The impact of increased atmospheric carbon dioxide on microbial community dynamics in the rhizosphere

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Stellingen

1. Mycorrhiza play a central role in global change processes, as they are key components in the response of terrestrial ecosystems to elevated atmospheric CO_2 (this thesis).

2. Responses of soil-borne communities to elevated CO_2 are different for bacteria, fungi and nematodes and dependent on the plant type and soil nutrient availability (this thesis).

3. Effective accumulation of plant-derived carbon in the short term is restricted to efficient rhizosphere colonizers, such as the bacterial genera *Burkholderia* and *Pseudomonas* (this thesis).

4. The balance of pathogenic and antagonistic pressures may be affected by elevated CO_2 conditions as the sizes of phloroglucinol, phenazine and pyrrolnitrin producing communities were influenced by elevated CO_2, as was the density of the fungal genera *Fusarium* and *Trichoderma* (this thesis).

5. As opposed to simply increasing the activity of soil-borne microbes resident at ambient CO_2 conditions, elevated atmospheric CO_2 strongly selects for opportunistic plant-associated microbial communities, with a particular shift in the dominant arbuscular mycorrhizal fungi community as well as rhizosphere bacterial and fungal populations (this thesis).

6. Climate change is already happening and represents one of the greatest environmental, social and economic threats facing the planet.

7. There is *high agreement* and *much evidence* that with current climate change mitigation policies and related sustainable development practices, global GHG emissions will continue to grow over the next few decades (IPCC fourth assessment report, 2007).

8. The resilience of many ecosystems is *likely* to be exceeded this century by an unprecedented combination of climate change, associated disturbances (e.g. flooding, drought, wildfire, insects, ocean acidification) and other global change drivers (e.g. land use change, pollution, fragmentation of natural systems, overexploitation of resources) (IPCC fourth assessment report, 2007).

9. Because today's rhizosphere is yesterday's (and tomorrow's) bulk soil it is critical to integrate rhizosphere mechanisms into models of bulk soil processes in order to better understand the long-term response of ecosystems to global change (Phillips R.P., 2007).

10. Destiny and character are two names for the same concepts (Herman Hesse).

11. The world is a book and those who don't travel read only one page of it (Saint Augustine).

12. Be who you are and say what you feel because those who mind don't matter and those who matter don't mind.

13. I've learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel.

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