

Introduction to IEEE and Climate Change Initiatives

CMU Executive Forum
Climate Change Initiative of IEEE



2 NOVEMBER 2023
1.00 - 2.30 pm

HYBRID EVENT

VENUE Engineering Auditorium
Faculty of Engineering
Chiang Mai University

LIVE ZOOM and facebook page
 www.facebook.com/engineeringcmu

Prof. Saifur Rahman
2023 IEEE President & CEO
Director, Virginia Tech Advanced Research Institute, USA

REGISTER NOW

<https://cmu.to/IEEETalk>

VENUE LOCATION

<https://cmu.to/EngAuditorium>

 **IEEE**

*Advancing Technology
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www.srahman.org

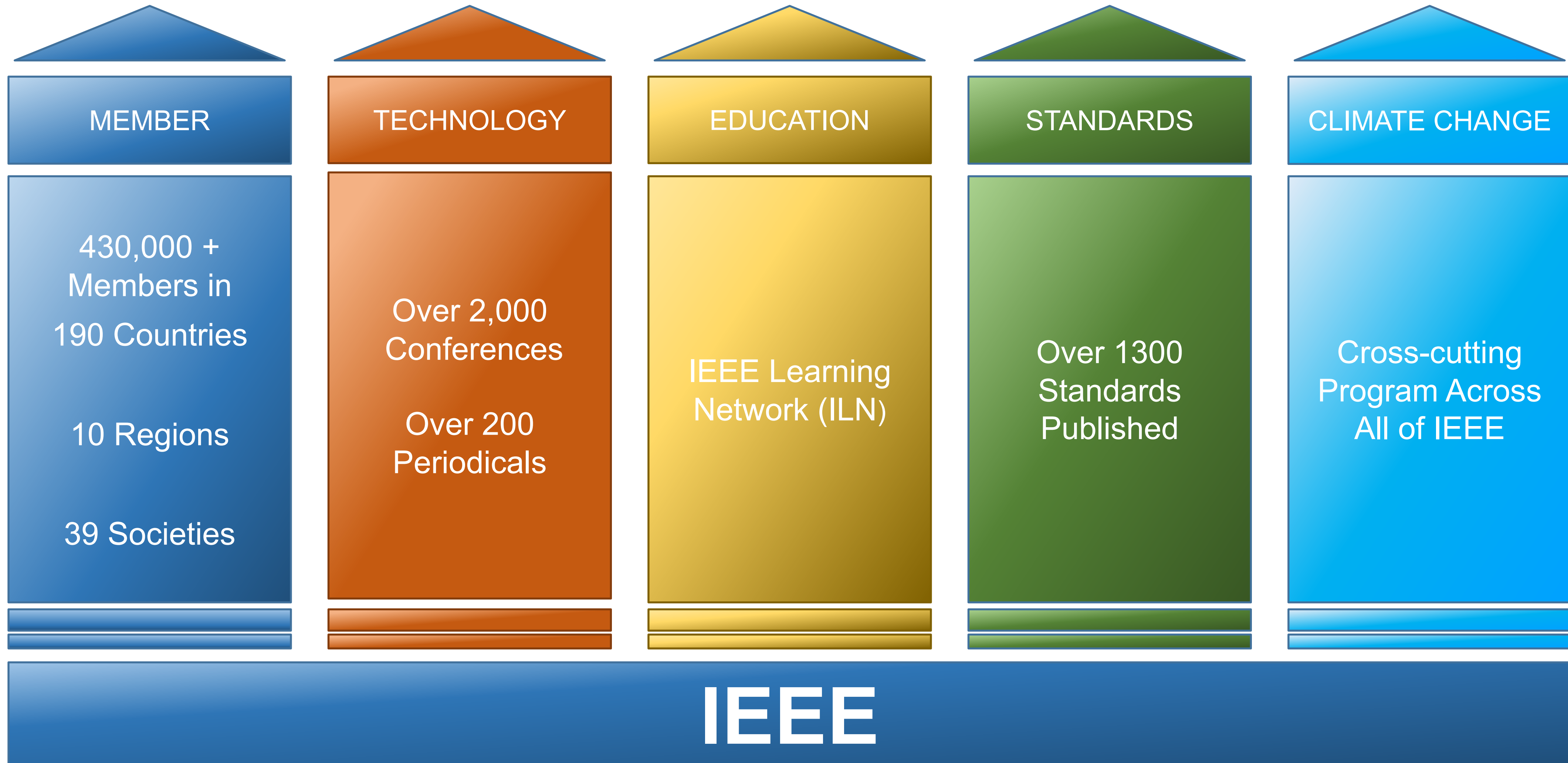




*IEEE 2023
Board of Directors
Retreat Focus*



Synergy among IEEE's areas of focus



IEEE

Climate Change

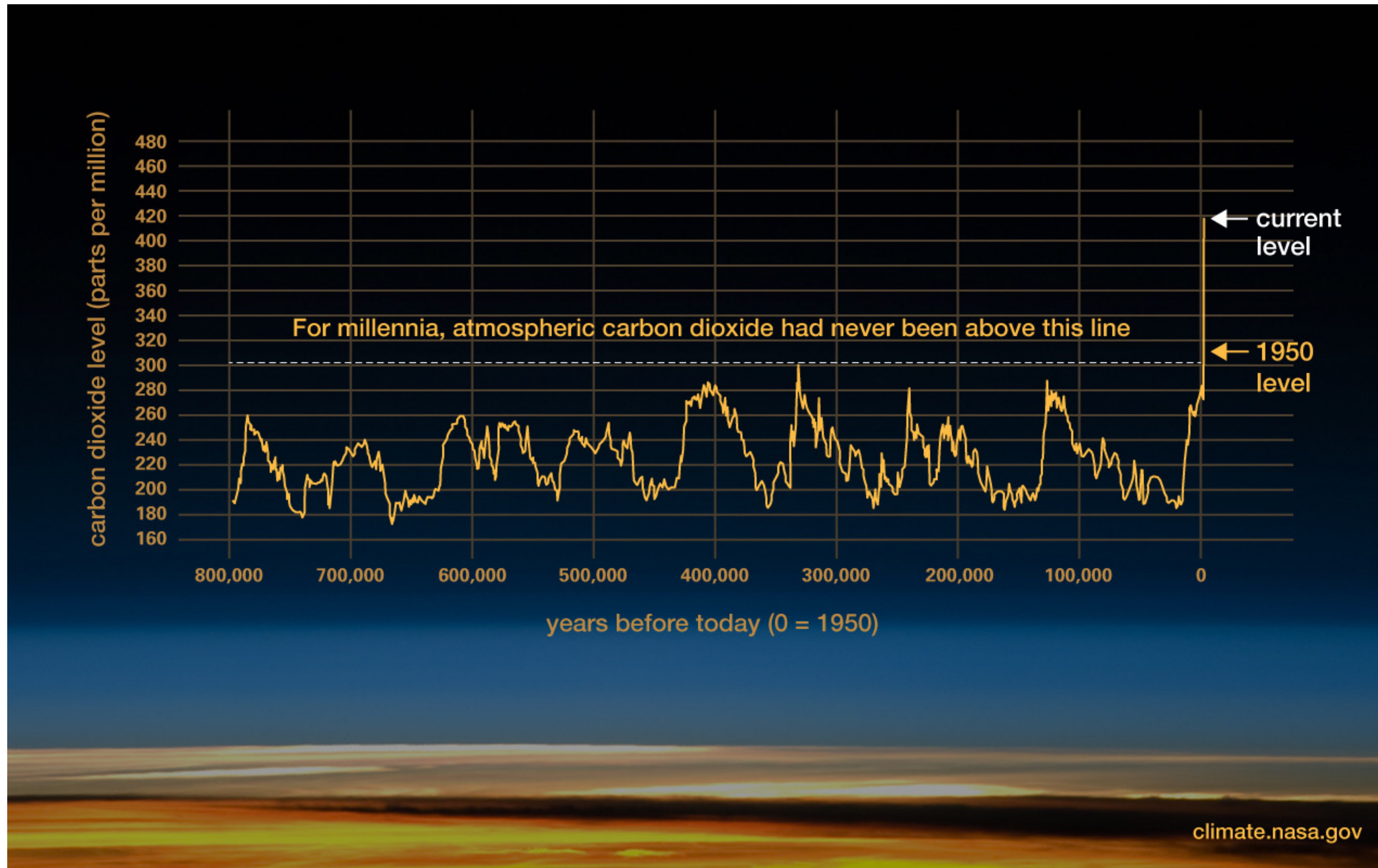
IEEE: Enabling Innovation and Technology Solutions

