
The Newsletter of the Italian Carbon Network - June 2021 Issue

CarboNetwork

All the news and opportunities from the Italian scientific community working on the Carbon Cycle

June 2021



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Dear All,

welcome to the second issue of *CarboNetwork*, the newsletter of the Italian Carbon Network! We have exciting news and opportunities from the network, and highlight a number of interesting articles published in the last six months or so.

As our network keeps growing, we have a number of challenges to face together. We need to make this newsletter and the network more inclusive and representative of all the disciplines involved in the study of Carbon. To do this we ask for your help. Please share this newsletter with all your networks and with students, researchers, journalists and stakeholders that might find it interesting or useful. If this is the first time you receive the *CarboNetwork* newsletter, remember to [Subscribe](#).

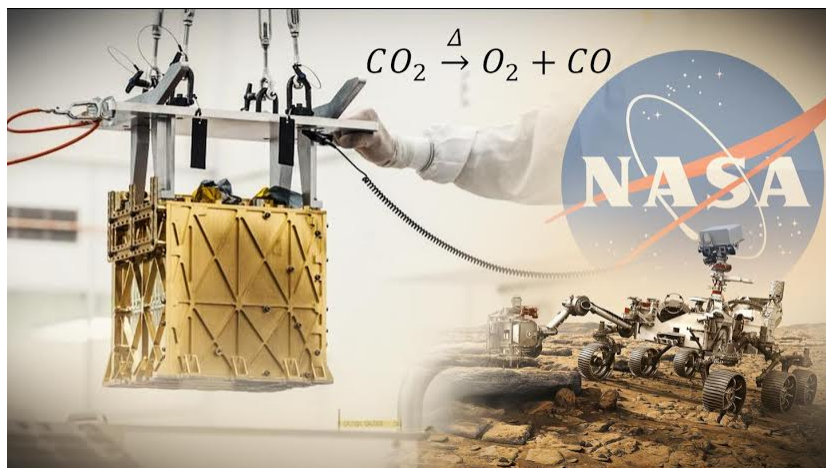
Also, do not forget to contribute to the next newsletter scheduled for October 15, 2021. You can submit your contributions using the online form at the address <https://forms.gle/fvEwWUYKrUQjhUicA>. Contributions arriving after the 1st of October will automatically go to the next newsletter.

Finally, we want to thank you for your support and the contributions we have received so far.

Best,
CNR GdL Ciclo del Carbonio

News

MOXIE "The Mars Oxygen In-Situ Resource Utilization Experiment"



The Perseverance rover has created a breath of fresh air on Mars. An experimental device on the NASA rover split carbon dioxide molecules into their component parts. This created enough breathable oxygen to sustain a person for about 10 minutes. The toaster-size instrument that did this is called MOXIE. MOXIE's job is to break the chemical bonds in CO_2 , releasing oxygen. NASA is preparing for human exploration of Mars, and MOXIE will demonstrate a way that future explorers might produce oxygen from the Martian CO_2 -rich atmosphere for propellant and for breathing. For more information: <https://mars.nasa.gov/mars2020/spacecraft/instruments/moxie/>

ICOS announces the certification of 12 new stations



On 7th June 2021, ICOS, Integrated Carbon Observation System, announces that 12 more greenhouse gas measurement stations have passed the rigorous ICOS quality assurance process for standardized data production. The new Italian stations labelled within ICOS are: Class 1 Ecosystem Station Castelporziano 2 (IT-Cp2) Italy, Council for Agricultural Research and Economics (CREA), Class 2 Atmosphere Station Plateau Rosa (PRS) Italy, Ricerca sul Sistema Energetico - RSE Spa, Associated Ecosystem Station Bosco Fontana (IT-BFt) Italy, Università Cattolica del Sacro Cuore. More info on <https://www.icos-cp.eu/event/1066> and <https://www.icos-italy.it/news-and-events/>

