletter #1, January 2013

on the search for appropriate criteria for the subdivision of the Ediacaran Period. A vote will be called to decide whether the Ediacaran System should be divided into two or three series and what criterion or criteria will be the most useful in Ediacaran subdivision and correlation.

2014-2015: Additional field trips to be organized to examine potential GSSP sections for Ediacaran subdivisions. Submission and discussion of formal proposals for Ediacaran Stage GSSP(s);

2015-2016: Review and vote on Ediacaran Stage GSSP proposals.

2016-2017: Ratification of Ediacaran Stage GSSP(s).

Names a of Current Officers and Voting Members

The Subcommittee is organized by an Executive consisting of Chairman, Vice-Chairman and Secretary, who are all Voting Members of the Subcommittee. These officers were nominated by the Executive of the predecessor Neoproterozoic Subcommittee and appointed by ICS executives in August 2012. There are currently 16 other Voting Members, making a total of 19 voting members. There are currently over 30 additional corresponding members. The Voting Members have been specifically selected for their international reputations, recognized expertise in an area of geoscience relevant to the subcommittee, and their willingness to take an active role in the subcommittee's activities.

Officers

- Chair: Shuhai Xiao, Department of Geosciences, Virginia Tech, Blacksburg, VA 24061, USA; xiao@vt.edu
- Vice Chair: Dima Grahdankin, Institute of Petroleum Geology and Geophysics, Koptyug Avenue 3, Novosibirsk 630090, Russia; dima.grahdankin@gmail.com
- Secretary: Marc Laflamme, Department of Chemical and Physical Sciences, University of Toronto Mississauga, 3359 Mississauga Road N., Mississauga, ON L5L 1C6, Canada; marc.laflamme@utoronto.ca

Voting members

- Alvaro, Jose-Javier
- Brasier, Martin D.
- Christie-Blick, Nicholas
- Gehling, James G.
- Grahdankin, Dmitri V.
- Grey, Kathleen
- Jensen, Sören
- Jiang, Ganqing
- Kaufman, Alan Jay
- Laflamme, Marc
- Moczydlowska-Vidal, Malgorzata
- Narbonne, Guy M.
- Rai, Vibhuti
- Shields-Zhou, Graham A.
- Xiao, Shuhai
- Yin, Chongyu
- Yuan, Xunlai
- Zhou, Chuanming
- Zhu, Maoyan

Corresponding Members

- Antcliffe, Jonathan
- Boggiani, Paulo César
- Butterfield, Nicholas
- Chen, Xiaohong

Edies Newsletter #1, January 2013

- Chumakov, Nikolay
- Erwin, Douglas
- Evans, David A.D.
- Fedonkin, Mikhail
- Frimmel, Hartwig
- Gaucher, Claudio
- Hoffmann, Karl-Heinz
- Hofmann, Mandy
- Jenkins, Richard
- Khomentovsky, Vsevolod
- Knoll, Andrew H.
- Kochnev, Boris
- Linnemann, Ulf
- Liu, Alex
- Liu, Pengju
- Melezhik, Victor
- Nagovitsin, Konstantin
- Pokrovskii, Boris G.
- Rainbird, Robert
- Schiffbauer, James D.
- Semikhatov, Mikhail A.
- Sergeev Volodya
- Sperling, Erik
- Van Kranendonk, Martin
- Vickers-Rich, Patricia
- Volodya, Sergeev
- Walter, Malcolm
- Walde, Detlef
- Wang, Xiaofeng
- Weiguo, Sun

And the list is growing ...

Contributions by our members: We have included a list of relevant 2012-2013 publications as submitted by our members. Please continue to keep us abreast of your scientific contributions to our field.

Articles from 2012/2013:

Allen, H.-J., Grey, K. and Haines, P.W., 2012. Neoproterozoic Stromatolite biostratigraphy in the western Amadeus Basin. In: Ambrose, G.J. and Scott, J. (Eds). Central Australian Basins Symposium III. Petroleum Exploration Society of Australia, Special Publication, 1-11.

Allen, P.A., Leather, J., Brasier, M.D., Rieu, R., Mccarron, M., Le Guerroue, E., Etienne, J. And Cozzi, A. 2012. The Abu Mahara Group (Ghubrah and Fiq formations), Jabal Akhdar, Oman. *Memoirs of the Geological Society*, London, 36: 251- 262.