<https://climate-change.ieee.org>



Climate Change and CO₂ Emissions

History of CO₂ Emissions

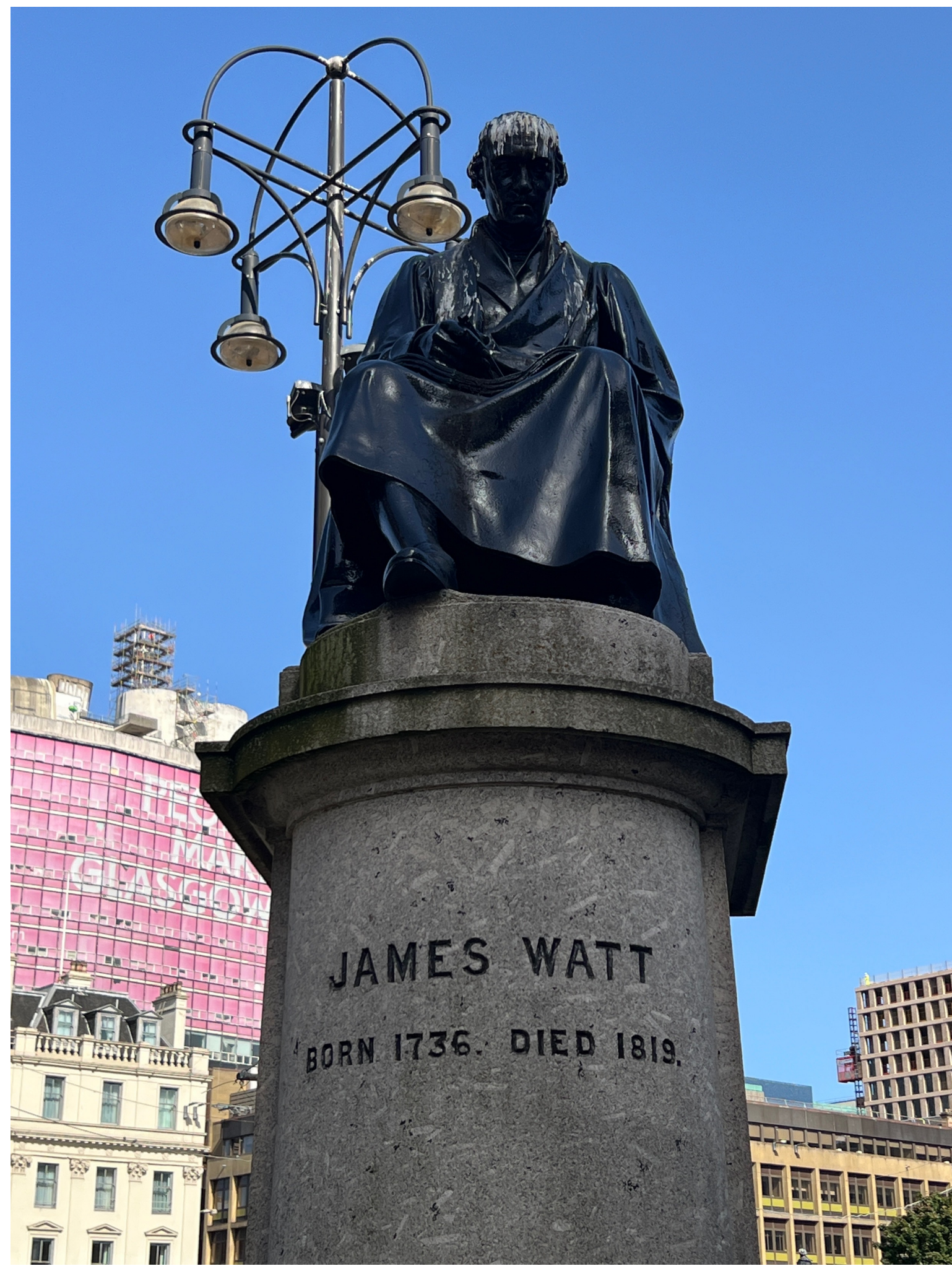
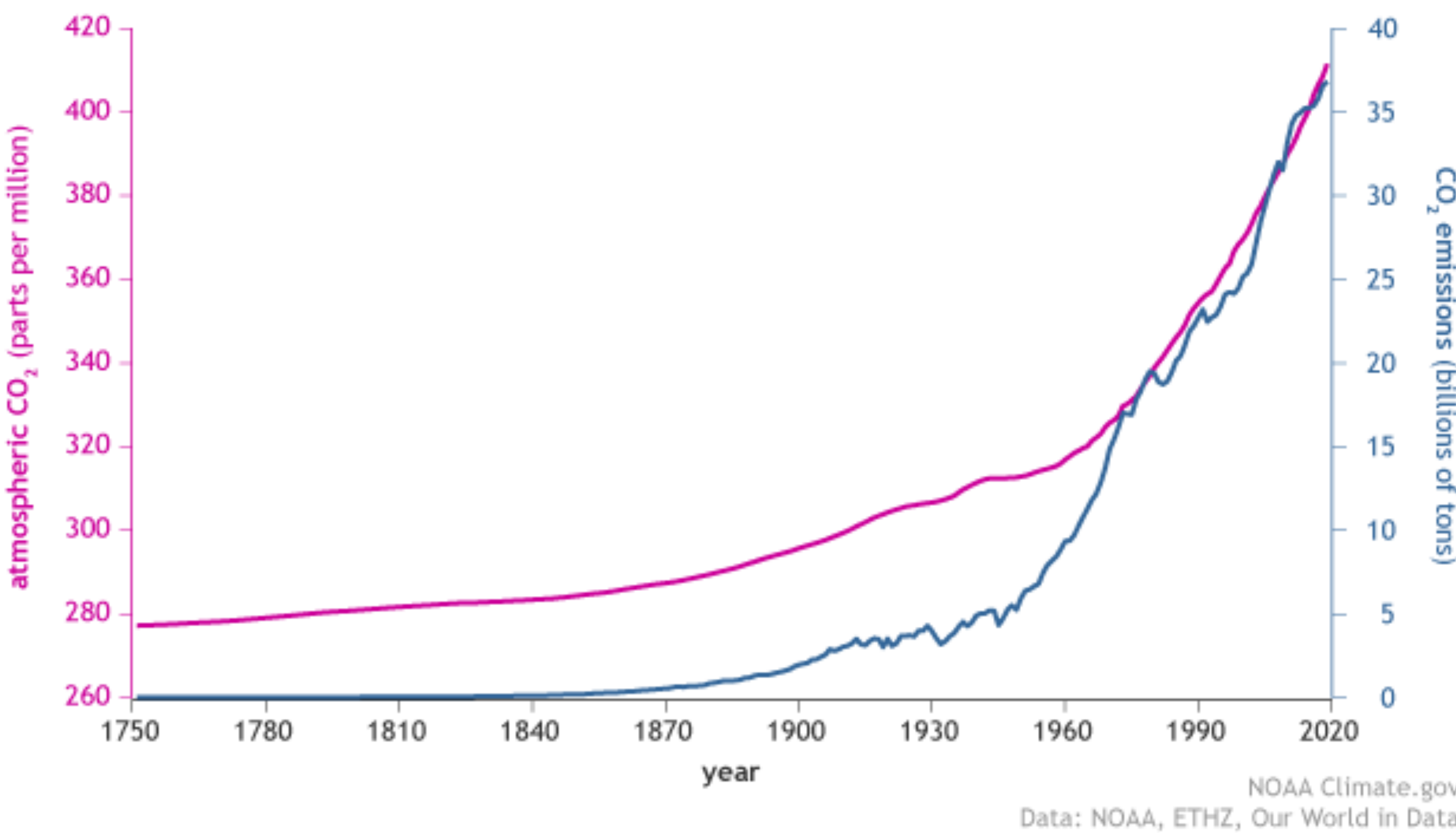


Source: NASA

https://climate.nasa.gov/climate_resources/24/graphic-the-relentless-rise-of-carbon-dioxide/



