

# UCM RESEARCH FESTIVAL

# Welcome





# UCM RESEARCH FESTIVAL

Dr Douglas Fox

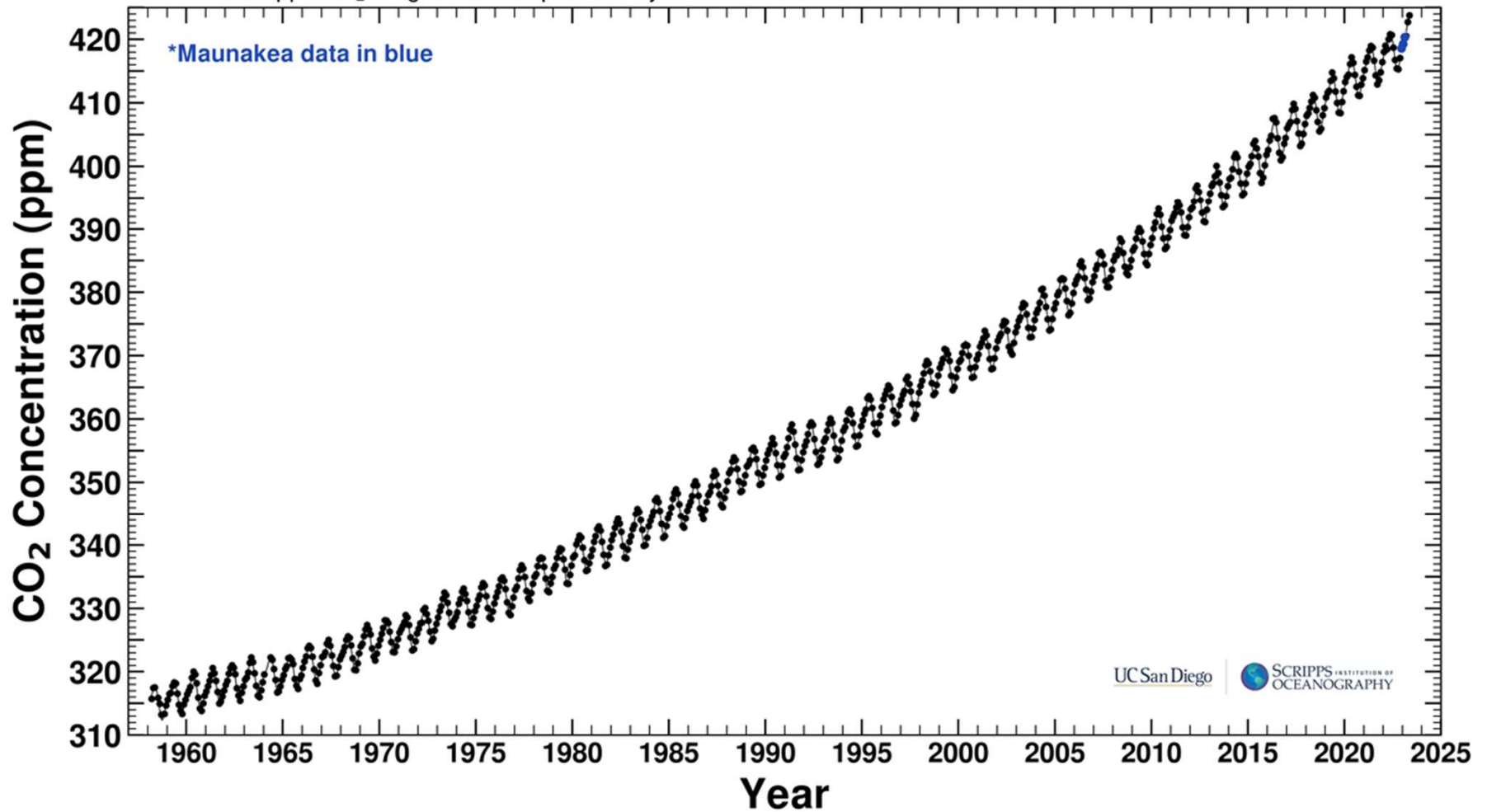
## Can Research Save Us From Ourselves?

Searching for a Secure, Vibrant and Sustainable Future.



