

# Newsletter of the Anthropocene Working Group

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International Union of Geological Sciences  
International Commission on Stratigraphy



Subcommission on Quaternary Stratigraphy

<http://quaternary.stratigraphy.org/workinggroups/anthropocene/>

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Newsletter edited by Colin Waters and Jan Zalasiewicz.

Thanks to all colleagues who contributed to this Newsletter.

Cover Illustration:

View of Pwllfawatkin Landfill near Cwmgors, South Wales. The landfill in the right of the image was opened in the mid 1970s and was still active in 2006. The area to the left is undergoing the same process in 2012 and it is possible to see the layering of clay materials extracted from an old colliery spoil tip, seen in the far right, and subsequently overlain by domestic refuse. Behind the site and to the right of the image, was in 1961 the site of Abernant Colliery working deep-mined coal at about 670 m depth, with colliery spoil tipped adjacent to the mine. The area of worked colliery spoil is being redeveloped as an Anaerobic Digestion Facility. The photograph displays large-scale post-war development of rural environments in the UK. The large amounts of waste products were previously seen as a development constraint, with risks of acid leachates and catastrophic collapse, such as the one that caused 144 fatalities, many of which were schoolchildren, in nearby Aberfan in 1966. Humanity is increasingly seeking to turn such wastes into resources and the photograph shows the recycling of anthropogenic deposits, which are still in a state of sediment flux. Photograph courtesy of Rhian Kendall.

## CHAIRMAN'S COLUMN

This last year has seen continuation of extraordinary interest in the Anthropocene concept, from both within the Earth sciences (writ large) and beyond it. There are museum exhibitions, in progress and planned, the creation of dedicated journals, radio programmes, and the publication of a range of articles, both technical and general. It is clear that the term is being found widely useful. Time will tell whether this widespread interest will continue. But, for the time being, putting all else aside, it is good to see that the aims and working practices of stratigraphy – long regarded as amongst the most arcane areas within geology – are also receiving wide attention.

Among this widespread activity, we focus as before on what might be regarded as narrow technical aspects. That is, we are considering:

- whether the Anthropocene as a formal geological time unit is stratigraphically reasonable;
- whether it is useful to Earth scientists (a somewhat different matter) – and whether its potential use to other scholarly disciplines should also be considered as regards utility;
- if so, when should its beginning be best placed: opinions have ranged from several thousand years ago, to decades ago, and indeed to some point in the future;
- how should it be defined - whether in a stratal section by a Global Stratigraphic Section and Point (i.e. a 'golden spike') or by a Global Standard Stratigraphic Age (i.e. a numerical date)
- at what hierarchical level it should be placed: age, epoch, period, era or eon? For working purposes we are considering it as a potential Epoch, as that places the decision in sharp focus (i.e. has the Holocene Epoch ended or not?), but that is simply a working hypothesis.

As with consideration of all other geological boundaries, these technical questions necessitate (and hopefully encourage) close study of the underlying scientific questions. The underlying general phenomenon – the scale and rate of recent and contemporary geological change – is clearly of considerable significance to both science and society.

To further these aims, we are assembling a Special Publication of the Geological Society (see below: hopefully to be published later this year) that focuses on stratigraphic aspects of the Anthropocene. This will complement the Royal Society volume published in 2011, and also the growing numbers of papers that explicitly discuss the Anthropocene published in other fora. There will be further work to do over the coming few years, among which closer focus on biological (i.e. biostratigraphical) aspects seems to be a priority. Provisionally, we are working to arrive at some kind of consensus (or at least to outline a range of opinions) for 2016, the date of the International Geological Congress, combined with a synthesis of evidence assembled to that date.

Given the normal pace of stratigraphic boundary deliberations in general, the newness of the Anthropocene as a potential formal unit, and the complexity (and novelty) of the underlying stratigraphical phenomena, this is ambitious. We will do what we can.

To this end, the Anthropocene Working Group continues to evolve its membership (see below), and we welcome new members and thank existing ones for their many and valuable contributions - carved with difficulty, we know, out of the usual academic life of busy schedules, tight deadlines, and always too much to do.

