

Newsletter of the Anthropocene Working Group



Anthropocene
Working Group

**Volume 9: Report of
activities 2019**

December 2019

**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: Attendees at the Anthropocene Working Group meeting held in New Orleans, 8–9th November 2019, hosted by the New Orleans Center for the Gulf South, Tulane University.

CHAIRMAN'S COLUMN

Dear all,

This has been a pivotal year in the AWG's history. For something like a decade, we have been putting together evidence on a potential Anthropocene formal geological time unit that we could gather: and studied, mulled over, debated and published all this, culminating in the summary volume published this year by Cambridge University Press. This has shown that there is substantial geological reality behind the concept that Paul Crutzen, via the IGBP, launched upon the world in 2000; and, that the mid-20th Great Acceleration, so clearly demonstrated by Will Steffen and colleagues, can also provide the basis for a functional and effective chronostratigraphic boundary for such a unit in Earth's geological history.

In this formal project, time and the demanding decision-making processes of the ICS and IUGS will tell over the next few years. Nevertheless, thanks to the initiative of Berlin's Haus der Kulturen der Welt and its director, Bernd Scherer, the lengthy, complex and expensive process of selecting and analysing potential GSSP candidate sites, each represented by its own scientific team working in partnership with us, has begun in earnest, led by Colin Waters and Simon Turner. This is yet another extraordinarily novel step for formal stratigraphy (the Anthropocene has provided quite a few, so far): for an arts/humanities organization to fund such scientific work, and reflects the way that this chronostratigraphic assessment (even in its most drily technical aspects) has intersected with wider scholarship, and wider society.

This new phase coincides with the structural change now due in the AWG, to conform with ICS rules. We must now (in effect) disband, and re-constitute ourselves: into a voting membership with specialist expertise in chronostratigraphy to construct a formal proposal potentially acceptable to the ICS, and an advisory membership (in essence, our existing multidisciplinary membership) which will continue to explore the utility for the development of science and scholarship and significance of the Anthropocene in a wider context. This should allow both the technical side of our work to proceed in classical manner, and for the range, spirit, scholarship and energy of our collective endeavours to continue, I hope, undimmed.

As part of this change, I will be stepping down as Chair, though will continue both general membership and involvement. Having recently been elected to serve as chair for the Subcommittee on Quaternary Stratigraphy from the spring, I hope to continue the increasing interaction between AWG and SQS started so effectively by Martin Head. The AWG, hence, will need a new Chair – an outstanding candidate is clearly Colin Waters, who has been a tower of strength as Secretary, holding the AWG together with both efficiency and tact, and who is now leading the GSSP analysis – and, of course, we will need a new Secretary too.

On a personal note, I would like to thank you all for your friendship, support, ideas, energy, inspiration and spirit over these extraordinary years: all these have been

of profound help and, at times, deeply moving. The AWG has, collectively, brought something quite new to geology, and beyond. When we started in 2009, literature on the Anthropocene, as Davor Vidas has noted, could be skim-read in an afternoon, with 64 Google hits on 27 August 2009 for the term Anthropocene; as I write, Google shows around 5 million hits. It has been quite an adventure to be caught up in this phenomenon: I look forward to continuing this adventure with you all.

Jan Zalasiewicz

The updated version of the **AWG website** is available at <http://quaternary.stratigraphy.org/working-groups/anthropocene/>. Developments of the website in early 2019 are thanks to the efforts of Alex Damianos.

RESULTS OF THE AWG BINDING VOTE

At the Mainz AWG meeting in September 2018 it was recommended that the group follow up on its interim recommendations, presented at International Geological Congress Cape Town in 2016 and published by Zalasiewicz et al. (2017) *Anthropocene*, Vol. 19, 55-60, by holding a binding vote. It is customary ICS procedure to formally decide on the approximate level of a boundary prior to the search for candidate GSSPs. This gives the necessary direction and stability when selecting and researching potential candidate GSSPs. The process commenced on 19th March 2019. We are required to allow one month for discussion (until 19th April) to finalise the precise wording of the questions, followed by another month for voting (until 20th May). The voting results, below, were announced on 21st May 2019.

Q1. Should the Anthropocene be treated as a formal chronostratigraphic unit defined by a GSSP?

29 voted in favour (88% of votes cast); 4 voted against; no abstentions

Q2. Should the primary guide for the base of the Anthropocene be one of the stratigraphic signals around the mid-twentieth century of the Common Era?

29 voted in favour (88% of votes cast); 4 voted against; no abstentions

The number of potential voting members: 34; the number required to be quorate (60%): 21; the number of votes received: 33 (97% of voting membership). Votes on both key questions exceed the 60% supermajority of cast votes required to be agreed by the Anthropocene Working Group as the official stance of the group and will guide their subsequent analysis.

ANTHROPOCENE GSSP PROJECT

At the end of 2018, Bernd Scherer, Director of the Haus der Kulturen der Welt (HKW) in Berlin announced that funding had been secured, which provide a significant contribution to the phase of GSSP analysis, supporting examination of existing sites being considered, and allowing collection and analysis of core from additional sites, providing a broad suite of proxy analyses across diverse environments and globally distributed locations. 2019 has been a period of developing the programme and in order to facilitate this an inaugural project meeting was held at HKW providing an opportunity for project leaders for specific candidate sites and specialists in the analysis of particular proxies who will work between sites. The following was the agenda for the meeting.

Tuesday, 28 May 2019

9:20 – 11:05 **Session 1: Introductions and GSSP process**

- 9:20 Introductions by the meeting attendees
- 9:35 Outline of scope of meeting (*Colin Waters*)
- 9:45 Explanation of the process involved in seeking formalization (*Martin Head*)
- 10:10 Review of suitability of diverse environments (*Colin Waters*)
- 10:30 The Anthropocene at HKW and MPIWG – project genealogy, strategies and outlook (*Katrin Klingan, Christoph Rosol*)
- 10:50 Discussion

11:20– 13:00 **Session 2: Analytical techniques**

- 11:20 ^{210}Pb dating and ^{137}Cs & ^{241}Am from gamma spectroscopy (*Neil Rose*)
- 11:40 Radiocarbon (*Irka Hajdas*)
- 12:00 Microplastics (*Juliana Ivar do Sul*)
- 12:20 Spheroidal Carbonaceous Particles (*Neil Rose*)
- 12:40 Discussion

14:00 –15:30 **Session 3: GSSP/auxiliary section proposals**

- 14:00 Crawford Lake, Ontario, Canada (*Francine McCarthy & Martin Head*).
- 14:25 Huguangyan Maar Lake, China (*Han Yongming & An Zhisheng*)
- 14:50 Searsville Reservoir, Jasper Ridge Biological Preserve, California (*Allison Stegner, Tony Barnosky & Elizabeth Hadly*)
- 15:15 Discussion

15:45 – 17:30 **Session 4: GSSP/auxiliary section proposals (continued)**

- 15:45 Corals- Cayman Islands and Great Barrier Reef (*Jens Zinke, Kristine DeLong & Janice Lough*)
- 16:25 Palmer Antarctic Ice core (*Colin Waters & Liz Thomas*)
- 16:40 Ernesto cave, Italy (*Colin Waters & Ian Fairchild*)
- 17:00 Discussion

Wednesday, 29 May 2019

11:15 – 13:00 **Session 5: GSSP/auxiliary section proposals (continued)**

- 11:15 Baltic Sea, Sweden (*Jerome Kaiser*)
- 11:40 San Francisco Bay, California (*Stephen Himson*)
- 12:05 Etang de la Gruère, Switzerland (*Colin Waters & Bill Shotyk*)
- 12:20 Vienna Anthropogenic deposits (*Michael Wagreich*)
- 12:45 Discussion

14:00 – 15:15 Session 6: Project organisation HKW-AWG

- 14:00 Public presentation of material evidences and research results (*Bernd Scherer, Katrin Klingan, Christoph Rosol*)
- 14:20 General proceedings, working structures and next steps (*Bernd Scherer, Katrin Klingan, Christoph Rosol*)
- 14:40 Future meetings (*Colin Waters, Christoph Rosol, Bernd Scherer*)
- 14:55 Conclusions (*Bernd Scherer & Colin Waters*)

In addition to presentations, on Wednesday time was dedicated to a series of journalist interviews with AWG members were arranged, Armin Linke filmed interviews discussing personal involvements in the study and a number of discussions were held with specific project leaders about administrative procedures and contractual agreements.