# Mauna Loa Observatory, Hawaii\* Monthly Average Carbon Dioxide Concentration

Data from Scripps CO<sub>2</sub> Program Last updated July 2023



It's a problem and we should avoid it

1992:  
UNFCCC



1997 Kyoto Protocol

Rich countries should reduce their emissions

2009  
Copenhagen Accord



Let's keep below 2 degrees and make everyone do something



PARIS2015  
UN CLIMATE CHANGE CONFERENCE  
COP21·CMP11

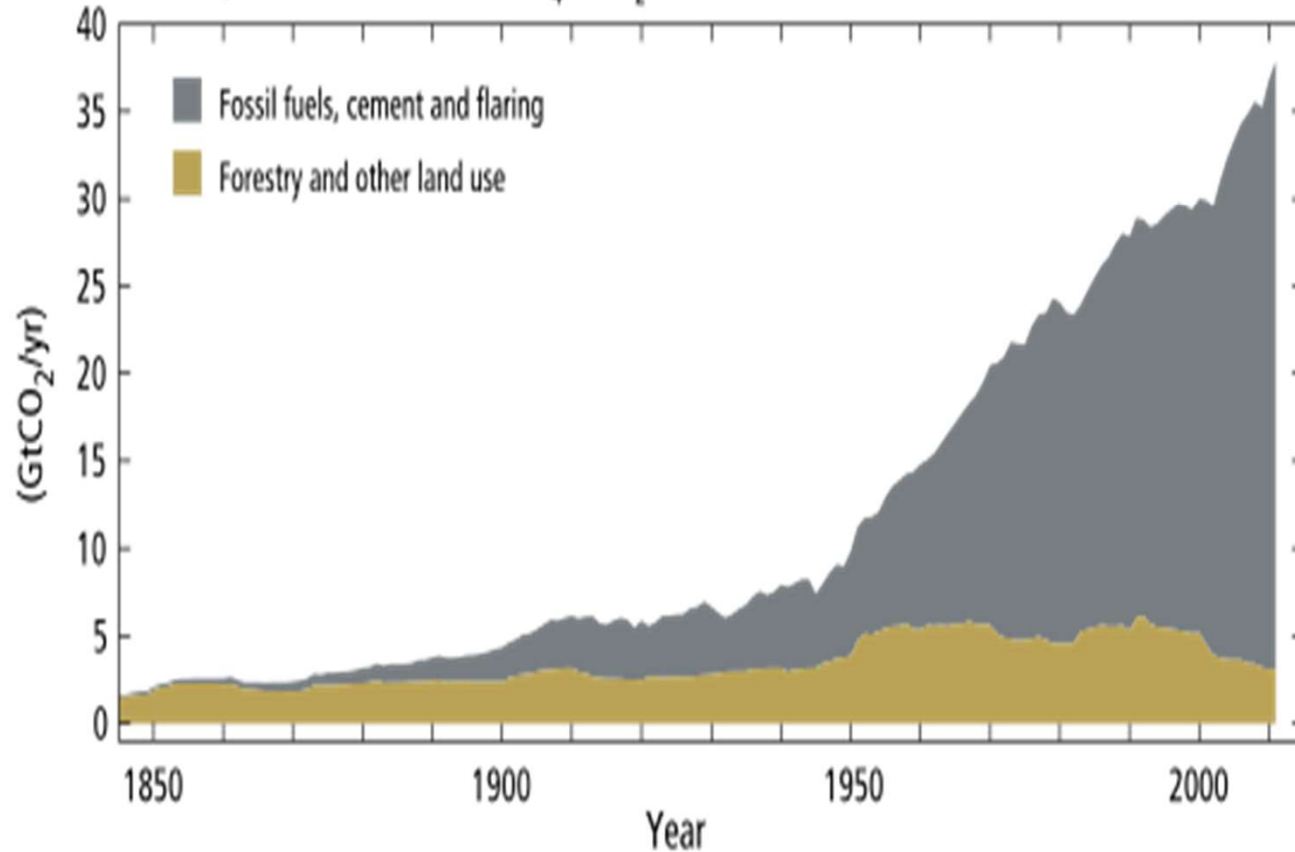
2015 Paris Agreement

Self determined commitments incl. business, charity, cities, etc.



## Global anthropogenic CO<sub>2</sub> emissions

Quantitative information of CH<sub>4</sub> and N<sub>2</sub>O emission time series from 1850 to 1970 is limited