We stress, though, that we welcome evidence from, and collaboration with, sources from outside our membership, and look forward to another year of reaching a closer understanding of the remarkable geological times (whether considered formally or informally) that we live in.

## SELECTED PUBLICATIONS

- **The Anthropocene Review**

News of a new journal, to be published by SAGE: *The Anthropocene Review*, a transdisciplinary journal issued 3 times per year, brings together peer-reviewed articles on all aspects of research pertaining to the Anthropocene from earth and environmental sciences, social sciences, material sciences, and humanities. High impact research articles, reviews and brief 'perspective' articles are especially welcome.

It is planned to publish three issues during 2014. Contributions to the first issue focus on a range of concerns within the broad theme of 'Human Societies in the Anthropocene' should reach Frank Oldfield by 30.9.2013. The second issue will focus on 'Biodiversity' with a submission deadline of 30.11.2013. The third issue will focus on the theme of 'Planetary boundaries and key processes', with a submission deadline of 31.1.2014.

***All interested should, in the first instance, contact Frank Oldfield ([oldfield.f@gmail.com](mailto:oldfield.f@gmail.com)) or a member of the Editorial Board.***

The Editorial Board currently comprises: Frank Oldfield (Editor in Chief), John Dearing ([J.Dearing@soton.ac.uk](mailto:J.Dearing@soton.ac.uk)), Marina Fischer-Kowalski ([Marina.Fischer-Kowalski@aau.at](mailto:Marina.Fischer-Kowalski@aau.at)), Will Steffen ([will.steffen@anu.edu.au](mailto:will.steffen@anu.edu.au)) and Jan Zalasiewicz ([jaz1@leicester.ac.uk](mailto:jaz1@leicester.ac.uk)). It will be expanded to reflect the scope of the journal.

- **Anthropocene**

This new journal, also devoted to publishing research into the Anthropocene, is published by Elsevier (<http://www.journals.elsevier.com/anthropocene/>). Anne Chin is the Editor-in-Chief, and Paul Crutzen is on the editorial board. The journal advertises that it welcomes the following types of manuscripts:

- Original research articles that meet the Aims and Scope of the journal, with typical length of text in the 5000-7000 word range. Research articles may

include specific case studies if these studies demonstrate theoretical significance and broad systemic relevance.

- Review papers and Prospects that assess the state of knowledge of a particular subfield or topic, that point toward future research needs and directions. These review articles, with a typical length within 8000 words, may include some new data or synthesis of existing data that produce new understanding.
- Short communications include commentaries and viewpoints on specific issues, discussions and replies of articles published in the journal, and shorter papers addressing timely topics that are reviewed and published rapidly. The length of these articles should be within 2000-4000 words.

- **Elementa – Science of the Anthropocene**

*Elementa* is published on an open-access, public-good basis—available freely and immediately to the world. (<http://elementascience.org/>). The journal welcomes the following types of manuscripts:

- **Research articles**, presenting the results of primary scientific research and typically following the format of a traditional research paper;
- **Reviews**, presenting conceptual advances, syntheses, and integration of a field or topic;
- **Policy bridge**, articles focused on bridging scientific knowledge with policy issues, policy options, or policy analysis;
- **Special features**, collections of articles addressing themes of broad interest, typically 4–10 articles in each collection, linked by keywords and preceded by a short introduction; and
- **Comment & reply**, items of correspondence relating to *Elementa* articles and promoting discussion of relevant research, accompanied by author responses.

- **Geological Time Scale 2012**

Zalasiewicz, J., Crutzen, P. and **Steffen, W.** (2012) Anthropocene. In: A Geological Time Scale 2012 (Ed. F.M. Gradstein), Elsevier, pp. 1057-1064.

- **New Scientist Editorial**

An editorial on “A species with prospects” appeared on 3 March 2012 edition.

- **The Future of Nature: Documents of Global Change**

Part 6 titled “The Anthropocene: How can we live in a world where there is no nature without people?” included a contribution by Will Steffen on the origin of the term Anthropocene.