Álvaro, J.J. 2012. Colour banding in a latest Neoproterozoic-Cambrian microbially variegated sabkha of the Taoudeni Basin, Adrar of Mauritania. *Palaeogeography, Palaeoclimatology, Palaeoecology* 367/368: 209-218.

Álvaro, J.J. (in press). Late Ediacaran syn-rift/post-rift transition and related fault-driven hydrothermal systems in the Anti-Atlas Mountains, Morocco. *Basin Research*. DOI: 10.1111/bre.12003

Bao, H., Chen, Z., Zhou, C. 2012. An 170 record of late Neoproterozoic glaciation in the Kimberley region, Western Australia. *Precambrian Research*, 216-219: 152-161.

Brasier, M.D. 2012. *Secret Chambers: the Inside Story of Cells and Complex Life*. Oxford University Press, 297 pp.

Edies Newsletter #1, January 2013

- Brasier, M.D., Antcliffe, J.B., and Liu, A.G., 2012. The Architecture of Ediacaran Fronds. *Palaeontology*, 55: 1105-1124.
- Brasier, M.D., Liu, A.G., Menon, L., Matthews, J.J. and Mcilroy, D. 2013. An environmental context for exceptional preservation of Ediacaran fossils from Spaniard's Bay (Upper Island Cove), Newfoundland. *Precambrian Research*. (In press).
- Brasier, M.D., Mcilroy, D., Liu, A.G., Antcliffe, J.B. and Menon, L. 2012. The oldest evidence for bioturbation. *Forum Comment. Geology*. doi:10.1130/G33606C.
- Butterfield, N.J. and Grotzinger, J.P. 2012. Palynology of the Huqf Supergroup, Oman, p. 251–263. In Bhat, G.M., Craig, J., Thurow, J.W., Thusu, B. and Cozzi, A. (eds). *Geology and Hydrocarbon Potential of Neoproterozoic–Cambrian Basins in Asia*. Geological Society, London, Special Publications, 366.
- Butterfield, N.J. and Harvey, T.H.P. 2012. Small carbonaceous fossils (SCFs): A new measure of early Paleozoic paleobiology. *Geology*, 40: 71–74.
- Cai, Y., Schiffbauer, J.D., Hua, H., and Xiao, S. 2012. Preservational modes in the Ediacaran Gaojiashan Lagerstätte: Pyritization, aluminosilicification, and carbonaceous compression. *Palaeogeography Palaeoclimatology Palaeoecology*, 326-328: 109-117.
- Callow, R.H.T., Brasier, M.D. and Mcilroy, D. 2012. Discussion: “Were the Ediacaran siliciclastics of South Australia coastal or deep marine?” by Retallack et al., *Sedimentology*, 59, 1208–1236.
- Chen, Z., Zhou, C., Meyer, M., Xiang, K., Schiffbauer, J.D., Yuan, X., and Xiao, S. 2013. Trace fossil evidence for Ediacaran bilaterian animals with complex behaviors. *Precambrian Research*, 224: 690-701
- Corkeron, M., Webb, G.E., Moulds, J. and Grey, K., 2012. Discriminating stromatolite formation modes using rare earth element geochemistry: Trapping and binding versus in situ precipitation of stromatolites from the Neoproterozoic Bitter Springs Formation, Northern Territory, Australia. *Precambrian Research*, 212-213: 194-206.
- Cunningham, J.A., Thomas, C.-W., Bengtson, S., Kearns, S.L., Xiao, S., Marone, F., Stampanoni, M., Donoghue, P.C.J. 2012, Distinguishing geology from biology in the Ediacaran Doushantuo biota relaxes constraints on the timing of the origin of bilaterians. *Proceedings of the Royal Society B (Biological Sciences)*, 279: 2369-2376.
- Darroch, S.A.F., Laflamme, M., Schiffbauer, J.D. and Briggs, D.E.G. 2012. Experimental Formation of a Microbial Death Mask. *Palaios*, 27: 293-303.
- Dong, L., Song, W., Xiao, S., Yuan, X., Chen, Z., and Zhou, C. 2012. Micro- and macrofossils from the Piyuancun