Subsequent to the meeting, Dr. Simon Turner at University College London, was selected following interview to become the HKW's project coordinator for the study. Draft contracts have been circulated to the main contributors and it is hoped that analytical work can commence early in 2020 and take the entire year, with publication of results aimed for 2021. A major exhibition of the results and discussion about the relative suitability of the candidate sites, is intended to be held at HKW at the end of the project.

FIFTH ANTHROPOCENE WORKING GROUP MEETING

The fifth meeting of the AWG was held in New Orleans on 8th–9th November 2019, kindly hosted by the New Orleans Center for the Gulf South (NOCGS), Tulane University. The meeting was coordinated by Grace Treffinger and Regina Cairns at Tulane, Friederike Becker and Anna Chwialkowska at Haus der Kulturen der Welt (HKW) and Colin Waters for the scientific programme, and our great thanks go to Rebecca Snedeker, Clark Executive Director at NOCGS for the use of the excellent facilities and being involved in the meeting. In addition to members of the AWG, numerous speakers and attendees added richly to the debate. Presentations on day one focussed upon some of the work currently being undertaken and planned as part of the analysis of potential Global Boundary Stratotype Section and Point (GSSP) sites. Day two had presentations addressing ideas for future areas of potential publication by the AWG and recent work by AWG members, plus discussion on the future plans of the task group.



Discussions during the AWG meeting at NOCGS, Tulane University, and afterwards at an oyster bar. Photos by Colin Waters.

This is a brief summary of the main programme of presentations. Those speakers who are not members of the AWG have their affiliation shown. For multiple author presentations, the speaker is marked with an *.

Friday, 8 November 2019

- 9:15 – 11:00 Session 1: Introductions, SQS and HKW business**
- 9:15 Welcome to Tulane University (*Rebecca Snedeker, NOCGS*)
 - 9:25 Work of the New Orleans Center for the Gulf South (*Rebecca Snedeker*)
 - 9:40 Introduction (*Colin Waters*)
 - 9:55 The process involved in seeking formalization (*Colin Waters* & Martin Head*)
 - 10:15 HKW GSSP project coordination and progress (*Simon Turner*)
 - 10:45 Discussion
- 11:20 – 13:00 Session 2: Candidate GSSP progress reports**
- 11:20 Searsville Reservoir, Jasper Ridge Biological Preserve, California (*Allison Stegner*, Tony Barnosky & Elizabeth Hadly – Stanford University*)
 - 11:50 Huguangyan Maar Lake, China (*Han Yongming* & An Zhisheng – IEECAS*)
 - 12:20 Crawford Lake, Ontario, Canada (*Simon Turner*, Francine McCarthy & Martin Head*).
 - 12:50 Discussion
- 14:00 – 15:40 Session 3: Candidate GSSP progress reports (Continued)**
- 14:00 The Baltic Sea: a potential GSSP site for the Anthropocene Epoch? (*Juliana Ivar do Sul* & Jerome Kaiser*)
 - 14:30 Corals- Cayman Islands and Great Barrier Reef (*Kristine DeLong*, Jens Zinke & Janice Lough – Louisiana State University*)
 - 15:00 San Francisco Bay, California (*Mark Williams* & Stephen Himson*)
 - 15:30 Discussion
- 16:00 – 18:00 Session 4: GSSP/auxiliary section proposals (continued)**
- 16:00 Possible candidates from Japanese estuaries/bays (*Yoshiki Saito – Shimane University & Geological Survey of Japan*)
 - 16:30 Palmer Antarctic Ice core (*Colin Summerhayes* & Liz Thomas*)
 - 17:00 Peat deposits: Etang de Gruère (*Colin Waters* & William Shotyk*)
 - 17:15 Trees as a potential GSSP candidate (*Colin Waters*)
 - 17:30 Discussion

Saturday, 9 November 2019

- 09:00 – 11:00 Session 5: Current areas of research**
- 9:00 HKW and the AR Campus (*Bernd Scherer, HKW*)
 - 9:15 Multi-time scale variations of black carbon, char, and soot in association with climate change and human activities (*Han Yongming – IEECAS*)
 - 9:45 Microplastics as potential markers of the Anthropocene (*Juliana Ivar do Sul*)
 - 10:15 Sea ice loss and ocean oscillations (*Colin Summerhayes*)
 - 10:45 Discussion
- 11:15 – 12:15 Session 6: Ideas for future biological initiatives**
- 11:15 Chains of correlation and the biosphere (*Mark Williams*)
 - 11:45 Current developments in e-DNA (*Elizabeth Hadly – Stanford University*)
 - 12:15 Discussion
- 13:30 – 15:15 Session 7: Differing time perspectives**
- 13:30 Deepening the Anthropocene: Archaeologists Confirm Earth's Early Transformation through Land Use (*Erle Ellis*)
 - 14:00 Experience from the Smithsonian exhibition on the “Age of Humans” and the PETM analogue (*Scott Wing*)

14:30 Beyond the Great Acceleration (*Peter Haff*)
15:00 Discussion

15:30 – 16:30 Session 8: Membership of the AWG (*Colin Waters**, *Martin Head & Jan Zalasiewicz*)

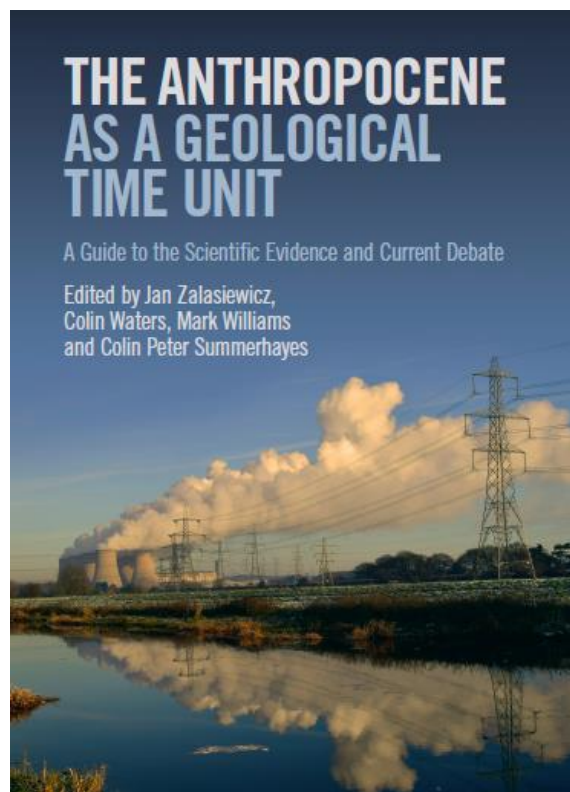
16:30 – 17:40 Session 9: Plans and logistics of the AWG programme of work for 2020 and beyond (*Colin Waters*)

Following the AWG meeting many of the attendees stayed to attend the Anthropocene River Campus: The Human Delta. The meeting provided an opportunity for those involved in the year of activities around *Mississippi. An Anthropocene River* to meet and discuss their findings on ecological, historical and social interactions between humans and the environment <https://anthropocene-curriculum.org/>. Included on this website is an article on *The Four-Dimensional Mississippi* by Jan Zalasiewicz, Catherine Russell, Colin Waters and Mark Williams <https://anthropocene-curriculum.org/contribution/the-four-dimensional-mississippi/>. Also, you will find the two parts of Willie Schumann's TV-report on the project now online ([part 1](#) / [part 2](#)) - both are in German.

A public programme, at Tulane University, New Orleans on 10th November included a presentation by Catherine Russell, Colin Waters and Mark Williams on *The Four-Dimensional Mississippi*.

