

## Anthropocene Working Group

### Report of activities 2011

This year has seen a range of activities, including:

- **Publication of Royal Society of London volume on the Anthropocene.**  
The title of the volume is:

WILLIAMS, M., ZALASIEWICZ, J., HAYWOOD, A. & ELLIS M. (eds) 2011. The Anthropocene: a new epoch of geological time? *Philosophical Transactions of the Royal Society* **369A**, 833-1112.

It comprises 13 papers (for details see Newsletter 2). The overview paper summarises the content and is freely downloadable:

<http://rsta.royalsocietypublishing.org/content/369/1938/835.full.pdf+html>

Pdfs of the other papers are available from the authors on request. The volume was reviewed in *Nature Geoscience*:

<http://www.nature.com/ngeo/journal/v4/n8/full/ngeo1220.html>

- **A meeting on the Anthropocene at the Geological Society of London** (Burlington House) on Wednesday 11<sup>th</sup> May. Convened by Mike Ellis, Jan Zalasiewicz, Mark Williams and Alan Haywood, and generously supported by the British Geological Survey, the speakers were, in order of speaking:

Andrew Revkin (Introduction)  
Dennis Dimick (Global Anthropocene)  
Will Steffen (Humans as a global geophysical force)  
Erle Ellis (Biodiversity)  
James Syvitski (From land to sea)  
Dorothy Merritts (Floodplain transformation)  
Toby Tyrrell (Anthropocene oceans)  
Davor Vidas (The commercial ocean)  
Paul Crutzen (Plenary lecture)

The meeting was widely regarded as a considerable success, and resulted in widespread publicity (including *Nature*, with a feature, an editorial and inclusion in their annual roundup of 'highlights of the year': <http://www.nature.com/nature/journal/v473/n7347/full/473254a.html> and <http://www.nature.com/news/365-days-2011-in-review-1.9684>; and in *Science*: <http://www.sciencemag.org/content/334/6052/32.full> the *Economist*: <http://www.economist.com/node/18741749> the BBC: <http://www.bbc.co.uk/news/science-environment-13335683> Other public dissemination of this concept has included a feature in the National Geographic <http://ngm.nationalgeographic.com/2011/03/age-of-man/kolbert->

[text](#), while the term was included in the title of the annual Geological Society of America meeting in 2011 <http://www.geosociety.org/meetings/2011/>

- **The Anthropocene was a major theme at the 2011 Nobel Laureate Symposium in Stockholm**, being a key concept in the Stockholm Memorandum published after the meeting in the journal *Ambio* (2011: published online DOI 10.1007/s13280-011-0187-8), and in associated papers in the same volume by Steffen et al. (The Anthropocene: From Global Change to Planetary Stewardship: DOI 10.1007/s13280-011-0185-x), Folke and Rockton (3rd Nobel Laureate Symposium on Global Sustainability: Transforming the World in an Era of Global Change: DOI 10.1007/s13280-011-0190-0, Folke et al. (Reconnecting to the Biosphere: DOI 10.1007/s13280-011-0184-y) and Westley et al. (Tipping Toward Sustainability: Emerging Pathways of Transformation: DOI 10.1007/s13280-011-0186-9).

- **Grant application for an Anthropocene research network.**

Given the need to maintain the momentum started by the Geological Society of London meeting, a grant application was prepared and submitted to establish an Anthropocene research community (i-ARC), to the International Opportunities Fund of the Natural Environment Research Council (NERC). This was jointly prepared between the British Geological Survey (Mike Ellis) and University of Leicester (Mark Williams/Jan Zalasiewicz), with a number of international partners including the Deutsches Museum and Rachel Carson Centre in Germany, the Fridtjof Nansen Institute in Germany, the University of Maryland, PACE University, the National Geographic, the University of Denver and Franklin & Marshall College in the USA, the Australian National University and the IGBP. A decision on the grant is due early in 2012.

- **Planned volume on *A Stratigraphic Basis for the Anthropocene*** (accepted as a proposed Special Publication of the Geological Society of London). The lead editor of this volume is Colin Waters (BGS), with co-editors Jan Zalasiewicz, Mark Williams, Mike Ellis and Andrea Snelling. In part arising from the Geological Society meeting on the Anthropocene (see above).

