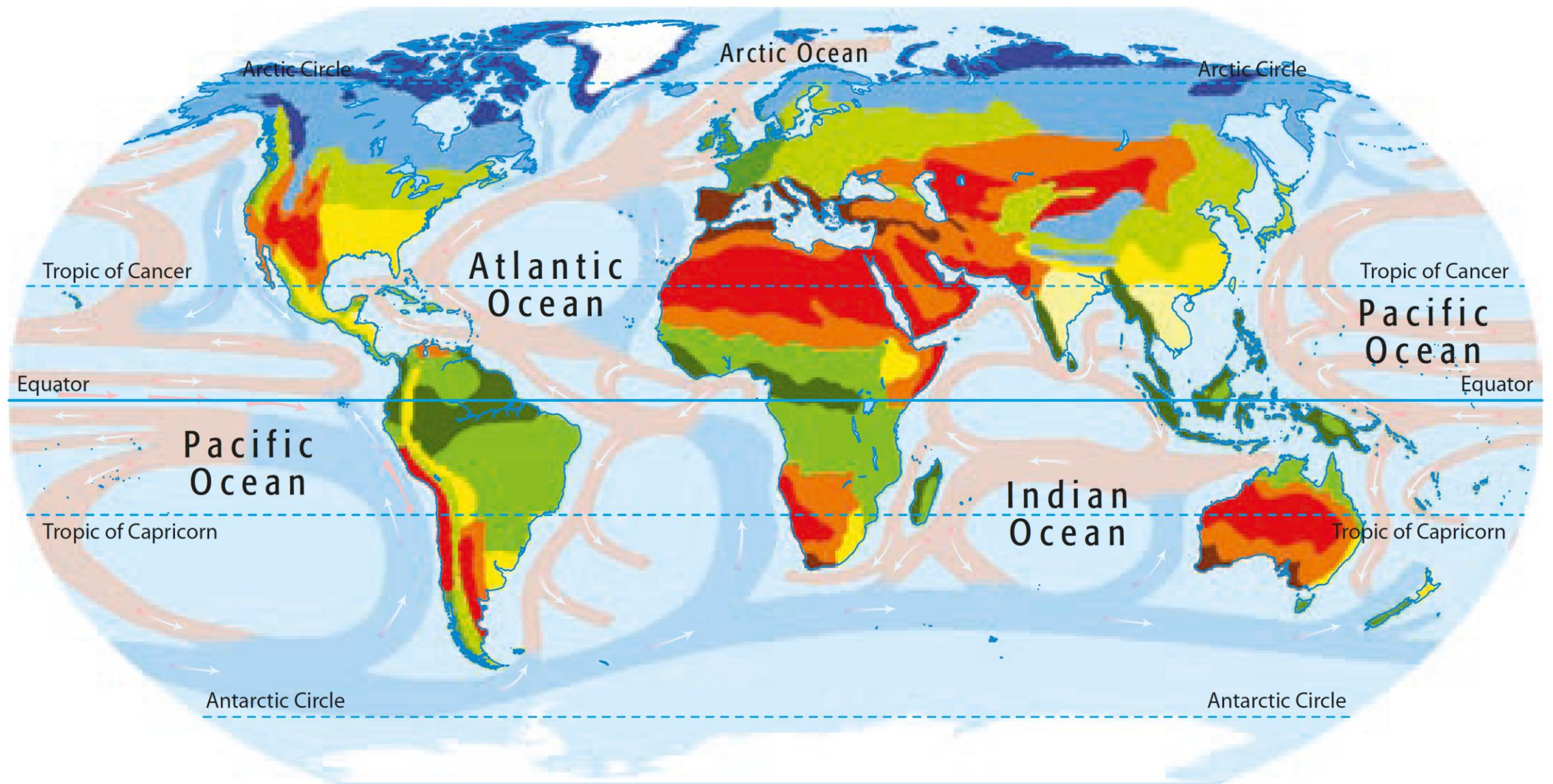
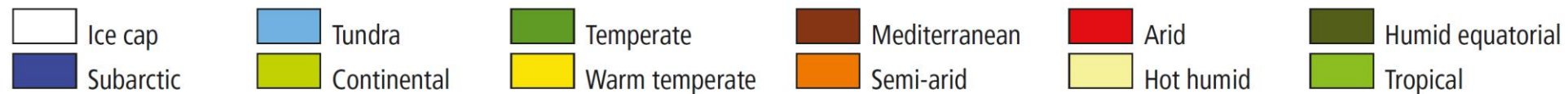


