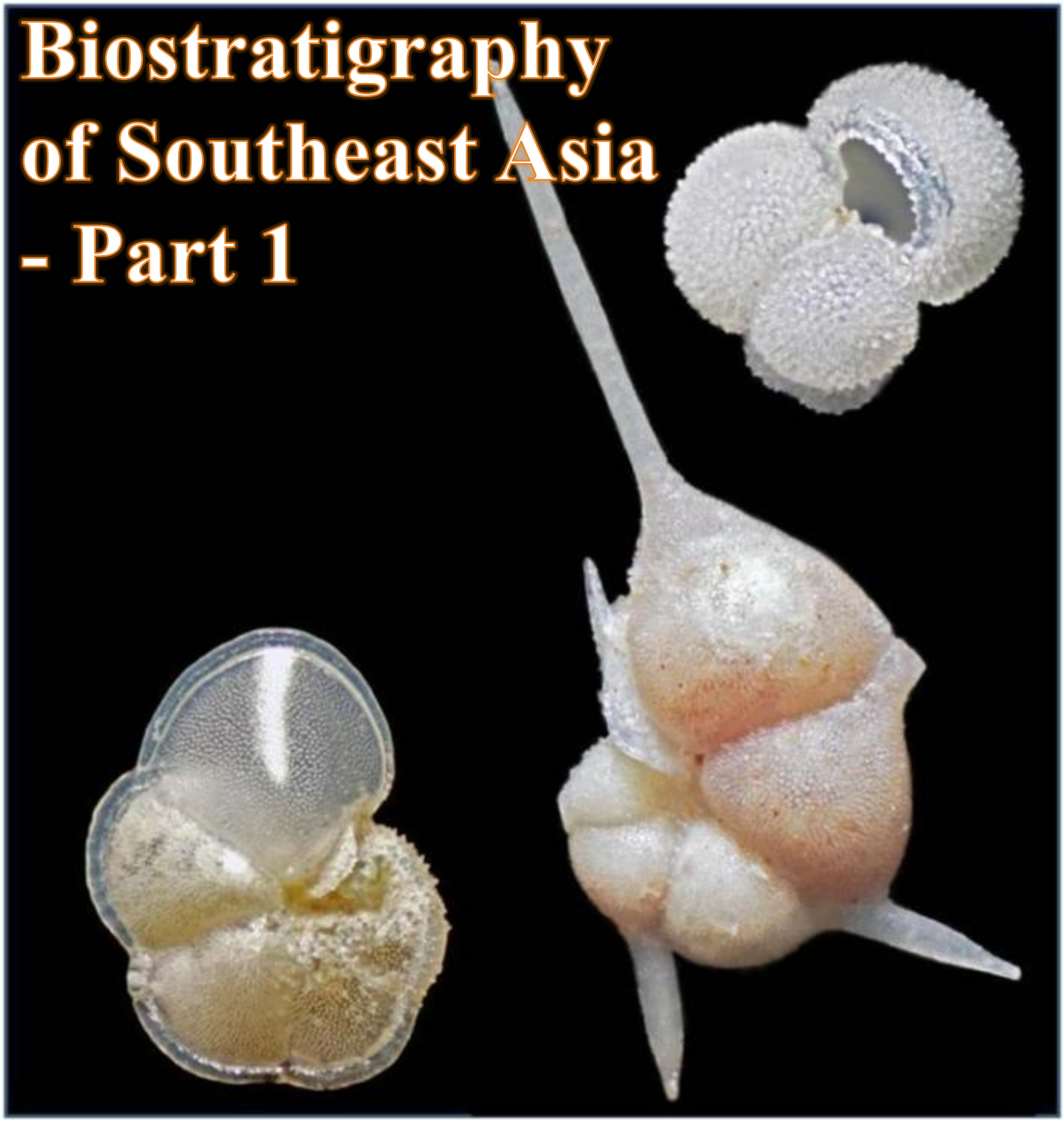
Number 29
04/2014

Berita Sedimentologi

Indonesian Journal of Sedimentary Geology

ISBN 0853-9413

Biostratigraphy of Southeast Asia - Part 1



Published by

The Indonesian Sedimentologists Forum (FOSI)

The Sedimentology Commission - The Indonesian Association of Geologists (IAGI)