EPOS Infrastructure

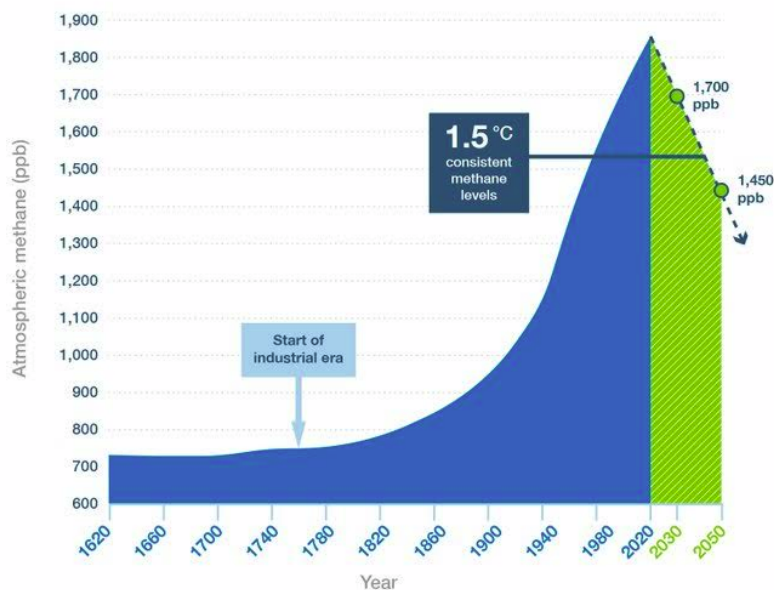
EPOS

EUROPEAN PLATE OBSERVING SYSTEM

EPOS, the European Plate Observing System, is a multidisciplinary, distributed research infrastructure that facilitates the integrated use of data, data products, and facilities from the solid Earth science community in Europe. EPOS brings together Earth scientists, national research infrastructures, ICT (Information & Communication Technology) experts, decision makers, and public to develop new concepts and tools for accurate, durable, and sustainable answers to societal questions concerning geo-hazards and those geodynamic phenomena (including geo-resources) relevant to the environment and human welfare. For more information: <https://www.epos-eu.org>

Global Methane Assessment released by Climate & Clean Air Coalition

Global atmospheric methane



Source: Ed Dlugokencky, NOAA/ESRL

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The Global Methane Assessment shows that human-caused methane emissions can be reduced by up to 45 per cent this decade. Such reductions would avoid nearly 0.3°C of global warming by 2045 and would be consistent with keeping the Paris Climate Agreement's goal to limit global temperature rise to 1.5 degrees Celsius (1.5°C) within reach. The assessment, for the first time, integrates the climate and air pollution costs and benefits from methane mitigation. Full report: <https://bit.ly/3b6V6wy> Key findings: <https://bit.ly/3a7rMp0> Press release: <https://bit.ly/3vMnb44>

Newsworthy articles

- Fullerton, K. M., Schrenk, M. O., Yücel, M., Manini, E., Basili, M., Rogers, T. J., et al. (2021). Effect of

tectonic processes on biosphere–geosphere feedbacks across a convergent margin. *Nature Geoscience*, 1–6. doi:10.1038/s41561-021-00725-0.

Researchers show a tight coupling between subduction related parameters and the microbiology of the deep subsurface at convergent margins

- Special Issue ""Impacts of the 2018 severe drought and heatwave in Europe: from site to continental scale"" on the *Philosophical transactions* - Royal Society B.
The summer drought that hit central and northern Europe in 2018 had severe impacts on crops, forests and grasslands. This theme issue brings together researchers working on different scales and domains to report on the impacts found, and what can be learnt from this. 15 individual papers in this issue provided an update of the observational data and library of numerical model experiments in a decades-long monitoring effort. <https://royalsocietypublishing.org/toc/rstb/2020/375/1810>
- M. Oosterloo, D. Höning, I. E. E. Kamp, and F. F. S. van der Tak. 2021. The role of planetary interior in the long-term evolution of atmospheric CO₂ on Earth-like exoplanets. *Astronomy & Astrophysics*, 649, A15. DOI: 10.1051/0004-6361/202039664.
A new model can predict carbon cycle presence on exoplanets.
- B Marty. 2020. Origins and Early Evolution of the Atmosphere and the Oceans. *Geochemical Perspectives*, 9:2. <https://www.geochemicalperspectives.org/online/v9n2/>
An in-deep multidisciplinary approach to the origin of the atmosphere and the oceans.
- L Cécillon, A dual response. 2021. *Nature Geoscience*, 14, 262–263. <https://doi.org/10.1038/s41561-021-00749-6>
European mineral soils may lose less organic carbon due to climate change than previously suggested, according to analyses of climate responses from two physical fractions of soil carbon.
- Martens, J., Romankevich, E., Semiletov, I., Wild, B., van Dongen, B., Vonk, J., Tesi, T., Shakhova, N., Dudarev, O.V., Kosmach, D., Vetrov, A., Lobkovsky, L., Belyaev, N., Macdonald, R., Pieńkowski, A.J., Eglinton, T.I., Haghypour, N., Dahle, S., Carroll, M.L., Åström, E.K.L., Grebmeier, J.M., Cooper, L.W., Possnert, G., Gustafsson, Ö., 2021. CASCADE - The Circum-Arctic Sediment CARbon DatabasE. *Earth Syst. Sci. Data* (2021) <https://doi.org/10.5194/essd-13-2561-2021>
The first open-source database of organic proxies from the Arctic Ocean. The database includes raw data and GIS products of bulk variables (TOC, TN, d14C, d13C) and organic biomarkers