Edies Newsletter #1, January 2013

- Formation and their implications for the Ediacaran-Cambrian boundary in southern Anhui. *Journal of Stratigraphy*, 36: 600-610.
- Dong, L. and Xiao, S. 2012, Quantitative methods in morphometric study of early life. *Acta Palaeontologica Sinica*, 51: 14-25.
- Dornbos, S. Q., Clapham, M. E., Fraiser, M. L., and Laflamme, M. 2012. Chapter 5: Lessons from the Fossil Record: The Ediacaran Radiation, the Cambrian Radiation, and the End-Permian Mass Extinction, p. 52-72. In *Marine Biodiversity Futures and Ecosystem Functioning frameworks, methodologies and integration*, by Solan, M., Aspden, R.J., and Paterson, D.M. 256 p.
- Fatka, V., Steiner, M., Weber, B., Zhu, M., 2012. The Precambrian-Cambrian Biosphere (R)evolution: Insights from Chinese Microcontinents. *Bulletin of Geosciences*, 87 (1):67-200. <http://www.geology.cz/bulletin/contents/2012>
- Gehling, J.G., and Droser, M.L. 2013. How well do fossil assemblages of the Ediacara Biota tell time? *Geology*, in press.
- Grey, K., Allen, H.-J., Hill, A.C. and Haines, P.W., 2012. Neoproterozoic biostratigraphy of the Amadeus Basin. In: Ambrose, G.J. and Scott, J. (Eds). *Central Australian Basins Symposium III. Petroleum Exploration Society of Australia*, Special Publication, 1-18.
- Haines, P.W., Allen, H.-J., Grey, K. and Edgoose, C. 2012. The western Amadeus Basin: revised stratigraphy and correlations. In: Ambrose, G.J. & Scott, J. (Eds). *Central Australian Basins Symposium III. Petroleum Exploration Society of Australia*, Special Publication, 1-6.
- Ivantsov, A.Yu. 2012. Chapter 5: Paleontological data on the possibility of Precambrian existence of mollusks. P. 153-179. In Fyodorov, A. and Yakovlev, H., *Mollusks : morphology, behavior, and ecology*. New York : Nova Science Publishers, ©2012. ISBN 978-1-62100-987-0.
- Jiang, G., Wang, X., Shi, X., and Xiao, S. 2012. The origin of decoupled carbonate and organic carbon isotope signatures in the early Cambrian (ca. 542-520 Ma) Yangtze platform. *Earth and Planetary Science Letters*, 317-318: 96-110.
- Johnston D.T., Poulton S.W., Goldberg T., Sergeev V.N., Podkovyrov V., Vorob'eva N.G., Bekker A., Knoll A.H. 2012. Late Ediacaran redox stability and metazoan evolution. *Earth and Planetary Science Letters*, 335-336: 25-35.
- Killingsworth, B., Hayles, J., Zhou, C., Bao, H. 2013. Sedimentary constraints on the duration of the Marinoan Oxygen-17 Depletion (MOSD) Event. *PNAS*, in press.
- Laflamme, M., Darroch, S.A.F., Tweedt, S., Peterson, K.J., and Erwin, D.H. 2013. The

