

CE-LAND+

Climate engineering on land: comprehensive evaluation of Earth system impacts of terrestrial carbon dioxide removal

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Summary

In continuation of the first project phase, CE-LAND+ provides spatially detailed quantitative analyses of environmental limits, biogeochemical (especially hydrological) Earth system impacts with related uncertainties, and tradeoffs with other land and water uses of terrestrial carbon dioxide removal (tCDR) strategies (biomass plantations, afforestation).

KEY QUESTIONS

- **What would be the biogeochemical – especially the hydrological – side-effects of large-scale tCDR, and what tradeoffs with**

global goals of food security and ecosystem protection would emerge?

- **What are the major model-structural uncertainties related to interactions between future climate and tCDR under high-temperature, high-CO₂ conditions?**

Methods

Within the Priority Program, CE-LAND+ is the hub to quantify the terrestrial biophysical limitations and impacts of climate engineering (tCDR) with a particular focus on the water cycle.

Role of the project within the SPP

CE-LAND+ interacts with other projects (ComparCE2, CEMICS2, CDR-MIA, SciPol2) to improve understanding of uncertainties and also to integrate social aspects of tCDR.