

Climate Change Adaptation – From Projections to Practice

BC Community Forests
Association Conference
June 12, 2024

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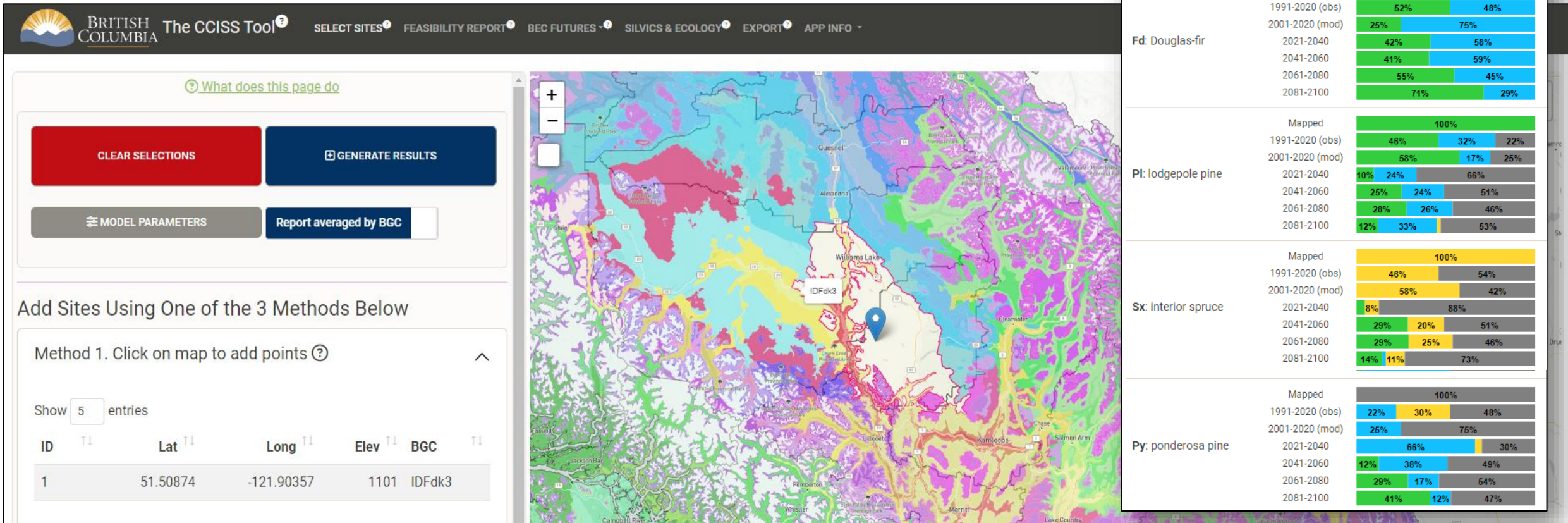
Dr. Colin Mahony
Team Lead, Research Climatologist

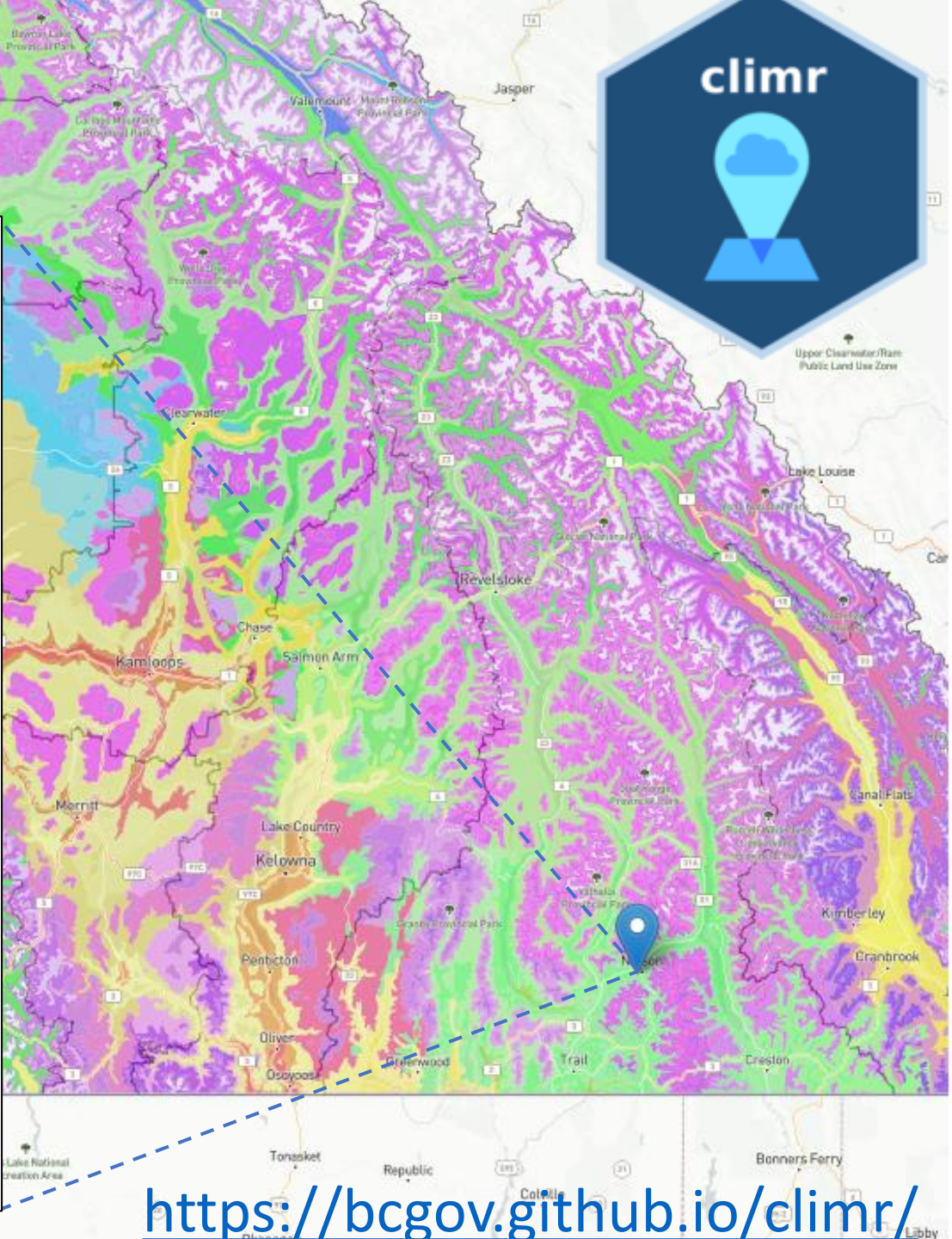
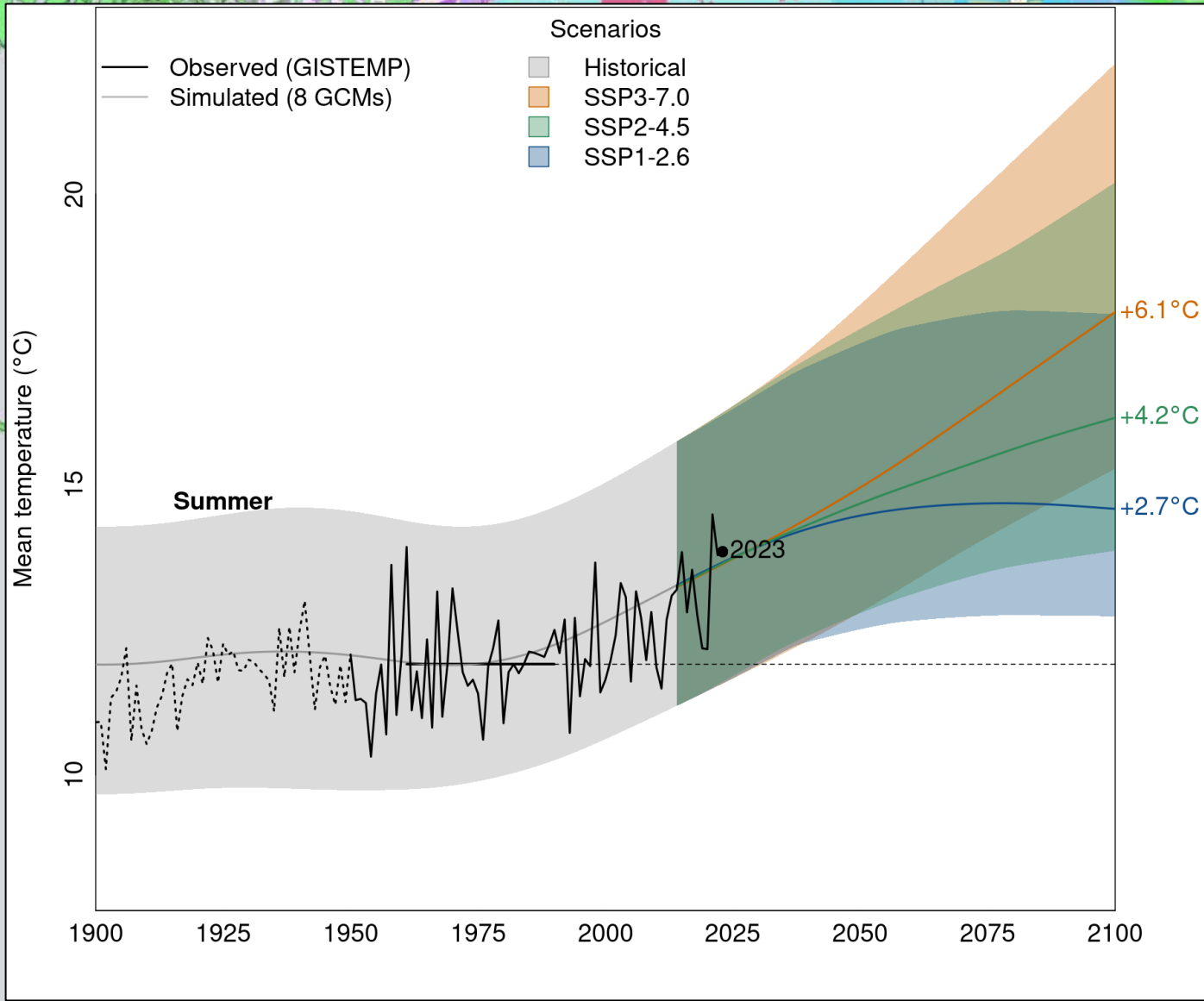
The CCISS Tool - Climate Change Informed Species Selection

The [CCISS tool](#) shows site-specific changes in tree species feasibility at user-selected locations (Fig. 4). It is designed to support operational reforestation decisions and the development of climate-informed reforestation policy.



CCISS tool output indicating the proportion of the climate model ensemble projecting high (green), medium (blue), low (yellow), and nil (grey) reforestation feasibility of tree species for a selected location.





