

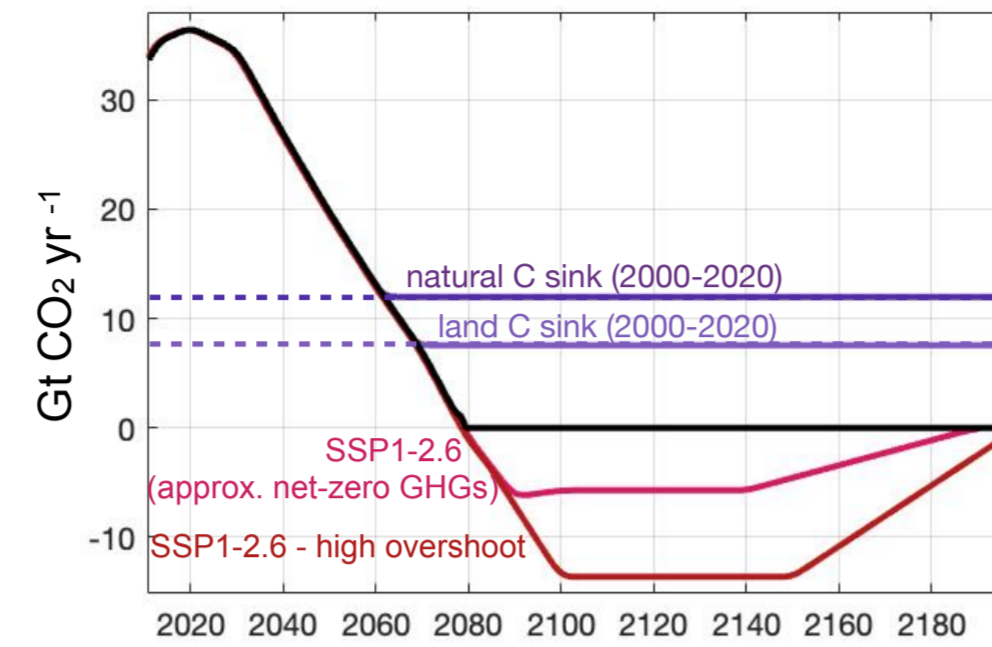


Let's be SMART about climate goals

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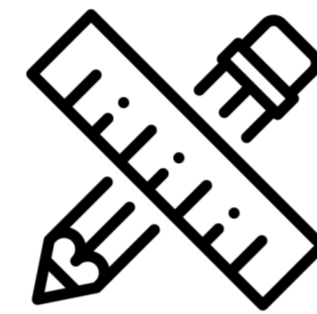
1 Current climate goals are not **specific**

- 60% of declared (or debated) climate goals refer to generic net-zero goals
- the inclusion of natural carbon sinks makes climate goals **not ambitious enough**
- the inclusion of non-CO₂ greenhouse gases makes climate goals **overly ambitious**
- ➔ reliance on net-negative CO₂ & carbon dioxide removal



2 Current climate goals are not **measurable**

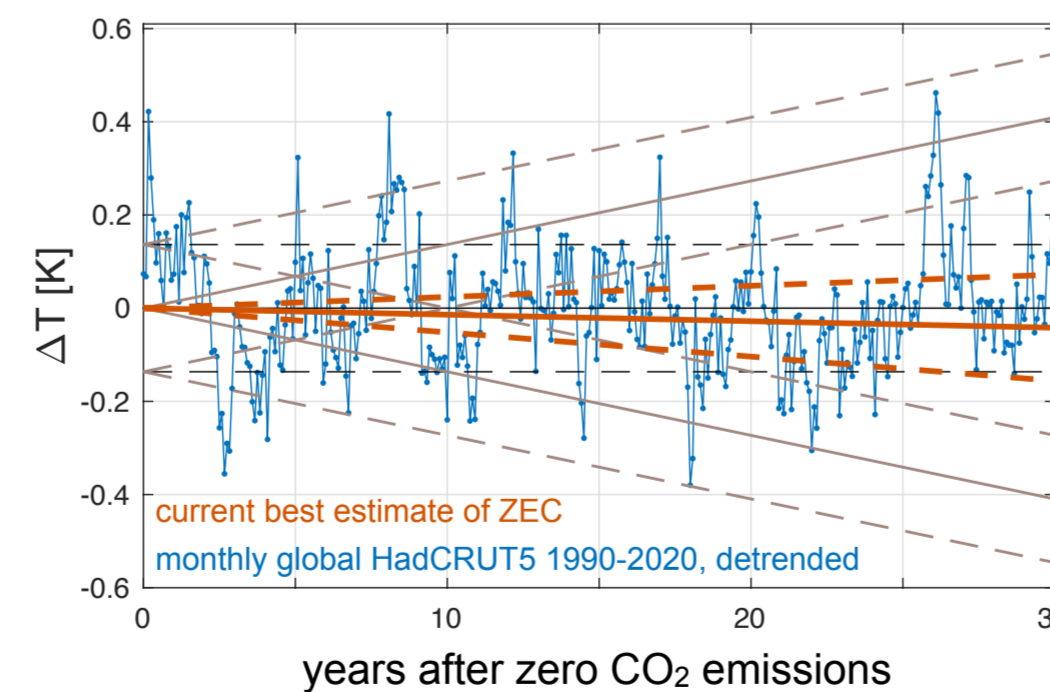
- over 90% of projected carbon dioxide removal until 2030 considers land-based sinks
- ... yet, accounting natural vs anthropogenic terrestrial carbon fluxes is non-trivial if not impossible based on observations (e.g., [Gidden et al., 2023](#))
- most national long-term strategies rely on ecosystem-based carbon dioxide removal ([Thoni et al., 2020](#))
- ... yet, monitoring and evaluation of carbon drawdown for non-technological, ecosystem-based carbon dioxide removal remains a challenge (e.g., [Mengis et al., 2023](#))



