



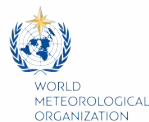
Safe Landing Climates

43rd Session of the WCRP Joint Scientific Committee

Gabi Hegerl w Steven Sherwood and team

June/July 2022

Online



International
Science Council



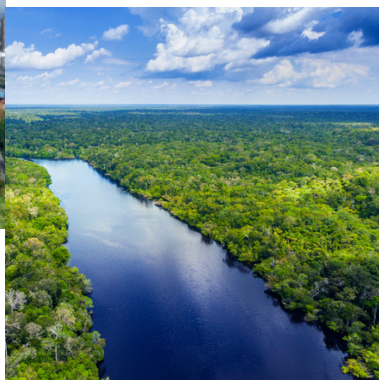
World Climate Research Programme

Progress, achievements and future plans

- In the last year Safe Landing Climates has focused on building its research community
- Five SLC Working Groups with 28 new WG members were established in late 2021 and the groups are now refining their goals and future activities



Perturbed
Carbon



Sea Level
Rise



Understanding
High-Risk
Events



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WCRP
Safe Landing
Pathways
World Climate Research Programme

Understanding High-Risk Events

Goals:

- Identify and characterise risks from low-probability high-impact climate change events and facilitate their incorporation into future projections, cost/benefit analysis and adaptation planning
- Key interest areas: compound extreme events, cascading hazards

Current Activities:

- Tipping Elements, Irreversibility and Abrupt Change Discussion Series (Sept 2021 – Dec. 2022) <https://tippingpointsseries.confetti.events>
- Involved in multiple workshops (Tipping Points, Exeter Sept 2022; ISSI Workshop, Bern Oct 2022)
- Mini symposium with members and affiliates held
- Presently identifying near-term targets of opportunity (e.g. CMIP7 input) and working with other themes on risks of large carbon release, ice shelf/sheet collapse, biome collapse.



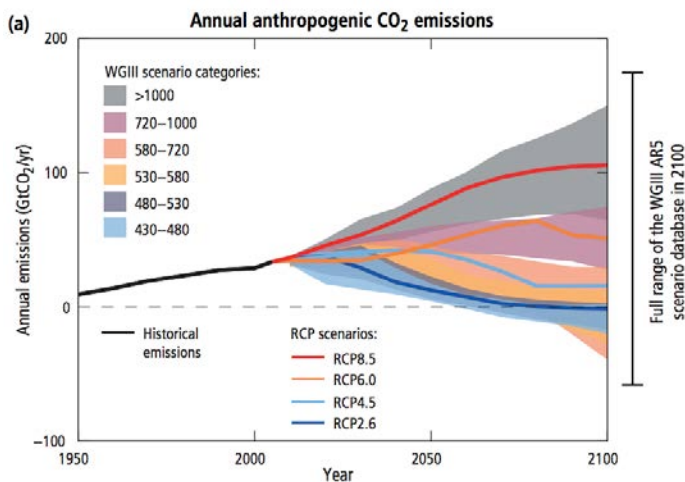
Perturbed Carbon

Goals:

- Understanding the implications of changes in greenhouse gases in the atmosphere, including due to rapid change 'surprises' and the effects of carbon dioxide removal (CDR) and assessing the possible contribution of CH₄ and N₂O, etc.
- Key interest areas: Transient Climate Response to Cumulative Emissions (TCRE), Overshoot, and methane mitigation

Planned Activities:

- Proposed workshop on TCRE and remaining carbon budget in 2023; possibly community assessment
- Series of seminars on overshoot scenarios in September 2022
- Considering methane and mitigation



Water Resources

Goals:

- Understanding how uncertainties in the long-term redistribution of water in land-based natural systems or reservoirs, their resilience and vulnerabilities, and impacts of changes to these systems
- Key interest areas: Impacts of i) global tipping points (e.g., AMOC weakening) and irreversibilities, ii) Arctic-tropics teleconnections, iii) changes in the diurnal cycle on long-term pathways of terrestrial water resources

Planned Activities:

- 2023: Potential workshop focusing on the global water cycle stability mechanisms - including paleoclimate perspectives and native peoples knowledge



Sea Level Rise

Goals:

- Understanding how a safe landing climate can be attained in coastal areas and islands/atolls that are facing the impacts of sea level rise and increased storm surge, cyclones etc.
- Key interest areas: identifying 'signposts' that can be used by practitioners to identify safe landings and improving predictions and better constraining uncertainties

Planned Activities:

- Involved in the WCRP GC Sea Level Conference in July 2022
- Will plan follow up activities in late 2022, early 2023



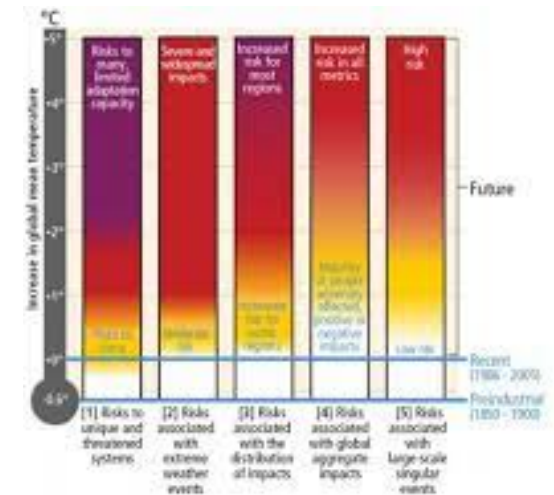
Safe Landing Pathways

Goals:

- Understanding and constraining individual risks, and assigning overall levels of risk to different potential future pathways
- Consideration of adaptation and resilience strategies across communities and ecosystems, and the impact of these and mitigation actions on SDGs, both regionally and globally

Planned Activities:

- Continuing outreach at upcoming community meetings (e.g., Scenarios Forum, SOLAS, Fall AGU, etc.).
- Engaging community through leadership in sessions/workshops (SOLAS, Workshop in 2023 on climate “gaming” approaches)
- Discussion series on future adaptation and mitigation pathways starting in September



Emerging issues

- Achieving good regional diversity remains a challenge
- Many of the WGs would like to organize workshops and webinar/discussion series, so we are looking at how to consolidate these (i.e., one Safe Landing Climates Discussion Series, combining workshops where natural links exist, or seeking external funding)
- Engagement with SLC affiliate members is developing, and will be strengthened in workshops and discussion series. Those will also strengthen engagement across WCRP and with partners, but we will have to work actively to ensure that this is the case