<https://bcgov.github.io/climr/>

BC Climate Anomaly App - https://bcgov-env.shinyapps.io/bc_climate_anomaly/



BRITISH COLUMBIA

[Introduction](#)

[About](#)

[Anomaly App](#)

[Reports](#)

[Feedback & Links](#)

Filter/Selections

Select region

Western North America

(Western North America, BC, Ecoprovince, Watersheds)

Select climate variable

Vapor pressure deficit (vpd)

(Temperature, VPD, Precipitation, RH, Soil moisture)

Select month or season or annual

Summer

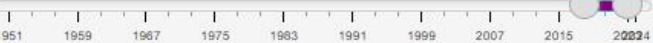
Choose range of years or specific year(s)

Range of years

Specific year(s)

year range

1951 2018 — 2023 2024



Reset

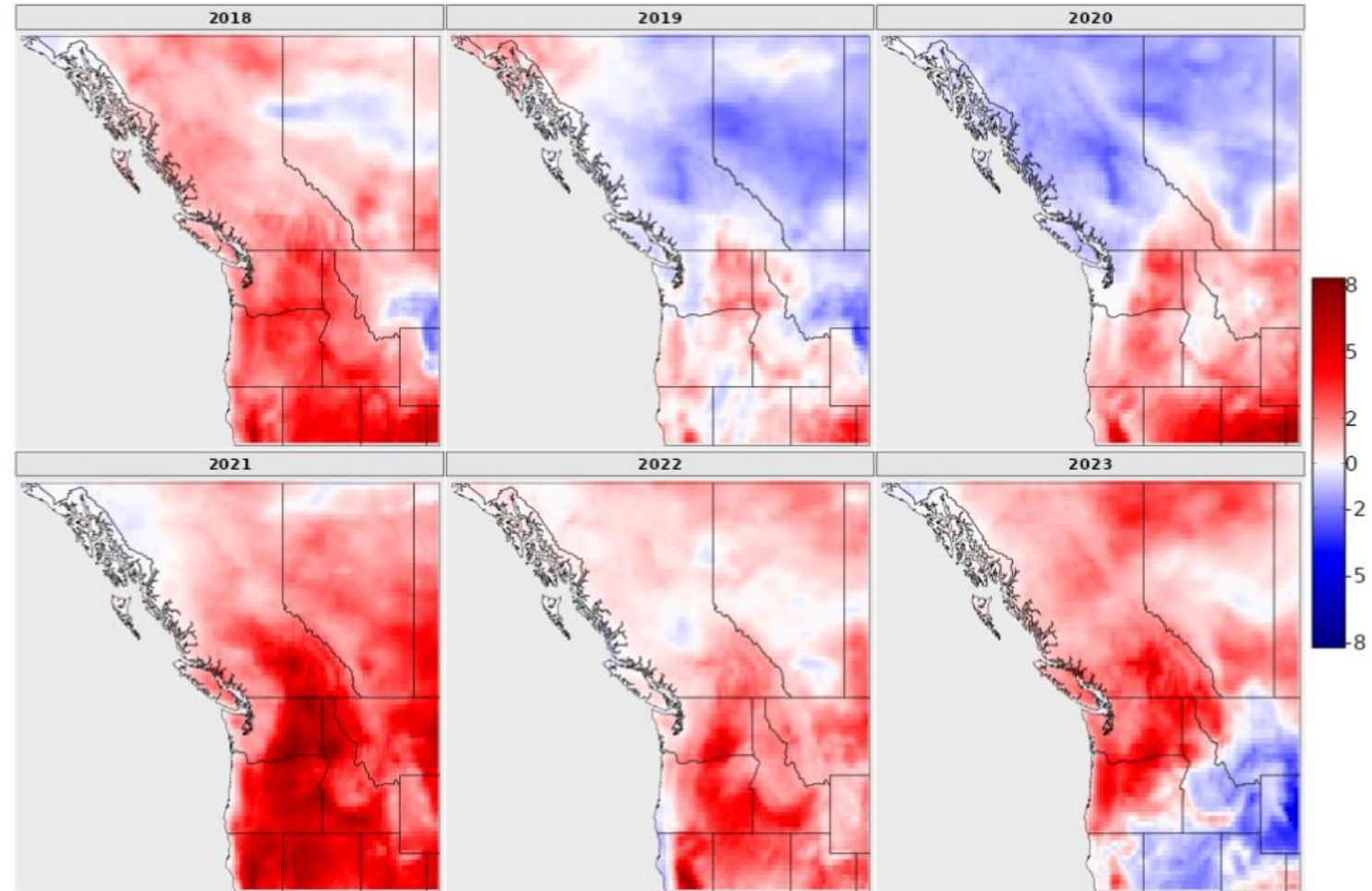
Location Map



Spatial anomaly map

Western North America vapor pressure deficit (VPD) anomaly (kPa): summer

Baseline: 1981-2010



[Download plot](#)

[Download raster data](#)

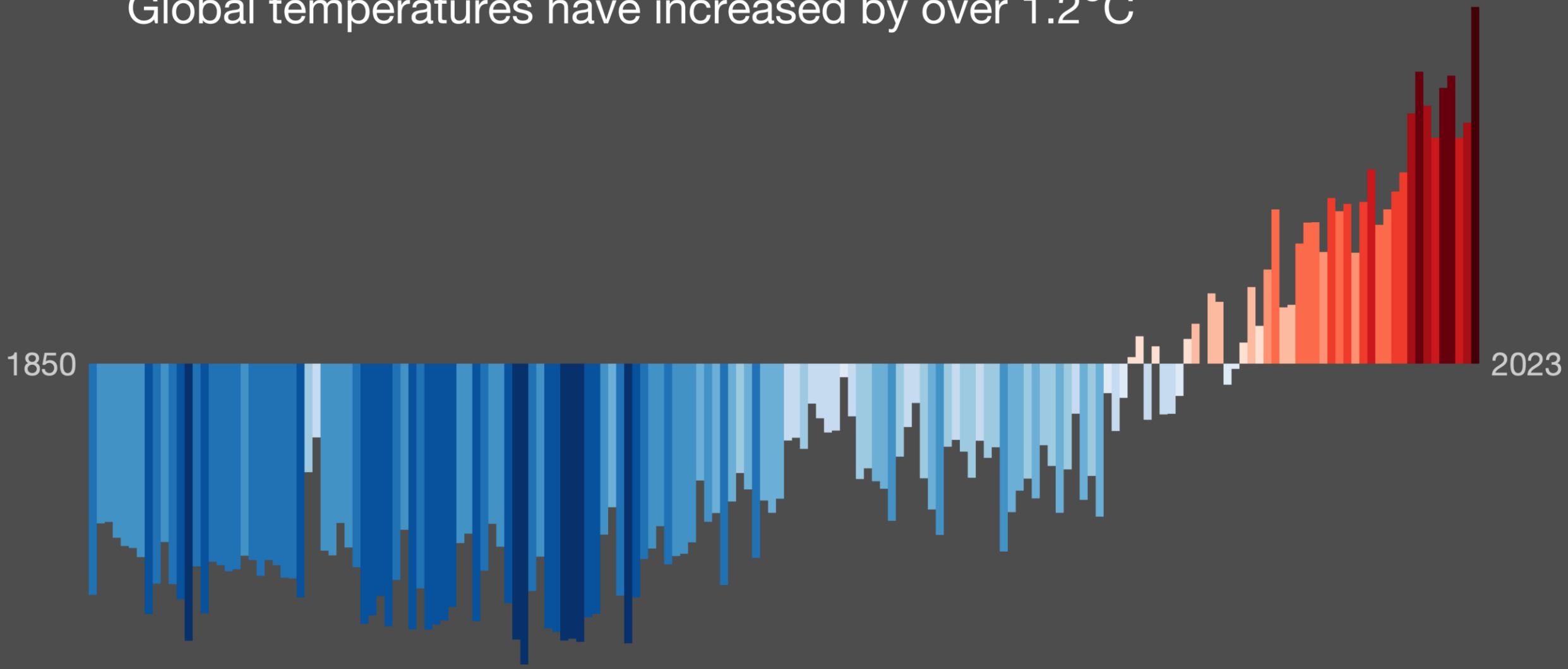
Looking forward 10 years...

**what climate risks are you
concerned about?**

Looking forward 10 years...

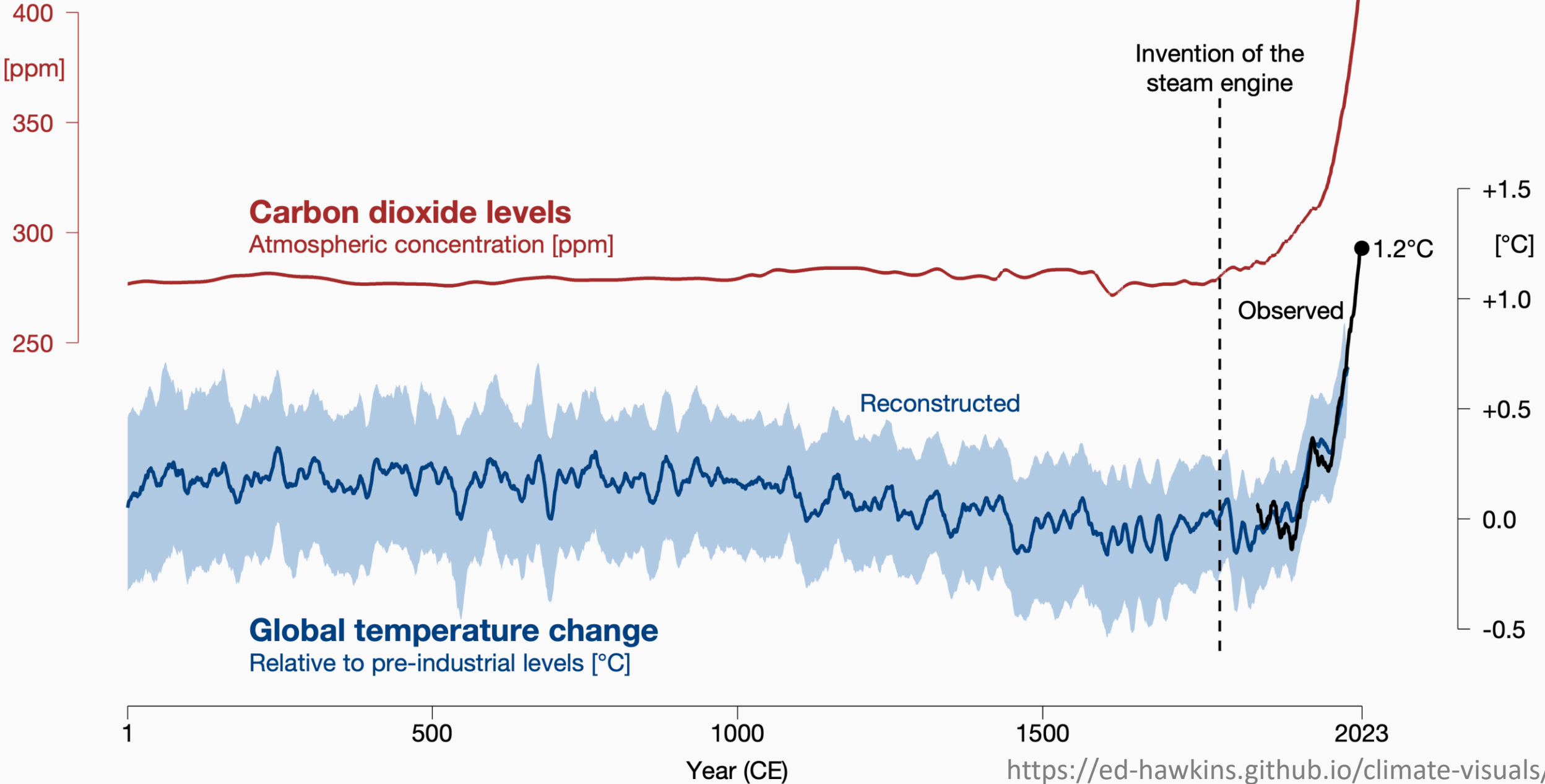
**How could we be more
resilient than today?**