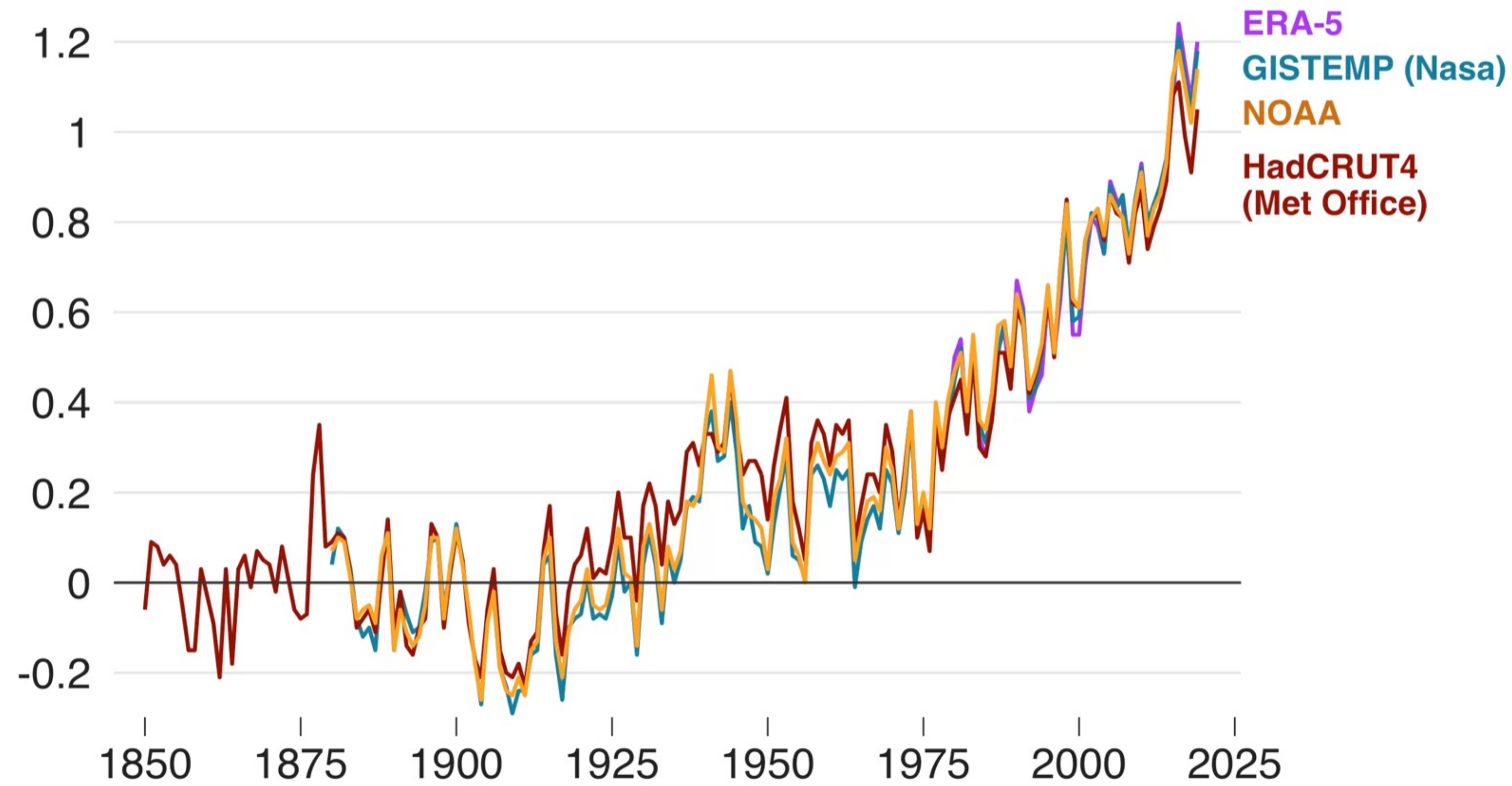
CO₂ in the atmosphere and annual emissions (1750-2019)



