

Cyclostratigraphy Newsletter, Dec. 2021

Hello and welcome to Cyclostratigraphy Newsletter number 3.

This letter brings updates about cyclostratigraphy and presents a selection of news and articles. So far, 2021 saw numerous publications in our field and several researchers were honoured with awards. You are invited to get in touch if you have news, publications, job opportunities or events that you would like to see included in the next newsletter.

Best wishes for 2022,

Sietske Batenburg, sbatenburg@ub.edu

1. Awards



Frits Hilgen's acceptance lecture

The prestigious **Antonio Feltrinelli Prize** has been awarded to Frits Hilgen from Utrecht University, the Netherlands. Frits Hilgen has received the award in recognition of his ground-breaking work in the development of astronomical tuning, which underlies much of the Geological Time Scale for the Neogene.

In the words of the society: *"he is an absolute innovator who, starting from detailed rock studies, has built the Astronomical Time Scale for the last 30 million years. This has triggered similar research for various parts of the geological time scale of the past 545 million years, with fundamental applications for dating and understanding climate change induced by orbital parameters recorded in marine and continental sedimentary archives"*.

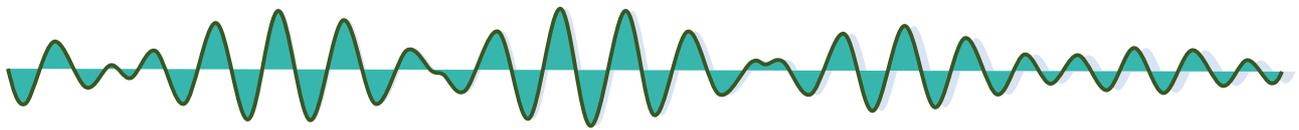
The Feltrinelli Prize is awarded by the Accademia Nazionale dei Lincei in Italy, and it is only the second time that an Earth Scientist has won the prize. The Accademia is one of Europe's oldest and most distinguished scientific societies, and was founded in 1603 with Galileo Galilei as one of its first members. The prize was awarded at the Academy headquarters in Rome on 12 November 2021.

The EGU has just announced its medal winners for 2022 and the **Milutin Milankovic Medal** will be awarded to Hai Cheng from Xi'an Jiaotong University in China. Professor Cheng is an expert in U-series dating techniques and his research on speleothems has advanced the reconstruction of past climates.



Hai Cheng





The 2021 **Milutin Milankovic Medal** of the EGU was awarded to Professor Ayako Abe-Ouchi from the University of Tokyo, Japan, for fundamental contributions to our understanding of climate-ice sheet interactions on orbital timescales and how they shape the planetary response to Milankovic cycles.



Ayako Abe-Ouchi

The Milankovic medal is awarded to scientists for their outstanding research in long-term climatic changes and modelling.

2. Podcasts on cyclostratigraphy.org

The website www.cyclostratigraphy.org now features five [podcasts](#) highlighting the work of innovative scientists. The three latest podcasts feature:

Anna Joy Drury, who discusses how climate and carbon cycle have been responding to astronomical forcing throughout the late Cenozoic, based on a 30-million-year long carbonate content and stable isotope record that she compiled for an ocean drilling site on Walvis Ridge, in the South-East Atlantic Ocean. See this recent publication in [Climate of the Past](#).



Anna Joy Drury



Zhixiang Wang, who talks about the Late Miocene sedimentary response to astronomical forcing in North-East Tibet, exploring why an eolian sequence displays a completely different astronomical signature compared to a contemporaneous lacustrine section. Results published in [GSA Bulletin](#).

Zhixiang Wang

Rocío Paola Caballero-Gill, who talks about her work on Pliocene climate and stratigraphy as well as her work on Inclusion, Diversity, Equity and Justice (IDEJ), which resulted in an anti-racism plan for geosciences published in [nature communications](#) and the development and implementation of an IDEJ-based model for multi-institutional research campaigns within the framework of the [CycloAstro](#) project.