Editorial Board

Herman Darman
Chief Editor
Shell International Exploration and Production B.V.
P.O. Box 162, 2501 AN, The Hague – The Netherlands
Fax: +31-70 377 4978
E-mail: **herman.darman@shell.com**

Minarwan
Deputy Chief Editor
Bangkok, Thailand
E-mail: **minarwanx@gmail.com**

Fuad Ahmadin Nasution
Total E&P Indonesie
Jl. Yos Sudarso, Balikpapan 76123
E-mail: **fuad.ahmadin@yahoo.co.id**

Fatrial Bahesti
PT. Pertamina E&P
NAD-North Sumatra Assets
Standard Chartered Building 23rd Floor
Jl Prof Dr Satrio No 164, Jakarta 12950 - Indonesia
E-mail: **fatrial.bahesti@pertamina.com**

Wayan Heru Young
University Link coordinator
Legian Kaja, Kuta, Bali 80361, Indonesia
E-mail: **londobali@yahoo.com**

Visitasi Femant
Treasurer
Pertamina Hulu Energi
Kwarnas Building 6th Floor
Jl. Medan Merdeka Timur No.6, Jakarta 10110
E-mail: **fvisitasi@yahoo.com**

Rahmat Utomo
Bangkok, Thailand
E-mail: **tomi_geologi04@yahoo.com**

Farid Ferdian
ConocoPhillips
Jakarta, Indonesia
E-mail: **faridferdian@yahoo.com**

Advisory Board



Prof. Yahdi Zaim
Quaternary Geology
Institute of Technology, Bandung

Prof. R. P. Koesoemadinata
Emeritus Professor
Institute of Technology, Bandung

Wartono Rahardjo
University of Gajah Mada, Yogyakarta, Indonesia

Ukat Sukanta
ENI Indonesia

Mohammad Syaiful
Exploration Think Tank Indonesia

F. Hasan Sidi
Woodside, Perth, Australia

Prof. Dr. Harry Doust
Faculty of Earth and Life Sciences, Vrije Universiteit
De Boelelaan 1085
1081 HV Amsterdam, The Netherlands
E-mails: **harry.doust@falw.vu.nl**;
harrydoust@gmail.com

Dr. J.T. (Han) van Gorsel
6516 Minola St., HOUSTON, TX 77007, USA
www.vangorselslist.com
E-mail: **jtvangorsel@gmail.com**

Dr. T.J.A. Reijers
Geo-Training & Travel
Gevelakkers 11, 9465TV Anderen, The Netherlands
E-mail: **tjareijers@hetnet.nl**

Peter M. Barber PhD
Principal Sequence Stratigrapher
Isis Petroleum Consultants P/L
47 Colin Street, West Perth, Western Australia 6005
E-mail: **pbarber@isispetroleum.com.au**



Cover Photograph:

Planktonic foraminifera, imaged with the method described by P. Lunt (this volume), preserving some of the transparency of tests that gets lost in coated SEM images. Clockwise from top: *Globigerinoides ruber*, Recent, East Java Sea (50m), *Hantkenina alabamensis*, Late Eocene, Nanggulan, Central Java and *Globorotalia menardii cultrata*, Recent, off Sabah (1600m).

Berita Sedimentologi
Indonesian Journal of Sedimentary Geology

- Published 3 times a year by the **Indonesian Sedimentologists Forum** (Forum Sedimentologiwan Indonesia, **FOSI**), a commission of the **Indonesian Association of Geologists** (Ikatan Ahli Geologi Indonesia, **IAGI**).
- Cover topics related to sedimentary geology, includes their depositional processes, deformation, minerals, basin fill, etc.

Berita Sedimentologi

A sedimentological Journal of the Indonesia Sedimentologists Forum (FOSI), a commission of the Indonesian Association of Geologist (IAGI)



From the Editor

Dear readers,

This year, 2014, FOSI will issue 4 volumes of Berita Sedimentologi to accommodate papers related to biostratigraphy, including a bibliography volume as a reference. The topic is covered under our sedimentary geology theme of the journal. Geographically these volumes are widened to cover Southeast Asia. J. T. (Han) van Gorsel has agreed to take the lead on this project, so he will be the guest editor for these volumes. With Han's experience, expertise and network, I believe this series of publications will be a significant contribution to the geosciences community in Southeast Asia.