Edies Newsletter #1, January 2013

- end of the Ediacara biota: extinction, biotic replacement, or Cheshire Cat? *Gondwana Research*, 23: 558–573.
- Laflamme, M., Flude, L.I., and Narbonne, G.M. 2012. Ecological tiering and the evolution of a stem: the oldest stemmed frond from the Ediacaran of Newfoundland, Canada. *Journal of Paleontology*, 86: 193–200.
- Liu, A.G., McIlroy, D., Matthews, J.J. and Brasier, M.D. 2012. A new assemblage of juvenile Ediacaran fronds from the Drook Formation, Newfoundland. *Journal of the Geological Society, London*, 169(4): 395-403.
- Liu, A.G., McIlroy, D., Matthews, J.J., Brasier, M.D., 2013. Exploring an Ediacaran 'nursery': growth, ecology and evolution in a rangeomorph palaeocommunity. *Geology Today*, 29(1): 22-26.
- Lyons, T.W., Reinhard, C.T., Love, G.D., Xiao, S., 2012, *Geobiology of the Proterozoic Eon*. p. 371-402. In Knoll, A.H., Canfield, D.E., Konhauser, K.O. (ed.), *Fundamentals of Geobiology*. Wiley-Blackwell, Hoboken, NJ.
- Mason, S.J., Narbonne, G.M., Dalrymple, R.W., and O'Brien, S.J. in press. Paleoenvironmental analysis of Ediacaran strata in the Catalina Dome, Bonavista Peninsula, Newfoundland. *Canadian Journal of Earth Sciences*.
- Meyer, M., Schiffbauer, J.D., Xiao, S., Cai, Y., and Hua, H. 2012, Taphonomy of the late Ediacaran enigmatic ribbon-like fossil *Shaanxilithes*. *Palaios*, 27: 354-372.
- Narbonne, G.M., Xiao, S., and Shields, G. 2012. Ediacaran Period. Chapter 18 in: Gradstein, F.M., Ogg, J.G., Schmidt, M.D., and Ogg, G.M. (eds.), *Geologic Timescale 2012*, Elsevier, pp. 427-449.
- Pawłowska, M.M., Butterfield, N.J., and Brocks, J.J. In press. Lipid taphonomy in the Proterozoic and the effect of microbial mats on biomarker preservation. *Geology*, doi: 10.1130/G33525.1.
- Peng, Y., Bao, H., Zhou, C., Yuan, X., Luo, T. 2013. Oxygen isotope composition of meltwater of a Neoproterozoic glaciations in southern China. *Geology*, in press.
- Peng, S., Wang, X., Xiao, S., Tong, J., Hua, H., Zhu, M., and Zhao, Y. 2012. A call to replace the chronostratigraphic unit Sinian System (Period) with the global Ediacaran System (Period). *Journal of Stratigraphy*, 36: 55-59 (in Chinese with English abstract).
- Schiffbauer, J.D., Wallace, A.F., Hunter, J.L., Kowalewski, M., Bodnar, R.J., and Xiao, S. 2012. Thermally-induced structural and chemical alteration of organic-walled microfossils: an experimental approach to understanding fossil preservation in metasediments. *Geobiology*, 10: 402-423.

Edies Newsletter #1, January 2013

- Schiffbauer, J. D., Xiao, S., Sharma K.S., Wang, G. 2012. The origin of intracellular structures in Ediacaran metazoan embryos. *Geology*, 40: 223-226.
- Sergeev V. N., Sharma M., Shukla Y. 2012. Proterozoic Fossil Cyanobacteria. *Palaeobotanist*, 61: 189-358.
- Shields-Zhou, G., Zhu, M., 2012. Biogeochemical changes across the Ediacaran-Cambrian transition in South China. *Precambrian Research*, <http://www.sciencedirect.com/science/journal/aip/03019268>
- Singer, A., Plotnick, R., and Laflamme, M. 2012. Fluid Mechanics of *Charniodiscus*. *Palaeontologia Electronica*, 15.2.19A.
- Shields-Zhou, G., and Zhu, M. 2012. Biogeochemical changes across the Ediacaran-Cambrian transition in South China. Special issue in *Precambrian Research* <http://www.sciencedirect.com/science/journal/aip/03019268>
- Vickers-Rich, P., Ivantsov, A. Yu., Trusler, P.W., Narbonne, G.M., Hall, M., Wilson, S.A., Greentree, C., Fedonkin M.A., Elliott, D.A., Hoffmann, K.H., and Schneider, G.I.C., 2013, *Reconstructing Rangea: New Discoveries from the Ediacaran of Southern Namibia*, *Journal of Paleontology* 85: 1-15.
- Wang, W., Zhou, C., Yuan, X., Chen, Z., and Xiao, S. 2012. A pronounced negative $\delta^{13}\text{C}$ excursion in an Ediacaran succession of western Yangtze Platform: a possible equivalent to the Shuram event and its implication for chemostratigraphic correlation in South China. *Gondwana Research*, 22: 1091-1101
- Xiao, S., 2013, Mudding the waters. *Nature*, doi:10.1038/nature11765.
- Xiao, S., Knoll, A.H., Schiffbauer, J.D., Zhou, C., and Yuan, X. 2012. Comment on "Fossilized nuclei and germination structures identify Ediacaran 'animal embryos' as encysting protists". *Science*, 335: 1169c.
- Xiao, S., McFadden K.A., Peek, S., Kaufman, A.J., Zhou, C., Jiang, G., and Hu, J. 2012. Integrated chemostratigraphy of the Doushantuo Formation at the northern Xiaofenghe section (Yangtze Gorges, South China) and its implication for Ediacaran stratigraphic correlation and ocean redox models: *Precambrian Research*, 192-195: 125-141.
- Zhou, C., Jiang, S., Xiao, S., Chen, Z., and Yuan, X. 2012. Rare earth elements and carbon isotope geochemistry of the Doushantuo Formation in South China: implication for middle Ediacaran shallow marine redox conditions. *Chinese Science Bulletin*, 57(16): 1998-2006