SELECTED PUBLICATIONS

The key AWG work published in 2019 has been the book **The Anthropocene as a geological time unit**. Compiled by the editors: Jan Zalasiewicz, Colin Waters, Mark Williams and Colin Summerhayes. Published by Cambridge University Press; ISBN: 9781108475235. An overview and Table of Contents is available [here](#).



The Working Group has also published over 2019, or has in press the following:

Williams, M., Edgeworth, M., Zalasiewicz, J., Waters, C.N., Steffen, W., Wolfe, A., Minter, N.J., Cearreta, A., Galuszka, A., Haff, P., McNeill, J., Revkin, A., Richter, D deB., Price, S., and Summerhayes, C. (2019). Underground metro systems: a durable geological proxy of rapid urban population growth and energy consumption during the Anthropocene. Anthropocene. In: *The Routledge Companion to Big History* (Benjamin, C., Quaedackers, E. and Baker, D. eds). Routledge, London and New York, pp. 434-455.

Zalasiewicz, J., Waters, C. N., Head, M. J., Poirier, C., Summerhayes, C. P., Leinfelder, R., Grinevald, J., Steffen, W., Syvitski, J. P. M., Haff, P., McNeill, J. R., Wagnreich, M., Fairchild, I. J., Richter, D. D., Vidas, D., Williams, M., Barnosky, A. D., and Cearreta, A. (2019). A formal Anthropocene is compatible with but distinct from its diachronous anthropogenic counterparts: a response to WF Ruddiman's 'three flaws in defining a formal Anthropocene'. *Progress in Physical Geography* Vol. 43(3). 319-333. <https://doi.org/10.1177/0309133319832607>

Edgeworth, M., Ellis, E. C., Gibbard, P., Neal, C., and Ellis, M. (2019). The chronostratigraphic method is unsuitable for determining the start of the Anthropocene. *Progress in Physical Geography* Vol. 43(3). 334-344. <https://doi.org/10.1177/0309133319831673>

Other Anthropocene-related papers/books published by AWG members over 2019, or in press:

Adeney-Thomas, J., Williams, M. and Zalasiewicz J. (in press). *The Anthropocene: A Multidisciplinary Approach*. Polity Books.

Bibi, M., Wagnreich, M. and Iqbal, S. (2019). Trace metals as markers for historical anthropogenic contamination: Evidence from the Peshawar Basin, Pakistan. *Science of the Total Environment*, Vol- 703, 134926. <https://doi.org/10.1016/j.scitotenv.2019.134926>

Cearreta, A. (2019). Climate change during the Anthropocene (in Spanish). *Euskonews*, 739. <http://www.euskonews.eus/zbk/739/el-cambio-climatico-durante-el-antropoceno/ar-0739001001C/>

Cearreta, A. and García-Artola, A. (2019). Geology, Anthropocene and climate change (in Spanish). *Cuaderno de Cultura Científica*. <https://culturacientifica.com/2019/03/29/geologia-antropoceno-y-cambio-climatico/>

El bani Altuna, N., Cearreta, A., Irabien, M.J., Gómez Arozamena, J., Hernández, S., Soualili, K. and Hilario, A. (2019). Environmental evolution of the Deba estuary (Basque Coast Geopark) during the Holocene and Anthropocene (in Spanish). *Geogaceta* Vol. 66, 63-66.

Gabbott, S., Key, S., Russell, C., Yonan, Y. and Zalasiewicz, J. (in press). The geography and geology of plastics: their environmental distribution and fate. In *Plastic Waste and Recycling: Environmental Impact, Societal Issues, Prevention and Solutions* (ed. Letcher, T.). Elsevier.

García-Artola, A., Cearreta, A. and Corbett, D.R. (2019). Recent transformation of intertidal environments under a sea-level rise scenario: examples from N. Spain. *Geogaceta* Vol. 66, 79-82.

Grinevald, J. (2019). De Lévi-Strauss à Descola à l'heure de l'Anthropocène. In: Geremia Cometti et al. (eds.) *Au Seuil de la forêt. Hommage à Philippe Descola, l'anthropologue de la nature*. Mirabeau-sur-Bèze, Tautem, 357-378.

Hagedorn, G, Loew, T., Seneviratne, S.I., Lucht, W., Beck, M.-L., Hesse, J., Knutti, R., Quaschnig, V, Schleimer, J.-H., Mattauch, L., Breyer, C., Hübener, H., Kirchengast, G., Chodura, A., Clausen, J., Creutzig, F., Darbi, M., Daub, C.-H., Ekardt, F., Göpel, M., Hardt, J.N., Hertin, J., Hickler, T., Köhncke, A., Köster, S., Krohmer, J., Kromp-Kolb, H., Leinfelder, R., Mederake, L., Neuhaus, M., Rahmstorf, S., Schmidt, C., Schneider, C., Schneider, G., Seppelt, R., Spindler, U., Springmann, M., Staab, K., Stocker, T., Steininger, K., Von Hirschhausen, E., Winter, S., Wittau, M. & Zens, J. (2019). The concerns of the young protesters are justified. A statement by Scientists for Future concerning the protests for more climate protection. *GAIA - Ecological Perspectives for Science and Society*, Vol. 28/2, 79-87, <https://doi.org/10.14512/gaia.28.2.3> (open access)

Himson, S.J., Kinsey, N., Aldridge, D.C., Williams, M. and Zalasiewicz, J. (2019). Invasive mollusk faunas of the River Thames exemplify biostratigraphical characterization of the Anthropocene. *Lethaia*. <https://doi.org/10.1111/let.12355>.

Irabien, M.J., Cearreta, A., Gómez-Arozamena, J., Serrano, H., Sánchez-Cabeza, J.A. and Ruiz-Fernández, A.C. (2019). Geological record of extreme floods and anthropogenic impacts on an industrialised bay: the inner Abra of Bilbao (northern Spain). *Science of the Total Environment* Vol. 696, 1-10. <https://doi.org/10.1016/j.scitotenv.2019.133946>

Leinfelder, R. (2019). Das Anthropozän - Die Erde in unserer Hand.-In: Schwinger, E. (ed.) *Das Anthropozän im Diskurs der Fachdisziplinen*, S. 23-46. Weimar bei Marburg (Metropolis-Publishers, ISBN 978-3-7316-1394-7).

Leinfelder, R. (2019). Where we are now - where we are heading. In: *Futurium - House of Futures*, p. 26-29, Dresden ([Sandstein-Publishers](#)).

Lenton, T.M., Rockström, J., Gaffney, O., Rahmstorf, S., Richardson, K., Steffen, W. and Schellnhuber, H.J. (2019) Climate tipping points - too risky to bet against. *Nature* Vol. 575, 593-596.

McNeill, J.R. (2019) The Anthropocene and Environmental History in the USA. *Historia Ambiental Latinoamericana y Caribeña* 9, 200-210.

Milon, A-S. and Zalasiewicz, J. (in press). Carbon dioxide. In (Tsing, A., Deger, J., Keleman-Saxena, A. & Zhou, F., eds) *Feral Atlas: The More-Than-Human Anthropocene*. Digital project in preparation.

Oppenheimer, M., Oreskes, N. Jamieson, D., Brysse, K., O'Reilly, J., Shindell, M. and Wazeck, M. (2019). *Discerning Experts: The Practices of Scientific Assessment for Environmental Policy*. University of Chicago Press. DOI: 10.7208/chicago/9780226602158.001.0001.

Oreskes, N. (2019). *Why trust science?* The University Center for Human Values Series. Princeton University Press.

Richter, D. D. (2019). Game Changer in Soil Science: The Anthropocene in soil science and pedology. *J. Plant Nutr. Soil Sci.* DOI: 10.1002/jpln.201900320.

Steffen, W. (2019). The Anthropocene: Where on Earth are we going? *The Ecological Citizen*, Vol. 2, 129-130.