## Cumulative CO<sub>2</sub> emissions

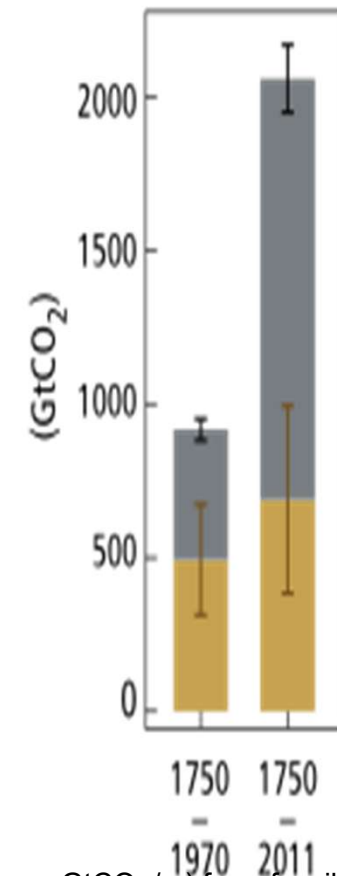
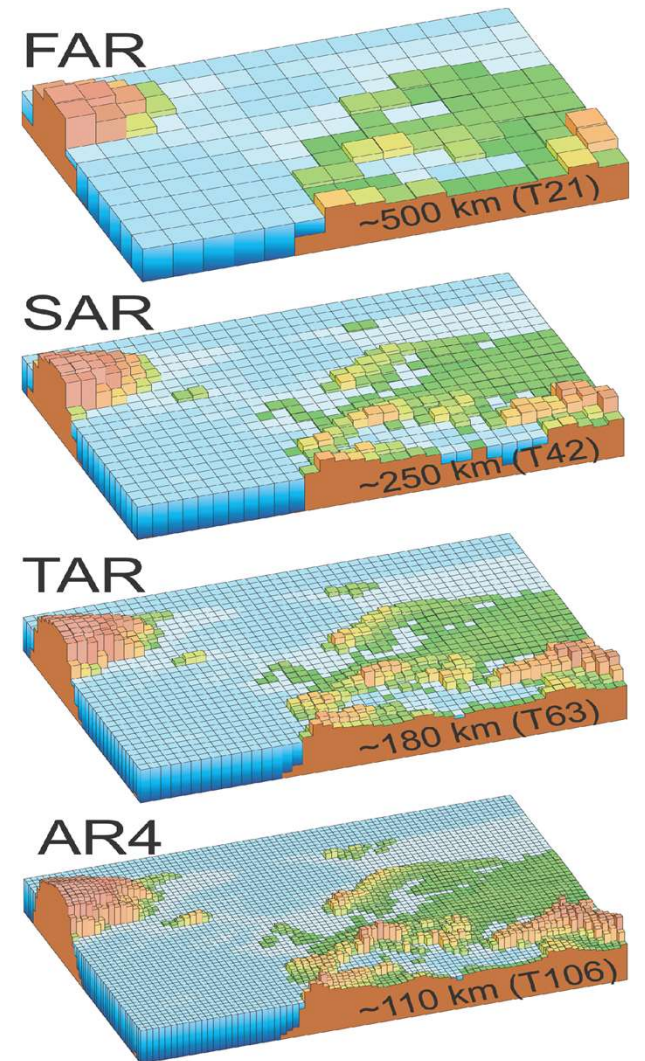
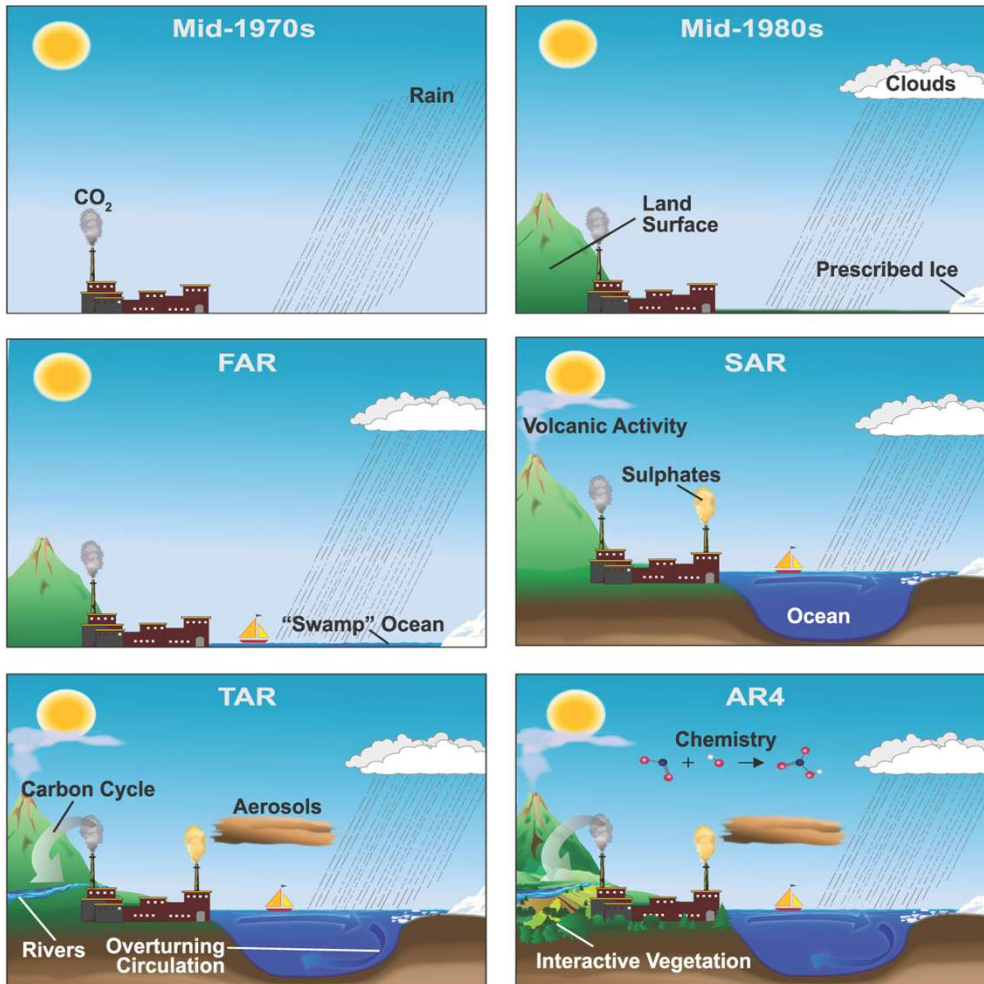
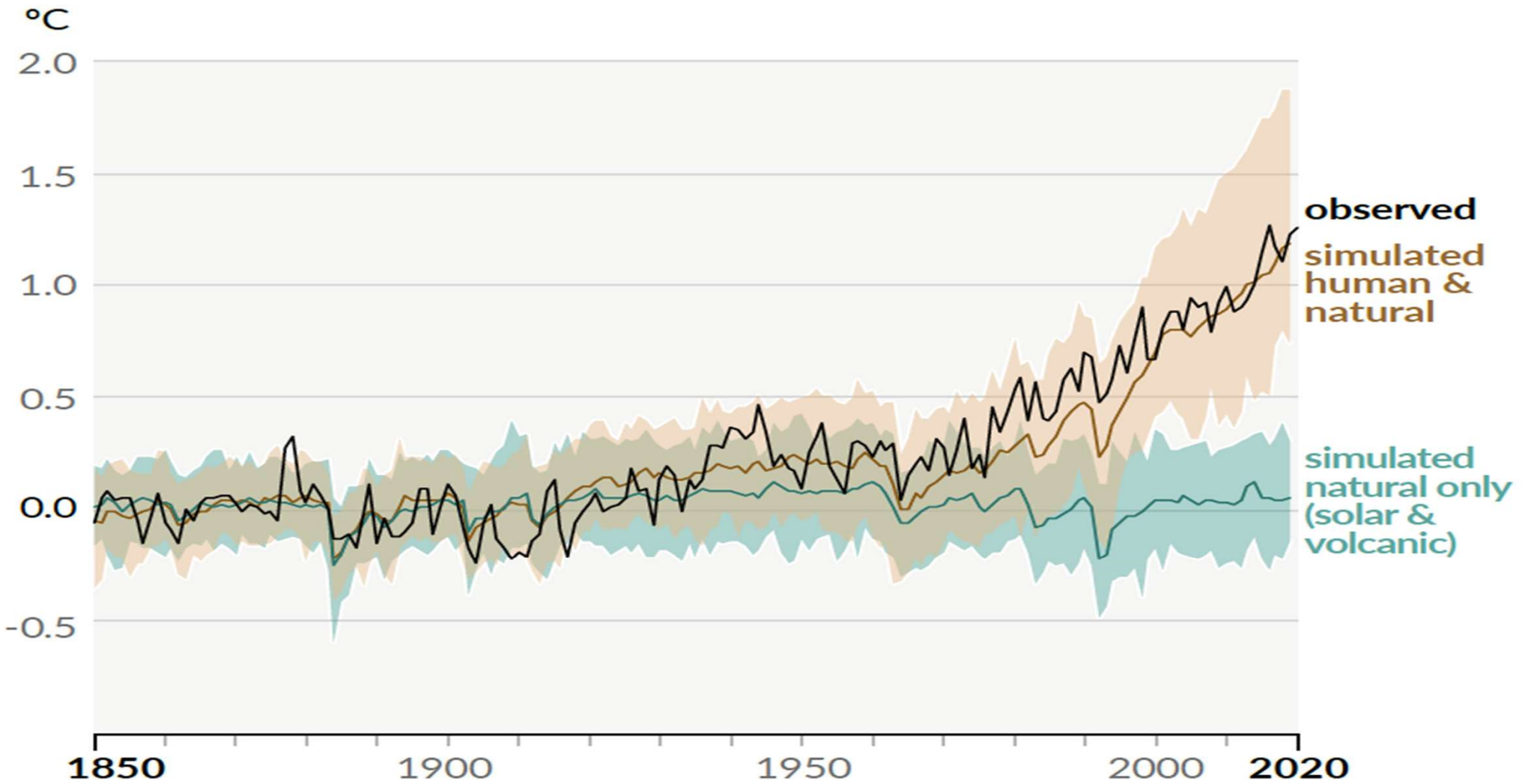


Figure 1.5 | Annual global anthropogenic carbon dioxide (CO<sub>2</sub>) emissions (gigatonne of CO<sub>2</sub>-equivalent per year, GtCO<sub>2</sub>/yr) from fossil fuel combustion, cement production and flaring, and forestry and other land use (FOLU), 1750–2011. Cumulative emissions and their uncertainties are shown as bars and whiskers, respectively, on the right-hand side.