Conference Guide Books:

- Brasier, M.D., Liu, A.G., Kenchington, C.G., Matthews, J.J., Wilby, P. and Antcliff, J.B. 2012. *Ediacaran Geology and Palaeobiology in England: Charnwood Forest, Leicestershire, and Long Mynd*,

Edies Newsletter #1, January 2013

Shropshire. Fermor Conference Field Guide, Geological Society of London, London, 46 pp.

Liu, A.G., Herringshaw, L., Matthews, J.J., McIlroy, D. 2012. Ediacaran-Cambrian ichnology, palaeobiology and geology of the Avalon and Burin Peninsulas, Newfoundland, Canada. Field Guide for Ichnia 2012, St John's, Newfoundland. 88 pp.

Myrow, P., and Narbonne, G.M., 2012, The Dawn of the Paleozoic on the Burin Peninsula, Geological Association of Canada Field Trip Guidebook A2, 42 p.

Narbonne, G.M., Laflamme, M., and Thomas, R. 2012, When Life Got Big: Glaciation, Oxidation, and the Mistaken Point biota of Newfoundland, Geological Association of Canada Field Trip Guidebook B1, 78 p.

Vickers-Rich, P., Fedonkin, M.A., Gehling, J.G., and Narbonne, G.M., 2012, IGCP 493 and 587: Rise and fall of the Vendian (Ediacaran) biota (2003-2007 and 2010-2014). Tales set in stone. 40 years of the International Geoscience Program (IGCP), UNESCO, Paris, pp. 28-31.

Scientific Communications:

Liu, A.G. & Brasier, M.D. 2012. *A Global Comparative Analysis of Ediacaran Fossil Localities*. Scientific Report for UNESCO and National Parks Canada, 130pp (unpublished).

Year in review: 2012 Conferences:

By Martin Brasier, James Schiffbauer, and Marc Laflamme

Ongoing work on Ediacaran palaeobiology and geochronology was presented at the GAC-MAC meeting in St Johns, Newfoundland in May. The special session “*Neoproterozoic to Cambrian Evolution of the Earth and Life: A Symposium in Memory of Hans J. Hofmann*” included papers by subcommission members Jonathan Antcliffe, Martin Brasier, Nick Butterfield, Doug Erwin, Mikhail Fedonkin, Jim Gehling, Andy Knoll, Marc Laflamme, Alex Liu, Guy Narbonne, Erik Sperling, Martin Van Kranendonk, Pat Vickers-Rich, Xunlai Yuan, and Chuanming Zhou. This meeting also included a field trip led by Guy Narbonne, Marc Laflamme, Richard Thomas, Alex Liu and Jack Matthews to the Mistaken Point fossil localities. Alex Liu and Jack Matthews also led a similar field excursion for the Ichnia conference of trace fossil specialists in July.

Ediacaran research was also highlighted at the Frontiers in Earth Sciences Meeting in Brazil in July. Field work and research into Cryogenian to Ediacaran stratigraphy and palaeobiology of the Pantanal region was then conducted under the leadership of Thomas Fairchild, Paulo Boggiani and Juliana Leme (Sao Paulo).

