

**1312th ORDINARY GENERAL MEETING
AND CLARKE MEMORIAL LECTURE**

WEDNESDAY 5 APRIL 2023
immediately following the 156th Annual General Meeting

**GALLERY ROOM AT THE STATE LIBRARY OF NEW SOUTH WALES
(ENTRANCE FROM SHAKESPEARE PLACE)**

AGENDA

1. WELCOME – President, Dr Susan Pond AM FRSN

2. MINUTES

Minutes of the 1311th Ordinary General Meeting held on 15 March 2023

3. CONFIRMATION OF NAMES OF CANDIDATES FOR FELLOWSHIP AND MEMBERSHIP

At the 1311th Ordinary General Meeting on 15 March, the following recommendations for Fellowship and Membership were presented. As no valid objections were received from members within two weeks of that meeting, the election of the following new Fellows, Members and Associate Members will take effect from 15 March 2023.

The nominations for Associate Members listed below, with the exception of Luke Martin Hall, are winners of the Jak Kelly Award and the RSNSW Scholarships for 2022. They are automatically given a year of Associate Membership as part of their Award.

FELLOWSHIP

Emeritus Professor Elizabeth Anne Ashburn
Professor Roy Gary Beran
Dr Joseph John Brophy
Professor Conal Stratford Condren
Professor Marcel Eduard Dinger
Mr Lionel Etheridge
Associate Professor Kalinda Griffiths
Professor Anthony John Mills
Professor Bernard Alexander Pailthorpe
Professor Prem Ramburuth
Professor Maree Rose Teesson
Professor Brian Uy
Mr Robyn Williams

MEMBERSHIP

Dr Matthew Broome
Dr Sam Lin
Dr Elizabeth Killen
Dr Robyn Williams

ASSOCIATE MEMBERSHIP

Mr Shankar Dutt
Mr Luke Martin Hall
Miss Clara Chung Ming Liu
Mr Thomas Mesaglio
Miss Anyang Zhao

4. PRESENTATION OF THE 2019 CLARKE MEDAL

Dr Pond will present the Clarke Medal for 2019 to Professor Dietmar Müller.

5. PRESENTATION OF FELLOWSHIP AND MEMBERSHIP CERTIFICATES

Dr Pond will present Certificates.

6. REPORT FROM COUNCIL AND COMMITTEES OF COUNCIL

The President will report on matters emanating from the March Executive Committee meeting.

7. QUESTIONS

8. THIS EVENING'S PRESENTATION AND CLARKE MEMORIAL LECTURE

RECONSTRUCTING ANCIENT OCEANS, SEA-LEVEL FLUCTUATIONS, THE DEEP CARBON CYCLE AND BIODIVERSITY

Professor Dietmar Müller FAA FAGU, Professor of Geophysics, School of Geosciences, The University of Sydney

Dietmar Müller received his undergraduate degree from the University of Kiel and his PhD in Earth Science from the Scripps Institution of Oceanography, UC San Diego/California. After joining the University of Sydney he built the EarthByte Research Group, pursuing geodata synthesis through space and time. He is leading the construction of a Virtual Earth Laboratory, assimilating the wealth of disparate geological and geophysical data into an experimental planet. Dietmar's virtual globe software and data are benefiting universities, government organisations, industry and schools worldwide, with end-users across over 190 countries. Novel applications include the development of combined geodynamic, tectonic and surface evolution models unravelling the origins and history of continental landscapes, coastlines, oceans and their environments. He held an Australian Laureate Fellowship from 2009-2014, and is a Fellow of the American Geophysical Union, and the Australian Academy of Science.

The presentation will be a journey through geological time, reconstructing ancient oceans that have little resemblance to the oceans we know today. These reconstructions are enabled by the EarthByte Group's Virtual Earth Observatory, powered by the GPlates software. They represent decades of software development and geodata synthesis to recreate now-vanished ocean basins. These digital maps form the basis for understanding the driving forces of changes in ocean basin volume and long-term sea level, the deep carbon cycle and biodiversity. The models track oceanic carbon reservoirs through time and demonstrate that the carbon storage and transport capacity of the oceans, from mid-ocean ridges to subduction zones, has increased 5-fold since the breakup of the Pangea supercontinent 200 million years ago, reflecting the emergence of biogenic deep-sea carbonate sediments as the largest carbon reservoir on Earth. Our maps have also been used to reconstruct marine biodiversity. An ocean evolution model over 550 million years, validated with fossil data, shows that modern ocean biodiversity, which is at its highest level ever, was achieved through the long-term stability of the location of so-called biodiversity hotspots. These are regions of especially high numbers of species located in warm, shallow, nutrient-rich waters. This study also emphasizes that, if current trends continue, projected diversity loss can take millions of years to recover, arguably beyond our own existence as a species.

9. VOTE OF THANKS

10. CLOSE – President, Dr Susan Pond AM FRSN