# The World in Global Climate Models



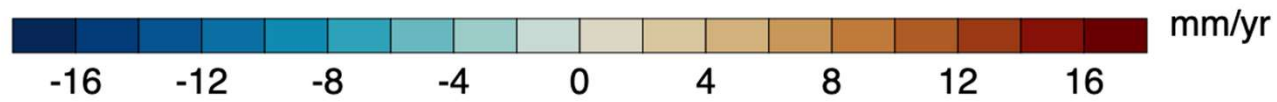
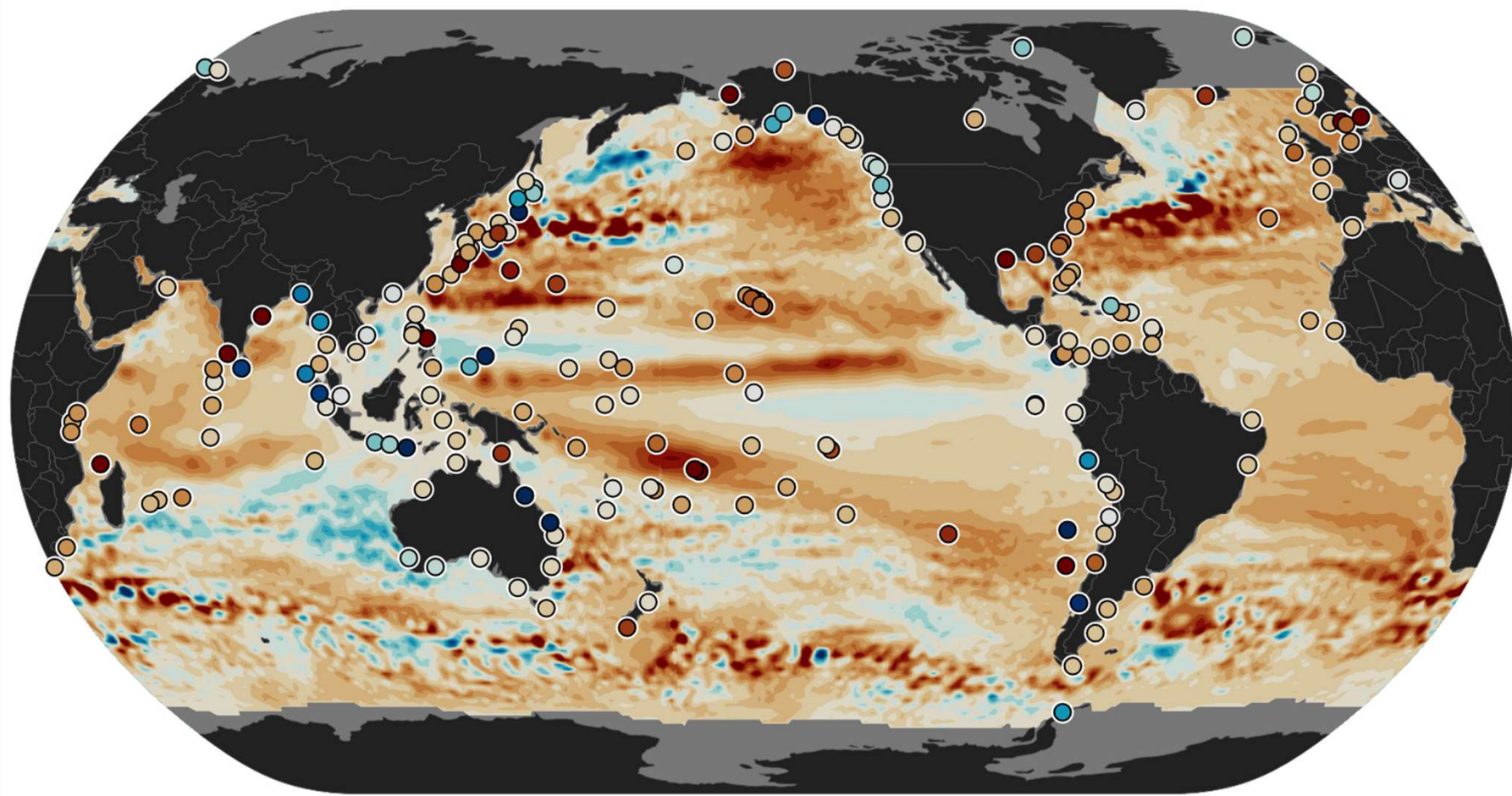
b) Change in global surface temperature (annual average) as **observed** and simulated using **human & natural** and **only natural** factors (both 1850-2020)