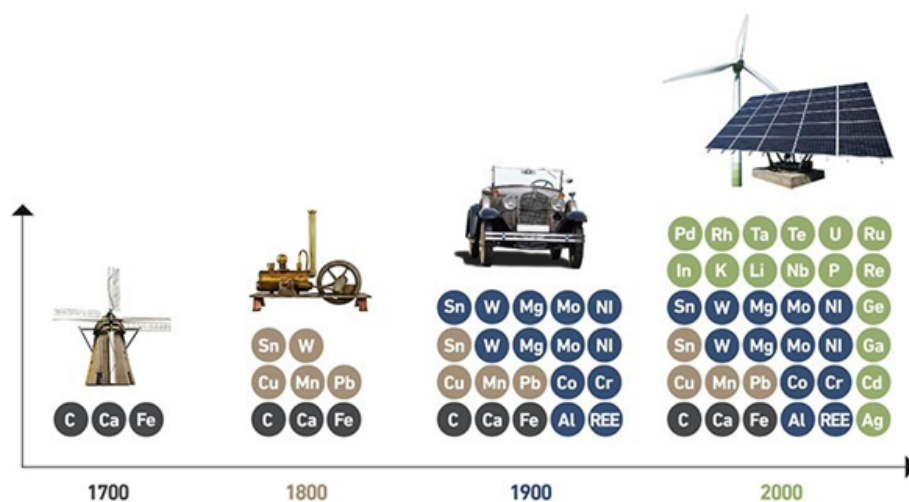
Hot off the press

- Brandano, M., Cornacchia, I., Catanzariti, R., & Tomassetti, L. (2021). The Monterey Event in the Mediterranean platform to basin transition: The Guadagnolo Formation (Miocene, Prenestini Mountains, Central Apennines). *Palaeogeography, Palaeoclimatology, Palaeoecology*, 564, 110177.
- Bröder L, Keskitalo K, Zolkos S, Shakil S, Tank SE, Kokelj SV, Tesi T, Van Dongen BE, Haghypour N, Eglinton TI, Vonk JE. Preferential export of permafrost-derived organic matter as retrogressive thaw slumping intensifies. *Environmental Research Letters*. 2021 May 10;16(5):054059.
- G Ceccherini, G Duveiller, G Grassi, G Lemoine, V Avitabile, R Pilli & A Cescatti. 2020. Was there or not an abrupt increase in harvested forest area over Europe after 2015? *Nature* volume 583, 72–77. <https://www.nature.com/articles/s41586-020-2438-y>
- Cornacchia, I., Munnecke, A., & Brandano, M. (2021). The potential of carbonate ramps to record C-isotope shifts: insights from the upper Miocene of the Central Mediterranean area. *Lethaia*, 54(1), 73-89.
- Esther M. Schwarzenbach, Monica Vogel, Gretchen L. Früh-Green, and Chiara Boschi. Serpentinization, Carbonation, and Metasomatism of Ultramafic Sequences in the Northern Apennine Ophiolite (NW Italy); April 2021 *Journal of Geophysical Research: Solid Earth*. DOI: 10.1029/2020JB02061. <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2020JB020619>
- Keskitalo KH, Bröder L, Shakil S, Zolkos S, Tank SE, van Dongen BE, Tesi T, Haghypour N, Eglinton TI, Kokelj SV, Vonk JE. Downstream evolution of particulate organic matter composition from permafrost thaw slumps. *Frontiers in Earth Science*. 2021 Mar 29;9:181.
- M. Ramonet, P. Ciais, F. Apadula, J. Bartyzel, A. Bastos, P. Bergamaschi, P. E. Blanc, D. Brunner, L. Caracciolo di Torchiariolo, F. Calzolari, H. Chen, L. Chmura, A. Colomb, S. Conil, P. Cristofanelli, E. Cuevas, R. Curcoll, M. Delmotte, A. di Sarra, et al. 2021 The fingerprint of the summer 2018 drought in Europe on ground-based atmospheric CO₂ measurements. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 375 (1810), <https://doi.org/10.1098/rstb.2019.0513>