- **GSA Today Vol. 22 (7)**

Paper on "Is the Anthropocene an issue of stratigraphy or pop culture?" by Whitney Autin and John Holbrook. The Working Group produced a response to this article.

Zalasiewicz, J., Cearreta, A., Crutzen, P., Ellis, E., Ellis, M., Grinevald, J., McNeill, J., Poirier, C., Price, S., Richter, D., Scholes, M., Steffen, W., Vidas, D., Waters, C., Williams, M. & Wolfe, A., in press. Response to Autin and Holbrook on: Is the Anthropocene an issue of stratigraphy or pop culture? *GSA Today*, Vol. 21, e21-e22.

- **"Fundamentals of Geobiology"**

Book Chapter entitled "Geobiology of the Anthropocene" by Dan Schrag (Harvard). The book is edited by Andy Knoll, Don Canfield and Kurt Konhauser (ISBN: 978-1-4051-8752-7).

- **"Das Anthropozän"**

Book produced by Eckart Ehlers (in German).

- **Proceedings of the 12th International Coral Reef Symposium**

Reinhold R. Leinfelder, Janina Seemann, Georg A. Heiss & Ulrich Struck. Could 'Ecosystem Atavisms' Help Reefs to Adapt to the Anthropocene? Proceedings of the 12th International Coral Reef Symposium, Cairns, Australia, 9-13 July 2012  
2B Coral reefs: is the past the key to the future?

- **Zalasiewicz, J. 2013. The epoch of humans. *Nature Geoscience* 6, 8-9.**

- **Zalasiewicz, J. 2013. The human touch. *Palaeontological Association Newsletter* 82.**

- **Ellis, E C., Kaplan, J O., Fuller, D Q., Vavrus, S., Goldewijk, K K. and Verburg, P H. 2013. Used planet: A global history. *PNAS* 2013 110:7978-7985; doi:10.1073/pnas.1217241110.**

- **From Will Steffen**

Seitzinger, S.P., Svedin, U., Crumley, C.L., **Steffen, W.**, Abdullah, S.A., Alfsen, C., Broadgate, W.J., Biermann, F.H.B., Bondre, N.R., Dearing, J.A., Deutsch, L., Dhakal, S., Elmqvist, T., Farahbakhshazad, N., Gaffney, O., Haberl, H., Lavorel, S., Mbow, C., McMichael, A.J., deMoraes, J.M.F., Olsson, P., Pinho, P.F., Seto, K.C., Sinclair, P., Stafford Smith, M. and Sugar, L. (2012) Planetary stewardship in an urbanizing world: beyond city limits. *Ambio*, **41**: 787-795.

Costanza, R., van der Leeuw, S., Hibbard, K., Aulenbach, S., Brewer, S., Burek, M., Cornell, S., Crumley, C., Dearing, J., Folke, C., Graumlich, L., Hegmon, M., Heckbert, S., Jackson, S.T., Kubiszewski, I., Scarborough, V., Sinclair, P., Sörlin, S. and **Steffen, W.** (2012) Developing an Integrated History and future of People on Earth. *Current Opinion in Environmental Sustainability* **4**: 106-114.

- **From Daniel Richter**

Richter, D.deB. and D.H. Yaalon. 2012. "The Changing Model of Soil" Revisited. *Soil Science Society of America Journal* **76**: 766-778.

- **From Alejandro Cearreta**

Cearreta, A., Mahiques, M.M. & Dias, J.A. (Guest Editors), 2013. Record of anthropogenic activities on the coastal environments of Iberoamerica (Antropicosta). *Ocean and Coastal Management*, doi: 10.1016/j.ocecoaman.2012.07.022

Dias, J.A., Cearreta, A., Isla, F.I. & Mahiques, M.M., 2013. Anthropogenic impacts on Iberoamerican coastal areas: historical processes, present challenges, and consequences for coastal zone management. *Ocean and Coastal Management*, doi:10.1016/j.ocecoaman.2012.07.025

Dias, J.A.; Mahiques, M.M. & Cearreta, A. (Guest Editors), 2012. Men-Environment Interactions in the Coastal Zone. *Journal of Integrated Coastal Zone Management*, 12: 1-116.