Sterner, T., Barbier, E.B., Bateman, I., van den Bijgaart, I., Crépin, A.-S., Edenhofer, O., Fischer, C., Habla, W., Hassler, J., Johansson-Stenman, O., Lange, A., Polasky, S. Rockström, R., Smith, H.G., Steffen, W., Wagner, G., Wilen, J.E., Alpízar, F., Azar, C., Carless, D., Chávez, C., Coria, J., Engström, G., Jagers, S.C., Köhlin, G., Löfgren, Å, Pleijel, H. and Robinson, A. (2019). Policy design for the Anthropocene. *Nature Sustainability* Vol. 2, 14-21. <https://doi.org/10.1038/s41893-018-0194-x>

Summerhayes, C., Zalasiewicz, J., Vidas, D. and Williams, M. (in press). Polar Regions in the Anthropocene. Chapter 2 in *Research Handbook on Polar Law* (K. Scott and D. VanderZwaag, eds.). Edward Elgar Publishing.

Turner, S.D., Horton, A., Rose, N.L. and Hall, C.J. (2019). A temporal sediment record of microplastics in an urban lake, London, UK. *Journal of Paleolimnology* Vol. 61, 449-462.

Vidas, D., Freestone D. and McAdam, J. (2019). *International Law and Sea Level Rise: Report of the International Law Association Committee on International Law and Sea Level*. Leiden and Boston: Brill.

Vidas, D., Zalasiewicz, J., Williams, M. and Summerhayes, C. (in press). Climate Change and the Anthropocene: Implications for the Development of the Law of the Sea. Chapter 2 in *Climate Change and the Law of the Sea* (I. Jacobsen, E. Johansen and S. Busch, eds.). Cambridge University Press.

Waters, C.N., Graham, C., Tapete, D., Price, S.J., Field, L., Hughes, A.G. and Zalasiewicz, J. (2019). Recognising anthropogenic modification of the subsurface in the geological record. *Quarterly Journal of Engineering Geology and Hydrogeology* Vol. 52(1), 83-98. <https://doi.org/10.1144/qjegh2017-007>

Zalasiewicz, J., Gabbott, S.E. and Waters C.N. (2019). Chapter 23: Plastic Waste: how plastic has become part of the Earth's geological cycle. In: Trevor M. Letcher and Dan A. Vallero (eds.) *Waste: A Handbook for Management*, 2nd edition. Elsevier, New York, 443-452. ISBN: 9780128150603.

Zalasiewicz, J., Waters, C. and Williams, M. (in press). Chapter 31: The Anthropocene. In: Gradstein, F., Ogg, J., Schmitz, M. and Ogg, G. (eds.) *A Geologic Time Scale 2020*.

Zalasiewicz, J., Williams, M. and Waters, C. (in press). Anthropocene patterns in stratigraphy as a perspective on human success. In: Desmond, H. and Ramsey, G. (eds.) *Human Success: Evolutionary Origins and Ethical Implications*. Oxford University Press.

Zalasiewicz, J. (2019). Commentary on the “Anthropocene in Chile” Manifesto. *Environmental Humanities* Vol. 11(2), 498-500.

Zalasiewicz, J. (2019). Préface. In Gemenne, F. and Rankovic, A. *Atlas de l'Anthropocène*. Paris: Presses de Sciences Po, 160 pp.

Zalasiewicz, J. (2019). *Ruskin and the ruin of the Earth*. Pp. 90-93 in (Cooper, S.F and Johns, R.J., eds) *Ruskin, Turner and the Storm Cloud*. Paul Holberton Publishing.

Zalasiewicz, J. (in press). The fossilization of architecture in the Anthropocene. In (Butcher, M. and O'Shea, M.J., eds.) *Emerging Architectural Research 2009-2018*. UCL Press.

Zalasiewicz, J. (in press). The Anthropocene square meter. In *Critical Zones. The Science and Politics of Landing on Earth* (Latour, B. and Weibel, P., eds). MIT Press.

Zalasiewicz, J. (in press). The Anthropocene and global warming – a brief update. Ch. 3 in *Nature and Value* (Bilgrani, A., Ed.), Columbia University Press.

Zalasiewicz, J. (in press). The extraordinary strata of the Anthropocene. Reprinted as Ch. 4 in *Nature and Value* (Bilgrani, A., Ed.), Columbia University Press.

KEY REPORTS BY OTHER INTERNATIONAL BODIES

Listed here are key reports from the past year that made extensive reference to the Anthropocene.

- Intergovernmental Panel on Climate Change (IPCC) 2019. [2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories](#).
- IPCC, 2019: [Climate Change and Land](#): an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems.
- IPCC, 2019: [IPCC Special Report](#) on the Ocean and Cryosphere in a Changing Climate.
- Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) 2019 global assessment report on biodiversity and ecosystem services.
- The [UN Emissions Gap Report](#) released on 26th November 2019 with an update on how annual greenhouse emissions are headed compared with the Paris agreement targets.
- International Law Association (ILA), 2019. Report of the Committee on International Law and Sea Level Rise. In *Report of the 78th Conference of the International Law Association (Sydney, 19-24 August 2018)*. London: ILA, 866–915. [This ILA Committee Report contains a section on ‘Change of Epochs in the History of the Earth: A New Context for International Law’ (at pp. 873–874), discussing the international law relevance of the Anthropocene concept and referring to the AWG work.]

- The Lancet Commissions 2019. Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems [http://dx.doi.org/10.1016/S0140-6736\(18\)31788-4](http://dx.doi.org/10.1016/S0140-6736(18)31788-4)
- [European Environment Agency Report](#) No. 14/2019 on Nutrient enrichment and eutrophication in Europe’s seas.

CONFERENCES/LECTURES

Global Markers of the Anthropocene

A workshop was convened by Nicole Boivin (Max Planck Institute for the Science of Human History, Jena), held at HKW Berlin on the 19th and 20th February. The following presentations were given by AWG members:

Erle Ellis (2019) ArchaeoGLOBE: Collaborative mapping of global land use, 10,000 BP to 1850 CE.

Juliana Ivar do Sul (2019) Diamonds and plastics are forever?

Neil Rose (2019) Fly-ash particles and persistent organic pollutants as stratigraphic markers for the mid-20th century.

Colin Waters et al. (2019) Progress in the investigation of a potential Global Boundary Stratotype Section and Point (GSSP) for the Anthropocene Series.

Mark Williams et al. (2019) Anthropocene palaeontology.

University of Vienna: The Anthropocene - challenging the disciplines

Michael Wagemann coordinated the University of Vienna interdisciplinary workshop (*The Anthropocene - challenging the disciplines*) on 8th April as part of the newly founded Vienna Anthropocene Network (<https://anthropocene.univie.ac.at/>). Presentations were given by the following AWG members:

Davor Vidas (2019) Two tasks of the Anthropocene Working Group (keynote).

Matt Edgeworth (2019) The material challenge: New configurations of anthropogenic strata that refuse to fit within existing conceptual frameworks.

Colin Waters (2019) Understanding the Anthropocene epoch demands a new multi-disciplinary approach in assessing recent geological time.

Two reviews about the event are available at:

- ‘Seeing the Woods’, a blog by Rachel Carson Centre:

<https://seeingthewoods.org/2019/07/16/the-anthropocene-challenging-the-disciplines/>

- The University of Vienna media portal:

<https://medienportal.univie.ac.at/presse/aktuelle-pressemeldungen/detailansicht/artikel/neue-perspektiven-auf-das-anthropozan/>

EGU General Assembly 2019

A multidisciplinary and transdisciplinary session on the Anthropocene was held at EGU2019 (Wednesday 10th April). ITS5.1/SSP2.1/CL3.01/GM6.7/SSS13.32 [The Anthropocene - an interdisciplinary approach](#) was convened by Michael Wagleich, Katrin Hornek, Kira Lappé, Colin Waters and Jan Zalasiewicz.

The following was presented as a poster as an update of the AWG/HKW GSSP project:

Waters, C.N. and the Anthropocene GSSP Analysis Team (2019). Progress in the investigation of a potential Global Boundary Stratotype Section and Point (GSSP) for the Anthropocene Series. *Geophysical Research Abstracts* Vol. 21, EGU2019.

