Shall we take this outside?
The next stages for SRM research governance

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What I'm going to cover

1. Context for geoengineering research and governance

2. Types of outdoors research and possible risks

3. Should outdoors research proceed?

4. Some proposals

Context

Research is needed, but is not risk-free

Specific governance is warranted

Therefore people are concentrating on governance

There is no real opposition to ‘indoors’ research

Outdoors research is more controversial

Range of possible research projects

1. Testing effects of aerosols on radiative forcing
2. Observing natural analogues (eg volcanic eruptions)
3. Engineering delivery systems
4. Observing plant reactions to diffuse light
5. Testing effects of aerosols on ozone

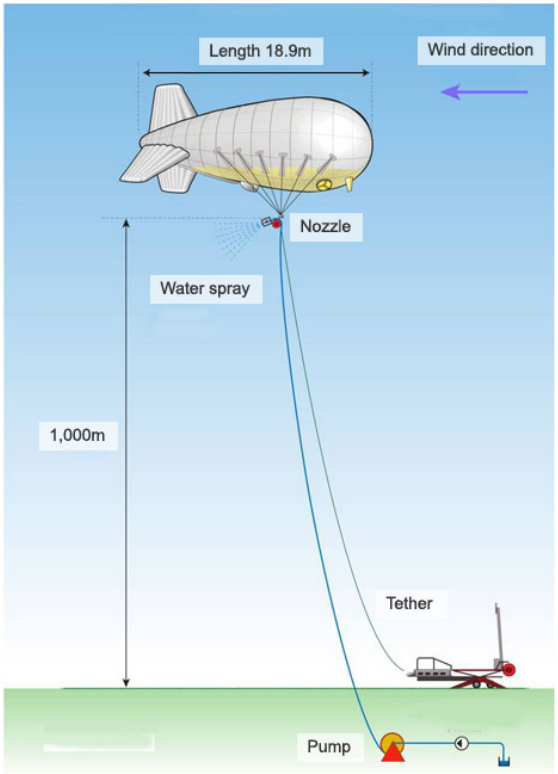
Existing governance

General guidelines from the UN CBD

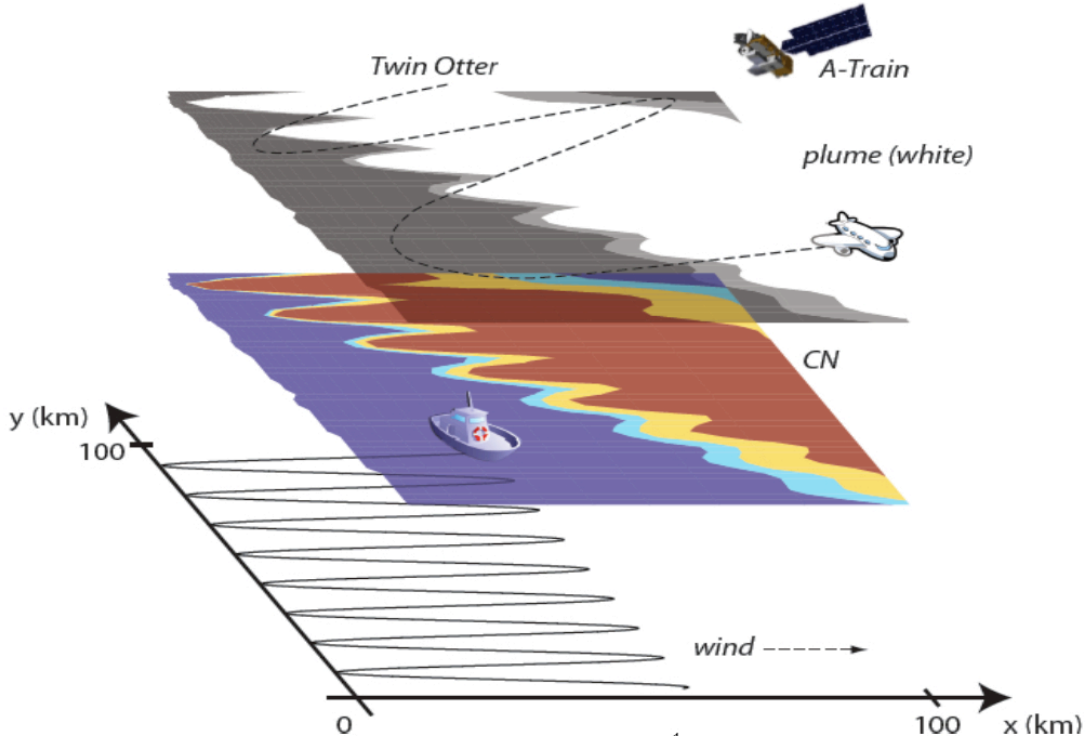
General national governance for scientific research

Lack of SRM - specific governance measures

Governance test cases



The SPICE balloon test



E-PEACE experiment

Possible risks

Physical risks

- chemical release
- changes to radiative forcing

Socio-political risks

- moral hazard
- ‘slippery slope’
- development pathways

Should outdoors research proceed?

Calls for a moratorium until there is specific national or international governance in place:

Robock (2012)
• guard against the physical risks of larger experiments

Hamilton (2013)
• prevent a rush towards geoengineering
• counterbalance an anticipated geoengineering lobby

Schäfer et al (2013)
• international governance needed before research to ensure transparency and environmental protection
• encourage international cooperation
• win public support for research

Should outdoors research proceed?

Morgan et al (2013)
• Not doing the research is risky
• Main concerns are physical risks from larger experiments
• An ‘allowed zone’ would help

Victor et al (2013)
• Risks that we ‘overgovern’ and don’t do any of the science
• Also suggests an allowed zone

Keith and Parson (2013)
• Suggested some values for an allowed zone

Parson and Keith 2013

Near-Term Steps to Break the Deadlock

Accept government authority over geoengineering research

- Scientific self-regulation insufficient to manage risks
- First steps: informal coordination; new laws or treaties not required

Declare moratorium on large-scale geoengineering

- Possible large-scale threshhold: nondetectable global climate signal
- Solar methods: threshold defined by area, time, and size of RF perturbation
- Possible threshold: annual average $\Delta RF > \sim 10^{-2}$ Wm^{-2}

State small-scale threshold below which research may proceed

- Modest new requirements: existing regulations, transparency, no forum-shopping
- Possible threshold: annual average $\Delta RF < \sim 10^{-6}$ Wm^{-2}

Arguments against a moratorium

I argue that a moratorium is probably:

1) unfeasible

2) not desirable

3) not an effective way to manage risks

Moratorium probably not feasible

SRM is indistinguishable from other forms of research

No clear institutional home to impose or enforce moratorium

Seems unlikely politically

Moratorium undesirable

Not necessary – CBD has already approved small scale outdoors research (twice)

Much research is low risk and will help inform decisions about riskier projects

Develop good governance ‘learning by doing’ small and safe research

Cooperation better achieved through joint research and governance projects

Moratorium effective at managing risks?

Discourages researcher honesty about intentions

Questionable effect on moral hazard

Slippery slope may be better combated with a moratorium on larger, not smaller, projects

But note!

Opposing a moratorium
≠
opposing top-down governance

What to do then?

1) Research should proceed – an opportunity to establish good governance

2) Researchers call for top-down governance of their research (eg Keith and Parson, Schäfer et al, Robock)

3) Researchers to pledge to uphold highest standards of governance wherever and whenever they are not already imposed – small steps to where we need to be

4) Best standards to be taken on and agreed nationally and internationally asap (Morgan et al 2013)

Thank you!

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