Global temperatures have increased by over 1.2°C



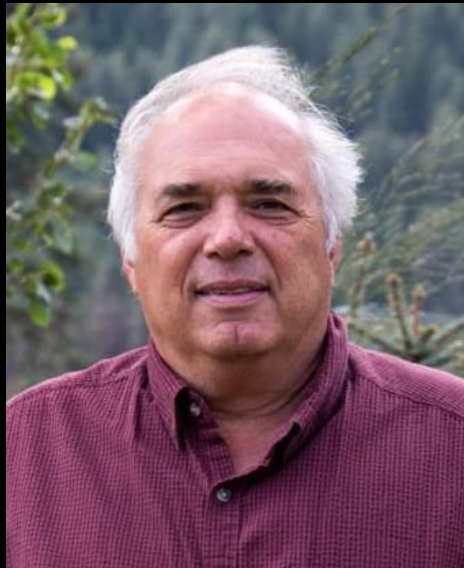
Observed changes in climate over the last 2023 years

Variations in atmospheric carbon dioxide levels and global average temperature

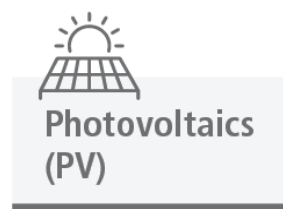


“I’m 60, and I thought climate change was a problem for the next generation. Now, I’m mayor of a town that no longer exists.”

Jan Polderman,
Former
Mayor of
Lytton, BC



Renewable electricity generation is increasingly price-competitive and some sectors are electrifying

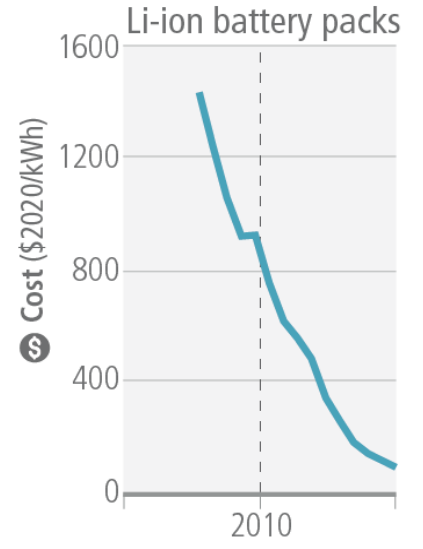
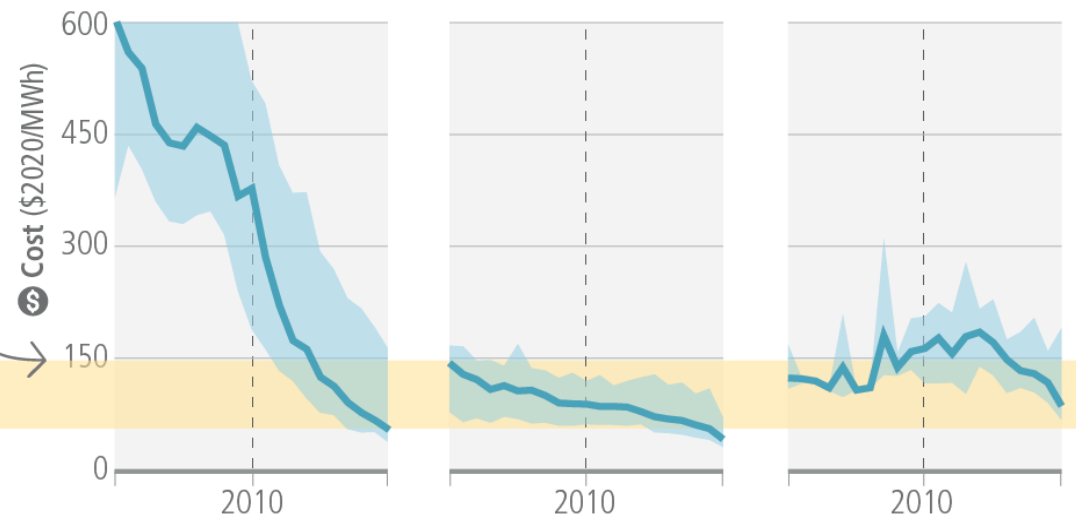


a) Market Cost

Since AR5, the unit costs of some forms of renewable energy and of batteries for passenger EVs have fallen.

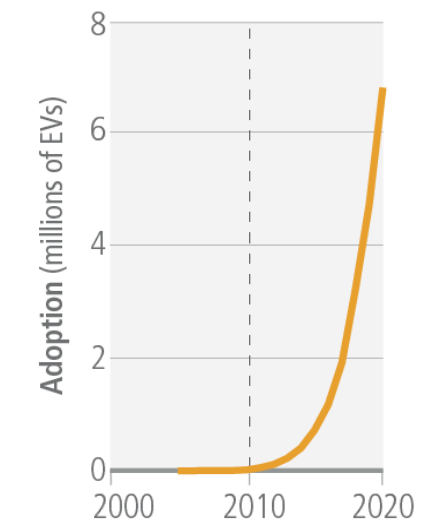
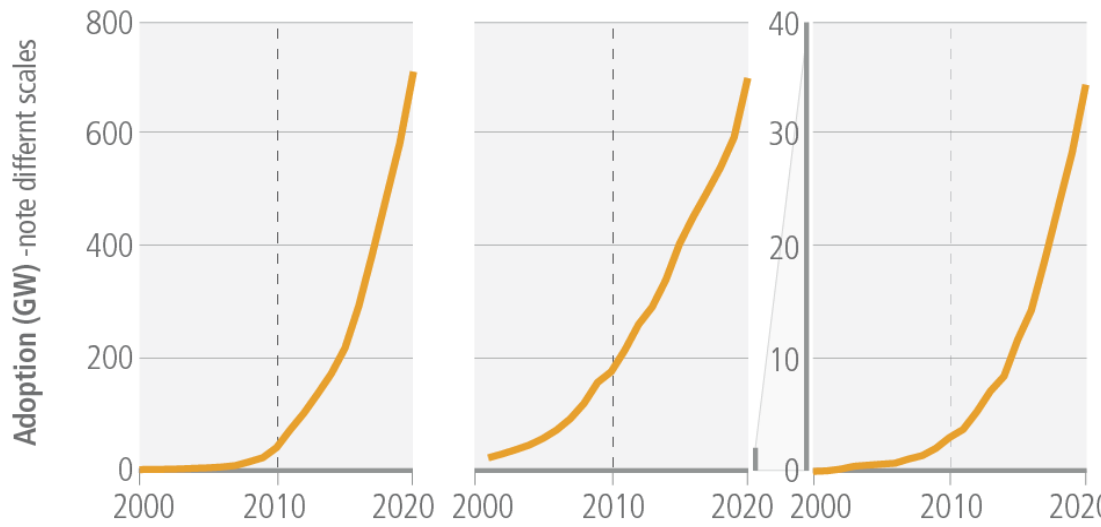
below this point, costs can be less than fossil fuels

Fossil fuel cost (2020)

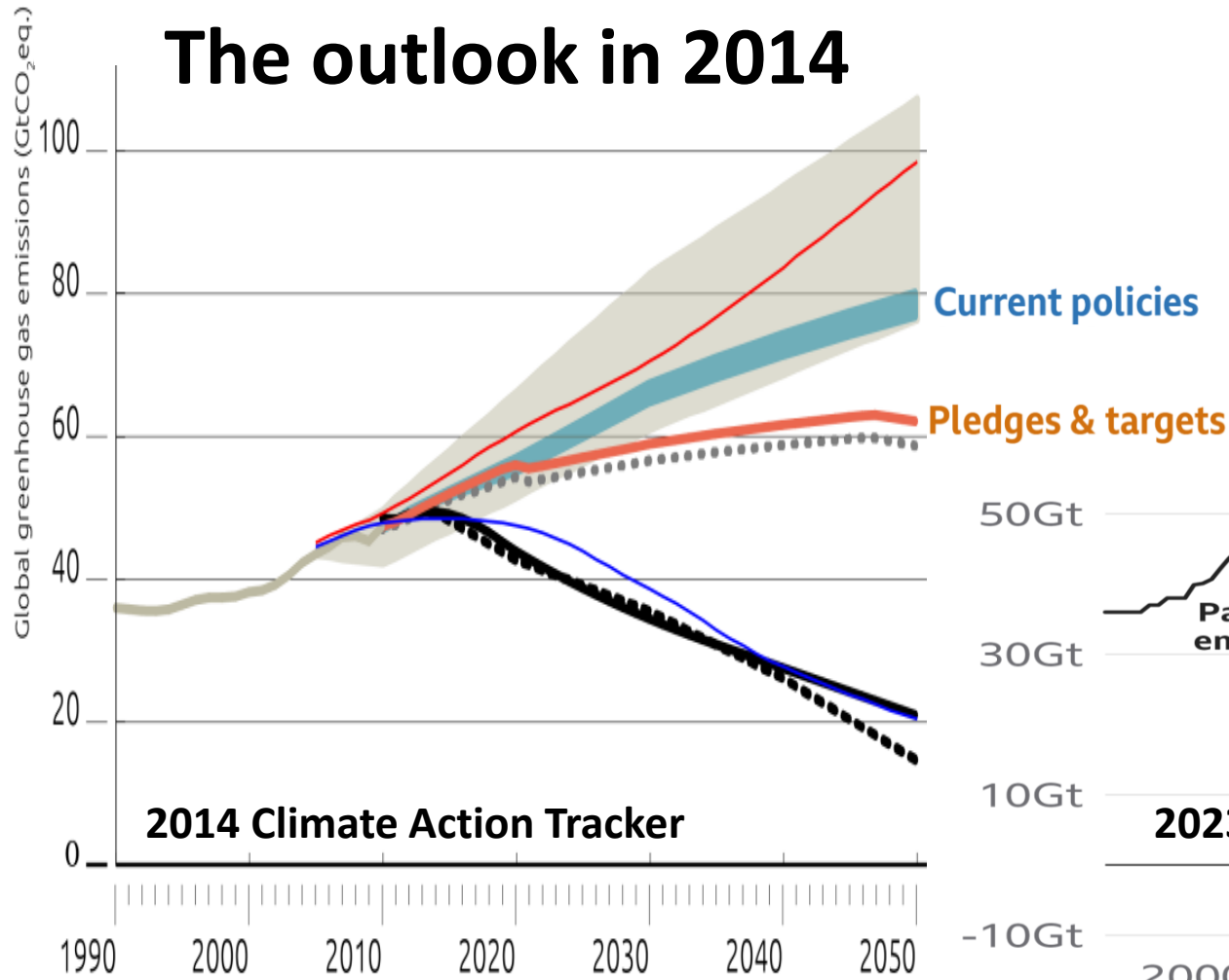


b) Market Adoption

Since AR5, the installed capacity of renewable energies has increased multiple times.