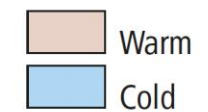
Climate Change and Global Issues



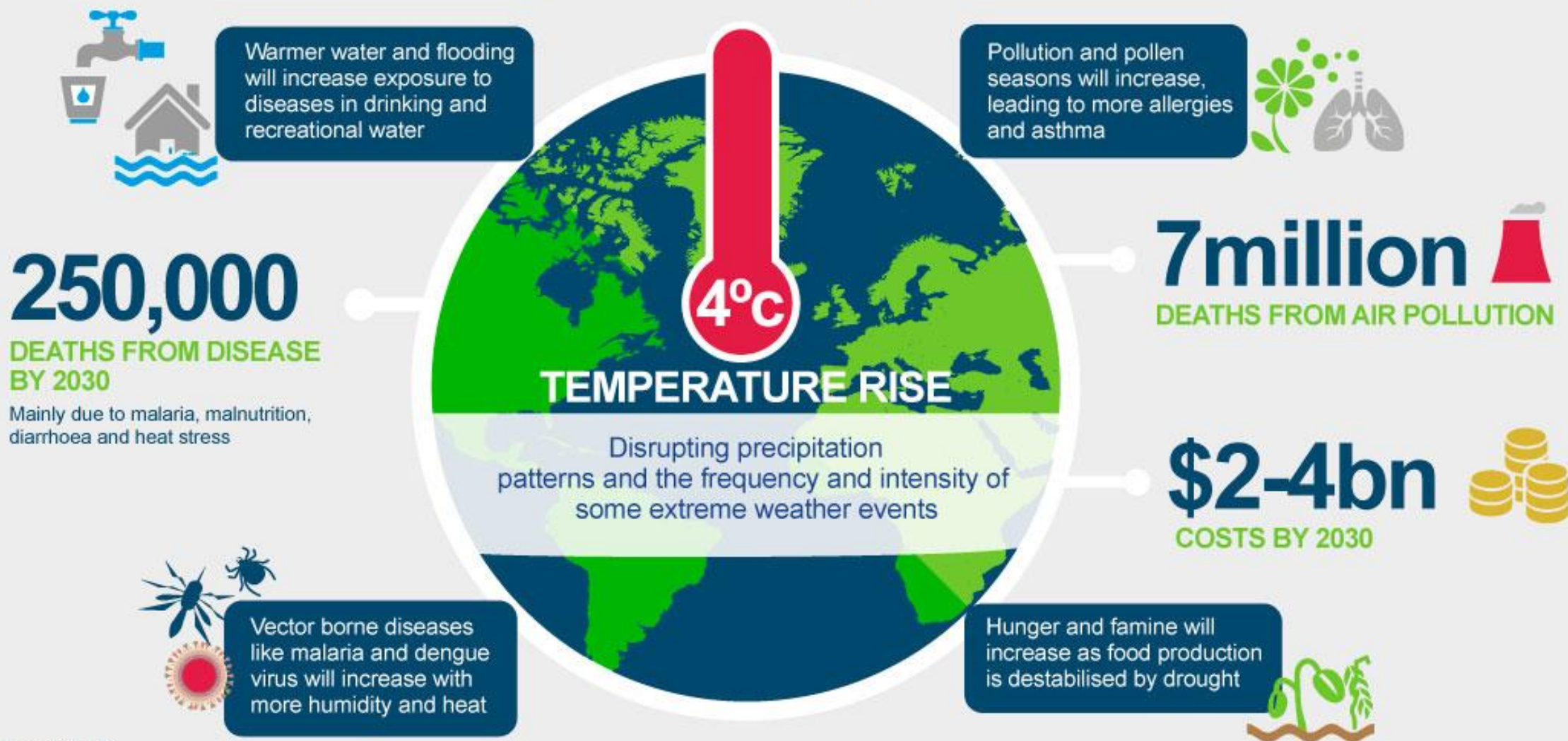