On behalf of FOSI editorial board, we would like to thank Han for contributing his time and energy for these volumes. We also want to thank article contributors for preparing the manuscript and sharing their ideas. Han will give the introduction to each volumes.



Herman Darman
Chief Editor

INSIDE THIS ISSUE

Introduction to Volume – J.T. van Gorsel *5*

Introduction to Cenozoic biostratigraphy of Indonesia- SE Asia – J.T. van Gorsel et al. *6*

A review of the foraminiferal biostratigraphy of the Melinau Limestone, Sarawak – P. Lunt *41*

Making sense of mud: the use of benthic foraminifera in mudstone sedimentology, Sabah, North Borneo – J. Noad and R. Preece *53*

The distribution of benthic foraminifera in Indonesian shallow waters – S.M. Natsir *66*

Recent agglutinated foraminiferal trends and assemblages of the Sedili Besar River and its adjacent offshore area, Southeastern Peninsular Malaysia – M. Mohamed et al. *73*

Palynofacies analysis of the Eocene Bayah Formation in Bayah High, Banten Block, SW Java – B.Y. Chandra et al. *80*

Late Eocene- Pleistocene planktonic foraminiferal biostratigraphy of the Kuripan-1 well, North Central Java, Indonesia – D. Kadar et al. *95*

A Late Oligocene drowned pinnacle reef in deepwater Makassar Straits – J.T. van Gorsel and C.E. Helsing *116*

Stacked digital imaging of foraminifera – P. Lunt *123*

Berita Sedimentologi
Indonesian Journal of Sedimentary Geology

Call for paper
BS #30 – Biostratigraphy of Southeast Asia-part 2
to be published in July 2014

About FOSI

The forum was founded in 1995 as the Indonesian Sedimentologists Forum (FOSI). This organization is a commu-nication and discussion forum for geologists, especially for those dealing with sedimentology and sedimentary geology in Indonesia.

The forum was accepted as the sedimentological commission of the Indonesian Association of Geologists (IAGI) in 1996. About 300 members were registered in 1999, including industrial and academic fellows, as well as students.

FOSI has close international relations with the Society of Sedimentary Geology (SEPM) and the International Association of Sedimentologists (IAS).
Fellowship is open to those holding a recognized degree in geology or a cognate subject and non-graduates who have at least two years relevant experience.

FOSI has organized 2 international conferences in 1999 and 2001, attended by more than 150 inter-national participants.

