

2. LIFE ON EARTH – ORIGINS AND DIVERSITY		Professor Simon George simon.george@mq.edu.au
SubTHEME	DESCRIPTION	CHAMPIONS
<b>2.1 The origins and development of life</b>	This session will explore recent and new suggestions and theories about the origin and development of life on Earth. Papers are encouraged that address the observational record from the Precambrian, including new geological and geochemical data. Additionally, we welcome submissions based on laboratory experiments and analogues studies that provide insights into some of the first bio(geo)chemical reactions that led ultimately to life.	Martin van Kranendonk (University of New South Wales) <b>m.vankranendonk@unsw.edu.au</b>
<b>2.2 Ediacaran and Cambrian Symposium</b>	The Ediacaran was the time when multicellular life first became abundant in the rock record. The Cambrian saw the “Cambrian explosion” with the development and rapid evolution of an amazing variety of biota in the early part of the Period. Richly fossiliferous Ediacaran and Cambrian successions are superbly exposed in South Australia, particularly in the Flinders Ranges and on Kangaroo Island. We welcome submissions dealing with advances in the knowledge of Ediacaran and Cambrian biota including their stratigraphic significance. Both oral presentations and posters are welcome.	Jim Jago (University of South Australia) <b>Jim.Jago@unisa.edu.au</b>
<b>2.3 Mass extinctions</b>	There are five mass extinctions in Earth history that transformed much of the life on Earth, and we are currently at the start of the sixth that is anthropogenically-driven. There has been much written about these, but some aspects still remain poorly constrained, for example the exact temporal and causal processes. The session welcomes presentations in paleobiology, biogeochemistry and geology that address the causes, processes and results of the mass extinctions.	Kliti Grice (Curtin University) <b>K.Grice@curtin.edu.au</b>
<b>2.4 Ancient and historical record of life in Australia</b>	This session seeks to unite a wide spectrum of papers covering significant paleobiological topics on Australia’s Phanerozoic faunas and floras. Ideally papers will present new and significant work including syntheses and cross-disciplinary findings of broader interest to the paleontological community and to broader geoscience. The session welcomes topics in invertebrate and vertebrate paleobiology and paleobotany/ palynology as well as paleoecology, taphonomy, ichnology and geochemistry.	Gregg Webb (University of Queensland) <b>g.webb@uq.edu.au</b>
<b>2.5 The limits of life on Earth – extremophiles</b>	Extremophiles inhabit a very large variety of places on Earth, including the deepest oceans, ice caves and glaciers, very dry desert regions and deep underground in rocks. In the last few years it has become apparent that the deep biosphere contains more complex life than simple microbial communities, including eukaryotes. Defining and exploring these limits of life on Earth help inform the search for life on other planets and moons. We welcome submissions that cover all these topics, and especially new information on life inhabiting rocks.	Gordon Southam (University of Queensland) <b>g.southam@uq.edu.au</b>

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<p><b>2.6 Geobiology – mineral/rock interactions with organic hydrocarbons</b></p>	<p>Geobiology investigates the interaction of biota with geochemical and sedimentary processes throughout Earth history. We welcome submissions from across the sub-disciplines of geobiology, including geochemistry, geomicrobiology, biomineralisation and sedimentology. We encourage contributions that integrate these to determine the role of life in the Earth System, and to understand the co-evolution of life and the environment. Contributions that describe current questions and challenges in the field, present novel tools, techniques or approaches are particularly welcome.</p>	<p>Stefan Löehr (Macquarie University)  <b>stefan.loehr@mq.edu.au</b></p>
<p><b>2.7 Life beyond our planet</b></p>	<p>The first (and only) mission to Mars to directly search for biological evidence was the Viking Mars Exploration Program in the 1970s, which was extremely expensive (US\$1bn in 1976 dollars - US\$11bn in today's dollars). At that time we did not know about ancient stromatolites in the Pilbara of Western Australia, or the controversy that would rage for 40 years on whether these stromatolites are biological or geological in origin. If we had, would the Viking landers have looked for habitability instead of biology, to establish first whether the planet was ever capable of supporting life as we know it? The mission landed two landers successfully, but the results were (in hindsight) predictably controversial — we did not know about the presence of perchlorate either. As a result the disappointment shut down Mars exploration for the next two decades. Abstracts are invited on the status of evidence of habitability — and the challenges of seeking life — among the planets and moons of the solar system and beyond.</p>	<p>Carol Oliver (University of New South Wales)  <b>Carol.Oliver@unsw.edu.au</b></p>
<p><b>2.8 Earth, Life and Ores</b></p>	<p>This session focusses on the co-evolution of Earth and life over geological time and the critical role that biology, interactions, and by-products have played in preconditioning sites for mineralization, or the active role that they play in the mineralization process. We welcome posters and oral presentations that focus on, but are not limited to: black shale and sediment-hosted ore deposits and their biological origins, the role of organic–inorganic interactions in facilitating metal enrichments, influence of biological processes at sites of deposition, life and sulfide precipitation at hydrothermal vents, how the nature of the oceans and atmosphere has evolved over geological time, and impact that anoxia and euxinia may have on metallogenic processes. We also welcome interesting research that focusses on bio-mediation and processing of ores. We believe that this session is very complementary to those already proposed and will provide an integration of some of the concepts discussed under this theme.</p>	<p>Dr Sean Johnson (iCRAG, Irish Centre for Research in Applied Geosciences &amp; University College Cork)  <b>sean.johnson@ucc.ie</b></p> <p>Professor Ross Large (University of Tasmania)</p>