Climatic zones



Ocean currents



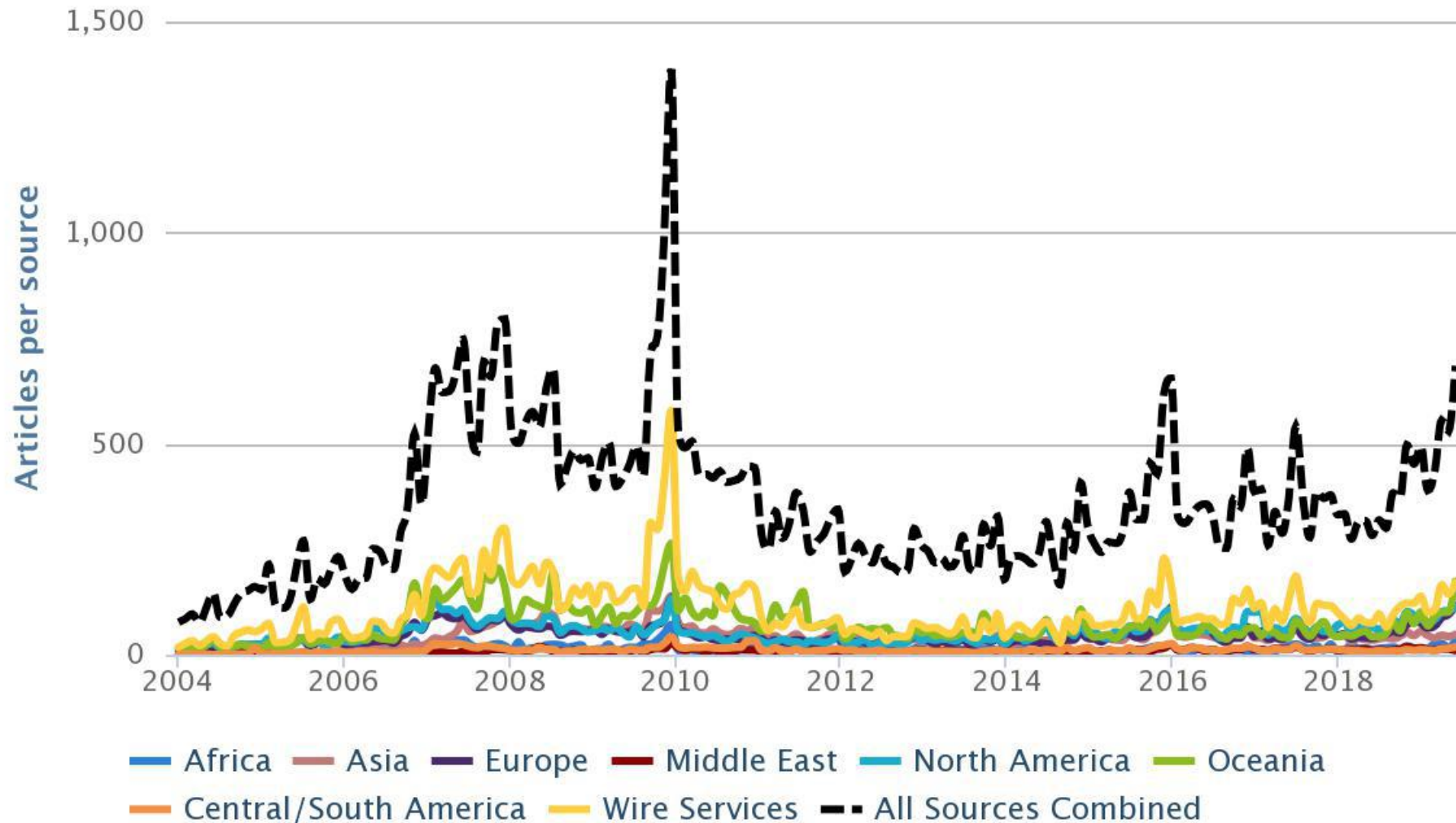
How climate change could impact the world