- Tanski G, Bröder L, Wagner D, Knoblauch C, Lantuit H, Beer C, Sachs T, Fritz M, Tesi T, Koch BP, Haghypour N. Permafrost carbon and CO₂ pathways differ at contrasting coastal erosion sites in the Canadian Arctic. *Frontiers in Earth Science*. 2021 Mar 26;9:207.
- Trisolino P, di Sarra A, Sferlazzo D, Piacentino S, Monteleone F, Di Iorio T, Apadula F, Heltai D, Lanza A, Vocino A, Caracciolo di Torchiariolo L, Bonasoni P, Calzolari F, Busetto M, Cristofanelli P. 2021. Application of a Common Methodology to Select in Situ CO₂ Observations Representative of the Atmospheric Background to an Italian Collaborative Network. *Atmosphere*. 12(2):246. <https://doi.org/10.3390/atmos12020246>
- Vannoli P., Martinelli G., Valensise G. (2021). The Seismotectonic Significance of Geofluids in Italy. *Front. Earth Sci*. 9:579390. doi: 10.3389/feart.2021.579390.
- Yver-Kwok, C., Philippon, C., Bergamaschi, P., Biermann, T., Calzolari, F., Chen, H., Conil, S., Cristofanelli, P., Delmotte, M., Hatakka, J., Heliasz, M., Hermansen, O., Komínková, K., Kubistin, D., Kumps, N., Laurent, O., Laurila, T., Lehner, I., Levula, J., Lindauer, M., Lopez, M., Mammarella, I., Manca, G., Marklund, P., Metzger, J.-M., Mölder, M., Platt, S. M., Ramonet, M., Rivier, L., Scheeren, B., Sha, M. K., Smith, P., Steinbacher, M., Vítková, G., and Wyss, S. 2021. Evaluation and optimization of ICOS atmosphere station data as part of the labeling process, *Atmos. Meas. Tech.*, 14, 89–116. <https://doi.org/10.5194/amt-14-89-2021>

Our Book Suggestion

A short review of "*The Rare Metals War: The Dark Side of Clean Energy and Digital Technologies*" by Guillaume Pitron, journalist (by Tommaso Tesi, ISP-CNR)