Other presentations by AWG members include:

An, Z. et al. (2019) Multi-proxy anthropogenic signals revealed from lacustrine records in China.

Bibi, M. and Wagleich, M. (2019) Precious metals and the early Anthropocene: Evidences from the Peshawar Basin, Pakistan.

Draganits, E. and Wagleich, M. (2019) Better earlier than late? Mining-related geochemical anomalies from 3500 to 2000 BP as potential stratigraphic markers for the beginning of the Anthropocene.

Gałaszka, A. and Migaszewski, Z. M. (2019) Which metals and organic pollutants are the best signals of the Anthropocene?

Knierzinger, W. and Wagleich, M. (2019) Geochemical analyses of a minerotrophic peat core (Hallstatt, Austria) to detect and reconstruct periods of mining activity in prehistoric (early Anthropocene) times.

Lappé, K., Meszar, M., Hornek, K. and Wagleich, M. (2019) Vienna's Anthropocene in 3D.

Luks, F., Horn, E. and Wagleich, M. (2019) Presenting the Vienna Anthropocene Network.

Meszar, M., Lappé, K., Hornek, K. and Wagleich, M. (2019) Vienna's Anthropocene and anthropogenic geochemical signals.

Migaszewski, Z. M. and Gałaszka, A. (2019) Glass microspheres in the urban environment – a key signal for the Anthropocene.

Wagleich, M. et al. (2019) Anthropocene plastics stratigraphy and ubiquitous microplastics as anthropogenic sedimentary particles in alpine rivers.

Strati2019

Wagreich M., Draganits E and Sames B. (2019). Stratigraphy in the Anthropocene - nailing down chronostratigraphy. *ST2.6 Does the Golden Spike still glitter?* STRATI 2019, Milan, 2-5 July 2019 (Poster presentation).

Waters CN., Zalasiewicz J., Head MJ., McCarthy FMG., Thomas ER., Kaiser J., Ivar do Sul JA., Shotyk W., DeLong KL., Barnosky AD., Hadley EA., Stegner MA., An Z., Fairchild IJ., Himson S., Rose NL., Gałuszka A., Hajdas I., Wagreich M., Summerhayes C. and Williams M. 2019. Progress in the investigation for a potential Global Boundary Stratotype Section and Point (GSSP) for the Anthropocene Series. ST3.11 *Quaternary stratigraphy and chronostratigraphy*. STRATI 2019, Milan. 2nd July 2019 oral presentation.

University of Leicester

On 3rd June 2019 there was the inaugural meeting of the University of Leicester's informal Anthropocene Research Group, organised by Dr. Marta Gasparin of the Business School with support from the Leicester Institute of Advanced Studies: <https://www2.le.ac.uk/departments/geology/news/news-2019/the-world-of-business-on-an-anthropocene-earth>

This well-attended multidisciplinary event saw lectures from speakers including Mark Williams and John Palmesino, and Anthropocene-themed artworks from Anne-Sophie Milon, Clémence Hslé and Claire Driscoll. The keynote lecture was given by Bruno Latour: https://www.youtube.com/watch?feature=player_embedded&v=i-8V9mSRdf4

Other Specific Presentations:

Alejandro Cearreta:

"The Anthropocene Perspective" Change the Change. *International Conference on Climate Change*, Donostia-San Sebastián (6 March). <https://changethechangetv.nirestream.com/videoteca/change-the-change-parte-iii> (min 19:20)

"The Anthropocene Epoch: Signatures to identify a possible stratotype in coastal and marine environments". *MAST Dialogues on Anthropocene*, Bologna (23 July).

"Environmental history of the Bilbao estuary during the Anthropocene" *European Researchers' Night*, Bilbao (27 September).

"Anthropocene, climate change and biodiversity" *Spanish Committee of the International Union for Nature Conservation (IUNC) Annual Meeting*, Busturia (24 October).

Cearreta, A., Irabien, M.J., Gómez Arozamena, J., El bani Altuna, N., Goffard, A., Fernández Martín-Consuegra, A., Hilario, A. Environmental evolution of the estuaries from the Basque Coast Geopark during the Holocene and Anthropocene (in Spanish). *XV Reunión Nacional de Cuaternario*, Bilbao (1-5 July). <https://www.aranzadi.eus/catalogo/xv-reunion-nacional-cuaternario-libro-de-resumenes>

Fernández Martín-Consuegra, A., Pérez Díaz, S., Cearreta, A. Recent anthropogenic signature on the coastal vegetation of the eastern Cantabrian coast (N. Spain). *20th INQUA Congress 2019*, Dublin (25-31 July).

Gardoki, J., Cearreta, A., Irabien, M.J., Gómez Arozamena, J., Goffard, A., Fernández Martín-Consuegra, A. Anthropocene geological record of the *Basque Mud Patch* and its relationship to coastal processes in the Bay of Biscay (in Spanish). *XV Reunión Nacional de Cuaternario*, Bilbao (1-5 July).

<https://www.aranzadi.eus/catalogo/xv-reunion-nacional-cuaternario-libro-de-resumenes>

Sáez-Muñoz, M., Ortiz, J., Martorell, S., Gómez-Arozamena, J., Cearreta, A. Uranium and plutonium determination in soil and sediments samples by fusion. *2nd International Conference on Radioanalytical and Nuclear Chemistry-RANC 2019*, Budapest (5-10 May).

Villasante-Marcos, V., Irabien, M.J., Cearreta, A. Magnetic properties of recent sediments in the Bilbao estuary: industrial pollution and postindustrial recovery in the Anthropocene (in Spanish). *XV Reunión Nacional de Cuaternario*, Bilbao (1-5 July).

<https://www.aranzadi.eus/catalogo/xv-reunion-nacional-cuaternario-libro-de-resumenes>

Agnieszka Gałuszka

"A multidisciplinary perspective on the Anthropocene" at the University of Warsaw given during the *Ecology in a Changing World* conference (23 March).

"Impact of humans on the environment and how it can be measured" *Austrian Geological Society*, Vienna (4 April).

Jacques Grinevald:

"Le débat sur l'Anthropocène: Où en est-on? (The Anthropocene debate: Where are we now?)" *Université de Genève, Cours d'été de français, Conférences* (7, 14 & 21 August).

Catherine Jeandel:

"Anthropocene, Golden Spike: the debate" *Université Jean Jaures* (10 October).

"L'océan de l'anthropocene" *les mercredis de la géographie* (6 November).

Reinhold Leinfelder:

Von der Umwelt zur Unswelt. Ein neues Weltbild für das Anthropozän?. Um-Weltbilder: Weltansichten, Werte und Wirklichkeit. *Ringvorlesung zum studium generale*, TU Dresden (14 January).

Das Anthropozän - von der erdsystemaren Analyse zur Zukunftsverantwortung.

"Transforming Our World: Nachhaltige Entwicklung als Herausforderung für Wissenschaft und Universität". Ringvorlesung ABV Kompetenzbereich "Nachhaltige Entwicklung", FU-Berlin (24 January) <https://www.fu-berlin.de/sites/nachhaltigkeit/mitmachen/ringvorlesungen/index.html>

Von der Umwelt zur Unswelt - Das Potenzial des Anthropozän-Konzepts für den Schulunterricht. Tagung "Pädagogik im Dialog VI", Pädagogische Hochschule Niederösterreich, Retz, NÖ (23 February).

Das Anthropozän - Von der geowissenschaftlichen Analyse zur Zukunftsverantwortung. "Mensch und Natur im 21. Jahrhundert", *Zweites Philosophiefestival in den Allgäuer Alpen*, Fellhorn-Gipfelstation, bei Oberstdorf (6 June) <https://www.forum-grenzfragen.de/leben-im-anthropozaen/>

"Climate Change and Impacts. Wird die Wissenschaft der Problematik von Klimawirkungen eigentlich gerecht, oder agiert sie noch in einer Komfortzone?" Podiumsdiskussion, *Berlin Science Week 2019*, Institut für Meteorologie der Freien Universität Berlin (8 November).