The volume specifically focusses on stratigraphic criteria that might be used to help define an Anthropocene boundary. In content, following an overview, the current proposed content includes:

- Viewpoint of the ICS (Stan Finney)
- Viewpoint of the Quaternary community (Phil Gibbard)
- Lithostratigraphy (Simon Price and others)
- Soils (Dan Richter)
- Vertebrate biostratigraphy (Anthony Barnosky)
- Shallow marine ecosystems (Ove Hoegh-Guldberg)
- Sea level changes and sequence stratigraphy (Alex Cerreata and others).
- Chemostratigraphy (Agnieszka Galuska and others)
- Speleothem stratigraphy (Ian Fairchild and others)

- Tephrochronology (Victoria Smith and others)
- Radiogenic isotopic signatures (Gary Hancock)
- Ice core stratigraphy (Eric Wolff)
- Geomagnetic characterization (Mark Hounslow and others)
  
- **The International Geosphere-Biosphere Project (IGBP) and the Anthropocene.** The IGBP, currently headed by James Syvitski, is to initiate a major new programme on the Anthropocene. This follows past involvement in the concept, which includes the original publication of the term in its Newsletter (Crutzen & Stoermer 2000) and the major compilation of Steffen et al. (2004) *A Planet under Pressure*.
  
- **New volume on The Anthropocene and the Law of the Sea**  
The concept of the Anthropocene as a possible influence on the Law of the Sea has been further explored in the newly published book *The World Ocean in Globalization: Challenges and Responses* (ed. Vidas, D. & Schei, P.J.). Martinus Nijhoff Publishers: 2011, a companion volume to the earlier *Law, Technology and Science for Oceans in Globalisation*, edited by Davor Vidas (Martinus Nijhoff Publishers: 2009), in which the opening section of three papers was entitled 'The World Ocean in the Anthropocene Epoch'.
  
- **Two major exhibitions on the Anthropocene** are being planned in Germany: one at the Deutsches Museum in Munich, and another at the Haus der Kultur der Welt in Berlin. These will approach the concept from a science and an arts/cultural perspective, respectively, with liaison and co-operation between the two institutes.
  
- **A new NSF-funded project *GLOBE: Evolving New Global Workflows for Land Change Science*** (chief investigator Erle Ellis, University of Maryland in Baltimore) will be assessing the global impacts of local changes, and therefore helping to define the terrestrial signature of the Anthropocene.
  
- **A new four-year research project on 'International Law for an Anthropocene Epoch'**, led by Davor Vidas and the Fridtjof Nansen Institute, has been funded by the Research Council of Norway.
  
- **Global Soil Change Groups have been set up** within both the International Union of Soil Sciences and the Soil Science Society of North America, chaired by Dan Richter, and it is proposed that some kind of linkage, encouraging dialogue, be set up between these groups and the AWG.
  
- **A recent significant paper on a sedimentary/sequence signal** significant to the Anthropocene is: Poirier, C., Chaumillon, E. & Arnaud, F. 2011. Siltation of river-influenced coastal environments: Respective impact of late Holocene land use and high-frequency climate changes. *Marine Geology* **290**, 51-62.
  
- **The Mineralogical Society of Poland** invited a keynote talk on the Anthropocene in September 2011. This allowed the exploration of the idea that

humans are causing a significant new phase in mineral diversity on Earth (Zalasiewicz, J, Kryza, R. & Williams, W. 2011. Mineral evolution on Earth: from the Hadean to the Anthropocene. *Mineralogia* **38**, 33-36).

### **Membership to date**

Listed here are names of members to date and their contact details. Note the Secretary of the AWG is now Dr. Colin Waters of the British Geological Survey (see details below); with many thanks to Mark Williams for his notable contributions (including steering the Royal Society volume to completion) in this role up to 2011.

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### **Anthropocene Working Group: suggested programme for 2012-13**

- The analyses of Anthropocene stratigraphy proposed for the Geological Society of London Special Publication (see above) will go some way towards extending the database on this concept.
- One aspect, in particular, that may need closer examination, is the biological signal, given the importance of palaeontology towards defining the

Phanerozoic time scale. We hope to establish studies that focus on this aspect over the coming year.

- It is becoming clear that the anthropogenic signal is complex in time and space. Better understanding of this will help in the selection of potential candidates for a level for the beginning of the Anthropocene. This aspect has been highlighted in the NERC IOF grant application (see above) with emphasis on 'mapping the Anthropocene'; the GLOBE work of Erle Ellis (see above) will also help advance knowledge here.
- We need to consider a timescale for providing our collective opinion (or opinions) on the question of whether or not to formalize the Anthropocene and, if so, at what level (i.e. when should it's beginning be placed) and using what criteria. A reasonable date to aim for may be summer 2016: that is, in time for the next-but-one International Geological Congress. This should give time for some of the projected studies (see above) to reach fruition, to allow discussion with relevant scientists and organisations (and indeed among wider circles of society) – and to allow discussion (and hopefully some consensus) among ourselves. We have recently been approached by Cambridge University Press, who are interested in producing a book on the Anthropocene: this may be an effective route to summarising and widely disseminating the evidence and opinions gathered by then. If so, then we should aim to compile the volume in 2015, for publication in early/mid 2016, timed to coincide with the IGC.

Jan Zalasiewicz (Chair)  
Colin Waters (Secretary)

10/01/2012