



Special issue (January, 2022)
Greenhouse Gases: Science & Technology
Topic: Negative Emission Technologies

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Scientific consensus has highlighted that avoiding dangerous climate change requires more than reducing greenhouse gas (GHG) emissions; it requires negative emissions at an unprecedented scale. Referred to also as Greenhouse Gas Removal (GGR) or Carbon Dioxide Removal (CDR), these Negative Emission Technologies (NETs) comprise various engineered technologies, treatments, and enhancements of natural processes that can extract carbon dioxide (CO₂) directly from ambient air and isolate that CO₂ from the atmosphere for centuries. The urgency and importance of developing NETs that can scale to match the enormity of the climate crisis are motivating significant new research and development to address the technical challenges and feasibility of different technological options.

We propose to lead the publication of a special issue in GHGS&T focusing on NETs that rely on geochemical and geological processes with the potential to scale up to substantively address the climate crisis. The purpose of the special issue is to bring together in one place a collection of papers that communicates the breadth and depth of research in these areas, and nurtures the development of a collaborative research community to encourage rapid and efficient R&D in this area.

We invite contributions on recent advances in geochemically and geologically oriented NETs, including all types of process, technology, and systems-level analyses (e.g., Integrated Assessment Modeling, Techno-Economic Analyses, Life-Cycle Assessments). While papers on all novel concepts and approaches are encouraged, we expect most contributions will fall within two broad areas:

(1) Mineralization in soil, natural sediments and outcrops, oceans as well as in mine tailings or other large-scale industrial products or waste materials. Topics of particular interest include accelerated CO₂ mineralization (*ex situ*, *in situ* and surficial) that has the potential of combining capture and storage, and providing co-benefits such as improved soil carbon storage, soil health, and plant growth.

(2) Coupling NETs with energy recovery and storage. Geologic CO₂ storage (GCS) (direct injection of CO₂ into deep reservoirs) provides the most important current disposal option for air-extracted CO₂ from technologies like Direct Air Capture and Bioenergy CO₂ Capture. The special issue will include papers on approaches of coupling GCS with other technologies such as geothermal energy production to encourage widespread deployment through providing associated benefits (e.g., energy recovery or storage).

Studies that address the key scientific unknowns with suggestions for future research by the community, and that inform operation and upscaling of these technologies are encouraged.

Timeline:

Manuscript deadline (March 1st, 2023)

Expected publication of the SI (September, 2023)

Contact:

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Submission Instructions:

Submissions for this special issue should follow the submission format and guidelines for regular papers at the Greenhouse Gases: Science & Technology website:

<https://onlinelibrary.wiley.com/page/journal/21523878>.

Manuscripts should be submitted via the submission portal [online](#). Please indicate the special issue name in the submission portal: “**Negative Emission Technologies**”. Please also mention the special issue name in your cover letter.