Source: WHO

Credit: Rebecca Robinson/LSHTM

2004-2019 World Newspaper Coverage of Climate Change and Global Warming



Boykoff et al.(2019)

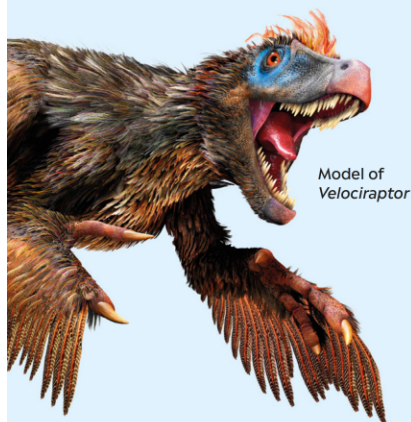


History of climate change

- Scientists study changes in Earth's climate by analysing rock formations, ice cores, and plant growth over millions of years.
- The first weather records began in the 18th century, and methods of measuring atmospheric changes have only been developed in the last 150 years.
- This timeline tracks the events that have severely impacted Earth's climate, and the techniques used to study them.

Timeline

Scientists study changes in Earth's climate by analysing rock formations, ice cores, and plant growth over millions of years. The first weather records began in the 18th century, and methods of measuring atmospheric changes have only been developed in the last 150 years. This timeline tracks the events that have severely impacted Earth's climate, and the techniques used to study them.



Model of Velociraptor

250 million years ago (mya)

The biggest mass extinction in Earth's history destroys 96 per cent of species, after massive volcanic eruptions releasing huge amounts of carbon dioxide (CO₂) increase the greenhouse effect, causing serious global warming and making life on Earth almost impossible.

250–65 mya

A warm, ice-free period leads to the age of the dinosaurs. This ends with another mass extinction, possibly caused by catastrophic volcanic activity coupled with the impact of a huge asteroid.

55 mya

A long period of global cooling begins, eventually leading to the ice ages that cover much about 20,000 years ago. We are currently living in a warm phase compared to an ice age.

15,000 years ago

The last cold phase of the current ice age ends, and the vast ice sheets that cover much of North America, Europe, and northern Asia begin to melt.

13,000 years ago

Disruption of ocean currents caused by vast quantities of meltwater entering the north Atlantic cause a local temperature drop that lasts for 1,300 years. This is the period known as the "Younger Dryas".

8,000 years ago

CO₂ levels in the atmosphere rise by about 8 per cent, while the first farmers are clearing and burning large areas of forest to create fields.

6,000 years ago

Drought brings an end to an 8,000-year monsoon climate in north Africa, turning tropical grasslands into vast desert – the Sahara.

1000 CE

Temperatures rise to the peak of the "Medieval Warm Period", whose climate is as warm as it is today. In Mexico a prolonged drought causes the abandonment of many Mayan cities.

1430

Europe enters a "Little Ice Age" that lasts until the 19th century. The low temperatures cause widespread crop failures and famines, and make rivers and canals freeze over each winter. This may be linked to increased volcanic activity producing ash clouds that partly reflected the Sun's rays.

1607

At the first Frost Fair on the frozen River Thames in London, people flock to food stalls and sideshows on the thick ice. The last Frost Fair is in 1813, near the end of the Little Ice Age.

1703

Britain's most severe storm on record till then, known as the Great Storm, destroys many towns and kills 123 people on land, 8,000 at sea.

1709

British industrialist Abraham Darby invents a way of using coal to produce iron. This

begins the intense use of fossil fuels as an industrial energy source. The resulting Industrial Revolution commences the largescale increases in atmospheric CO₂.

1807

Coal gas provides the fuel for the first street lighting scheme in London.

1815

The Indonesian volcano Tambora explodes in the largest volcanic eruption in recorded history. Airborne ash shading Earth causes the "year without a summer" of 1816.

1827

French mathematician Jean Baptiste Fourier discovers the greenhouse effect, by which gases in the atmosphere trap heat radiated from the Sun-warmed Earth.

