



CO₂ GeoNet Highlights

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Editorial

CCUS: a year into the pandemic

I hope you and your families are keeping safe and well in these strange times. It's been a busy year work-wise so far. During January, the [Hystories project](#) started. CO₂GeoNet Members are working together, building on the work of previous projects such as FP7 CO2STOP and H2020 ESTMAP, to prepare a hydrogen-relevant geological storage database. The kick-off meeting and a geological database workshop were held during January.

During February, we hosted the [CO₂GeoNet Winter Webinar](#) which talked about the progress made in CO₂ capture and storage, highlighting that things haven't stood still in 2020. CCS is moving towards commercial operations with companies wanting to offer low carbon services including Northern Lights/Longship, Net Zero Teeside, Zero Carbon Humber and PORTHOS. We were fortunate to have great speakers explaining the European Green Deal and CCS strategy and representing these up and coming CO₂ transport and storage services. The recording is available on our website.

During March we held the CO₂GeoNet General Meeting and voted on the Executive Committee members and presidency of the Association. I'd like to thank our Members for their support and say we are looking forward to working with you

all over the next two years. During March, CO₂GeoNet Members also contributed to the [CSLF Technology Roadmap 2021](#), sharing information on national policies enabling CCS and hydrogen.

CO₂GeoNet is currently renewing the 'State-of-play on CO₂ geological storage in 32 European countries – an update. This update to the report is led by BGR. The original report was prepared during the FP6 CGS Europe project during 2013. The report covers national policies and climate strategies, regulation and practical demonstration of CCS. Keep an eye out for this report - coming soon!

Another key point of interest was that during April 2021, [provisional agreement](#) was reached on one of the key elements of the European Green Deal; European Climate Law will enshrine the EU's commitment to reaching climate neutrality by 2050 and the immediate target of reducing emissions by at least 55% net by 2030 compared to 1990 levels.

Ceri Vincent, CO₂GeoNet President

CO₂GeoNet on the international scene



CSLF Technical Group virtual mid-year meeting. CO₂GeoNet President, Ceri Vincent, was invited to give an update on CO₂GeoNet activities: the presentations are available on the [CSLF webpage](#).



15th Greenhouse Gas Control Technologies Conference.

One of the main events of the year, **GHGT-15** was held 12-18 March 2021 from UAE. The articles, several from our members, are available on the [proceedings web page](#).



COP26. CO₂GeoNet is preparing for its participation at the UN Climate Change Conference in

Glasgow 1-12 November 2021. The aim is to again host an official exhibit and a side event. Watch this space.

In this issue:

- CCUS: a year into the pandemic
- International Master on CO₂ Geological Storage
- HyStorIES: a new CO₂GeoNet initiative
- 15th Open Forum
- Winter webinar
- New Executive Committee



Ceri Vincent talking about the GTB (at the GTB) for the IIEA panel 'Climate Change: from Problems to Solutions'

International Master on CO₂ Geological Storage

The international Master Course on CO₂ Geological Storage (<https://web.uniroma1.it/masterco2/home>), organized and hosted by the Sapienza and Zagreb Universities with the support and endorsement of CO₂GeoNet, aims to prepare a new generation of young people who want to work on these topics and to develop a solid professionalism in the field of geological storage of CO₂. The first edition ran in the academic year 2019 - 2020, and was provided within the EU project ENOS (Enabling Onshore CO₂ Storage in Europe) (<http://www.enos-project.eu>). In this edition, the course lasted one academic year (January 2020 – October 2020) with the participation of several European research institutions: GEUS (Denmark), Heriot Watt University (Scotland), University of Nottingham (England), Sotacarbo (Italy), TalTech University (Estonian), NORCE (Norway). The next run of the Master Course, which will be activated for the academic year 2021-2022, will involve professors from institutions members of CO₂GeoNet. It is planned to start in January 2022, whereas the call for application will be announced in August 2021.

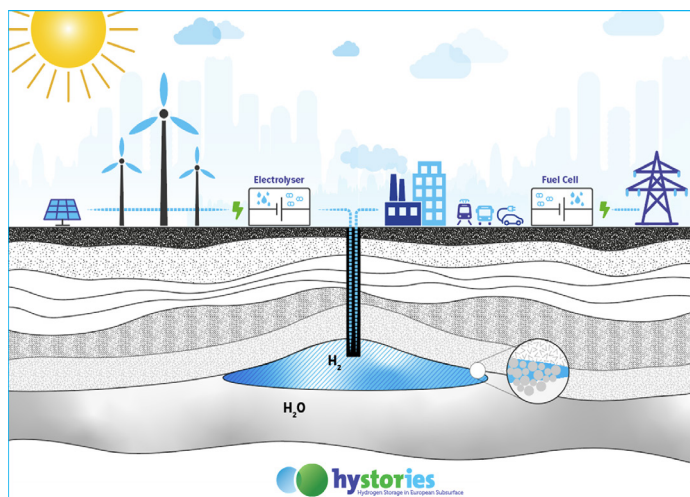
The course will be organized in 15 modules, covering all the aspects of the geological storage of CO₂, including CO₂ injection and safety monitoring, the exploration of critical processes in laboratory studies, and reservoir numerical modelling, a week of practise and 2 months of training at several research institutes members of CO₂GeoNet. The goal of the course is to provide the participants with the scientific and technical knowledge for the successful storage of CO₂ into geological formations. At the end of the course, students that acquire the joint Diploma, will be able to both understand the work of all specialists who will be involved in CCS projects (such as reservoir engineers/geologists, sedimentologists, stratigraphers, geophysicists, structural geologists, geochemical modellers, regulators, etc.) and further develop their own field of specialization. In the last edition (AA 2020-2021), on the 2nd of November 2020, at the Earth Science Dept. of the Sapienza University, the four students of the International Master on CO₂ Geological Storage completed their studies, with the final defence of their thesis works. The event