# Sea level trends (2012-2021)

.png

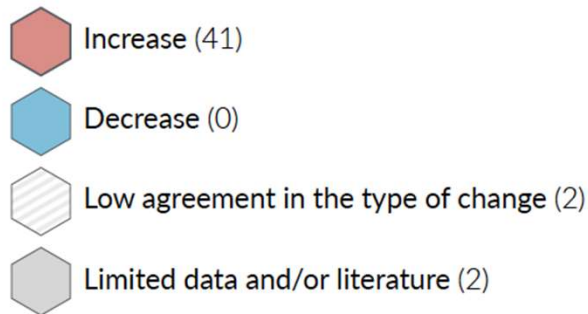




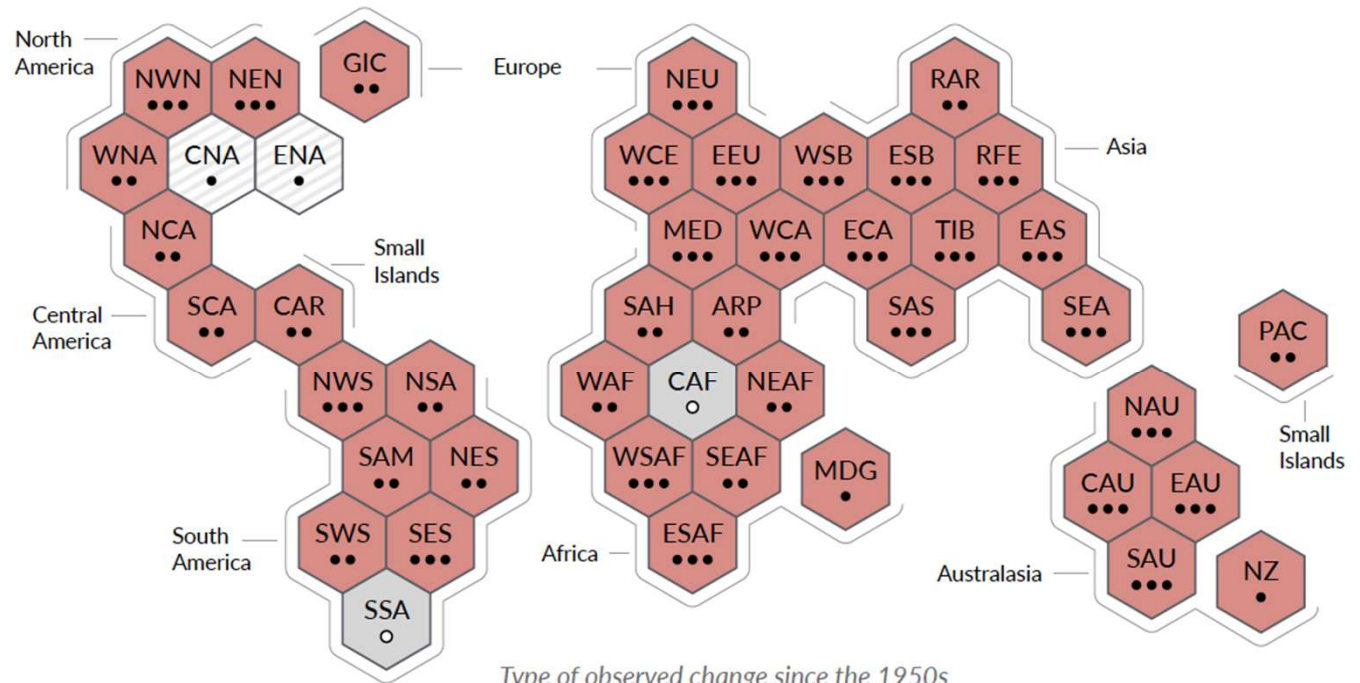
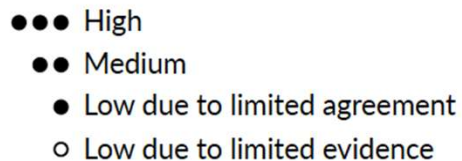
# Climate change is already affecting every inhabited region across the globe with human influence contributing to many observed changes in weather and climate extremes

a) Synthesis of assessment of observed change in **hot extremes** and confidence in human contribution to the observed changes in the world's regions

Type of observed change in hot extremes



Confidence in human contribution to the observed change

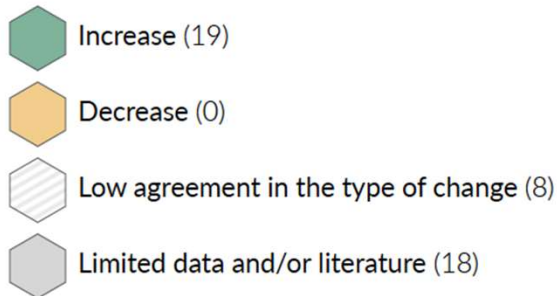


Type of observed change since the 1950s

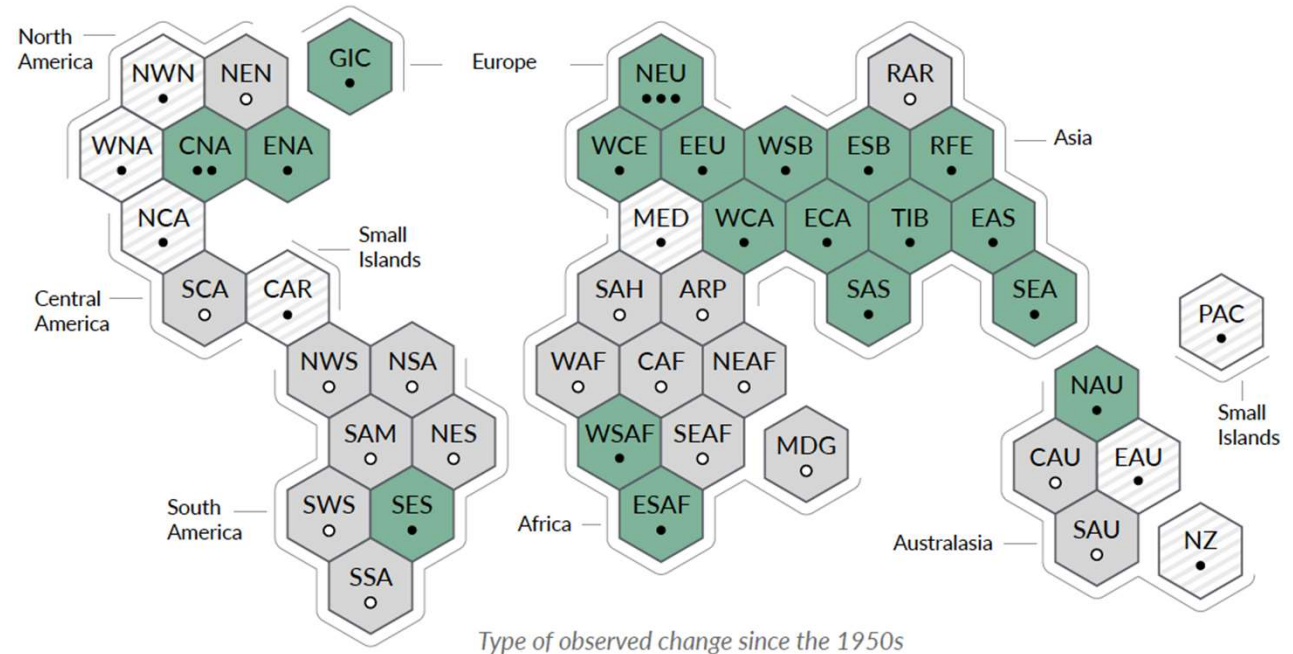
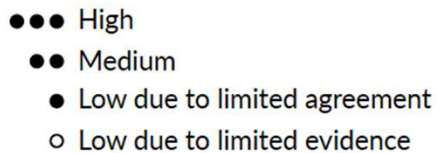
# Climate change is already affecting every inhabited region across the globe with human influence contributing to many observed changes in weather and climate extremes

b) Synthesis of assessment of observed change in **heavy precipitation** and confidence in human contribution to the observed changes in the world's regions