1840

Swiss-born scientist Louis Agassiz proposes his theory of ice ages, and realizes that northern Europe was once covered by an ice sheet.

1847

The world's first oil well is drilled at Baku, Azerbaijan.

1856

The first refinery for crude oil is at Ulaszowice, Poland.

1863

Irish scientist John Tyndall describes how water vapour can act as a greenhouse gas.

1882

American inventor Thomas Edison sets up the world's first commercial coal-fired electricity generating station – the Pearl Street plant in New York City. It is used to supply power for the incandescent light bulbs invented by Edison in 1879.

1885

German engineer Karl Benz creates the first practical petrol-engined car.

1895

Swedish physicist and chemist Svante Arrhenius suggests that adding CO₂ to Earth's atmosphere by burning coal might increase the greenhouse effect, causing global warming.

1908

In the United States, the Model T Ford goes into mass production, and car ownership starts to rise rapidly.

Edison's light bulb, invented in 1879



1920

Serbian scientist Milutin Milankovitch discovers how regular variations in Earth's orbit around the Sun cause cycles of changing global temperature that are believed to be responsible for ice ages.

1931

After three years of drought, torrential rain falls for months in China. This causes the Yangtze River to flood catastrophically, rising up to 29 m (95 ft) above its usual level. As a result, 3.7 million people die through disease, starvation, or drowning. It is the most destructive climatic event in human history.

1932

Following years of drought, the desperately dry soil of the "Dust Bowl" in the American Midwest starts to blow away. The dust storms continue until 1939.

1939

British engineer Guy Stewart Callendar argues that observed global warming since the 19th century could be explained by a 10 per cent rise in atmospheric CO₂. He suggests that a doubling of CO₂ in the atmosphere would bring about an average global temperature increase of 2°C (3.6°F).

1945

After rising steadily for about a century, global temperatures start to fall slowly because air pollution by soot and other particles partly obscures the Sun.

1957

After discovering that the oceans cannot absorb all the extra CO₂ being created by the burning of fossil fuels, American oceanographer Roger Revelle warns that humanity is conducting a "large-scale geophysical experiment" by releasing greenhouse gases into the atmosphere.

1958

Charles Keeling starts recording atmospheric CO₂ concentrations, first in Antarctica, and then in Hawaii. Over the following years he records a steady long-term rise with annual fluctuations caused by Northern Hemisphere winters. The graph's line is described as the "sawtoothed curve".

1962

Russian climate expert Mikhail Budyko warns that the exponential growth of industrial civilization could cause drastic global warming within the next century.

1967

In the United States, geophysicists Syukuro Manabe and Richard Wetherald devise an early computer model of the global climate. This



A car crushed by a fallen tree, caused by the Great Storm of 1987 in the UK

agrees with Callendar's earlier suggestion that a doubling of atmospheric CO₂ could cause a global temperature rise of 2°C (3.6°F). Later computer models revise this figure to an even higher 3°C (5.4°F).

1968–74

The Sahel region on the southern fringes of the Sahara in Africa suffers a seven-year drought. Millions die of starvation, and by the end of the drought, 50 million people are relying on food aid for survival.

1970

The worst tropical storm of the 20th century occurs in Bangladesh, where flooding caused by a 7.5-m (25-ft) storm surge in the Bay of Bengal kills up to 500,000 people.

1976–77

Europe suffers a major drought, which in Britain is the worst for 250 years.

1977

Records show that global temperatures start to rise again after a reduction in soot emissions reduces the "global dimming" effect that air pollution is thought to have.

1982

Swiss physicist Hans Oeschger, working on atmospheric samples trapped in the ancient ice of the Greenland ice sheet, confirms the link between increasing atmospheric CO₂ and global warming.

1982–83

Eastern Australia suffers its worst drought of the 20th century. It triggers the disastrous "Ash Wednesday" fires that kill more than 60 people around Victoria and South Australia.

1983–85

Crop failures and famine brought about by civil war and a long drought in Ethiopia and Sudan kill 450,000 people, and millions more are made destitute.