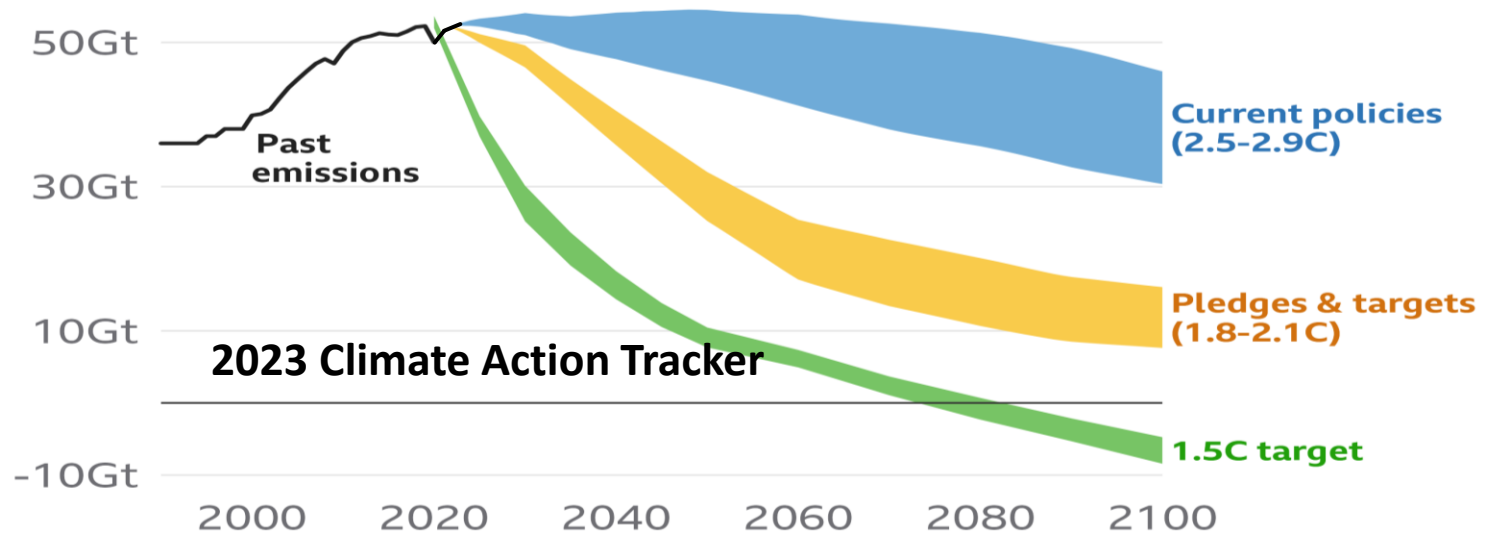
The outlook in 2014



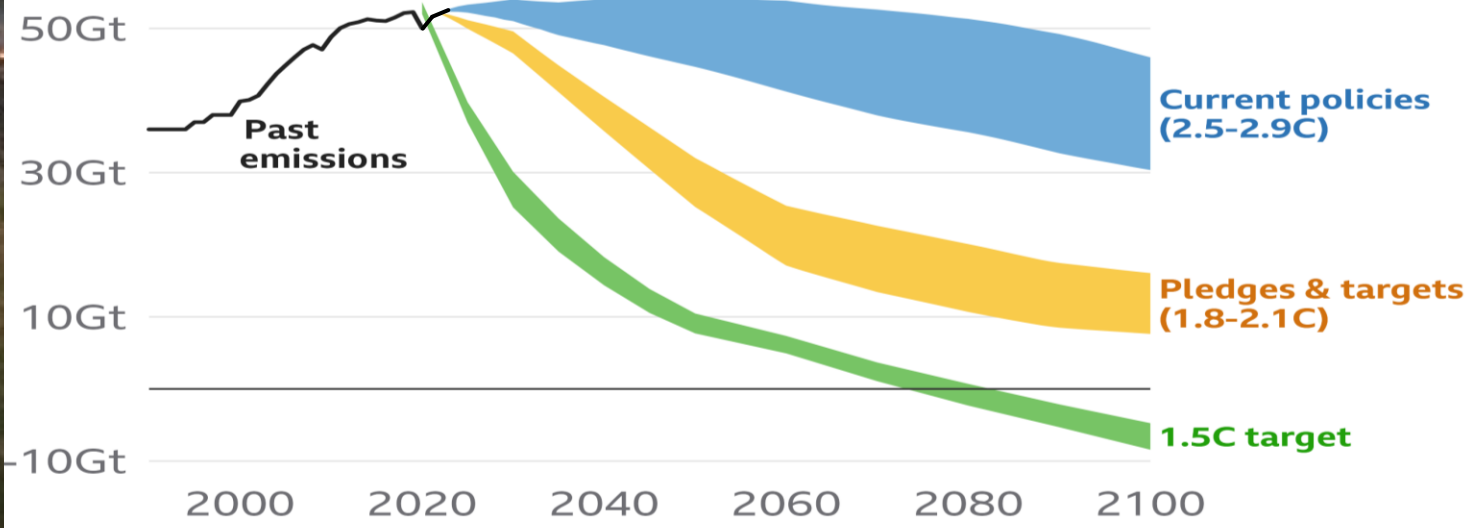
2014 Climate Action Tracker

- Historic emissions
 - Reference range*
 - Pledge pathway (CAT assessment)
 - Likely below 2°C
 - 50% chance below 1.5°C in 2100
 - RCP2.6
 - RCP8.5
 - Action incl. conditional pledges & national policies
 - Current policy projections (CAT assessment)
- © www.climateactiontracker.org/
Ecofys/Climate Analytics/PIK