Impacts of Carbonization

Temperature rise since 1850

Global mean temperature change from pre-industrial levels, °C



Source: Met Office

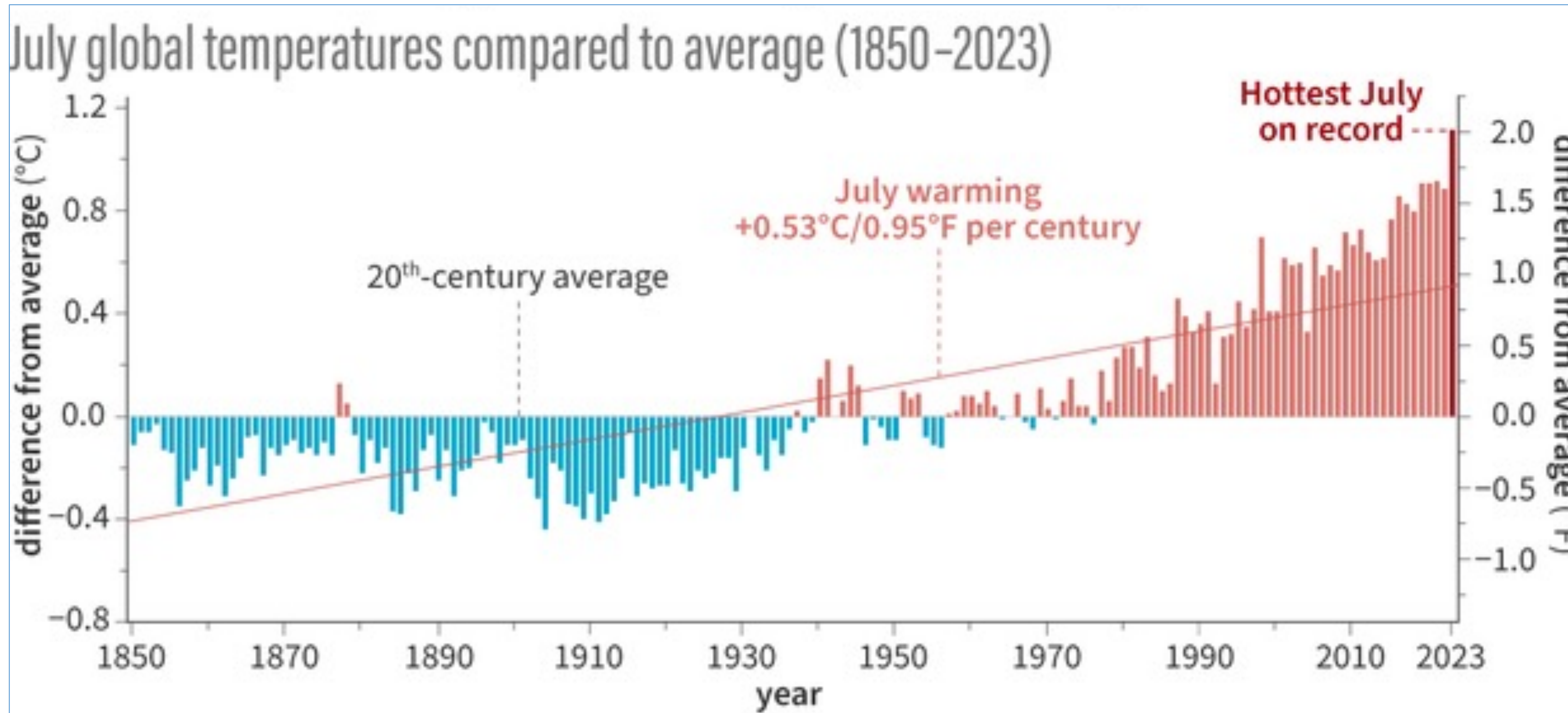


Source: <https://www.bbc.com/news/science-environment-51111176>

Temperature rise target is below 1.5. More than 2.0 Point of No Return



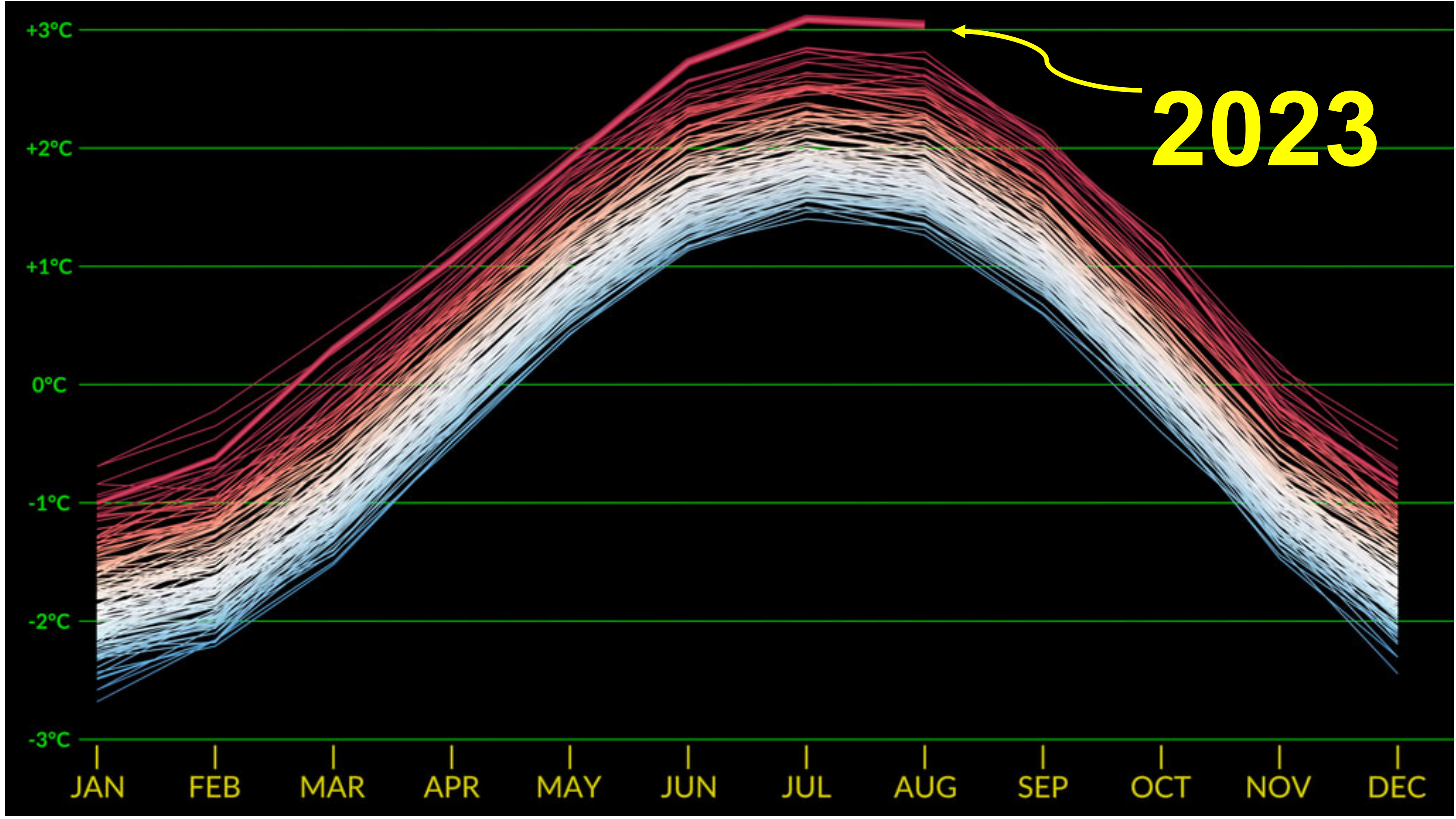
Global Climate Summary for July 2023



July temperatures compared to the 20th-century average for each year from 1850 through 2023, which set a new record for the hottest July. NOAA Climate.gov image, based on data from NOAA National Centers for Environmental Information.