Rocío Paola Caballero-Gill

3. Conferences and workshops

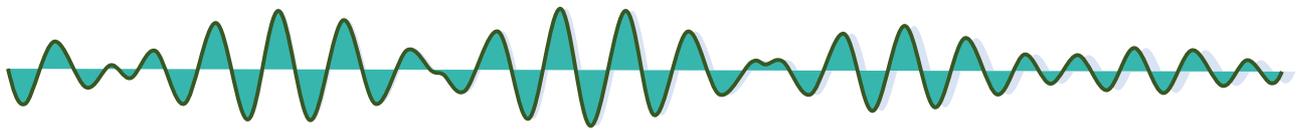
AGU FALL MEETING

New Orleans, LA & Online Everywhere
13–17 December 2021

The **AGU fall meeting 2021**, 13-17 December 2021, will have a hybrid format of in-person and on-line activities. This session highlight cyclostratigraphy:

[122638](#): Cyclostratigraphy and Astronomical Forcing of Earth's Paleoclimate System





Abstract submission is open for the **EGU General Assembly 2022**, 3–8 April 2022, Vienna Austria. Several sessions invite contributions in the field of cyclostratigraphy:



- Session [EMRP3.3](#): Magnetostratigraphy and Rock Magnetic Cyclostratigraphy
- Session [SSP2.2](#): Integrated Stratigraphy - Recent advances in stratigraphic systems and age modelling to constrain rates of change in the Earth System
- Session [CL1.1.4](#): Climate response to orbital forcing
- Session [NP3.2](#): Climate Variability Across Scales and Climate States
- Session [SSP2.1](#): Phanerozoic stratigraphy, paleoceanography, and paleoclimate

A short-course highlights the development of age models:
Short course [SC4.10](#): Application of age models in palaeoclimatology and geomorphology

And another short course introduces statistical methods to investigate cyclicity:
Short course [SC4.15](#): Introduction to time series analysis for Earth scientists

4. Job/Research Opportunities

The Oceanography group at the University of Hawaii-SOEST is looking for a graduate student to work on a funded project in the area of [marine geology / astrochronology / cyclostratigraphy](#).

Within the CycloCohort program in the USA, [job opportunities](#) include six PhD and six Post-doctoral positions in Astrochronology, Solar System Dynamics and Inclusion, Diversity, Equity and Justice. The second wave of applications is open until 15 December.

The department of Geography at the University of Cambridge is looking for a [Postdoctoral Research Associate in Geochronology](#), to work on “Improving probabilistic models for automated alignment of Palaeoclimate records”.

5. Cyclostratigraphy publications

A selection of articles of interest to the cyclostratigraphic community that appeared in 2021:

A special issue of the [Boletín Geológico y Minero](#) is dedicated to the memory of Walther Schwarzacher and presents a series of articles on sedimentary cyclicity. The volume contains contributions ranging from astrochronology case studies as well as age model methodologies and reviews discussing problems with the detection of regular cyclicity.

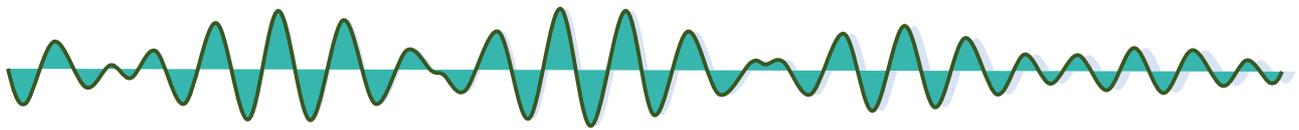
A new integration method for geochronology is presented in:

Claire O. Harrigan, Mark D. Schmitz, D. Jeffrey Over, Robin B. Traylor, Vladimir I. Davydov; Recalibrating the Devonian time scale: A new method for integrating radioisotopic and astrochronologic ages in a Bayesian framework. GSA Bulletin 2021; doi: <https://doi.org/10.1130/B36128.1>

A range of time series analysis techniques is reviewed in:

Trauth, M.H., 2021. Spectral analysis in Quaternary sciences. Quaternary Science Reviews, 270, p.107157. doi: <https://doi.org/10.1016/j.quascirev.2021.107157>