Cearreta, A.; García-Artola, A.; Leorri, E.; Irabien, M.J. & Masque, P., 2013. Recent environmental evolution of regenerated salt marshes in the southern Bay of Biscay: anthropogenic evidences in their sedimentary record. *Journal of Marine Systems*, 109-110: 203-212 .

Dias, J.A.; Mahiques, M.M. & Cearreta, A., 2012. Coastal Management: the result of a doubtful relationship between Man and Nature. *Journal of Integrated Coastal Zone Management*, 12: 3-6.

Leorri, E.; Cearreta, A. & Milne, G., 2012. Field observations and modelling of Holocene sea-level changes in the southern Bay of Biscay: implication for understanding current rates of relative sea-level change and vertical land motion along the Atlantic coast of SW Europe. *Quaternary Science Reviews*, 42: 59-73.

- **From Bruce Smith**

Smith, B.D. & Zeder, M.A., in press. The Onset of the Anthropocene. *Anthropocene*.

- **Volume on *A Stratigraphic Basis for the Anthropocene*** (Special Publication of the Geological Society of London). In Prep. 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 in May 2011.

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

- Overview of the content of the volume (Waters and others)
- Can an Anthropocene Series be defined and recognised? (Zalasiewicz and others) \*
- Viewpoint of the ICS (Stan Finney)\*
- The term 'Anthropocene' in the context of formal geological classification (Phil Gibbard & Mike Walker) \*

- An assessment of lithostratigraphy of anthropogenic deposits (Jon Ford and others) \*
- The mineral signature of the Anthropocene (Zalasiewicz and others) \*
- The relationship between archaeological stratigraphy and artificial ground and its significance in the Anthropocene (Matt Edgeworth) \*
- Anthropocene Soils and stratigraphy (Dan Richter)
- Modern changes in sediment flux, erosion rates and desertification (Janet Hooke and others)
- Palaeontological evidence for defining the Anthropocene (Anthony Barnosky) \*
- Micropalaeontological signatures for the Anthropocene (Ian Wilkinson and others) \*
- Coral reefs in the Anthropocene: persistence or the end of the line? (Ove Hoegh-Guldberg) \*
- Definition of the Anthropocene: a view from the underworld (Ian Fairchild & Silvia Frisia) \*
- Ice Sheets and the Anthropocene (Eric Wolff) \*
- Assessing the Anthropocene with geochemical methods (Agnieszka Galuska and others) \*
- The release and persistence of Radioactive Anthropogenic nuclides (Gary Hancock and others) \*
- Geomagnetic and mineral magnetic characterization of the Anthropocene (Ian Snowball and others) \*
- Tephrochronology (Victoria Smith & Christine Lane)\*
- Technology as a Geological Phenomenon: Implications for Human Well-Being (Peter Haff) \*

Those papers already submitted are marked by \*.

- **Keywords in the Study of Environment and Culture**

Zalasiewicz, J., Williams, M. and Waters, C N. In press. *Anthropocene*. (edited by Joni Adamson, William A. Gleason, and David N. Pellow). NYU Press.

## CONFERENCES

- **American Geophysical Union Fall Meeting in San Francisco**

A session on “The Anthropocene: Confronting the Prospects of a +4C World” was convened by P Frumhoff, Mike Ellis, Mark Williams and J Gullede on 7 December 2012. Presentations included *Temporal and Spatial scales of the Anthropocene Series* (Jan Zalasiewicz), *Paleontological evidence for defining the Anthropocene* (Tony Barnosky), *From forest to farmland and moraine to meadow: Integrated modelling of Holocene land cover change* (Jed Kaplan), *Transport and Purpose in the Anthropocene* (Peter Haff) and *The Anthropocene – and International Law of the Holocene* (Davor Vidas). A poster session presided over by Mike Ellis, T Sanford and J Gullede included 17 posters. A Press Conference on the topic “Setting boundaries for the Anthropocene” held on 6 December included Mike Ellis, Tony Brown, Michael Kruge and Colin Waters and can be viewed at <http://www.youtube.com/watch?v=RtgfgbHCNjY> . EOS, Vol.94, No.4, 22 January 2013 p41-42 report on the AGU meeting.