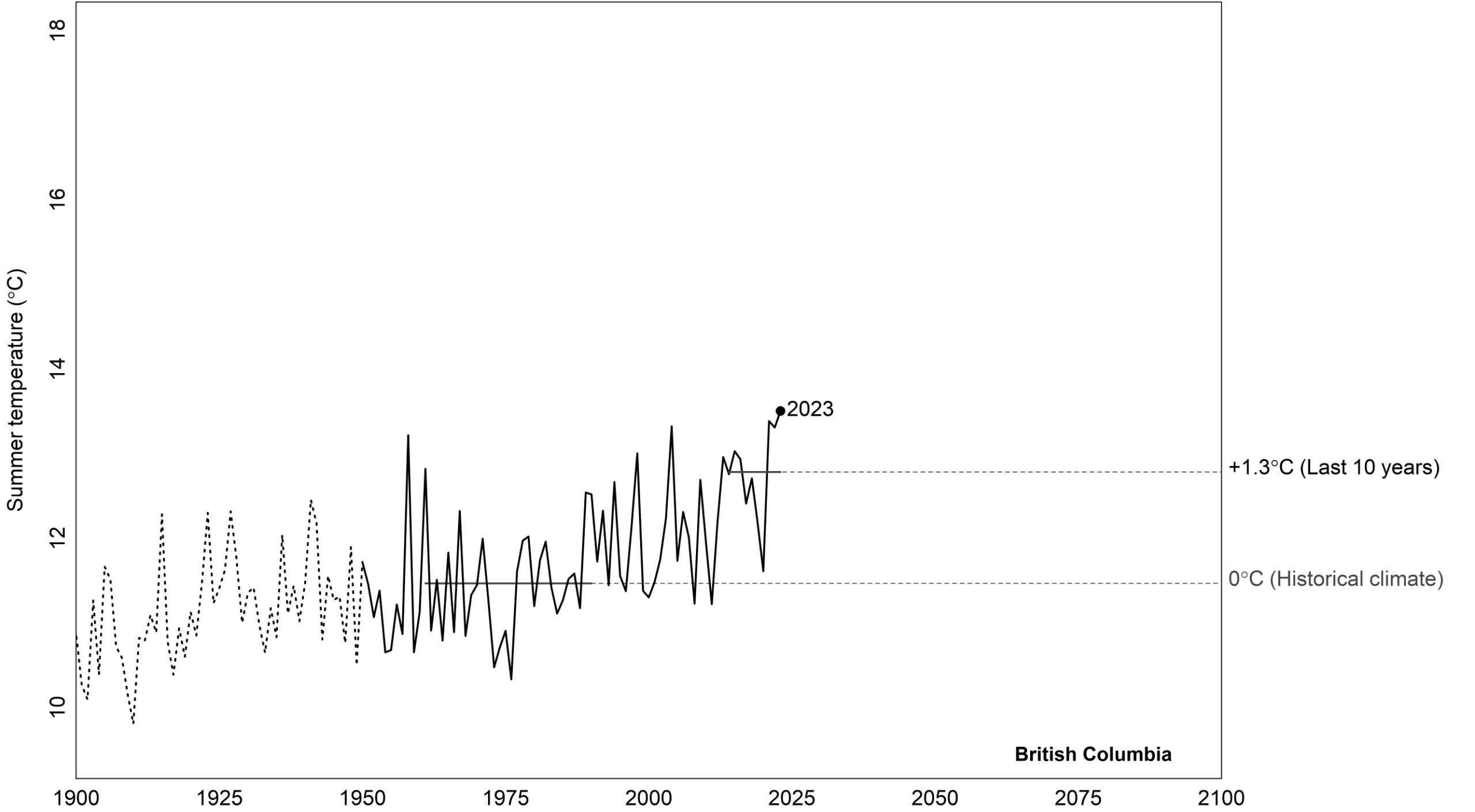
The outlook in 2023

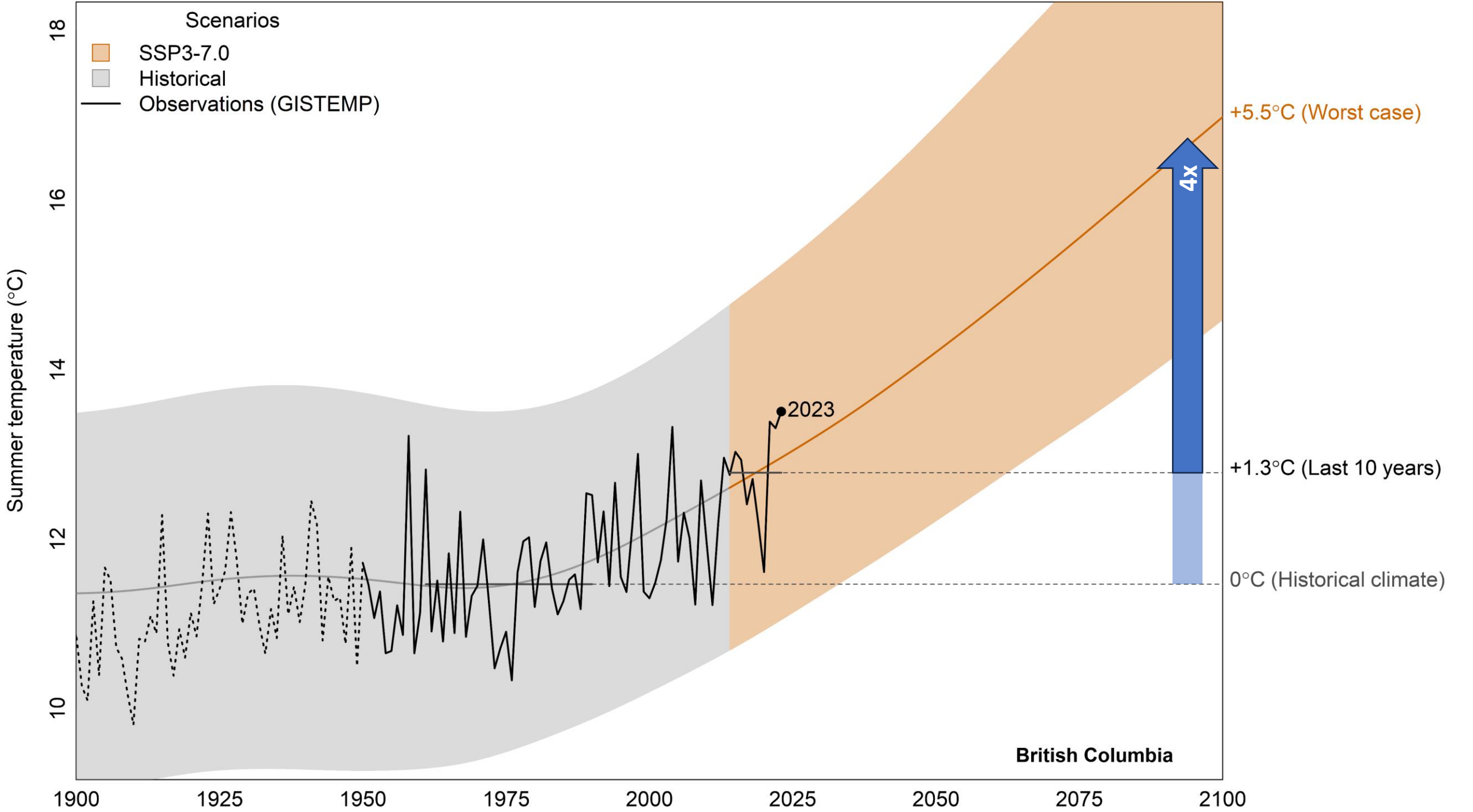


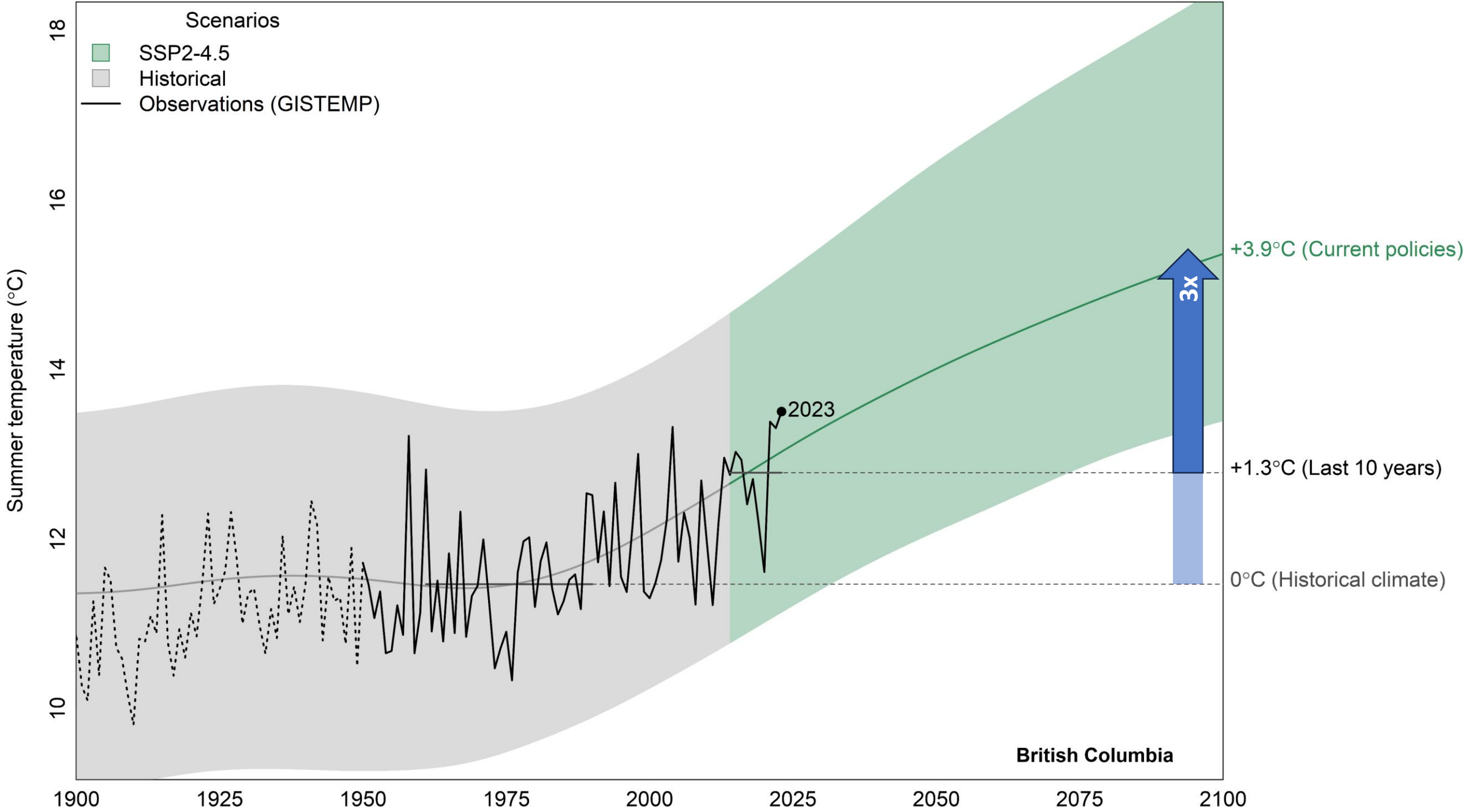
2023 Climate Action Tracker

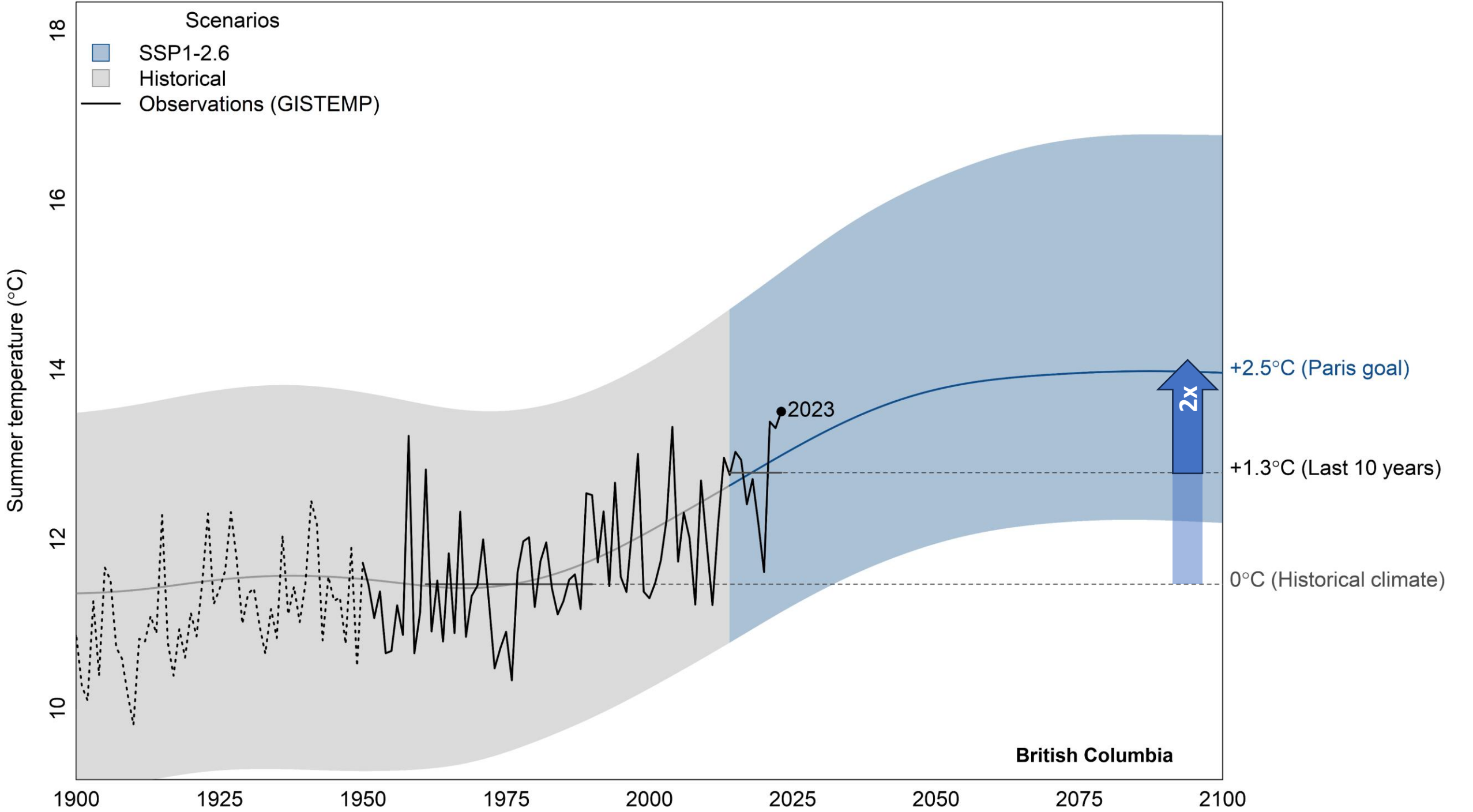


Boehm et al. 2023. State of Climate Action 2023.
<https://doi.org/10.46830/wriprt.23.00010>.