Papers that investigate the influence of external forcing (i.e. asteroids, volcanism):

Rasmussen, J.A., Thibault, N. and Mac Ørum Rasmussen, C., 2021. Middle Ordovician astrochronology decouples asteroid breakup from glacially-induced biotic radiations. *Nature communications*, 12(1), pp.1-14. doi: <https://doi.org/10.1038/s41467-021-26396-4>

Gilbert, V., Batenburg, S.J., Arenillas, I., Arz, J.A.; Contribution of orbital forcing and Deccan volcanism to global climatic and biotic changes across the Cretaceous-Paleogene boundary at Zumaia, Spain. *Geology* 2021; doi: <https://doi.org/10.1130/G49214.1>

A detailed investigation of how orbital forcing results in seasonal trends:

Lücke, L.J., Schurer, A.P., Wilson, R. and Hegerl, G.C., 2021. Orbital forcing strongly influences seasonal temperature trends during the last millennium. *Geophysical Research Letters*, 48(4), p.e2020GL088776. doi: <https://doi-org.sire.ub.edu/10.1029/2020GL088776>

Studies that investigate climate dynamics:

Xu, K., De Vleeschouwer, D., Vahlenkamp, M., Yang, R. and Chen, H., 2021. Reconstructing Eocene Eastern Indian Ocean Dynamics Using Ocean-Drilling Stratigraphic Records. *Paleoceanography and Paleoclimatology*, 36(2), p.e2020PA004116. doi: <https://doi-org.sire.ub.edu/10.1029/2020PA004116>

Mitchell, R.N., Gernon, T.M., Cox, G.M., Nordsvan, A.R., Kirscher, U., Xuan, C., Liu, Y., Liu, X. and He, X., 2021. Orbital forcing of ice sheets during snowball Earth. *Nature Communications*, 12(1), pp.1-9. doi: <https://doi.org/10.1038/s41467-021-24439-4>

Omar, H., Da Silva, A.C. and Yaich, C., 2021. Linking the variation of Sediment Accumulation Rate to short term sea-level change using cyclostratigraphy: case study of the Lower Berriasian hemipelagic sediments in central Tunisia (Southern Tethys). *Frontiers in Earth Science*, 9, p.176. doi: <https://doi.org/10.3389/feart.2021.638441>

Cheng, H., Zhang, H., Cai, Y., Shi, Z., Yi, L., Deng, C., Hao, Q., Peng, Y., Sinha, A., Li, H. and Zhao, J., 2021. Orbital-scale Asian summer monsoon variations: Paradox and exploration. *Science China Earth Sciences*, pp.1-16. doi: <https://doi-org.sire.ub.edu/10.1007/s11430-020-9720-y>

And a series of astrochronology papers:

M. Sinnesael, P.I. McLaughlin, A. Desrochers, A. Mauviel, J. De Weirtdt, P. Claeys, T.R.A. Vandenbroucke; Precession-driven climate cycles and time scale prior to the Hirnantian glacial maximum. *Geology* 2021; 49 (11): 1295–1300. doi: <https://doi.org/10.1130/G49083.1>

Gannon, P.J., Smith, M.E., Umhoefer, P.J., Leary, R.J.; High-resolution late Paleozoic cyclostratigraphy and tectonic evolution of the Keeler Basin, California, southwest Laurentia. *GSA Bulletin* 2021; doi: <https://doi.org/10.1130/B36027.1>

The list of publications is incomplete. If you would you like to see your work included in a future newsletter, or if you would like to share other news, do send an email.

And finally, consider submitting a manuscript to [Cyclostratigraphy and Rhythmic Climate Change](#).

Feel free and encouraged to distribute this newsletter further. If you know of conferences, workshops, job opportunities, or if you would like to share other news related to cyclostratigraphy, please do not hesitate to email. Subscribe or unsubscribe from this newsletter by writing to sbatenburg@ub.edu. The newsletter will be available for download on www.cyclostratigraphy.org.