- **International Geological Congress (IGC), Brisbane, Australia**  
Simon Price delivered a talk entitled 'The geology of the Anthropocene' at the 34th IGC in August 2012.
- **Soil Science Society of America Annual Meeting in Cincinnati**  
A session in the Pedology Division entitled, "How is the Anthropocene transforming pedology?" was convened by Dan Richter, Patrick Drohan, and John Galbraith on 22 October 2012. Presentations included international speakers and soil scientists such as Don Johnson, Ron Amundson, Cynthia Stiles, Klaus Lorenz, Henry Lin, Kate Scow, Li Guo, Ray Bryant, Wendy Greenberg, Jeff Howard, David Weindorf, Ishai Dror, Michael Konen, Said Al-Ismaily, Galbraith, Drohan, and Richter. Attendance was large and discussion spirited.
- **Geological Society of America (GSA) Annual Meeting**  
Leorri, E.; Cearreta, A. & Milne, G., Field observations and modeling of Holocene sea-level changes in the SW Europe: assessing anthropogenic sea-level rise. 2012 GSA Annual Meeting, Charlotte (USA), 4-7 November 2012.
- **IIASA 40th Anniversary Conference**  
Syvitski, JPM, 2012, Policies for Mitigating Human Impact on Terrestrial Sediments, IIASA 40th Anniversary Conference: World Within Reach: From Science to Policy, Vienna Austria, 2012.
- **2nd GEOSS Science and Technology Stakeholder Network Workshop**  
Syvitski, JPM, 2012, Observing the Anthropocene < The Geology of Humanity, 2nd GEOSS Science and Technology Stakeholder Network Workshop, Bonn, Germany, 28-31 Aug 2012.
- A two-day meeting on '**Natural and Anthropogenic Modification of the Fragile Equilibrium of the Earth**' took place at the Accademia dei Lincei, Rome, on 26-27<sup>th</sup> November 2012. It was co-ordinated by Maria Bianca Cita and A. Golini,; abstracts are published in the *Atti dei Convegni Lincei* and papers arising out of the meeting will be published in a special issue of the *Rendiconti Lincei*.
- A major exhibition on the Anthropocene, focussing on social, cultural and artistic aspects, opened at Berlin's **Haus der Kulturen der Welt** in mid-January, 2013. Among members of the Anthropocene Working Group who were represented were Will Steffen (who gave a keynote presentation), Erle Ellis, Reinhold Leinfelder and Jan Zalasiewicz. Presentations from the opening event can be seen on Youtube and via the HKW website. The exhibition itself will run for some two years and involve a number of events.
- **TAG Conference:** Chicago, Friday May 10<sup>th</sup> 2013, morning session (3hrs)  
*Session Title:* Archaeology in the Anthropocene  
*Organiser:* Matt Edgeworth, University of Leicester, UK.
- A conference on the Anthropocene - '**The History and Politics of the Anthropocene**' - took place at the School of Social Service Administration Chicago on 17-18<sup>th</sup> May 2013, organised by Dipesh Chakrabarty and Frederik

Albritton Jonsson. Members of the AWG who were involved were John McNeill and Jan Zalasiewicz.

- A session on Anthropocene Geomorphology at 8<sup>th</sup> International Conference on Geomorphology, August 27<sup>th</sup> to 31<sup>st</sup>, 2013, Paris, France (Simon Price has a paper accepted).

## MEDIA

- **Süddeutsche Zeitung**

This significant German newspaper ran an article on 9 March 2012 on the Anthropocene (in German) quoting the work of Paul Crutzen, Erle Ellis and Jan Zalasiewicz.