"Anthropocene - The Human Epoch" Artist talk with Edward Burtinsky and Reinhold Leinfelder, after film screening (16 November) *Thementage Anthropozän*, Stiftung Nantesbuch, Bad Heilbrunn, <https://stiftung-antesbuch.de/veranstaltungen/events/5295/die-spur-des-menschen>

"Korallenriffe und der Klimawandel - gestern, heute, morgen" Lectures for Future (Abstract). *Climate Action Week 25-29 November*, Freie Universität Berlin, Geocampus Lankwitz <https://pcs.fridaysforfuture.berlin/events/korallenriffe-und-der-klimawandel-gestern-heute-morgen/>

"The Health of the Earth System in the Age of Humankind (Anthropocene) - A Multiscale and Multimodal Project" Nikolaus Lecture, BSRT Symposium *The Hitchhikers's Guide to Regenerative Therapies. The Role of Space and Time in Healing Processes*, Berlin Brandenburg School for Regenerative Therapies, Charité Campus Virchow Klinikum, 6 December http://bsrt-symposium.charite.de/?page_id=3777

J.R. McNeill:

"The Great Acceleration and the Anthropocene," *Berkley Center Conference on Thomas Berry*, Georgetown University (31 October)

"The Anthropocene," *University of Bologna*, Italy (24 May)

"The Anthropocene Debates," Commencement Address, *Istituto di Studi Avanzati*, University of Bologna (17 May)

Neil Rose:

"Environmental records of coal combustion" and "Environmental problems in the UK: Past, present and future": *School of Resources and Environmental Science and the State Key Laboratory of Coal Mine Disaster Dynamics and Control*, Chongqing University, China (April).

"Indicators of contamination in contrasting lake sediment records from Mpumalanga, South Africa and Maloti Mountains, Lesotho" *Southern African Society of Aquatic Scientists Congress 2019*. Bela-Bela, Limpopo, South Africa (July).

Will Steffen:

“The Anthropocene: Surviving the Age of Humans” *MV Plancius, West Antarctica* (4 February)

“The Anthropocene: Where on Earth are we going?” *Geosciences Australia, Canberra* (27 February).

“The Anthropocene: Rising Risks; Growing Challenges” *Cambridge Institute of Sustainability Leadership, Australian Workshop, Melbourne* (2-3 March)

“The Anthropocene: Where on Earth are We Going?” *Sleeping Financial Giants Workshop, Future Earth, Tokyo, Japan* (5-6 March)

“The Anthropocene: Challenges of the Human Age” *Ecological Economics masters course, The Australian National University, Canberra* (24 May)

“The Anthropocene: Where on Earth are We Going?” *Ecosperity Conference, Singapore* (6-7 June).

“The Anthropocene: Where on Earth are we going?” *Earth System Finance Seminar, Future Earth, Singapore* (7 June)

“The Anthropocene: Where on Earth are we going?” *Inaugural Crutzen Lecture, NCAR (National Center for Atmospheric Research), Boulder CO USA* (20 June).

“The Anthropocene: Rising Risks; Growing Challenges” *Sky City, Auckland, New Zealand* (26 June).

“The Anthropocene: Where on Earth are We Going?” *Vector Energy Company, Auckland, New Zealand* (3 July).

“The Anthropocene: Where on Earth are We Going?” *University of the Third Age, Canberra, Australia*: (13 August).

“Challenges of the Anthropocene” *Another Development Foundation seminar, Uppsala, Sweden* (4 October).

“The Anthropocene: Global change and the Earth System” *Z Energy, Wellington, New Zealand, public lecture* (29 October).

““The Anthropocene: Where on Earth are We Going?” *Singapore Fintech Festival, Singapore* (11 November).

“The Anthropocene: The many dimensions of the human epoch” *Potsdam Institute for Climate Impact Research (PIK), Science & Pretzels Seminar Series* (20 November).

“The Anthropocene: The many dimensions of the human epoch” *International Symposium on Anthropocene Studies, Center for Anthropocene Studies, Korean Advanced Institute of Science & Technology (KAIST), Seoul* (10 December).

Colin Summerhayes:

The Guildford Environmental Forum (18 March)

The U3A at Banstead, Surrey (19 March)

Probus 83 Retired Mens' Business Group, Guildford (4 April)

East Surrey Womens' Institute Science Group (East Grinstead) (25 September)

"The climate change aspects of the Anthropocene" *Manchester Geological Association, Broadhurst Lectures* (23 November).

Davor Vidas:

"Climate Change and Sea Level Rise in the Anthropocene: Challenges for International Law in the 21st Century", *KLIMAFORSK Programme Board*, at the Research Council of Norway, Lysaker (12 March).

"The Future of the Law of the Sea and Law-of-the-Sea Research in the 2020s", concluding panel of the Final Conference of the *Jebsen Centre for the Law of the Sea (2013–2019)*, University of Tromsø, Norway (20 September).

"An International Lawyer and the Anthropocene", *Environmental Lunchtime Discussion series*, Oslo School of Environmental Humanities, University of Oslo (25 September).

"How Healthy in the UN Convention on the Law of the Sea? A Public Health Perspective", *International Conference 25 Years of the United Nations Convention on the Law of the Sea*, at the International Tribunal for the Law of the Sea, Hamburg (17 October)

"Is Law from the Holocene? Some Remarks about the Architecture of International Law Facing the Anthropocene", *Plan the Planet seminar series* convened by the Territorial Agency, at the Architectural Association of London (25 November).

Michael Wagreeich:

Wagreeich, M. & Hornek, K. (2019). The Anthropocene Surge - evolution, expansion and depth of Vienna's urban environment. *Anthropocene Project*, University of Applied Arts Vienna (10 January).

"Das Anthropozän – eine interdisziplinäre Herausforderung", *Austrian Society for the History of Sciences*, Vienna (9 May).

Invited lecture on plastics and panel discussion at 2. *FORUM ANTHROPOZÄN Natur - Innovation - Verantwortung*, Mallnitz, Austria: Das Anthropozän als neue geologische Zeiteinheit – Plastik als Signal (20 June).

Interdisciplinary University of Vienna lecture series *Climate Change and Climate Crisis -- Interdisciplinary Perspectives*: The geological Anthropocene and its definition (14 November).

Colin Waters:

“The Anthropocene Epoch: the expression of human impact on the Earth” *Futures Congress*, Santiago, Chile (14 January) and Antofagasta, Chile (16 January).

“The Anthropocene: an overview of the current status and geological assessment to date” *Austrian Geological Society*, Vienna (28 March).

“The Anthropocene Epoch: the expression of human impact on planet Earth” *MAST Bologna* (1 July).

“The scale of human impact during the Anthropocene” *The Milano Triennale*, Milan (3 July).

“The evidence for anthropogenic modification of the atmosphere and the implications for the recognition of the Anthropocene Epoch” *Yorkshire Geological Society*, Leeds University (12 October).

“What is the Anthropocene, when did it start and what is the material and geochemical evidence?” *Manchester Geological Association Broadhurst Lectures* (23 November).

“The scale of human impact during the Anthropocene” *Blind Sensorium / Il paradosso dell'Antropocene*, Matera Italy (8 December).

Mark Williams:

“How humans reconfigured the biosphere in the Anthropocene” *The Government of the Republic of Chile, and the Chilean Academy of Sciences Congresso Futura*, Santiago, Chile (January).

“Reconfiguration of the biosphere in the Anthropocene: a sustainable or unsustainable pattern” *South Wales Geologists Association*, Swansea (February).

“The Anthropocene” *First Annual Conference on Pan-Pacific Anthropocene (ConPPA)*, Taipei, Taiwan, plenary talk (14 May: Mark, Jan & Colin W).

“The human impact on the biosphere” *The second Asia Conference on Business and Economic Studies*, Ho Chi Minh City, Vietnam (September: Mark & Jan)

“Mapping the Anthropocene impact on the biosphere” *Yorkshire Philosophical Society*, York (October)

“The Anthropocene biosphere and its implications for the well-being of all organisms on planet Earth” *Manchester Geological Association Broadhurst Lectures* (23 November).