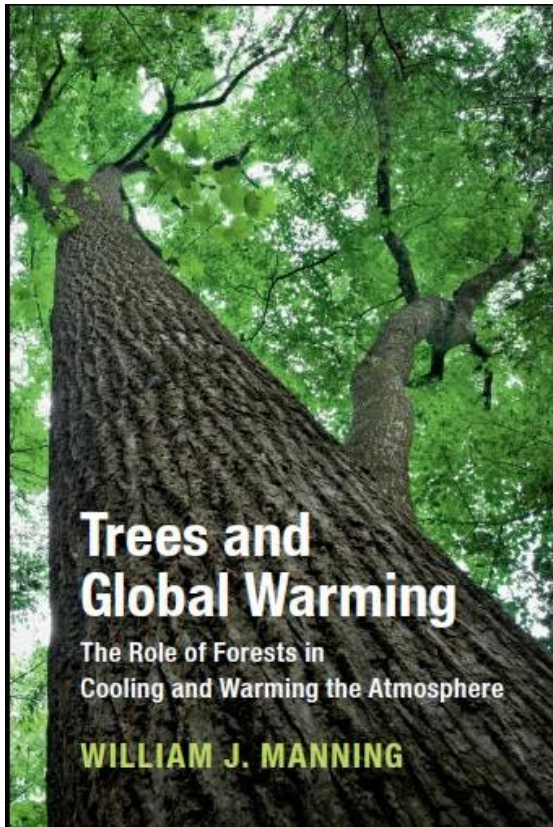


Source <https://www.ngu.no/nyheter/rapport-det-gr-nne-skiftet>

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Have you ever thought about what car batteries, solar panels and wind mills have in common? Probably your first answer would be that they are among the fundamental pillars of the upcoming green energy transition. This is surely accurate. However, in his book Guillaume Pitron goes behind the scenes to reveal something profoundly overlooked: all the new green technologies heavily depend on metals, in particular rare metals. Metals are finite resources and their messy extraction and purification are far from being sustainable. Guillaume Pitron warns against the enthusiastic belief that the so-called “green technologies” are the solution without consequences. All metals need to be mined and processed and, in the end, that’s not green at all. Equally important, Guillaume warns that more carbon is emitted in the manufacture of e-vehicles than of internal combustion engine cars despite the fact that over a lifecycle the benefits are heavily in favour of electric cars. However, if we want to meet the climate change targets agreed at the Paris 2015 summit we will surely need to produce more electric cars and extensively dig for metals which will probably result in a big impact on climate and environment. All in all, there is strong evidence in Pitron’s book that we are moving away from a strong dependence on fossil fuels to embrace a new dependence on metals with underestimated side effects on the long run for the Earth system and geopolitics.

A short review of “*Trees and Global Warming - the role of forests in cooling and warming the atmosphere*” by William J. Manning (by Elena Paoletti, IRET-CNR)



From a literature reanalysis, it is concluded that tropical forests are the major source of carbon capture and atmospheric cooling. Boreal forests are more likely to warm the atmosphere. Temperate forests may cool in summer, but this is uncertain. Cooling generally prevails over warming, but this may change. A combination of reduction of emissions and the mitigating influence of forests is the only effective strategy to prevent global warming increase above 2 °C.

"William J. Manning (2020) *Trees and Global Warming - the role of forests in cooling and warming the atmosphere*. Cambridge University Press isbn: 9781108471787. <https://www.cambridge.org/it/academic/subjects/life-sciences/ecology-and-conservation/trees-and-global-warming-role-forests-cooling-and-warming-atmosphere?format=HB>

Upcoming Events



The **ACID RAIN 2020 conference**, postponed to 1-4 March 2022 because of the covid-19 pandemic, dedicates one theme (T15) to the effects of acid deposition on carbon cycle. To be held in Niigata, Japan <https://www.acidrain2020.org/>



The **LUH 2021 conference on Landscape and Urban Horticulture** (Giarre, Italy, 14-17 December 2021) is an opportunity for discussing the carbon cycle of urban ecosystems <https://www.luh2021.it/>



The **Air Pollution threats to Plant Ecosystems Conference** will be held in Paphos (Cyprus island) on 11-15 October 2021 <https://cyprus2021.com/> and welcomes carbon-related presentations



90th Conference of the Italian Geological Society ""Geology without borders"", 14-16 September 2021 (on-line). For more information <http://www.geoscienze.org/trieste2021/index.php/en/>



3mugis

**Monitoring, Modeling and Management
of Urban Green Infrastructure and Soils**

**"ANTHROPOGENIC AND NATURAL SOIL LANDSCAPES
IN EUROPEAN RUSSIA: FROM SEA TO SEA"**

International annual summer school 3MUGIS will be held online from July 26 to August 2, 2021 and will address current environmental consequences and opportunities of urbanization with special emphasis on soil functions. For more information <http://3mugis.org/>



Svalbard Science Conference 2021. The SSC2021 will be held at Scandic Fornebu, Oslo 2-3 November 2021. The conference will focus on achieving excellent science through cooperation; enhance cooperation and quality within Svalbard research, build and strengthen interdisciplinary and international networks and consolidate Svalbard as an attractive platform for Arctic research. For more information: <https://www.forskningsradet.no/en/svalbard-science-forum/ssf-tools-and-funding-schemes/svalbard-science-conference/>

First OZCAR TERENO International Conference- Strasbourg, France. Oct. 5 - Oct. 7 2021. The French OZCAR and German TERENO research networks have decided to co-organise an international meeting every two years that will be held alternatively in Germany and in France. The event will offer keynote lectures, oral presentations and poster sessions on scientific research on the Critical Zone, which is the most superficial layer of the planet where all human activities concentrate. The meeting will cover the cutting edge scientific progresses in a variety of disciplines: hydrology, geophysics, soil sciences, geochemistry, ecology, socio-ecology. For more information: <https://ozcartereno2020.sciencesconf.org>