The July global surface temperature was 1.12°C (2.02°F) above the 20th-century average of 15.8°C (60.4°F), making it the warmest July on record. This marked the first time a July temperature exceeded 1.0°C (1.8°F) above the long-term average.

July 2023 was 0.20°C (0.36°F) warmer than the previous July record from 2021. July 2023 marked the 47th-consecutive July and the 533rd-consecutive month with temperatures at least nominally above the 20th-century average.



Monthly temperature anomalies from 1880 to August 2023 measured with respect to the baseline period 1951-1980.

This graph includes the seasonal cycle showing that June 2023, July 2023, and August 2023 were each consecutively the warmest month on record.

Climate-change Impacts



Fethi Belaid/Agence France-Presse — Getty Images





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How Are We Serving the Humanity ?

Clean-tech Solutions for Climate Sustainability



Source: IEEE Spectrum,
January 2023


IEEE Discusses 6 Simple Solutions to Climate Change at COP27 - IEEE Spectrum 2/6/23, 8:20 AM

IEEE Spectrum

ARTICLE THE INSTITUTE

IEEE Discusses 6 Simple Solutions to Climate Change at COP27 > They include switching to LEDs and making coal plants more efficient

BY KATHY PRETZ 26 JAN 2023



<https://spectrum.ieee.org/6-solutions-to-climate-change> Page 1 of 8

Opportunities of Decarbonization in the Electric Power Supply Industry

Source: IEEE Spectrum, Jan 2023



Reduce Carbon Emissions

1. Use less electricity, energy efficiency
2. Use low carbon fossil fuel power plants
3. Use H₂ & other storage technologies
4. Promote more renewables
5. Accept some nuclear
6. Promote cross-border power transfer

IEEE's Presence at the UN Conference on Climate Change (COP27) Egypt, November 2022

IEEE at UN Climate Change Conference



Global Alliance of Universities on Climate



Presentation at GAUC



SHOT ON MI 9T
AI TRIPLE CAMERA

Partnership with International Renewable Energy Agency (IRENA)

Founding Partners: Energy Transition Education Network



ETEN Founding Partners

Convened by:  **IRENA**
International Renewable Energy Agency

PERMANENT MISSION OF THE
UNITED ARAB EMIRATES
INTERNATIONAL RENEWABLE
ENERGY AGENCY (IRENA)  البعثة الدائمة
الإمارات العربية المتحدة
الوكالة الدولية للطاقة
المتجددة (أيرينا)

Partners:  **unesco** **Teach For All**
A Global Network

 **unicef** | for every child  Higher
Education
Sustainability
Initiative **HESI+10**
Celebrating 10 years
with Higher Education
Sustainability Impact  **IEEE**
Advancing Technology
for Humanity