took place in part online (with more than 35 persons connected) and in presence. The first student was Dr. Pegah Soleimani Dinani who presented her work entitled "Simulation of fluid flow in a fault and nearby aquifer on the base of the SFL data" Tutor Anton Shchipanov from NORCE (Norwegian Research Centre), followed by Dr. Martina Mariani who presented her work entitled "North Italian CCS scenario for the cement industry" Tutors Kazbulat Shogenov & Alla Shogenova TalTech (Tallinn University of Technology). The third one was Dr. Michele Conte who presented his work entitled "Fluid flow simulation in the Cornelia reservoir" Tutors Dorian Foster & Gillian Pickup HWU (Heriot-Watt University). The last one Dr. Gabriela Garcia, connected from Zagreb University, presented her work entitled "Determination of Cost-Effectiveness of CO₂-EOR and CO₂ Utilization Factor as Feasibility Indicators for Permanent CO₂ Storage", Tutor Domagoj Vulin (Zagreb University). All students have successfully defended their theses and received Final Diploma Awards of Professional Master in CO₂ Geological Storage.



Students of the International Master on CO₂ Geological Storage

HYSTORIES



The 1st day of 2021 (01/01/2021) saw the launch of the European project “Hydrogen storage in European Subsurface” – Hystories – coordinated by GEOSTOCK (France) and with CO₂GeoNet as partner including 16 of its members as third parties. Renewable hydrogen combined with large scale underground storage enables transportation of energy through time, balancing out the impacts of variable renewable energy production. While storing pure hydrogen in salt caverns has been practiced since the 1970’s in Europe, it has never been carried out anywhere in depleted hydrocarbon fields or aquifers. As subsurface technical feasibility studies for a future hydrogen storage in depleted field or aquifer will be site-specific, as for other geology related activities, Hystories will provide developments applicable to a wide range of possible future sites: the addition of H₂-storage relevant characteristics in reservoir databases at European scale; reservoir and geochemical modelling for cases representative of the European subsurface, and tests of this representativeness by comparing models with results obtained by modelling real fluid storage sites; and lastly an extensive sampling and microbiological lab experiment programme will be conducted that will cover a variety of possible conditions. Modelling of the European energy system will first define the demand for hydrogen storage. Techno-economic feasibility studies will provide insights into underground hydrogen storage for decision makers in government and industry. Environmental and Societal impact studies will be developed. Finally, several case studies will enable consideration of the implementation of potential projects. CO₂GeoNet Members and MEERI-PAS will be led by BGS on evaluating potential opportunities for geological storage of hydrogen across Europe. This project has received funding from the European Union’s Horizon 2020 Research and Innovation Programme under grant agreement No 101007176. For more information, please visit www.hystories.eu

Other projects

A short introduction to two other recently launched international projects currently led by our members:

- 1. CO₂-SPICER - CO₂ Storage Pilot in a Carbonate Reservoir**, coordinated by CGS and with NORCE as partner, aims to prepare a CO₂ geological storage pilot project at the mature oil & gas field in the SE part of the Czech Republic and take this up to the implementation-ready stage. It is financed by the Technology Agency of the Czech Republic and co-funded by the Norway Grants. The complete workflow is planned – from the geological model of the storage complex, its geomechanical and geochemical characterisation, to injection simulations, risk assessment and monitoring plan. In the final stage, scenarios will be developed for the future site, including design of CO₂ injection facilities. Apart from strengthening the Czech-Norwegian cooperation in the field of CCS, it will be the first CO₂ storage pilot project in Central and Eastern Europe.
- 2. PilotSTRATEGY – CO₂ Geological Pilots in Strategic Territories** is a 5-year H2020 project launched in May 2021. It is coordinated by BRGM and several CO₂GeoNet Members are partners: IGME, UEvora, GIG and CERTH. It is a follow-on evolution of the work carried out in the current [Strategy CCUS project](#). PilotSTRATEGY will investigate deep saline aquifers in detail in three regions: Paris Basin (France), Lusitanian Basin (Portugal) and Ebro Basin (Spain). This will include acquisition of new data, detailed geo-characterisation, feasibility studies and preliminary design or pre-front end engineering and design studies. The level of site characterisation in these three regions will be sufficient to allow a final investment decision to be made and for storage permitting and project approval to be obtained. In parallel, for other two regions -West Macedonia (Greece) and Upper Silesia (Poland)-, PilotSTRATEGY will increase the maturity and confidence level of understanding of DSA storage resources and will enable these regions to start planning to develop their storage resources in the near future.