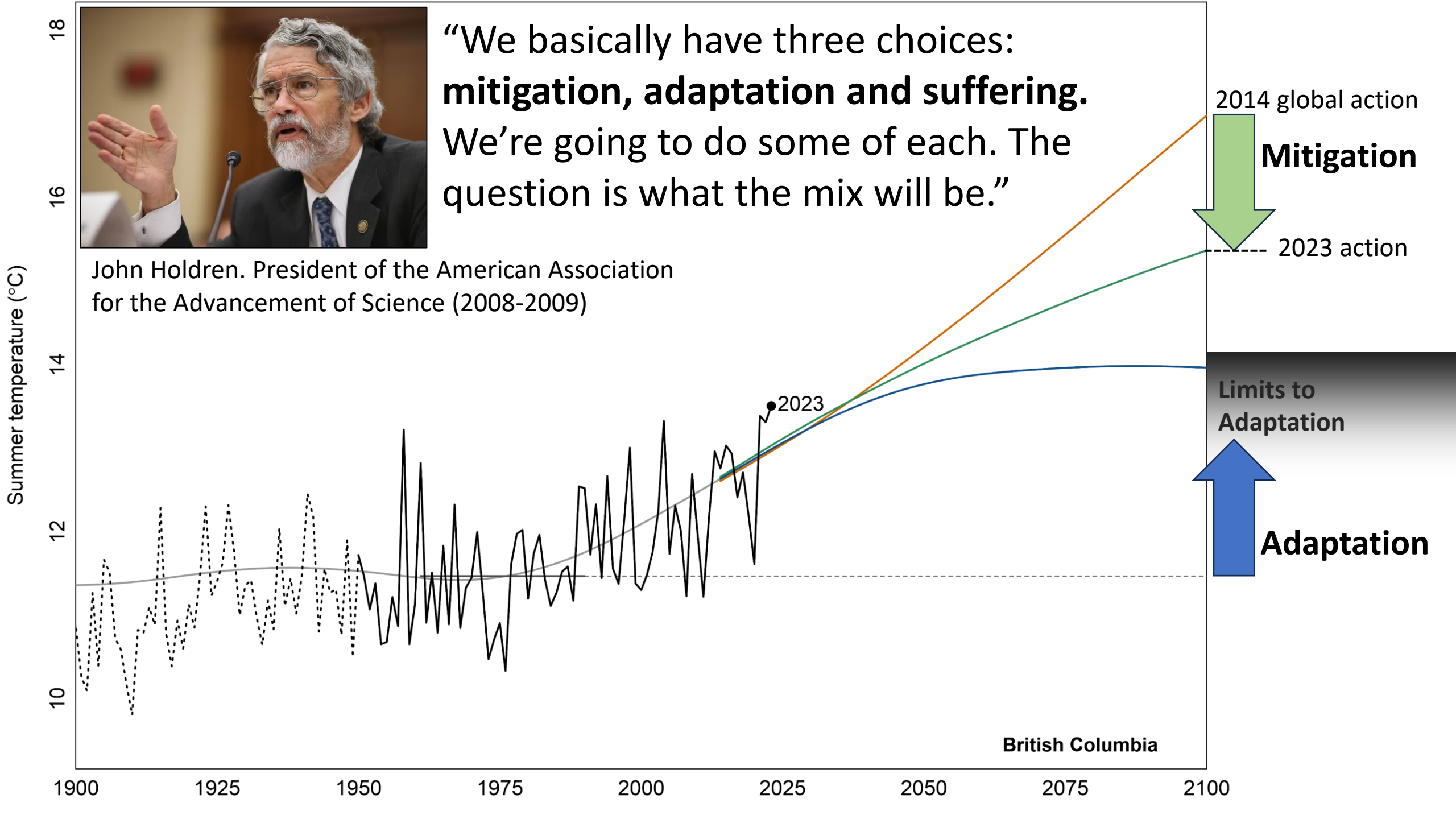






“We basically have three choices: **mitigation, adaptation and suffering.** We’re going to do some of each. The question is what the mix will be.”

John Holdren. President of the American Association for the Advancement of Science (2008-2009)

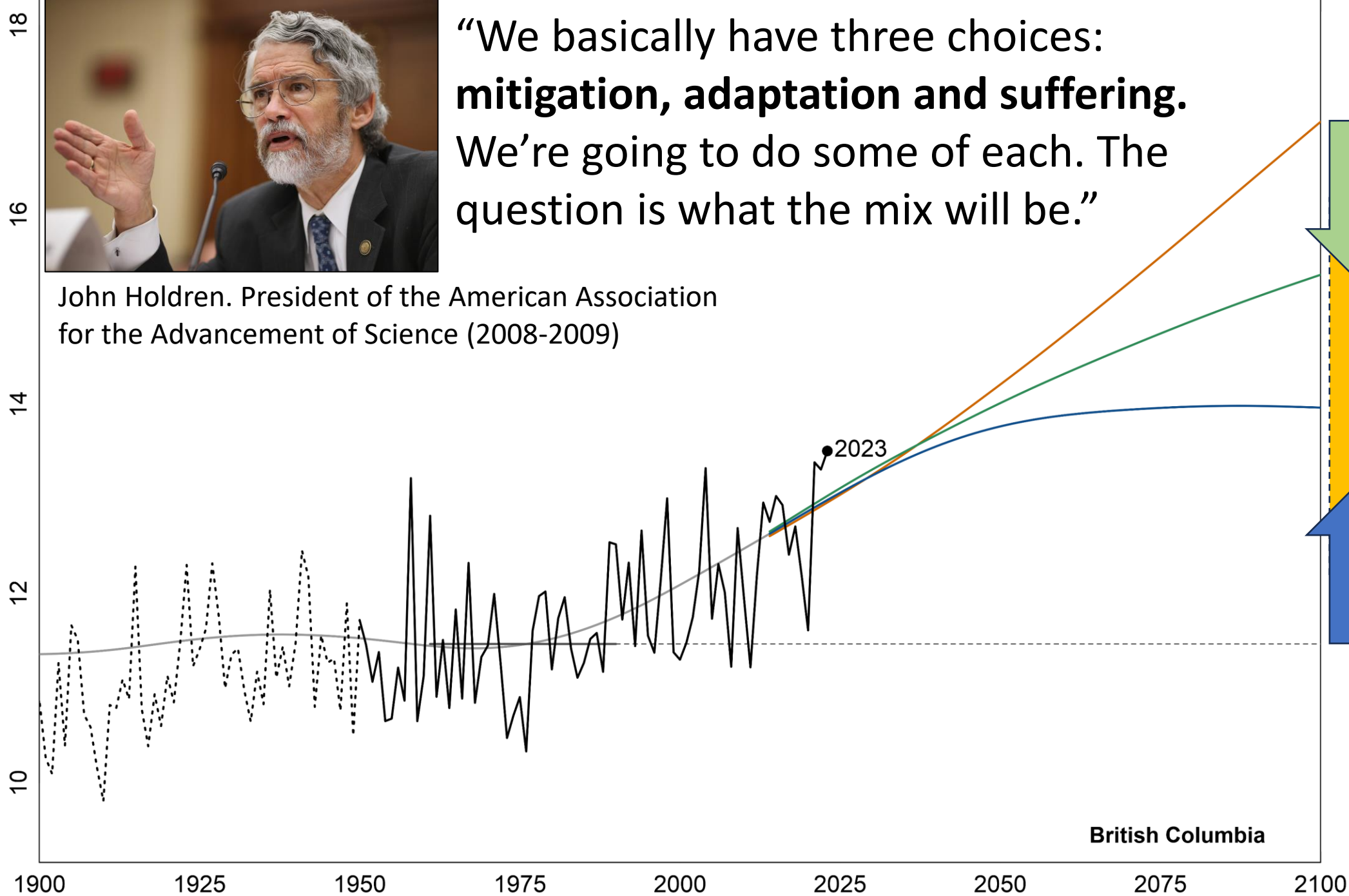




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Summer temperature (°C)