- **Science et Vie**

A well illustrated magazine article “Mais dans quelle époque vivon-nous?” by Boris Bellanger appeared in August 2012 (in French) with commentary from Phil Gibbard and Jan Zalasiewicz.

- **BBC World Service Discovery Series**

A major four part series on “The Age We Made” broadcast in November 2012 as part of BBC World Service’s Discovery series and later broadcast on BBC Radio 4’s Frontiers series. The broadcast included contributions from several members of the Working Group <http://www.bbc.co.uk/programmes/p0104klm>.

- **British Geological Survey Anthropocene webpages**

Launch of webpages at: <http://www.bgs.ac.uk/anthropocene/>

- **Science magazine**

25 April debate over how to define the Anthropocene. Bruce D. Smith of the Smithsonian’s National Museum of Natural History and Phil Gibbard of the University of Cambridge and Michael Balter discuss whether humans have affected the Earth so dramatically that we’ve created a new geological era, as well as explore their differing views on when the Anthropocene began: <http://news.sciencemag.org/sciencenow/2013/04/live-video-chat-have-we-entered-.html>

## OTHER NEWS

### From Will Steffen:

Most of my research in 2012 has focused on the further development of the planetary boundaries concept, primarily in collaboration with colleagues at the Stockholm Resilience Centre. The main components of the research are:

- An update of the original 2009 Rockstrom et al. papers, with (i) updates of several of the boundaries (e.g., land systems, phosphorus/nitrogen, biodiversity); (ii) first estimates of the boundaries for aerosols and chemical pollution; and (iii) a more thorough analysis of the interactions among the boundaries. Paper in preparation. Lead author: Will Steffen.

- A paper on the conceptual framework of the planetary boundaries, with an analysis of energy and material cycling in a (hypothetical) Earth System without biology, a similar analysis with biology to show the importance of life in the functioning of the Earth System, and a third analysis in the Anthropocene, showing the influence of humans on the functioning of the Earth System in the same framework as the first two analyses. Paper in preparation. Lead author: Katherine Richardson.

An analysis of the importance of equity issues, especially the redistribution of resources from wealthy to developing countries, in addressing many of the planetary boundaries, especially those that are spatially heterogeneous such as P and N, biodiversity, aerosols, etc. Paper under review for Current Opinion in Environmental Sustainability. Lead Author: Will Steffen.

Selected presentations include:

- Invited keynote lecture at the “Planet Under Pressure” Conference in London, March 2012.
- Invited keynote lecture to the symposium “Sustainable Land Use in a Changing World”, sponsored by the Swedish Government All-Party Committee on Environmental Objectives.

- **Jacques Grinevald writes:**

a cycle of lectures on the Anthropocene is organized by the Faculty of Geosciences and Environment of the University of Lausanne (CH) for its 10th anniversary. Notably:

March 21: Climat, Environnement et l'Homme : l'Alerte venue des Pôles, Prof. Claude Lorius

April 4: The closing doors of climate targets, Prof. Thomas Stocker (IPCC)

May 23: The Anthropocene as a potential epoch of Earth history, by Dr. Jan Zalasiewicz

May 30: L'Anthropocène comme périodisation de la géohistoire environnementale et de la crise anthropogénique de la Biosphère actuelle, Prof. Jacques Grinevald.

- **From Daniel Richter**

The Duke University Perkins-Bostock Library will be showing an exhibit, "Welcome to the Anthropocene?" from July to October 2013. The exhibit grows from a diverse group of scientists, humanities scholars, and artists at Duke who meet to read stratigraphy, global change science, critical essays, and philosophy. The exhibit includes displays on the pop-cultural concept of the Anthropocene and examines four proposed dates of origin as well as the contrasting public narratives that result from each of the four dates of origin. A reading and cinema list is included.

- **From Alejandro Cearreta (research activities)**

-Recent natural and anthropogenic transformation of salt marshes in northern Spain: response to climate change-TANYA (CGL2009-08840), Spanish Ministry of Science and Innovation (MICINN), 2010-2012.

