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Highly precise atmospheric oxygen measurements as a tool to detect leaks of carbon dioxide from Carbon Capture and Storage sites

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Propositions belonging to the thesis:

Highly precise atmospheric oxygen measurements as a tool to detect leaks of carbon dioxide from Carbon Capture and Storage sites

Charlotte van Leeuwen

1. Performing accurate atmospheric O₂ measurements is challenging.
(this thesis)
2. There are effective tools available for atmospheric monitoring of CO₂ leaks from CCS sites.
(this thesis)
3. Measuring atmospheric O₂ in addition to CO₂ is the only tool that can discriminate between random (biospheric or fossil fuel combustion) point sources of CO₂ and leaks of CO₂.
(chapter 4 of this thesis)
4. Next to highly precise and expensive CO₂ detectors, also relatively simple and cheap CO₂ sensors can play a role in CO₂ leak detection of CCS sites.
(chapter 2 of this thesis)
5. Steady scientific and technical staff is essential for acquiring high-quality datasets from an atmospheric measurement station.
6. It is possible to concurrently produce scientific publications and children during a PhD project.
7. Many things in life can be planned, but some things just happen.

Stellingen behorende bij het proefschrift:

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1. Het nauwkeurig meten van de atmosferische O₂ concentratie is een uitdaging.

(dit proefschrift)

2. Er bestaan effectieve methoden voor het in de atmosfeer monitoren van CO₂ lekken uit ondergrondse opslag.

(dit proefschrift)

3. Het meten van O₂ naast CO₂ is de enige techniek die onderscheid kan maken tussen willekeurige puntbronnen van CO₂ (uit de biosfeer of door de verbranding van fossiele brandstoffen) en lekken van CO₂.

(hoofdstuk 4 van dit proefschrift)

4. Behalve zeer nauwkeurige en dure CO₂ meters kunnen ook relatief simpele en goedkope CO₂ sensoren een rol spelen in het opsporen van CO₂ lekken op een CCS locatie.

(hoofdstuk 2 van dit proefschrift)

5. Een vaste technische en wetenschappelijke staf is essentieel voor het verkrijgen van een hoogkwalitatieve dataset van een atmosferisch meetstation.

6. Het is mogelijk om gelijktijdig wetenschappelijke publicaties en kinderen te produceren tijdens een promotietraject.

7. Veel dingen in het leven kan je plannen, sommige dingen gebeuren gewoon.