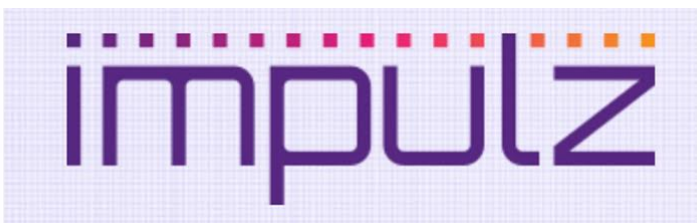
Funding Opportunities

Joint project Saspro 2, Marie Curie Sklodowska COFUND

Slovak Academic and Scientific Programme

Joint project Saspro 2 in the frame of UE Horizon 2020 Marie Curie Sklodowska COFUND. We offer approximately 40 positions within 70 potential host institutions covering various research areas and topics for foreign and Slovak scientists More information: <https://saspro2.sav.sk/indexEn.html>

IMPULZ 2021 program is recruiting talented researchers!



The IMPULZ 2021 Programme aims to improve the excellence of the Slovak Academy of Sciences (SAS) and its research institutes by recruiting internationally recognized scientists and highly talented young researchers either from abroad or within Slovakia. A selected project could ask for funding ranging from 60,000 to 160,000 EUR per year. For more information: <https://impulz.sav.sk/en>

Higher School of Economics for Launching International Laboratories Competition



Higher School of Economics (Moscow, Russia) announces a competition of the three-year projects for the creation of international laboratories. The competition runs from April 19, 2021 to July 30, 2021. For more information: https://www.hse.ru/en/contest_labs/

EU Marie Skłodowska-Curie Actions Doctoral Networks and for Postdoctoral Fellowships

A call for Doctoral Networks and for Postdoctoral Fellowships within the EU Marie Skłodowska-Curie Actions (MSCA) are expected to open on June 2021 with a deadline in October-November 2021. <https://ec.europa.eu/research/mariecurieactions/actions/doctoral-networks>

SIMP Awards 2021

The prizes for young researchers whose scientific research works deserve recognition by the SIMP have been announced. For more information (deadline 26th of June): https://www.socminpet.it/N132/premi-simp-2021.html?fbclid=IwAR2WuC8sQSQvosACmX2LBeqXpoozZQ5VxhZk_UEoIn0oOZa6g2nilWkSdmQ

CNR Short-Term Mobility

The Short Term Mobility (STM) Program enables CNR Italian researchers to carry out research activities in cooperation with foreign Universities and Research Institutions of clear international standing. Cnr does therefore finance short - term stays of 21 days of Italian researchers and 10 days of foreign researchers engaged in international research projects of mutual interest. For more information: <https://www.cnr.it/en/short-term-mobility>

EU Prize for Women Innovators (HORIZON-EIC-2021)

The EU Prize for Women Innovators celebrates the women entrepreneurs behind game-changing innovations. In doing so, the EU seeks to raise awareness of the need for more female innovators, and create role models for women and girls everywhere. Deadline: 30th of June 2021. For more information: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2021/roc_horizon-eic-2021-womeninnovatorsprize_en.pdf

Call for Proposals for ERC Advanced Grant (ERC-2021-ADG)

ERC Advanced Grants are designed to support excellent Principal Investigators at the career stage at which they are already established research leaders with a recognised track record of research achievements. Deadline: 31 of August 2021. For more information: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2021/wp_horizon-erc-2021_en.pdf

EIC Transition Challenges 2021 (HORIZON-EIC-2021)

Innovative technologies for efficient, low cost, sustainable, compact and flexible energy harvesting, conversion and storage are crucial to reach the Green Deal targets of decarbonised energy systems while achieving the transition to secure and affordable energy. EU-funded early-stage research on innovative energy technologies is uncovering unique opportunities for systems integration of advanced and sustainable energy harvesting and storage technologies. Deadline: 22th of September 2021. For more information: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2021/wp_horizon-eic-2021_en.pdf

Employment Opportunities

Position Term: 3-year term position with possible extension on demographic modelling @NCAR. Location: Boulder, CO. Position Term: 3-year term position with possible extension. Application Deadline: Review of applicants will begin on 3/15/21. All applications received by this date will be given full consideration. Application will be open until the position is filled. More info here: https://ucar.wd5.myworkdayjobs.com/en-US/UCAR_Careers/job/Mesa-Lab-Building/Project-Scientist-II_REQ-2021-47-1