 ENERGY TRANSITION
EDUCATION NETWORK 

Speakers at the IRENA Panel at COP27

International Renewable Energy Agency

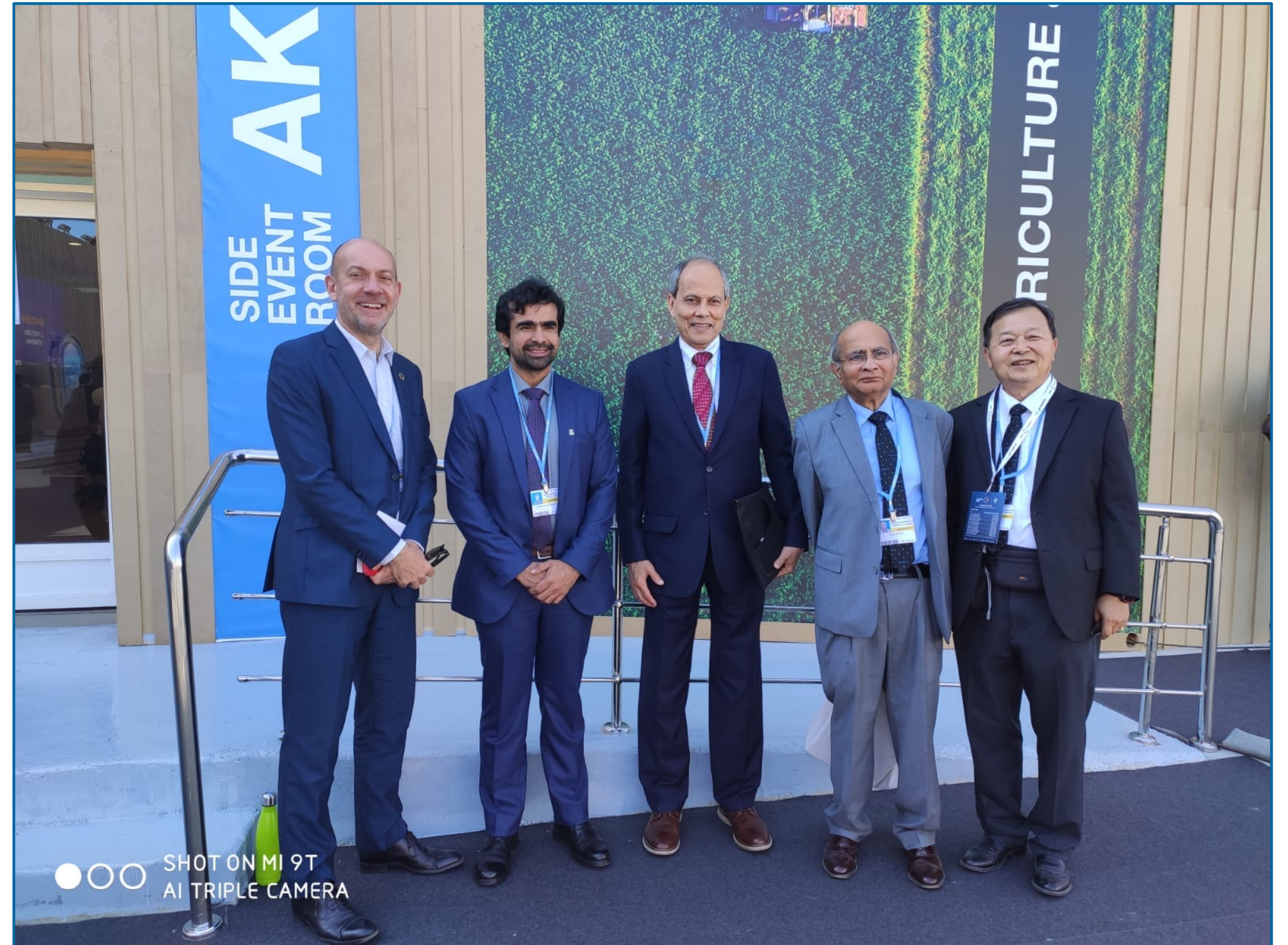


COP27 Event by IRENA

Energy Transition Education Network



IEEE/WFEO/EIC Participants at COP27



Energy Day 15 November 2022



IEEE at UN COP28 Dubai, December 2023



IEEE Climate Change Program

<https://climate-change.ieee.org>



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MAKING A
DIFFERENCE

TECHNICAL
Solutions

BUILDING
Technical Community

CLIMATE CHANGE
Mitigation

email: ccircc@ieee.org



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RESOURCES FROM IEEE