3 Current climate goals are not **relevant**

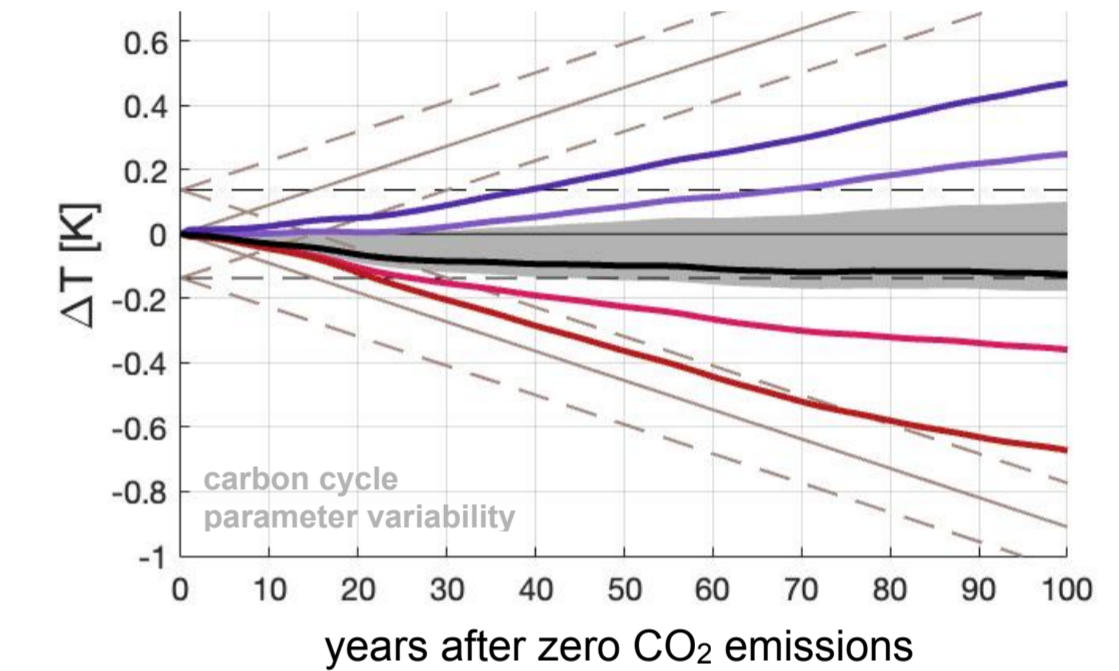
- temperature trends <0.09 °C / decade are likely undetectable over a 30-year observational period
- e.g.: It is unlikely that we will be able to detect the **zero emissions commitment (ZEC)** against **natural climate variability**
- the corresponding detectable annual emissions rate would be 20 Gt CO₂ yr⁻¹

(0.09 °C / decade => 200 Gt CO₂ / decade, with TRCE = 0.45 °C / 1000 Gt CO₂)



4 Prioritising **SMART** climate goals

- global climate action aims to halt anthropogenic climate change
- I suggest to prioritise net-zero fossil, geogenic and industry (FFI) CO₂ emissions goals for national climate action



Net-zero FFI CO₂ by 2050:

- ✓ **Specific**, since it outlines responsible actors
- ✓ **Measurable**, since balance between emissions and removal could be assessed at point sources/sinks
- ✓ **Achievable**, since it focuses mitigation efforts & lowers CDR requirements
- ✓ **Relevant**, since it is very likely to decelerate climate change below detectable levels
- ✓ **Time-bound**, that is equal in ambition than previously proposed goals

5 ...while being transparent about other incentives for system change

System change	Climatic co-benefit	Other co-benefits
sustainable agricultural practices	avoidance of non-CO ₂ GHGs	improved food quality, less soil impacts from fertiliser usage, ...
restoring/maintaining ecosystems (including forests)	avoidance of LULUCF emissions & enabling natural carbon sinks	biodiversity, intrinsic value of ecosystem, recreational usage, education & science, ...
dietary changes	avoidance of non-CO ₂ GHGs & LULUCF	freeing up area for other usages, animal welfare, health benefits, ...



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<https://footprints.carbondioxide-removal.eu>