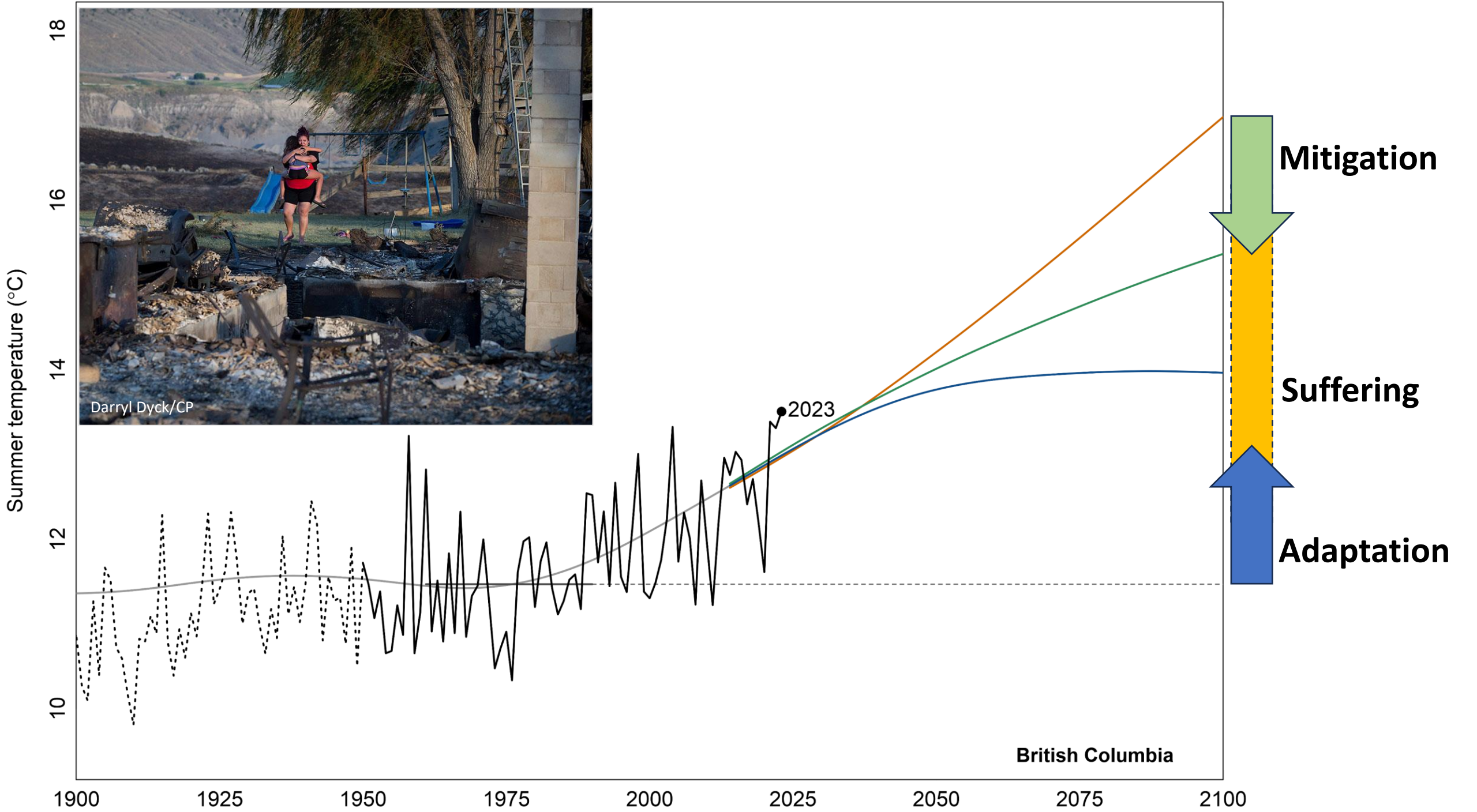


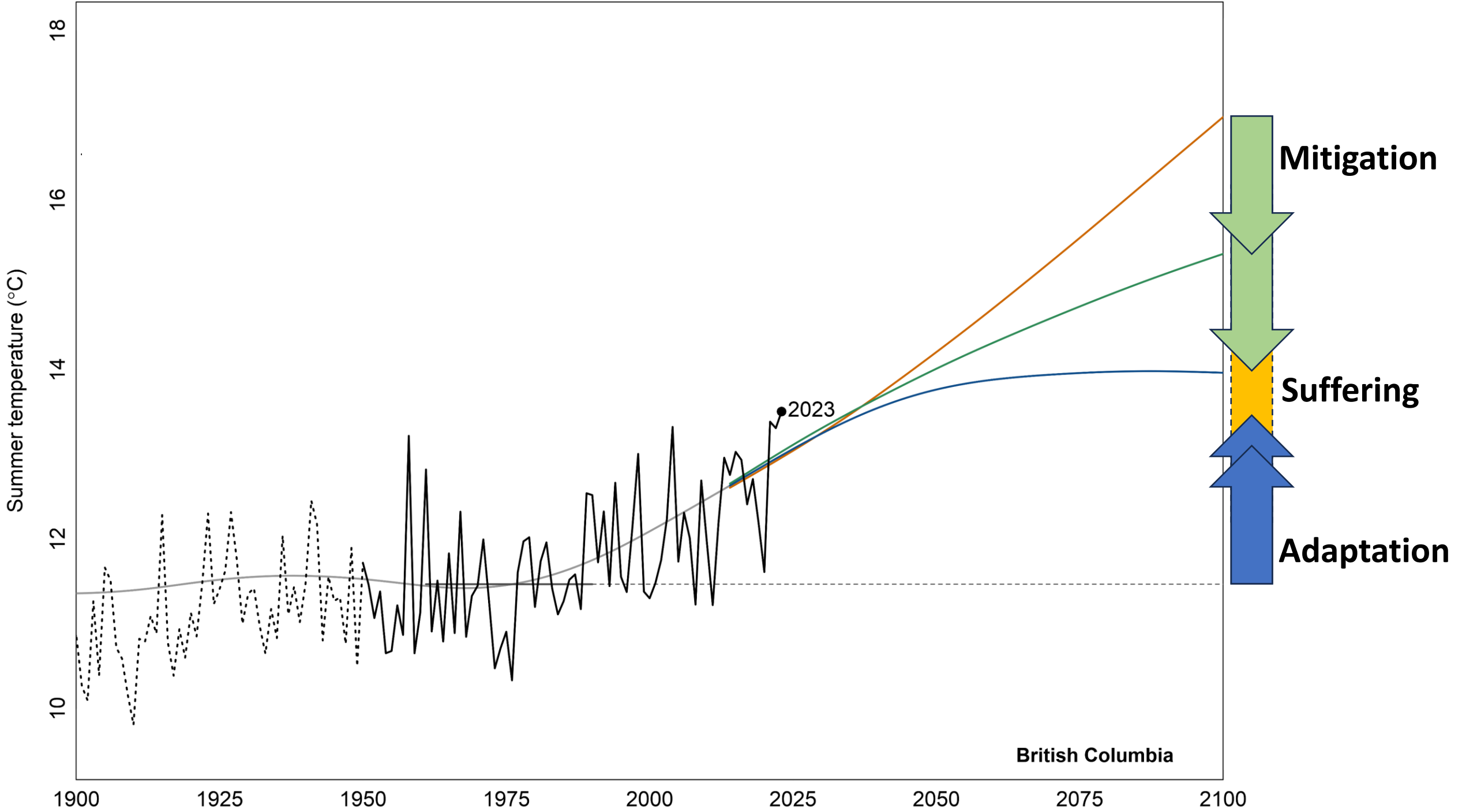
British Columbia

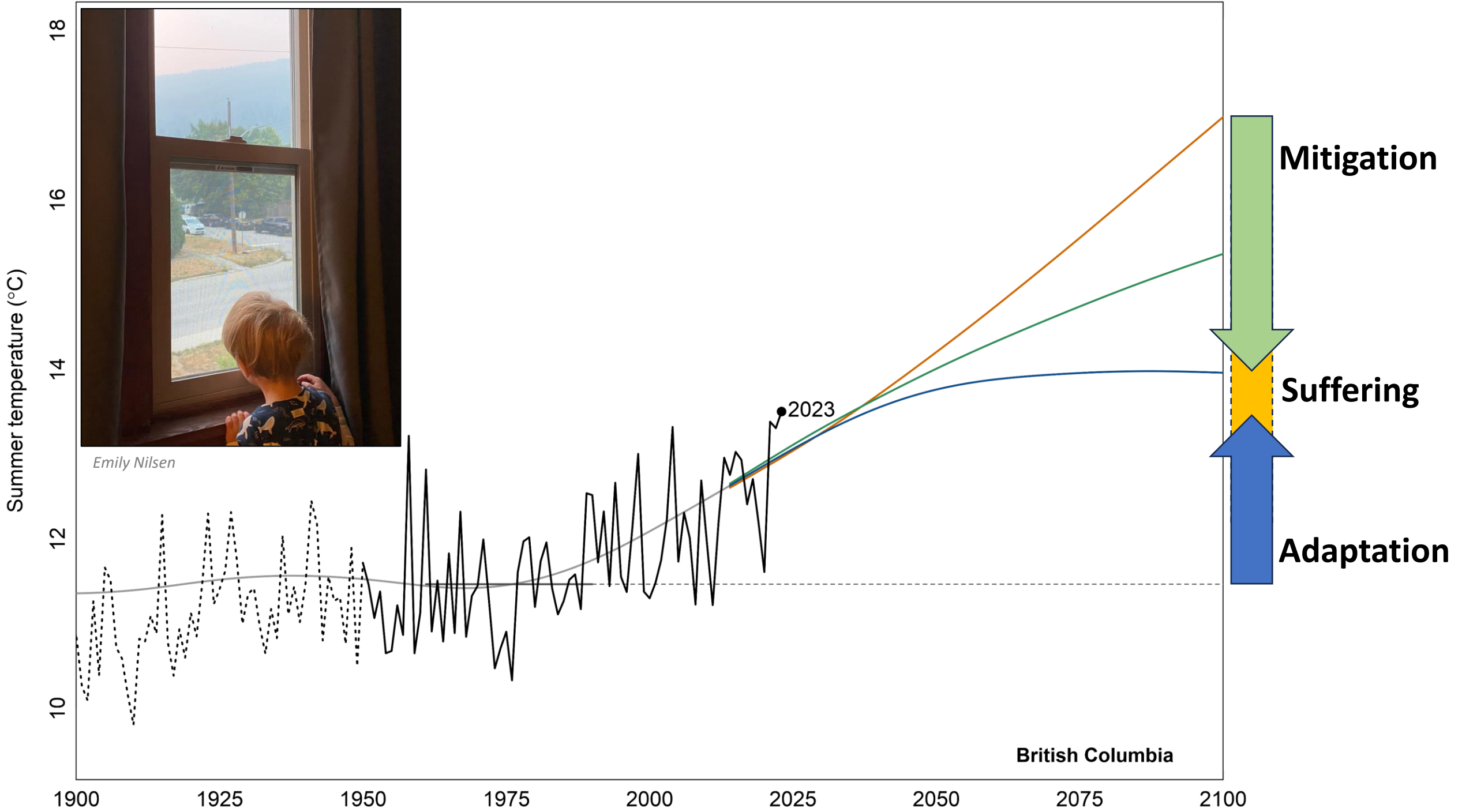
Mitigation

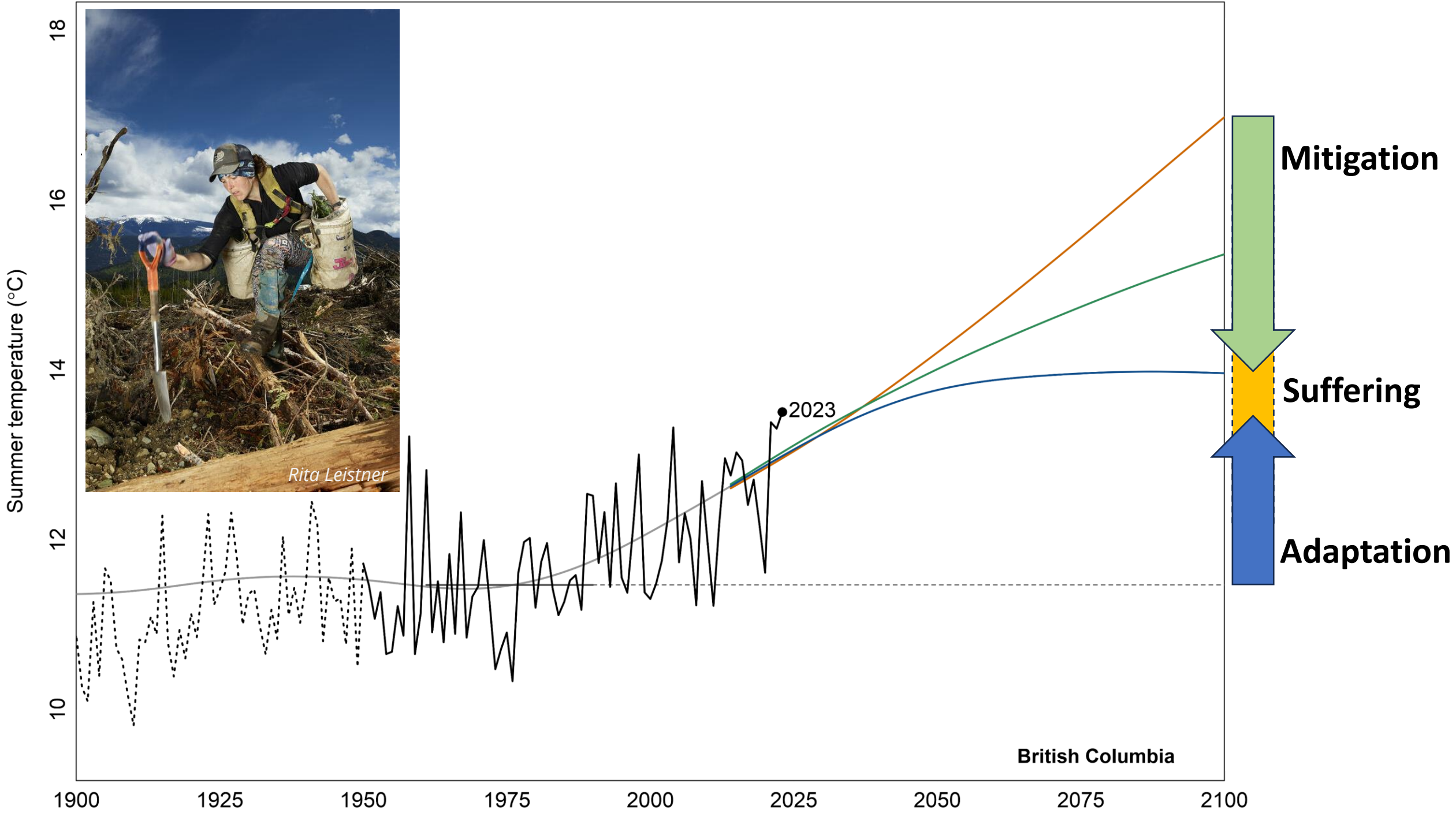
Suffering

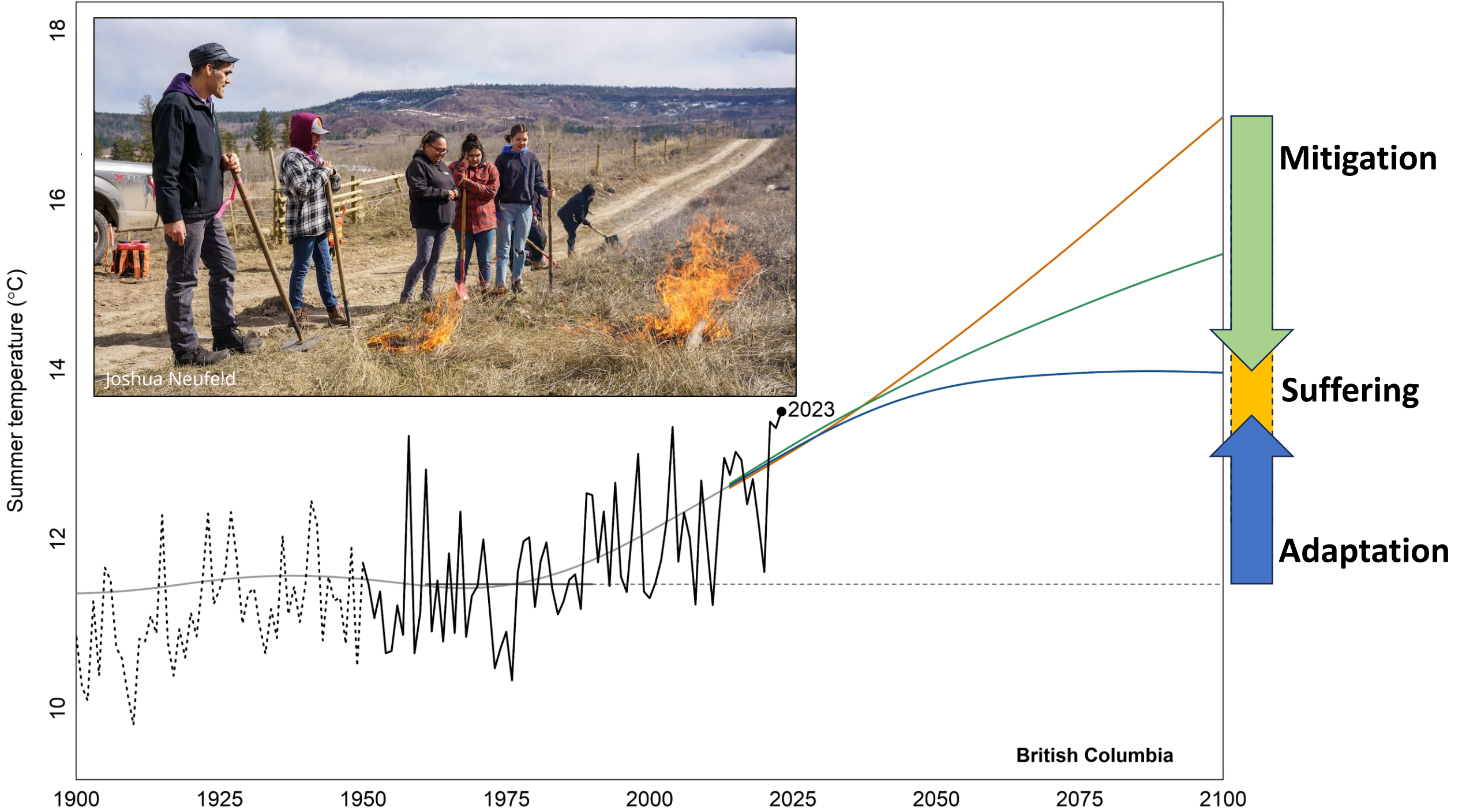
Adaptation











Overcoming barriers to adaptation

Barriers

Solutions

Failures of imagination



Build storylines of the future

Tokenism



Respond proportional to the risks

Technocracy



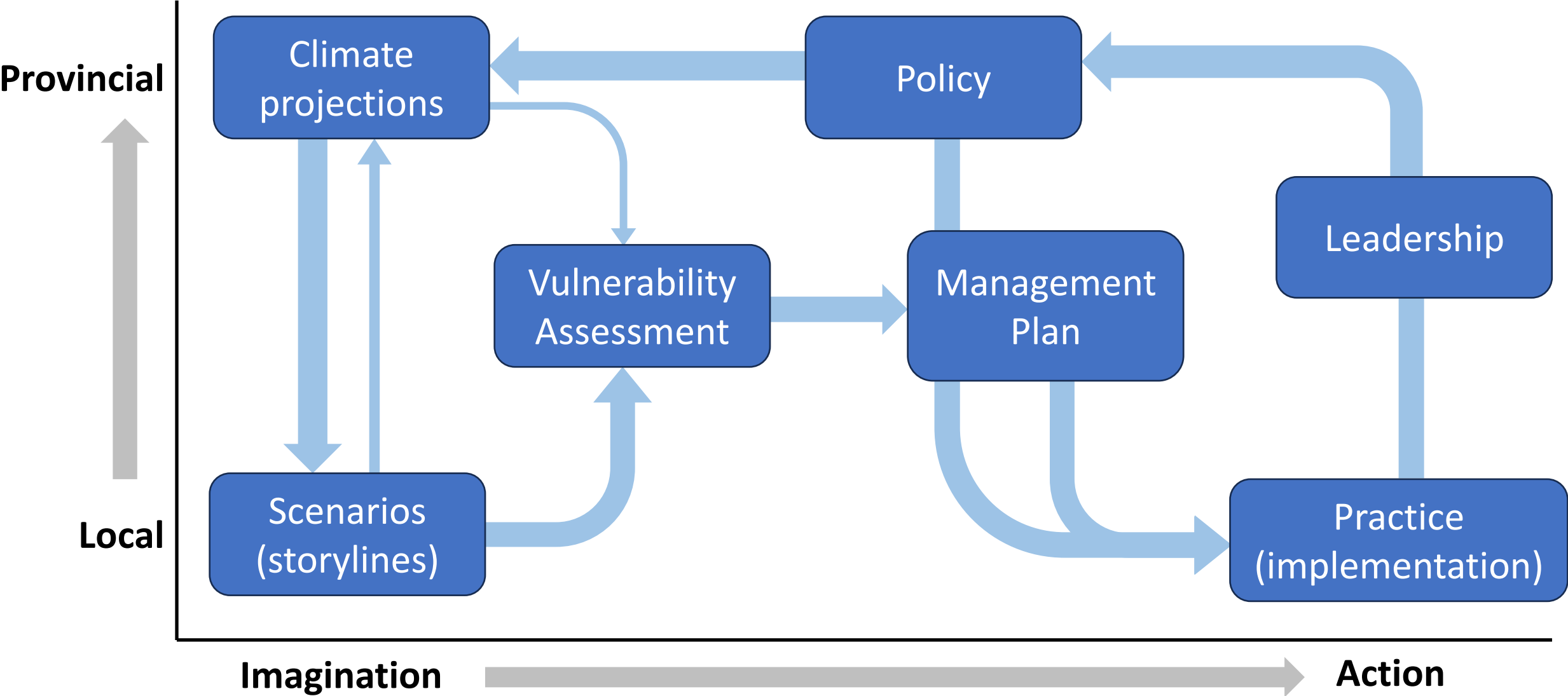
Empower local decisions/knowledge

Treating the symptoms



Leadership on stabilization of the climate

Adaptation – from projections to practice



Key messages

- 1. The future is not written.** Adaptation is made possible by the phaseout of fossil fuels.
- 2. Local knowledge and imagination is central** in adapting to climate change in forest management

Make your own projections

<https://bcgov-env.shinyapps.io/cmip6-BC/>



Intro About **Time Series** Choose models Maps Guidance Model Info

Compare CMIP6 climate model simulations to each other and to observations. Compile custom ensembles with and without bias correction. See projections for subregions (ecoprovinces) of BC. The 8-model subset of the ClimateBC/NA ensemble