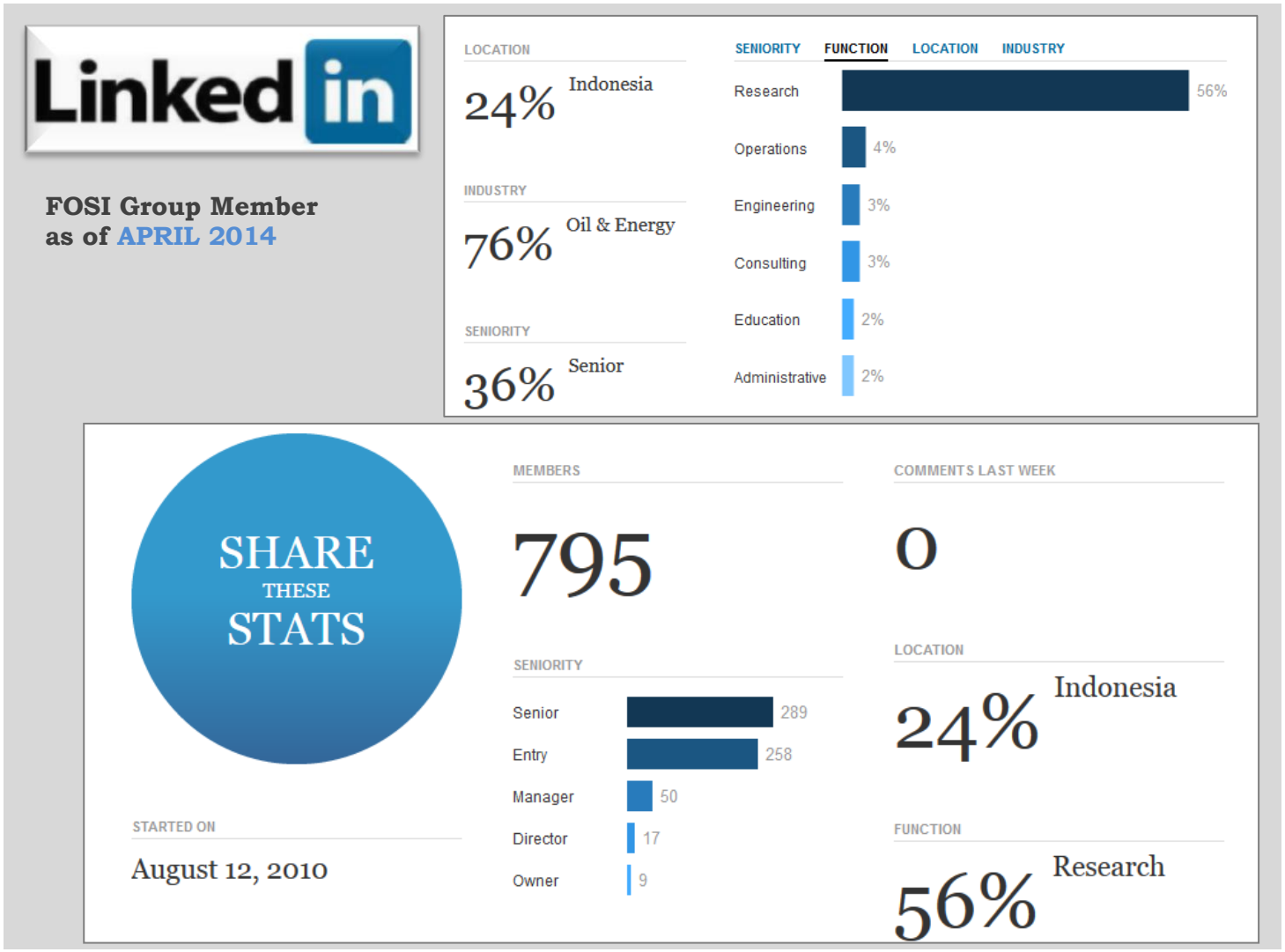
Most of FOSI administrative work will be handled by the editorial team. IAGI office in Jakarta will help if necessary.

The official website of FOSI is:

http://www.iagi.or.id/fosi/

FOSI Membership

Any person who has a background in geoscience and/or is engaged in the practising or teaching of geoscience or its related business may apply for general membership. As the organization has just been restarted, we use **LinkedIn (www.linkedin.com)** as the main data base platform. We realize that it is not the ideal solution, and we may look for other alternative in the near future. Having said that, for the current situation, LinkedIn is fit for purpose. International members and students are welcome to join the organization.



INTRODUCTION TO VOLUME

J.T. van Gorsel (Special Chief Editor)

"A bad fossil is more valuable than a good working hypothesis"
(R. Trumpy (1971)- Stratigraphy in mountain belts. Quart. J. Geol. Soc.,126, p. 293-318)

The above saying by the well-known Swiss geologist Rudolf Trumpy, famous for his contributions to the unraveling of the plate tectonic history of the Alps, is another reminder of how important it is to have good fossil-based age control in interpretations of stratigraphy, paleogeography and tectonic histories.

Although often seen as an 'old-fashioned' discipline, biostratigraphy/ paleontology is still indispensable for dating and correlations of sedimentary rocks and for its use in reconstructions of past depositional environments, like water depth, temperature, salinity, oxygen levels, paleoclimate setting, etc. This then allows recognition of paleoenvironmental trends like transgressions and regressions, depositional sequences and sequence boundaries, ultimately leading to a better understanding of basins evolution and economically relevant issues like distributions of hydrocarbon reservoir and source rocks.

Indonesia (and surrounding SE Asia) is an area rich in opportunities for fossil faunal and floral studies. Much work has already been done in the last 150 years, as attested by the >3300 papers in the annotated bibliography compiled in conjunction with this volume, but much more work remains to be done. The following three volumes of Berita Sedimentologi will be dedicated to keeping this tradition alive. This issue, Number 29, focuses on Cenozoic microfossil biostratigraphy, important for the interpretation of the Tertiary sedimentary basins of Indonesia. The next issue BS30 will continue this theme, while number BS 31 will focus on Mesozoic-Paleozoic biostratigraphy and paleontology.