15th OPEN FORUM EDITION

Last year, the annual Open Forum was postponed due to the pandemic outbreak. Due to the ongoing COVID situation, we have decided to hold an online event during September 2021 instead of hosting the Open Forum in Venice: Following the success of the February Winter Webinar, CO₂GeoNet will hold two webinars on the 21st and 22nd September 2021 - please save the dates. We hope to see you in Venice the week of 9th May 2022, if the COVID-19 situation has eased sufficiently - we will provide an update on plans later this year.



Group picture of the 2018 Open Forum in Venice

CO₂GeoNet Winter Webinar

2020 was supposed to be the year of the annual 15th CO₂GeoNet Open Forum and, as much as we envisioned this to be special, we could never know just how special it was to be able to meet face-to face. It took us some time to adapt and rethink opportunities before the winter webinar was held early in 2021. The next challenge, in these times of numerous online events, was to keep the spirit of the Open Forum alive. This meant providing an informative update on the status of geological storage of CO₂ from different perspectives and allowing room for open exchange and discussion. We chose an event with a set of short 10-minute presentations followed by panel discussions and our speakers made a fantastic job of providing the audience with updates from the EC, and various industrial and research players. We were happy to see that more than 140 people found a slot in their calendars to join us. The event was recorded and is now [available on the CO₂GeoNet website](http://co2geonet.com/news-and-events/news/winter-webinar/). We hope to be able to meet you all and shake hands, the good old-fashioned way, for the 15th anniversary Open Forum in the week 9th May 2022. In the meantime, join us for our next online webinar on 21-22 of September 2021. Stay tuned!

<http://co2geonet.com/news-and-events/news/winter-webinar/>



New CO₂GeoNet Executive Committee 2021-2023

During the online General Meeting held on 11 March 2021, the Members of the Association elected the candidates for the new Executive Committee (ExCo). We would like to take the opportunity and thank some former ExCo members who will no longer be with us. Sergio Persoglia (OGS) and Marjeta Car (GEO-INZ), who continued to accompany the previous ExCo during the last two years, receive our acknowledgement for their great support to the association. A further acknowledgement goes to our long-standing ExCo member Niels Poulsen, who acted as CO₂GeoNet Treasurer and led the Training & Capacity Building Task Force to educate upcoming generations on CO₂ storage issues. The new board comprises the following team: Ceri Vincent (BGS) as president, Roman Berenblyum (NORCE) as Chair, Suzanne Hurter (TNO) as Vice-Chair, Carsten Møller Nielsen (GEUS) as Treasurer, together with the ExCo members Sabina Bigi (URS), Paula Canteli (IGME), Pierre Cerasi (SINTEF), Bruno Saftić (UNIZG-RGNF), Conny Schmidt-Hattenberger (GFZ), and Rowena Stead (BRGM), who share the tasks of the 4 Task Forces: research & internal networking, scientific advice & international collaboration, training & capacity building, and information & communication.



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Editorship: Information and Communication Task Force

Membership:

Austria: GBA - Geologische Bundesanstalt; **Belgium:** RBINS-GSB - Royal Belgian Institute of Natural Sciences; **Croatia:** UNIZG-RGNF - University of Zagreb, Faculty of Mining, Geology and Petroleum Engineering; **Czech Republic:** CGS - Czech Geological Survey; **Denmark:** GEUS - Geological Survey of Denmark and Greenland; **Estonia:** TALTECH-DG - Tallinn University of Technology; **France:** BRGM - Bureau de Recherches Géologiques et Minières; **IFPEN** - French Institute of Petroleum and Energies Nouvelles; **Germany:** BGR - Bundesanstalt für Geowissenschaften und Rohstoffe; **GFZ** - Helmholtz Centre Potsdam, German Research Centre for Geosciences /Deutsches GeoForschungsZentrum; **Italy:** Sapienza - Università di Roma "La Sapienza"; **OGS** - National Institute of Oceanography and Applied Geophysics; **The Netherlands:** TNO - Netherlands Organisation for Applied Scientific Research; **Norway:** NORCE - Norwegian Research Centre AS; **SINTEF** - Petroleum Research; Poland: PGI-NRI - Polish Geological Institute - National Research Institute; **Romania:** GeoEcoMar - National Institute of Marine Geology and Geocology; **Slovenia:** GEO-INZ - Geoinženiring d.o.o.; **Spain:** IGME - Instituto Geológico y Minero de España; **Switzerland:** ETH - Swiss Federal Institute of Technology Zurich; **Turkey:** METU - Middle East Technical University Petroleum Research Center; **UK:** BGS - British Geological Survey; HWU - Heriot-Watt University; **IMPERIAL** - Department of Earth Science and Engineering, Imperial College London.

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