is the default selection. Shaded areas are the minimum and maximum of the multiple simulation runs for each climate model; a line indicates there is only one simulation for that scenario.

GCM selection mode

Single GCM Ensemble

Default Ensemble

13-model (ClimateBC/NA) 8-model subset

Reset

Compile into ensemble projection

Choose global climate models:

ACCESS-ESM1-5 AWI-CM-1-1-MR BCC-CSM2-MR CanESM5 CNRM-CM6-1
 CNRM-ESM2-1 EC-Earth3 GFDL-ESM4 GISS-E2-1-G HadGEM3-GC31-LL
 INM-CM5-0 IPSL-CM6A-LR MIROC-ES2L MIROC6 MPI-ESM1-2-HR
 MPI-ESM1-2-LR MRI-ESM2-0 NESM3 UKESM1-0-LL

Bias correction (match 1961-90 model climate to observations)

Choose emissions scenarios

SSP1-2.6 SSP2-4.5 SSP3-7.0 SSP5-8.5

Show 1961-1990 baseline for models

Show range of projections Show mean of projections Simplify

Show 5-year gridlines fit y axis to visible data

Compare to a predefined ensemble

None 13-model (ClimateNA) 8-model subset

Choose observational datasets

Stations (PCIC) Stations (ClimateBC) ERA5 ERA5-land GISTEMP

Choose the climate element

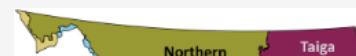
Choose the month/season

Mean temperature Summer

Compare two variables

Choose an ecoprovince

British Columbia



Download plot