“A profoundly human-modified biosphere and its implications for well-being” *International Symposium on the Anthropocene*, National Folk Museum, Seoul, South Korea (December: Mark & Jan)

Jan Zalasiewicz:

“The Anthropocene” London, Architectural Association (4 November)

“Anthropocene” Keynote on the 10th anniversary of the Rachel Carson Centre. Munich (21 November; with Julia Adeney-Thomas).

AWARDS

The Fridtjof Nansen Institute (FNI), Norway, received the prestigious Prospect Think Tank Award for 2019 as the best European think tank in the category ‘Science, Health, Environment and Energy’. This is the third year in a row that the FNI is awarded with Prospect Magazine Award: the original explanation of the jury referred to FNI’s work related to climate policies in the Arctic and the Anthropocene in particular, referring in 2019 to FNI’s ‘combining natural science with an understanding of the political environment to suggest policies in the fields like ocean governance’. For FNI news see: <https://www.fni.no/news/hat-trick-for-fni-wins-prestigious-think-tank-award-third-year-in-a-row-article2083-330.html>

J.R. McNeill received the Distinguished Scholar Award, American Society for Environmental History.

Phil Gibbard received the ICS Digby McLaren Medal at the STRATI 2019 Congress for his enormous contributions to Quaternary stratigraphy.

MEDIA

Specific media output related to work by members of the AWG include:

Nicola Davison, who had been following AWG activities and attended our Mainz meeting published her long-read article in [The Guardian](#) on 30th May. Discussion of the AWG binding vote was covered in articles by Robinson Meyer in [The Atlantic](#) and Meera Subramanian in [Nature](#), 21st May 2019. Peter Brannen produced two commentaries in The Atlantic: one on 13th August entitled ‘[The Anthropocene Is a Joke](#)’ was followed on 11th October by ‘[What made me reconsider the Anthropocene](#)’ following discussions with AWG members concerning factual errors and a letter led by Scott Wing titled ‘[The Anthropocene Epoch is not hubris](#)’.

A report on the Anthropocene River Campus and AWG meeting published in [Tagesspiegel gefunden](#) There is also a multi-media dossier on the AR Campus which the German daily newspaper [Frankfurter Allgemeine Zeitung](#) did on the study (note there are three chapters).

Alejandro Cearreta:

Scientific reports and climate summits (in Spanish), El Correo newspaper, page 30, 9 December 2019.

Catherine Jeandel:

An interview (in French) with a researcher of the Lyon university <https://www.youtube.com/watch?v=TZSjEYfP8lA&t=192s>

Jacques Grinevald:

L'urgence Climatique avec le professeur Jacques Grinevald YouTube, 17 December.

Reinhold Leinfelder:

RTVE Spanish TV: Plástico por todas partes. 54 Min

(<http://www.rtve.es/alacarta/videos/documentos-tv/documentos-tv-plastico-todas-partes/4930898>). Or jump to our contribution from Freie Universität via youtube: <https://www.youtube.com/watch?v=pmy-hcBGrAw&feature=youtu.be&t=2778>

Tu umweltinitiative, TU-Dresden: Von der Umwelt zur Unswelt (15 January)

<https://tuuwi.de/2019/01/15/von-der-umwelt-zur-unswelt/> (Univ. Dresden feature)

RiffReporter /AnthropozänReporter: Anthro-what-bite? Mitreden, wenn das A-Wort fällt. Ein Crashkurs in zehn Fragen zu unserer neuen Epoche, von Christian Schwägerl (19 February) <https://www.riffreporter.de/anthropozaen/in-zehn-fragen-erklaert/>

Allgäuer Zeitung (sowie zugehörige Regionalausgaben): Festival spürt der Beziehung von Mensch und Natur nach, only print (13 March) see program: <http://www.allgaeu-tipp.de/allgaeu-veranstaltungen/philosophiefestival-in-den-allgaeuer-alpen-2019/> (information on Anthropocene Festival in the Allgaeu Alps)

Berliner Zeitung: Ein Riff im Schummerlicht. Forscher haben vor der italienischen Küste in der Adria eine besondere Korallengemeinschaft entdeckt, print, S. 17 (20 March) and online (with different title): <https://archiv.berliner-zeitung.de/wissen/ueberraschung-im-mittelmeer-forscher-entdecken-korallenriff-in-der-adria-32244780>

Humanistisch!: Bevor das Klima kippt (von Reinhold Leinfelder), in: *humanistisch!*, S. 32-33 (2 April).

Klimafakten.de: "Wir erreichen mit Leichtigkeit eine Zielgruppe, um die andere schwer kämpfen müssen" (16 April) <https://www.klimafakten.de/meldung/wir-erreichen-mit-leichtigkeit-eine-zielgruppe-um-die-andere-schwer-kaempfen-muessen>

Plastisphere Podcast: Ep.6: Plastic traces in the soil (16 April).

soundcloud.com/plastisphere-podcast

Riffreporter.de: Plastik im Boden. Seit Jahrzehnten landet Plastikmüll in den Böden. Was sind die Risiken? (19 April) riffreporter.de/plastisphere/plastik_boden/

Radio: SRF Wissenschaftsmagazin: Wie Forschende das Great Barrier Reef retten wollen (30 April) <https://www.srf.ch/play/radio/wissenschaftsmagazin/audio/wie-forschende-das-great-barrier-reef-retten-wollen?id=0632b337-a1fc-4d70-8505-5897994b3248>

Riffreporter / Anthropozänreporter: Am Ende der Umwelt: Im Anthropozän gibt es kein unerschöpfliches Draußen mehr, sondern eine gemeinsame Unswelt. Das Menschenzeit-

Projekt, Folge 6: Wir Erdbeweger, von Christian Schwägerl (6 May)
riffreporter.de/anthropozan/menschenzeit-folge-6-ende-holozaen/

Monthly Review: Working Group on the 'Anthropocene'. Results of binding vote by AWG (24 May) mronline.org/2019/05/24/working-group-on-the-anthropocene/

Forum-Grenzfragen: Leben im Anthropozän - Rückblick auf ein Philosophiefestival (11 June) forum-grenzfragen.de/leben-im-anthropozan (Feature on the Allgäu Anthropocene Festival)

Frankfurter Allgemeine Zeitung: Anthropozän-Forscher Reinhold Leinfelder - Es geht um uns. Warum dauert es so lange, bis Wissenschaftler sich einigen, ob wir wirklich im Erdzeitalter Anthropozän leben? Ein Gespräch. FAZ print, Nr. 151/2019, Natur und Wissenschaft, S. N2; and. FAZ+ online (3 July): <https://edition.faz.net/faz-edition/natur-und-wissenschaft/2019-07-03/es-geht-um-uns/327661.html> (Interview on occasion of the AWG/HKW meeting in Berlin, HKW)

Frankfurter Allgemeine Zeitung: Erweiterte Epochenskala. Das "Anthropozän startet im Atomzeitalter. FAZ print, Nr. 151/2019, Natur und Wissenschaft, S. N2; and. FAZ+ online (3 July): <https://edition.faz.net/faz-edition/natur-und-wissenschaft/2019-07-03/es-geht-um-uns/327661.html> (AWG-Feature on occasion of the AWG/HKW meeting in Berlin, HKW)

Radio: Deutschlandfunk Kultur heute: Reinhold Leinfelder über das Anthropozän. Der Mensch als geologischer Faktor. Reihe Wendepunkte. Text-Feature (13 July), with link to Audiothek: <https://www.deutschlandfunk.de/reinhold-leinfelder-ueber-das-anthropozan-der-mensch-als.691.de.html>

Frankfurter Allgemeine Sonntagszeitung, print Nr. 36, S. 57: Korallen ohne Nachwuchs. Die bunten Nesseltiere sind überall auf der Welt bedroht. Nun scheint auch noch ihre innere Uhr aus dem Takt geraten - das macht ihnen die Fortpflanzung unmöglich. (Von Rebecca Hahn: 8 September). And FAZ.net online version, 13 Sep. 2019: <https://www.faz.net/aktuell/wissen/erde-klima/korallen-nachwuchs-in-gefahr-16373124.html>