Type of observed change in heavy precipitation



Confidence in human contribution to the observed change





# Climate change is already affecting every inhabited region across the globe with human influence contributing to many observed changes in weather and climate extremes

c) Synthesis of assessment of observed change in **agricultural and ecological drought** and confidence in human contribution to the observed changes in the world's regions

Type of observed change in agricultural and ecological drought

● Increase (12)

● Decrease (1)

▨ Low agreement in the type of change (28)

○ Limited data and/or literature (4)

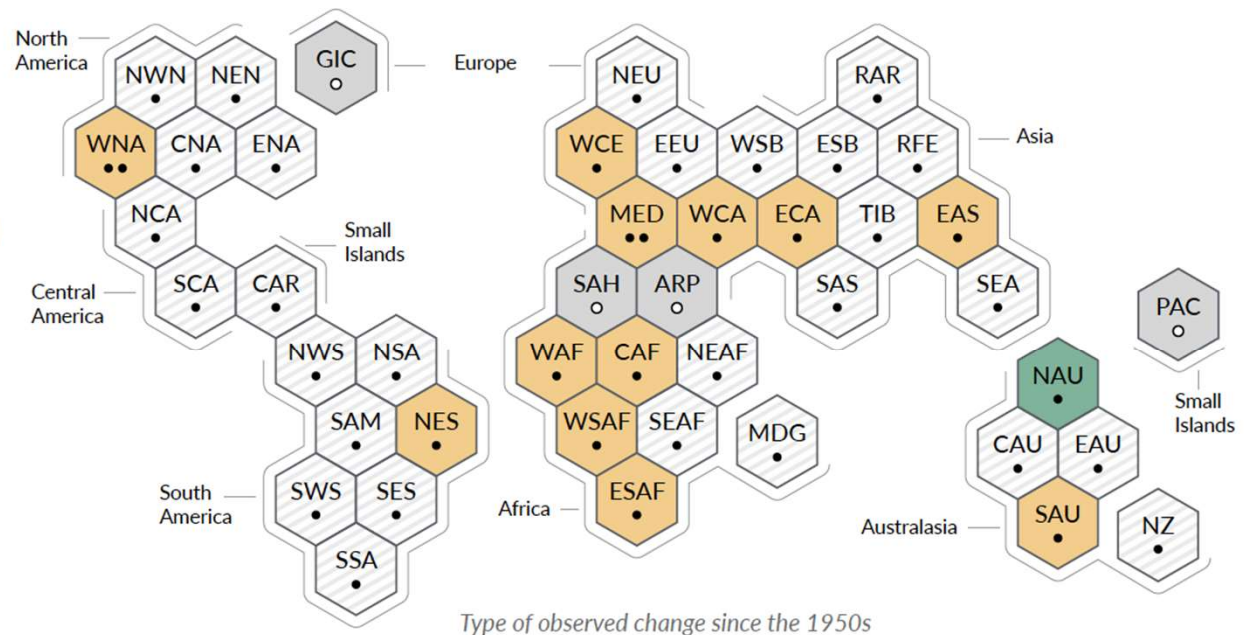
Confidence in human contribution to the observed change

●●● High

●● Medium

● Low due to limited agreement

○ Low due to limited evidence



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PARIS2015  
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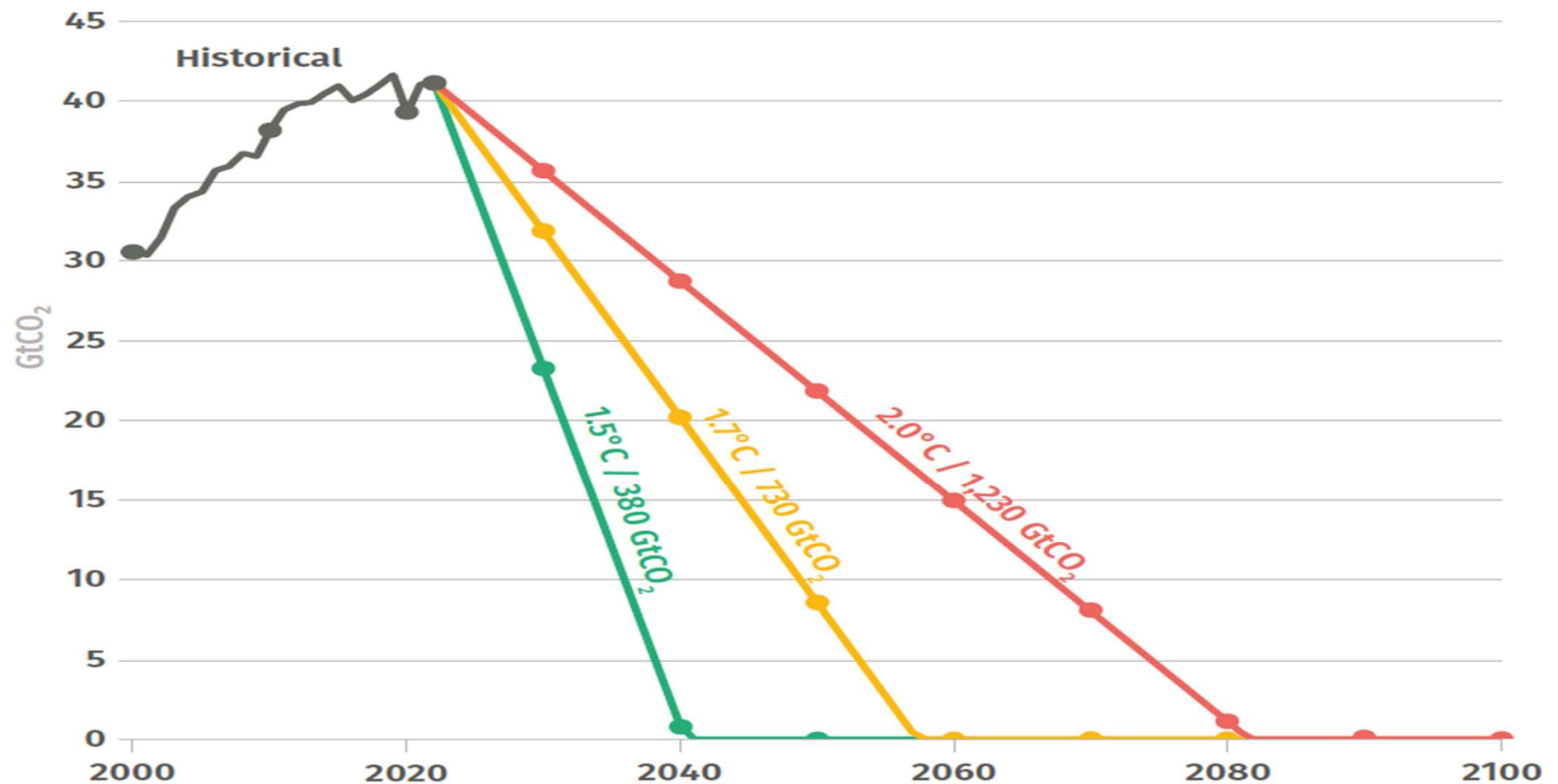
2015 Paris Agreement