[Home](#) » Resources from IEEE

As the world's largest organization of technical professionals, IEEE has both the opportunity and the responsibility to assist in organizing the response of engineers, scientists, and technical professionals across the world to address the causes, mitigate the impact, and adapt to climate change.

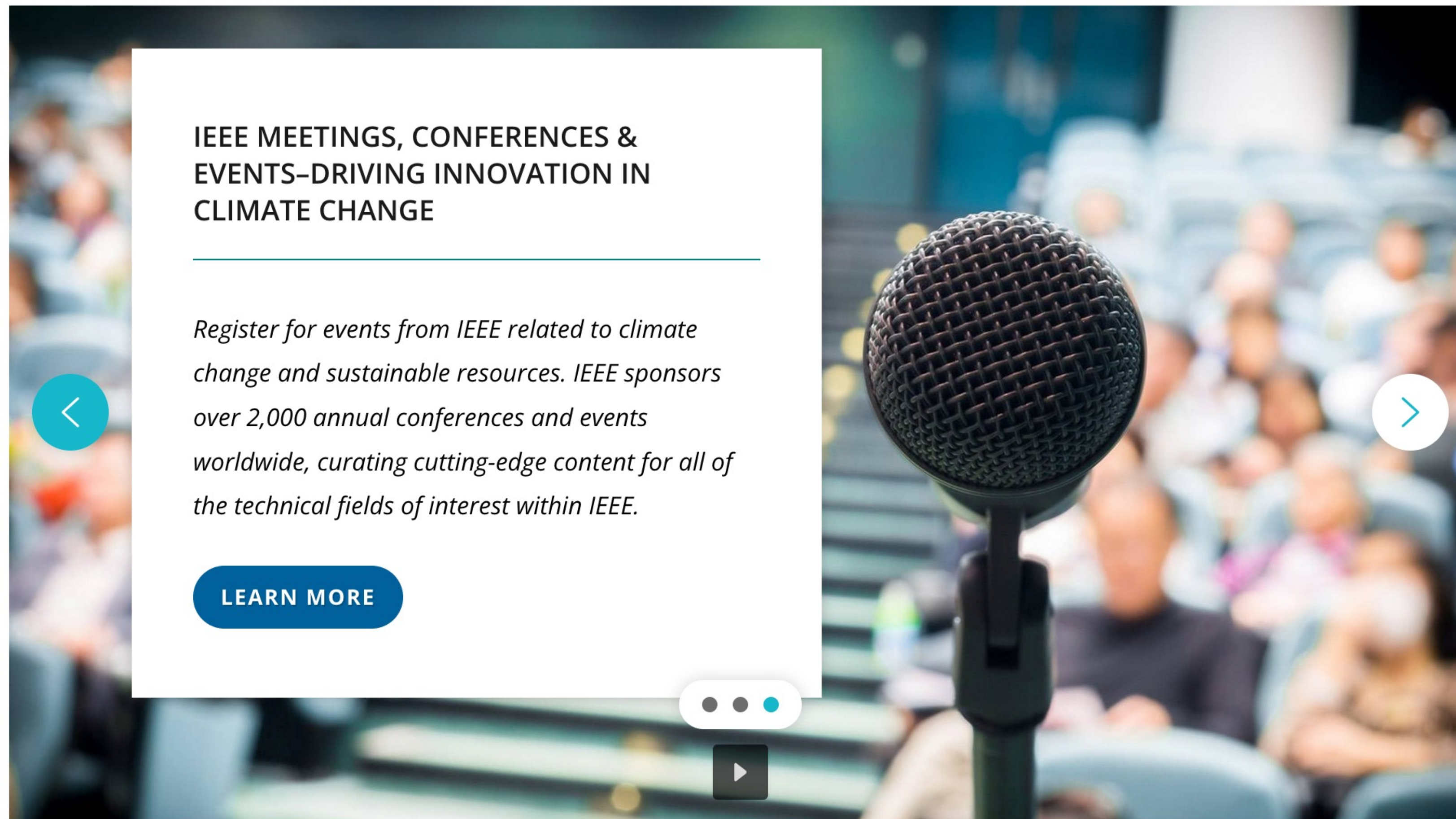
IEEE's scholarly publications, events, conference proceedings, technical standards, and other materials help foster the exchange of technical knowledge and information for the critical climate issues that our planet faces today.