Neue Zürcher Zeitung, S. 54: "Wir sind eine Naturgewalt". Interview with Reinhold Leinfelder on the Anthropocene (print) and "Wir kommen nicht zurück ins Holozän" (27 September). Online Version: <https://www.nzz.ch/wochenende/anthropozan/wir-kommen-nicht-zurueck-ins-holozaen-ld.1509967>)

Freie Universität Berlin, Plastik verschmutzt Böden (21 October 2019). https://www.fu-berlin.de/sites/nachhaltigkeit/stabsstelle/kommunikation/aktuelles/191021_Plastik-verschmutzt-Boeden.html

Süddeutsche Zeitung, print (Ausgabe PWO), Nr. 263, S. R8. Die Spuren des Menschen. Kulturstiftung Nantesbuch lädt zu Thementagen "Anthropozän" ein. (14 November). Also online, 13.11.2019, <https://www.sueddeutsche.de/muenchen/wolfratshausen/in-bad-heilbrunn-die-spuren-des-menschen-1.4680004>

Süddeutsche Zeitung, Anthropocene Working Group: "Die Kraft ins Positive wenden" (21/22 November). Both articles also in Print version of 22 November, R8, Süddeutsche Zeitung Nr. 270, Ausgabe PWO

<https://www.sueddeutsche.de/muenchen/wolfratshausen/anthropocene-working-group-die-kraft-ins-positive-wenden-1.4691748> ; Das Zeitalter der Gier, <https://www.sueddeutsche.de/muenchen/wolfratshausen/diskussion-in-bad-heilbrunn-das-zeitalter-der-gier-1.4691746>

Radio: ORF Ö1: Dimensionen: Wenn Regenwürmer Kunststoff fressen. Plastik im Boden (28 November). <https://oe1.orf.at/programm/20191128/579789/Wenn-Regenwuermer-Kunststoff-fressen>

Der Tagesspiegel, print, S 25 (Kultur) und online Ein neues Zeitalter zeigt sich mit aller Gewalt (1 December). <https://www.tagesspiegel.de/kultur/anthropozaenprojekt-am-mississippi-ein-neues-zeitalter-zeigt-sich-mit-aller-gewalt/25287126.html>

Naomi Oreskes:

A couple of links in The Guardian for articles written by and interview with Naomi Oreskes, which ties in with her latest books [Why Trust Science?](#) and [Discerning Experts: The Practices of Scientific Assessment for Environmental Policy](#).

Dan Richter:

60 min documentary made at Duke University entitled, "The Education of Bruno Latour: From Earth's Critical Zone to the Anthropocene." Bruno Latour, French philosopher and "sociologist of scientists", is fascinated by the Earth sciences and the Anthropocene. For several years, he has been touring the Earth science communities "Critical Zone Observatories", intentionally interdisciplinary place-base research sites that are operating as science programs in the USA, Europe, and China, and as scientist-volunteer sites in many other countries. Bruno Latour visited Duke University for several days at Dan's research site in the South Carolina Piedmont, the Calhoun Critical Zone Observatory. Duke videographer, Eric Barstow, kept his cameras rolling throughout and after several years of incubation, Eric has just released a 60-min [documentary](#)."

Will Steffen:

Interview on the Anthropocene for German National TV, Potsdam, 22 March 2019.

Interview with Anja Taylor, ABC (Australian Broadcasting Corporation), documentary on the Anthropocene, 24 June 2019.

Interview with Myung Ae Choi, Great Scholars Series, Korean National TV, 10 December 2019.

Michael Wagreich:

Documentary by the Austrian Nikolaus Geyrhalter "Erde" ("Earth"), mainly on moving material in mines, quarries. Michael was part of a panel discussion afterwards. See the links: <https://www.geyrhalterfilm.com/erde> (German) and <https://www.geyrhalterfilm.com/en/earth> (English)

Report on the Anthropocene ("Im Banne der Beschleunigung") for *Die Furche*, 4 April 2019.

Colin Waters:

Futures Congress TV interview along with Laura Gallardo (Universidad de Chile), 15 January broadcast widely across South America.

Jan Zalasiewicz:

[Forbes](#): Is a New Geologic Epoch Beginning – The Anthropocene? 15 Dec.

NEWS

- Agnieszka Gałuszka and Colin Waters both had visiting professorships at the University of Vienna. Agnieszka provided 15 hours of lectures on “Anthropocene geochemistry” from the 4-5 April and Colin gave 24 hours of lectures covering the broad topic of the Anthropocene from the 25-28 March.
- Armin Linke in collaboration with Giulia Bruno and Giuseppe Ielasi exhibited at the following: Carceri d’Invenzione from 1st March to 1st September, Germany’s official contribution to the Broken Nature: Design Takes on Human Survival at the XXII Triennale di Milano; Prospecting Ocean: IV Biennial Of Photography On Industry And Work 24 October – 24 November 2019 at Biblioteca Universitaria di Bologna; and Blind Sensorium/Il paradosso dell’Anthropocene in Matera, Italy from 6th September 2019 to 6th January 2020.
- Traveling Exhibition MenschenWelt (“HumansWorld”) by German Federal Environmental Foundation (Deutsche Bundesstiftung Umwelt, DBU) (Opening August 2018; exhibition program in Osnabrück, then start of touring through Germany in 2019). Information on exhibition: <https://www.dbu.de/doiLanding1503.html> Also see annual report 2018 (from 27 Jul 2019): Deutsche Bundesumweltstiftung, Jahresbericht 2018, S. 32-37: Die neue DBU-Wanderausstellung "MenschenWelt - nachhaltige Entwicklung innerhalb planetarer Leitplanken" (DBU/Fromm, Osnabrück). Online version: <https://www.dbu.de/phpTemplates/publikationen/pdf/250719113335ieva.pdf>
- [Climate Accountability Institute](#) website on Carbon Majors, listing the top twenty oil, gas and coal companies from 1965-2017 was updated on 8th October 2019. An article on this was published in the [Guardian](#).
- Elements: An International Magazine of Mineralogy, Geochemistry and Petrology Vol. 15(5) published October 2019 special volume on ‘[Catastrophic Perturbations to Earth’s Deep Carbon Cycle](#)’, edited by Suarez, C.A., Edmonds, M. and Jones, A.P.
- Jürgen Renn, director at the Max Planck Institute for the History of Science in Berlin has a book on ‘The Evolution of Knowledge: rethinking science for the Anthropocene’, due to be published by Princeton University Press on 14th January 2020.
- Colin Waters and Simon Turner visited An Zhisheng and his colleagues at Institute of Earth Environment Chinese Academy of Science in Xi’an from 22nd-27th October. The visit was an opportunity to see their superb analytical facilities, give six lectures, visit a loess section and there were some very positive discussions concerning their potential contributions to the GSSP study.

- Gary Gomby, from Department of Geological Sciences, Central Connecticut State University and John Kress chaired a session at the March regional meeting of the Geological Society of America meeting in Maine regarding the Anthropocene and he has subsequently launched a website <https://theanthropocenedashboard.com>
- There is a new section on the Natural History Museum website dedicated to talking about the human impact on the natural world. It's called [Anthropocene](#)

MEMBERSHIP TO DATE

Listed here are names of members to date and their contact details (as of 31st December 2019).

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ANTHROPOCENE WORKING GROUP: PROGRAMME FOR 2020

- Consolidate work on potential GSSP site assessments with support from HKW project funding.
- Dissolve and reassemble the AWG membership, incorporating new members with specialisms not currently covered by the group that are necessary for analysing proxy markers or links to potential GSSP sites and remove non-active members. Distinguish between voting and advisory members.
- Pursue work on analysing and articulating the utility of the Anthropocene as a formal part of the International Chronostratigraphic Chart.
- Finalize ideas about best strategy for initial communication to SQS and ICS; potential involvement of members of both bodies in future AWG meetings.

Jan Zalasiewicz (Chair)

Colin Waters (Secretary)

December 2019