Self determined commitments incl. business, charity, cities, etc.



## Deep and immediate emissions reductions are needed to put the world on a track to meet the Paris goals

Annual carbon emissions to align with IPCC AR6 mitigation pathways to keep emissions within remaining carbon budgets for 1.5°C (380GtCO<sub>2</sub>), 1.7°C (730GtCO<sub>2</sub>) and 2°C (1,230GtCO<sub>2</sub>)



# Climate Change

affects us all...

*but not*  
**equally.**



Let's  
**empower**  
small-scale  
farmers to adapt.





Isle of Man  
Government

*Reillys Ellan Vannin*

NET ZERO 

ISLE OF MAN

[ABOUT](#)

[OUR PROGRAMME](#)

[TAKE ACTION](#)

[RESOURCES](#)

[LATEST](#)

[PUBLIC BODIES](#)



# ONE ISLAND, ONE PLANET

THE ISLE OF MAN'S JOURNEY TO REACH NET ZERO BY 2050.  
EACH STEP WE TAKE IN TACKLING CLIMATE CHANGE CAN MAKE  
AN IMPACT.



*analyzing sensors*



*classifying trap images*



*citizen science*



*detecting anomalies*



*predicting failures*



*assessing vulnerability*



*aerial monitoring*

**Ecological awareness**

**Resilient infrastructure**



*targeting upgrades*

**Societal Adaptation**

**Crisis readiness**

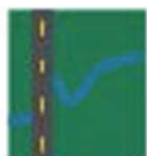
**Social systems**



*surveying epidemic risk*



*enabling diagnoses*



*annotating disaster maps*



*delivering alerts*



*monitoring food supply*



*predicting food demand*



*responding to food insecurity*



*protecting refugees*



*resilient livelihoods*



*public health*





# Seaweed. The smart way to combat climate change.

We fight climate change by using seaweed's fast-growing features to extract CO<sub>2</sub> from our oceans and atmosphere, achieving results 30 times quicker than reforestation.



# Shand Carbon Capture Test Facility

## We Help Bring CCS Projects to Life

The International CCS Knowledge Centre is a non-profit organization dedicated to advancing large-scale carbon capture and storage (CCS) as a critical means of managing greenhouse gas emissions and achieving the world's ambitious climate goals.

We provide independent, expert advice throughout the lifecycle of CCS projects, based on real-world experience and the latest knowledge from around the globe.





Vestaron's scientists are the first to pioneer a game-changing new strategy for crop protection. From a range of naturally occurring peptides with confirmed insecticidal properties, we select peptides that are potent against well-validated modes of insecticidal action and are not inherently cross-resistant from synthetic insecticides. We optimize our product formulations after a rigorous process that tests for efficacy and safety. We must also confirm the lack of activity against mammals and

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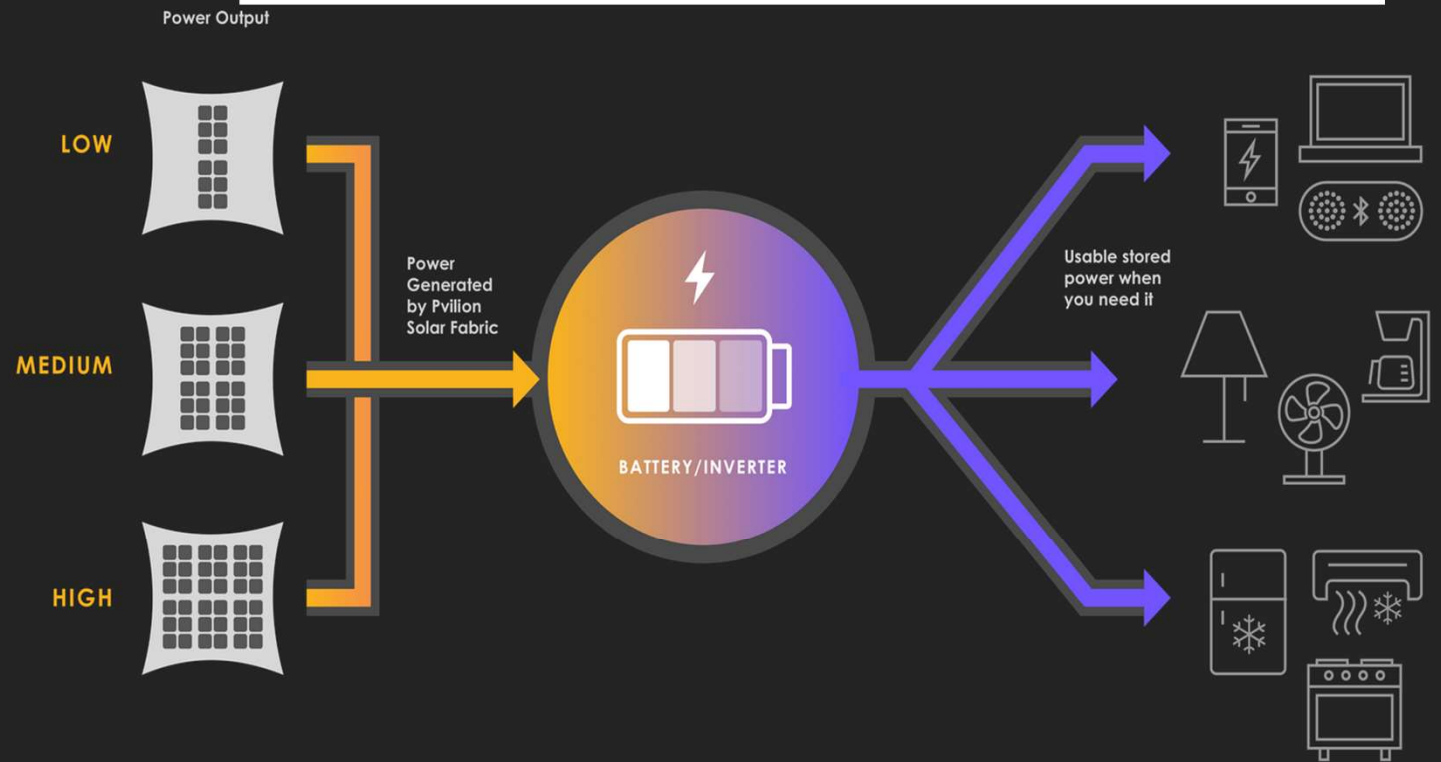
Extracellular electron transfer pathways to enhance the electroactivity of modified *Escherichia coli*