The Fermor meeting ‘*The Neoproterozoic Era: evolution, glaciation and oxygenation*’ was held at the Geological Society in London on 19-21 September, arranged by Graham Shields, Ian Fairchild and Tim

Edies Newsletter #1, January 2013

Lenton. This was attended by several hundred participants. Over forty scientists attended the field trip on 21-23 September, coordinated by Martin Brasier. The trip began with Phil Wilby and Charlotte Kenchington displaying the remarkable casts of hundreds of frondose fossils from North Quarry, now housed at the British Geological Survey. Martin Brasier then conducted visitors across the Bradgate Park geology to view the famous fossils under ideal lighting conditions for more than an hour. Alex Liu, Jack Matthews and Peter Toghil then helped to lead visits to the Longmynd localities on the following day, exploring the original sites collected by John Salter in 1885 and 1856, as well as some completely new fossil finds. Dan Condon, Steve Noble and Jack Matthews outlined preliminary results for new and high resolution U-Pb zircon isochrons from Charnwood, Longmynd and Llangynog, which will help to maintain the global importance of these sections for the chronology and ecology of very early macrofossil remains.

Also well attended was a meeting held at St Andrews University on 27 September to celebrate the 700th anniversary of the university, arranged by Peter Cahill and Tony Prave. The chosen theme was '*The Rise of the Earth System: a tale of ice, oxygen and bacteria*', with ten lecturers from around the globe.

At this past year's Annual Geological Society of America Meeting in Charlotte, North Carolina, Jim Schiffbauer and co-chair Shuhai Xiao, organized a highly-

attended, full-day topical session dedicated to the geobiology of the Ediacaran-Cambrian transition, with distinct focal areas on taphonomy, evolution, and geochemical/environmental change. This session, titled "*Fossil preservation, biological evolution, and environmental change at the dawn of animal radiation: An examination of geobiological events across the Ediacaran-Cambrian transition*," provided a day filled with exciting talks highlighting new research avenues and masterfully abridging previous work, as well as an accompanying poster session. Numerous Subcommittee members were not only in attendance but also were key contributors, including papers by Doug Erwin (as a keynote speaker), Jim Gehling, Dima Grazhdankin, Jay Kaufman, Andy Knoll, Marc Laflamme, Guy Narbonne, Jim Schiffbauer, Erik Sperling, Pat Vickers-Rich, Shuhai Xiao, and Maoyan Zhu. With such a successful turnout and positive feedback, we can hope to see similar Ediacaran broadly-themed sessions at every annual GSA as a venue for us to share ideas, updates, and progress.

Conference Announcements:

The Universities of Chouaïb Doukkali (El Jadida) and Aïn Chok (Casablanca) of Morocco and the Centre of Astrobiology (CSIC/INTA) of Spain are preparing for a September 2014 joint meeting of the International Subcommittee on Ediacaran Stratigraphy (ISES) and the International Subcommittee on Cambrian Stratigraphy (ISCS). This meeting will include fieldtrips to the Atlas Mountains. The first circular will occur next summer.

Edies Newsletter #1, January 2013

Detlef Walde at Universidade de Brasília is proposing a field trip Brazil in the summer of 2013. "**The Neoproterozoic Paraguay Belt (Brazil): Glaciation, Iron-Manganese Formation, Biota**".

Objectives

Present the internationally little known Neoproterozoic Paraguay Belt in western Brazil with the famous iron-manganese formation of Urucum (Jacadigo Group) including diamictites and dropstones and the Corumbá units with Ediacaran age biota, like *Cloudina* and *Corumbella*.

Tentative Schedule

4th of August: Arrival at Campo Grande by air (via São Paulo-international airport);
Evening: Opening session

5th of August: Transfer by rented bus to Corumbá (arrival at noon), afternoon introductory lectures about the Paraguay Fold Belt;

6th of August: Lectures and poster presentations (including one or two keynote lectures);

7th of August: Fieldtrip to the Jacadigo Group (Iron-manganese ore deposits);

8th of August: Lectures and poster presentations (including one or two keynote lectures);

9th of August: Fieldtrip to the quarries displaying Corumbá units with *Cloudina* and *Corumbella*;

10th of August: (morning): Fieldtrip to other quarries also displaying Corumbá units with *Cloudina* and *Corumbella* but also other stratigraphically, sedimentologically and geochemically important localities; (afternoon): departure by bus or plane to Campo Grande and /or São Paulo and other destinations.

Organisation: Detlef Walde and Dermeval Carmo, Instituto de Geociências, Universidade de Brasília, Brazil

Further information will be provided soon via a special link on www.igd.unb.br or ask for information ediacariano@gmail.com

Websites:

www.geosci.monash.edu.au/precseite:
IGCP493 and IGCP587 website.