-Formation and Research Unit on Quaternary: Environmental changes and Human fingerprint (UFI11/09) ([www.ehu.es/uficuaternario](http://www.ehu.es/uficuaternario)), University of the Basque Country UPV/EHU, 2012-2014.

-Environmental records of global change: reconstruction of recent sea-level change (<100 years) based on coastal sediments (153492), Mexican National Council of Science and Technology (CONACyT), 2012-2015.

- **From Christian Schwaegerl (Curator)**

the Deutsches Museum and the Rachel Carson Center in Munich will be showing a large Anthropocene special exhibition from October 2014 to June 2015. In preparation for the exhibition, we have just launched a global "scenario competition" about how the Anthropocene could play out. Please share the following invitation to participate with as many people as possible, school kids, journalists, senior researchers....

[http://www.carsoncenter.uni-muenchen.de/news\\_media/news\\_events/rcc\\_news/deutsches-museum-competition/index.html](http://www.carsoncenter.uni-muenchen.de/news_media/news_events/rcc_news/deutsches-museum-competition/index.html)

## MEMBERSHIP TO DATE

Listed here are names of members to date and their contact details. \* denotes new members- see New Members Forum, below, for brief introductions. 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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## NEW MEMBERS FORUM

### Matt Edgeworth

I am an archaeologist who works in both the commercial and academic sectors of the discipline. I obtained my PhD in Archaeology and Anthropology from the University of Durham, UK (1992). My publications cover many different aspects of archaeological method and theory. A recent book, *Fluid Pasts: Archaeology of Flow* (Altamira 2011) explores the cultural and historical dimensions of rivers. A forthcoming paper discusses areas of overlap between archaeological and geological approaches to stratigraphic evidence, with regard to finding potential stratigraphic markers for the Anthropocene. Currently employed as Senior Archaeological Investigator at English Heritage in Cambridge, I am also Honorary Research Fellow in Archaeology at University of Leicester. I am chairing a session on 'Archaeology in the Anthropocene' at the forthcoming 2013 Theoretical Archaeology Conference in Chicago.

### Peter Haff-

I am trying to conceptualize at least to my own satisfaction how the anthroposphere (or "technosphere" as I call it) works dynamically as an earth system. That is, what can we learn by formally considering humans plus their

technology as an emergent geologic phenomenon. One recent publication toward this goal is "Technology and Human Purpose: the Problem of Solids Transport on the Earth's Surface", *Earth System Dynamics*, 3, 417-431, 2012. A second paper soon to be submitted for publication is "Technology as a Geologic Phenomenon: Implications for Human Well-Being" in which I argue that humans plus technology, or the technosphere, is an emerging geologic paradigm with analogies to other great paradigms of earth function such as the biosphere and hydrosphere. The main goal of this line of thinking is to develop the notion that humans function as parts of a larger quasi-autonomous system, and as such are swept up in a higher level dynamics that they do not control. In other words, the goal is to move from a human-centric view of the Anthropocene to a more geo-centric view.

#### Reinhold Leinfelder

I am member of the Scientific Advisory Council on Global Change to the German Government (WBGU) [www.wbgu.de](http://www.wbgu.de). Presently my "tangible" activities on the Anthropocene are still largely on a national scale (although my affiliate professorship at the Rachel Carson Center for Environment and Society in Munich brings me into touch with a lot of environmental humanity colleagues from all over the world). I do run a German anthropocene blog ([www.scilog.de/wblogs/blog/der-anthropozaniker](http://www.scilog.de/wblogs/blog/der-anthropozaniker)), grabbed the domain [www.anthropocene.de](http://www.anthropocene.de) (which presently links to my anthroblog), do quite some media work on the topic, give lots of talks and participate in discussion rounds, but also started writing scientific publications on the topic. The "translation" of the last flagship report of the German Advisory Council on Global Change (WBGU) into a cartoon format is not only lots of fun, but also includes the Anthropocene metaphor. In the next flagship report of the WBGU which will be on future use of oceans, the Anthropocene concept will be central.