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View featured IEEE conferences and events on Climate Change



IEEE MEETINGS, CONFERENCES & EVENTS—DRIVING INNOVATION IN CLIMATE CHANGE

Register for events from IEEE related to climate change and sustainable resources. IEEE sponsors over 2,000 annual conferences and events worldwide, curating cutting-edge content for all of the technical fields of interest within IEEE.

LEARN MORE

IEEE Climate Change Newsletter



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<https://climate-change.ieee.org>

Advancing Technology for Humanity



Ecosystem for IEEE's Climate Sustainability Work

IEEE Spectrum: Climate Change News Feed; Podcasts; Features; Archives; Journal Watch Posts (Xplore); The Institute (Engineers of Climate Change); Coverage of Conferences and Standards

IEEE Discusses 6 Simple Solutions to Climate Change at COP27 > They include switching to LEDs and making coal plants more efficient

BY KATHY PRETZ | 26 JAN 2023 | 4 MIN READ

Simple, effective solutions that can help lessen the impact of climate change already exist. Some of them still need to be implemented, though, while others need to be improved.

Social Media



Sponsored Content From Industry

Evolution of In-Vehicle Networks to Zonal Architecture

In this webinar, you will learn more about:

- Evolution of In-Vehicle Network architecture
- Automotive Ethernet characteristics
- Compliance testing of Ethernet
- Practical demonstration

[Register now](#)

Xplore: Engineers to Follow; Journal Watch Articles (free); Climate Change Articles

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SEARCH 5,866,681 ITEMS

IEEE CLIMATE CHANGE COLLECTION

Featured Authors:

- Winnie N. Ye** (CANADA): Dual-Band Polarization-Independent Subwavelength Grating Coupler for Wavelength Demultiplexing
- Davide Scaramuzza** (SWITZERLAND): EVO: Fast semi-direct monocular visual odometry
- Fei (Fred) Wang** (UNITED STATES): Improved Double Pulse Test for Accurate Dynamic Characterization of Medium Voltage SiC Devices

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MAKING A DIFFERENCE

TECHNICAL Solutions | BUILDING Technical Community | CLIMATE CHANGE Mitigation

IEEE's mission is to advance technology for the benefit of humanity. Today the world faces its largest modern-day threat—climate change. We recognize this global crisis and are committed to helping combat and mitigate the effects of climate change through pragmatic and accessible technical solutions and providing engineers and technologists with a neutral space for discussion and action.

COORDINATING IEEE'S RESPONSE TO CLIMATE CHANGE DEDICATED COMMITTEE

The 2022 IEEE Ad Hoc Committee to Coordinate IEEE's Response to Climate Change is identifying ongoing efforts across IEEE and collaborating with key external partners for a comprehensive response to climate change.

Jobs From IEEE Job Site

IEEE JOB Site

FEATURED JOBS

- Image Reconstruction Scientist
- Engineering Manager
- Senior Test Systems/Instrumentation Engineer
- Manager - Hydro Plant Engineering
- Seattle Project Manager - Senior PM - Asst PM
- Lecturer

Conferences



Standards



Newsletters

IEEE Spectrum | [JOIN IEEE](#)

(Use promo code: MGA23SPEC for US\$25 off when you join IEEE.)

Tech Alert | 2 FEBRUARY 2023

Here's How Apptronik Is Making Their Humanoid Robot - Is now the right time for useful, affordable, general-purpose humanoid?

AI Goes To K Street: ChatGPT Turns Lobbyist - Automated influence campaigns could spell trouble for society.

IEEE Technology Center for Climate

IEEE TECHNOLOGY CENTER for Climate

The Promise of Electrification

The IEEE Technology Center for Climate (TCC) supports partnerships with leading institutions to advance pragmatic technical approaches and solutions to climate change used to drive global innovation through engaged collaboration and knowledge sharing.

It is dedicated to advancing the responsible development, deployment and use of technology for the environment and public goods by convening, planning and solving problem solvers to foster technology innovation and knowledge sharing.

TCC provides a collaborative and environment approach for institutions to access research, practical expertise as they explore and experiment technology within climate change.

TCC Pillars

- Technology Insight through our Knowledge Collaborative**: Through IEEE's diverse technical and program communities, we provide technical, research and practical expertise to help inform practical approaches for climate change technology development and use. We promote the exchange of knowledge, ideas, and best practices across technology for climate change and innovation and learning opportunities.
- Collaboration and Partnership**: By fostering interdisciplinary collaboration among industry, government agencies and other stakeholders to address environmental implications of technology, we aim to define and enable the development and implementation of responsible technology solutions and policies.
- Informing Policies through Vetted Technical Expertise**: We engage with policy makers and regulators to provide technical expertise and insights for the development and implementation of climate policies.

IEEE Climate Change newsletter

Information from IEEE to Help Sustain Our Planet

Climate Change | IEEE: Enabling Innovation and Technology Solutions

August 2023 IEEE Climate Change News

Smart Cities Rely on Smart Infrastructure to Make People's Lives Better

Smart Cities help urban environments to develop and grow by using modern technology, including data-driven solutions, that provide a sustainable, resilient, equitable, and privacy-respecting community for its inhabitants.

[Read More](#)

IEEE Climate Change Engagement Opportunities

Sections, Regions, Globally

The Climate Change Pavilions in the Sections Congress in Canada and the IEEE TenCon Conference in Chiang Mai, Thailand



2023 IEEE President and CEO Social Media Channels

There are four social media channels for the IEEE President:

<https://www.facebook.com/ieeepresident>



<https://www.instagram.com/ieeepresident/>



<https://www.linkedin.com/showcase/ieeepresident>



<https://twitter.com/ieeepresident>



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Thank you

web: www.srahman.org