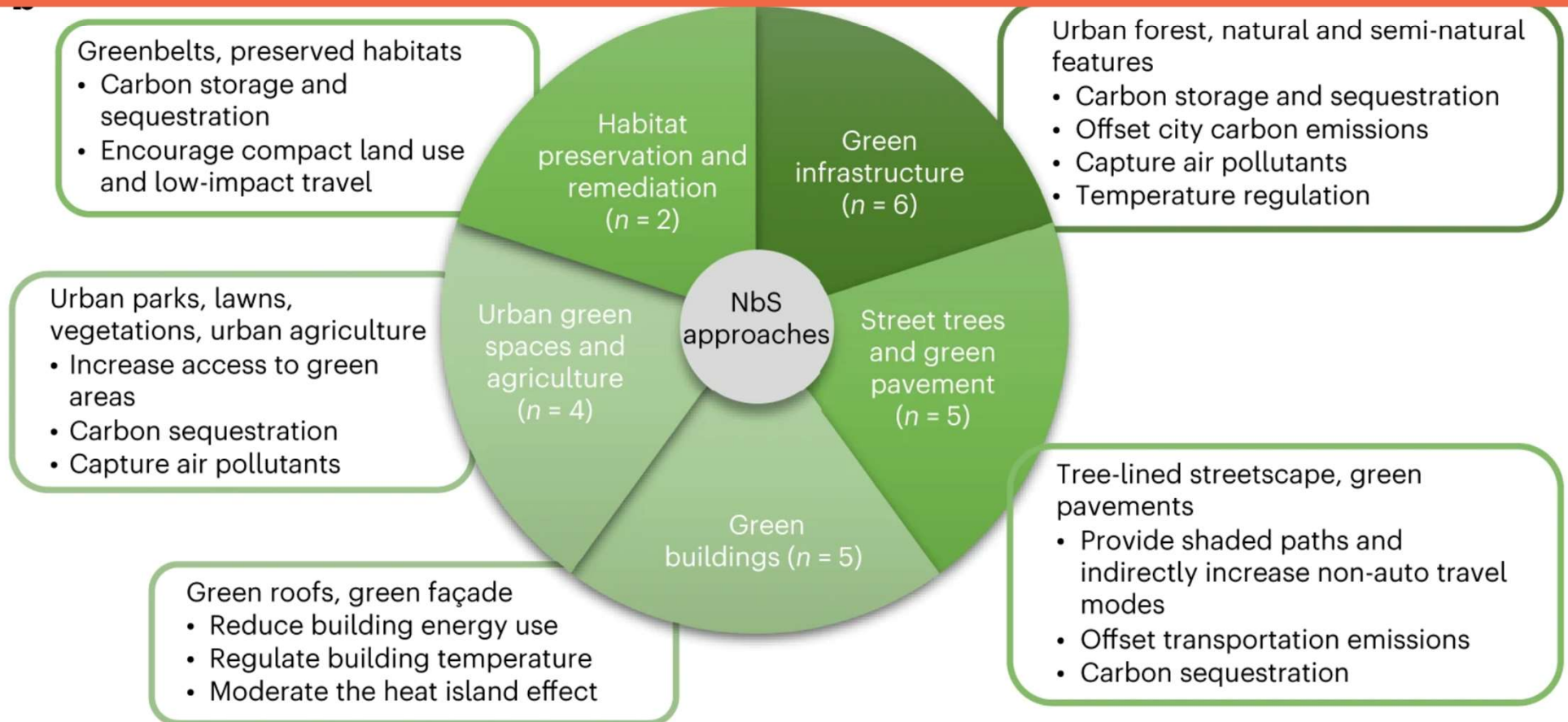
# how it works:

## our products

What started out as a solar powered tent has evolved into a product range covering stand-alone USB charging stations and easy to erect structures, including canopies and sails, all solar powered.



# SINGAPORE'S CLIMATE ACTION PLAN





More than one quarter of all venture capital funding is going to climate technology, with increased focus on technologies that have the most potential to cut emissions

**4,000+**

climate tech startups tracked



**\$260bn+**

invested in climate tech between 2018 Q1 and  
2022 Q3



**\$50bn+**

invested in climate tech in 2022 Q1-3







**" OUR COMMON HOME IS BEING  
PILLAGED, LAID WASTE AND HARMED  
WITH IMPUNITY. COWARDICE IN  
DEFENDING IT IS A GRAVE SIN.**

- POPE FRANCIS



climate change

Type

- Videos
- Playlists
- Magazines
- Petitions/Pledges

Series

- 5-Minute Videos
- Fireside Chats

79 results

Sort by: Relevance

Video · Short Clips · Apr 26, 2023

### It's Not Climate Change Denial to Acknowledge We Need Fossil Fuels

Why aren't we seeing environmentalists push for more investment into research and innovation instead of just fearmongering...



Video · Short Clips · Jun 16, 2021

### PragerU Is Changing the Narrative On Climate Change

PragerU is fighting back against the Left with new content for all ages that supports your values!





## Electricity generation from wind, solar and other renewable sources