Flagship report 2011: World in Transition: A Social Contract for Sustainability  
[www.wbgu.de/hauptgutachten/hg-2011-transformation/](http://www.wbgu.de/hauptgutachten/hg-2011-transformation/)

Die Große Transformation - Cartoon Version of the WBGU 2011 Report to be out end Feb. <http://www.wbgu.de/vorschau-comic-transformation/>

Reinhold Leinfelder blogs at:

[www.scilog.de/wblogs/blog/der-anthropozaniker](http://www.scilog.de/wblogs/blog/der-anthropozaniker)

[www.vielfalter-blog.de](http://www.vielfalter-blog.de)

[www.twitter.com/rleinf](http://www.twitter.com/rleinf)

[www.achdulieberdarwin.blogspot.com](http://www.achdulieberdarwin.blogspot.com)

#### Michael Wagreich

I am an earth scientist mainly dealing with sedimentology of clastic sediments and stratigraphy (some may call me a rather old fashioned geologist). I am working with various methods from biostratigraphy to orbital timescales mainly in deep time stratigraphies, i.e. also as a new (voting) member of the Subcommission on Cretaceous Stratigraphy. My research in palaeoclimate and palaeoceanography but also on regional Alpine sedimentary archives got me connected to Neogene and Quaternary problems, including the landscape evolution from the LGM to the Holocene in the classical and nearby Vienna Basin, and connections to early human activities. I personally find this a fascinating time interval to work on with classical and new geological methods, and as an



ideal concept to interact with various other disciplines from geography to archaeology. I am especially interested in the possible base (GSSP discussion) of a maybe in future defined Anthropocene. I see that as a primary task for stratigraphers, but as a place where stratigraphy meets other scientific fields and has to aim at a compelling and convincing cross-discipline proposal. I am also partly involved in mapping of anthropogenic “units” within Neogene-Quaternary basins. Recently we had a successful one semester university seminar with ample discussions on various aspects of the Anthropocene in the Vienna University Quaternary Research Group (AGQua) together with my geography colleagues in summer 2012.

Webpage: <http://geologie.univie.ac.at/sedimentology-stratigraphy/academic-staff/michael-wagreich/>

Selected references:

Salcher, B. & Wagreich, M., 2010. Climate and tectonic controls on Pleistocene sequence development and river evolution in the Southern Vienna Basin (Austria). *Quaternary International* 222, 154-167. doi:10.1016/j.quaint.2009.04.007.

Salcher, B., Faber, R. & Wagreich, M., 2010. Climate as main factor controlling the sequence development of two Pleistocene alluvial fans in the Vienna Basin (eastern Austria) - A numerical modelling approach. *Geomorphology* 115, 215-227. doi:10.1016/j.geomorph.2009.06.030.

## ANTHROPOCENE WORKING GROUP: PROGRAMME FOR 2013

- SQS in conjunction with SACOM-INQUA is sponsoring a full-day special session “The Quaternary System and its Formal Subdivision” during the First International Congress on Stratigraphy - *Strati 2013*, in Lisbon, Portugal, 1-7 July, 2013. See: <http://www.strati2013.org>. The conveners for this special session are Martin J. Head (Chair, SQS), Philip L. Gibbard (President, SACOM-INQUA), and Thijs van Kolfschoten (former Secretary SQS). There will be a special session on the Anthropocene at which Jan Zalasiewicz will be presenting. A special issue of **Quaternary International** is planned for contributions to the Quaternary session.
- International Geosphere-Biosphere Programme (IGBP): James P Syvitski reports on a workshop to be held in the fall of 2013 on the Anthropocene. The writing meeting and the subsequent workshop is being sponsored by IGBP, IHDP, DIVERSITAS, and WCRP, the four Global Environmental Change Programmes under ICSU. These programmes are merging into something called Future Earth and we want the Anthropocene to be a concept that makes this transition.
- 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. Online publication of some of the chapters will start in late Summer, with the aim for the book to be published towards the end of 2013.

- 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)

07/06/2013