ESSAC (ECORD Science Support & Advisory Committee) Science Coordinator - 2 years position. The International Ocean Discovery Program (IODP - <https://www.iodp.org>) is an international research program that explores the history and structure of the Earth as recorded in seafloor sediments and rocks. The ECORD Science Support and Advisory Committee (ESSAC) is responsible for the scientific and technological planning and coordination of ECORD's contribution to IODP. Submission deadline: 30 June 2021. For more information: <https://www.inogs.it/it/content/selezione-comparativa-essac-science-coordinator>. Also visit <http://www.iodp-italia.cnr.it/index.php/it/opportunita/in-evidenza/item/255-calls-for-application-essac-science-coordinator-2022-2023-ogs-trieste>

Postdoctoral Research Scientist position, Lamont-Doherty Earth Observatory of Columbia University. The Lamont-Doherty Earth Observatory of Columbia University invites applications for a Postdoctoral Research Scientist for an NSF-funded project to reconstruct Cenozoic climate maxima across a latitudinal transect from the North to the South Pacific. web-site: <https://pa334.peopleadmin.com/postings/7430>

Computational Scientist - Earth System Science. Oak Ridge National Laboratory (TN, US) is seeking an outstanding Computational Scientist for the Computational Earth Sciences group in the Computational Science and Engineering Division (CSED) to accelerate development of the US Department of Energy's (DOE's) Energy Exascale Earth System Model (E3SM) on the world's largest supercomputing platforms. More info at: <https://jobs.ornl.gov/job/Oak-Ridge-Computational-Scientist-Earth-System-Science-TN-37830/745987300/?fbclid=IwAR24xYBgZpGomqh5R1ZRjqhgteC8VL7EQ05jhb3fOVocZ3u5QBrLHhO3u3Y>

The European Space Agency is pleased to announce that an internal research fellow opportunity is currently open for applicants who have recently completed, or are close to completing a PhD in physics, engineering or Earth system science with research experience and peer-reviewed publications in topics relevant to the following fields: *Polar and cryosphere science. Ocean science. Hydrology and water cycle. Terrestrial carbon cycle. Climate adaptation: extremes and natural disasters.* Deadline for application is 28 June 2021. For additional information on the recruitment process, please visit : <https://jobs.esa.int/>

Postdoc Position (4 year) in Arctic carbon cycling and fate of permafrost in the Arctic Ocean. Call opening between the 1st and the 15th of July (<https://www.urp.cnr.it/>). Contact for further information tommaso.tesi@cnr.it

PhD position opportunity in "Combinatorial zeolite filtering for selective gas separation and CO2 trapping". The PhD ESFR project is in relation with the study of gas trapping in microporous materials (e.g. zeolites), with a focus on the sequestration of CO2. More information: C. Dejoie (tel.: +33 (0)4 76 88 23 57, email: catherine.dejoie@esrf.fr)

Postdoctoral research position (up to 3 years) in the frame of PON Infrastrutture PRO-ICOS_Med project is about to be announced at the Research Institute on Terrestrial Ecosystems (IRET CNR, Porano, Italy). The research fellow will be involved in the upgrading of the Stable Isotope Laboratory with new Isotope Ratio Mass Spectrometer for the analyses of isotope composition of C, N, H and O in solid, liquid and gaseous matrices; and in the development of gas chromatographic separation and HPLC - IRMS system for measurements of samples coming from Italian ICOS sites. For more information: angela.augusti@cnr.it

Useful links

- ICOS <https://www.icos-cp.eu/r>
- DCO <https://deepcarbon.net/>
- IPCC <https://www.ipcc.ch>
- IODP <http://www.iodp.org>

- SOLAS <http://ww.solas-int.org>

- Critical Zone Observatory NSF <https://www.czen.org>

Visita la pagina dedicata <https://dta.cnr.it/ciclo-del-carbonio>

Per i tuoi commenti, per segnalare opportunità ed eventi scrivi all'indirizzo carbonnetwork@cnr.it

Contribute to the NEWSLETTER CarboNetwork

The NEWSLETTER CarboNetwork is released every four months, on February 15th, June 15th, and October 15th. Please send your contribution to the next newsletter anytime before the release by uploading your contribution on the online form at the address <https://forms.gle/fvEwWUYKrUQjhUicA>. Contributions arriving after the 1st day of the release month will automatically go to the next newsletter.

Our Goodbye

“Some of the most fun people I know are scientists.” — Mae C. Jemison



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