1985

A drilling team at Vostok Station in central Antarctica produces an ice core that contains a 150,000-year record of temperature and atmospheric CO₂. This "Vostok core" shows that the levels of both have risen and fallen in remarkably close step and further proves the link between the two.

1987

The UK's most violent storm recorded since 1703 sweeps through southern England, uprooting more than 15 million trees.

1988

The UN asks for a high-level scientific assessment of climate change, which leads to the establishment of the Intergovernmental Panel on Climate Change (IPCC). Its role is to produce regular, detailed reports on the conclusions of climate scientists worldwide. The first report appears in 1990.

1990

A tropical cyclone (hurricane) in the Indian Ocean creates a storm surge 6 m (20 ft) high that sweeps up the Bay of Bengal and floods parts of the low-lying Bangladesh, causing around 148,000 deaths.

Ice cores at Vostok prove that atmospheric CO₂ levels affect global temperature



1990

In the United States, geophysicist Syukuro Manabe uses a computer model of world climate to show that global warming could weaken the Gulf Stream, possibly making northern Europe cooler rather than warmer.

1991

The eruption of Mount Pinatubo in the Philippines ejects a dust cloud into the atmosphere, making average global temperatures drop for two years.

1991-92

Africa suffers its worst dry spell of the 20th century when 6.7 million sq km (2.6 million sq miles) are affected by drought.

1997

Wildfires in Indonesia destroy more than 3,000 sq km (1,160 sq miles) of forest, creating a vast cloud of pollution that adds as much CO₂ to the atmosphere as 30-40 per cent of the world's fossil fuel consumption.

1997

At a meeting in Kyoto, Japan, representatives of many countries agree to aim for a five per cent cut in global greenhouse gas emissions by 2012. The United States and Australia refuse to agree, but it becomes international law in 2005.

2000

Torrential rain and flooding hit the UK during the wettest autumn recorded in 300 years.

2001

The IPCC produces its third report, which shows that there is no longer any doubt among climate scientists that human activity is causing global climate change. The report includes the "hockey stick" graph showing temperatures over the past 1,000 years, and the sharp upturn in the 20th century.

2002

The Larsen-B ice shelf near the tip of the Antarctic Peninsula disintegrates within 35 days, and 3,250 sq km (1,254 sq miles) of ice drift away to melt in the ocean.

Flooding after torrential rain due to Hurricane Katrina in the USA, 2005



2003

Europe experiences its most extreme heatwave for at least 500 years, with temperatures over 40°C (104°F), and at least 30,000 people die as a result.

2004

A study published in the scientific journal *Nature* concludes that up to 52 per cent of plant and animal species could face extinction because of climate change by the year 2050.

2004

Measurements of ocean currents associated with the Gulf Stream indicate that the flow has slowed since the 1960s. They suggest that the Gulf Stream might be under threat.



Forest in Australia burned down due to Australian bushfires in 2019-20

2004-05

A warm, snow-free winter forces most of the ski resorts in Washington and Oregon, USA, to shut down midway through the season.

2005

The British Antarctic Survey reveals that the massive West Antarctic ice sheet could be disintegrating – an event that could raise world sea levels by up to 5 m (16 ft).

2005

The Atlantic suffers the worst hurricane season on record, with 14 named storms. One of these, Hurricane Katrina, destroys much of New Orleans, Louisiana, USA.

2006

Several of Greenland's glaciers are reported to be flowing much faster than in the past, indicating that the fringes of the Greenland ice sheet are reacting to global warming more quickly than had been predicted.

2007

China takes over from the United States as the world's biggest producer of greenhouse gases, even though China's emissions per person are only a quarter of those in the USA. Much of the rise is caused by increased electricity generation by coal-fired power plants.

2007

Severe heatwaves hit southern Europe, with temperatures peaking at 46°C (114.8°F) in Greece, causing wildfires and deaths from heatstroke. Meanwhile torrential rain strikes the UK, causing serious flooding. The intensity of the rainfall matches computer models of the changing climate.

2012

Arctic sea ice reaches the lowest extent since satellite records began in 1979.

2013

The IPCC's fifth report states that "Warming of the climate system is unequivocal".

2015

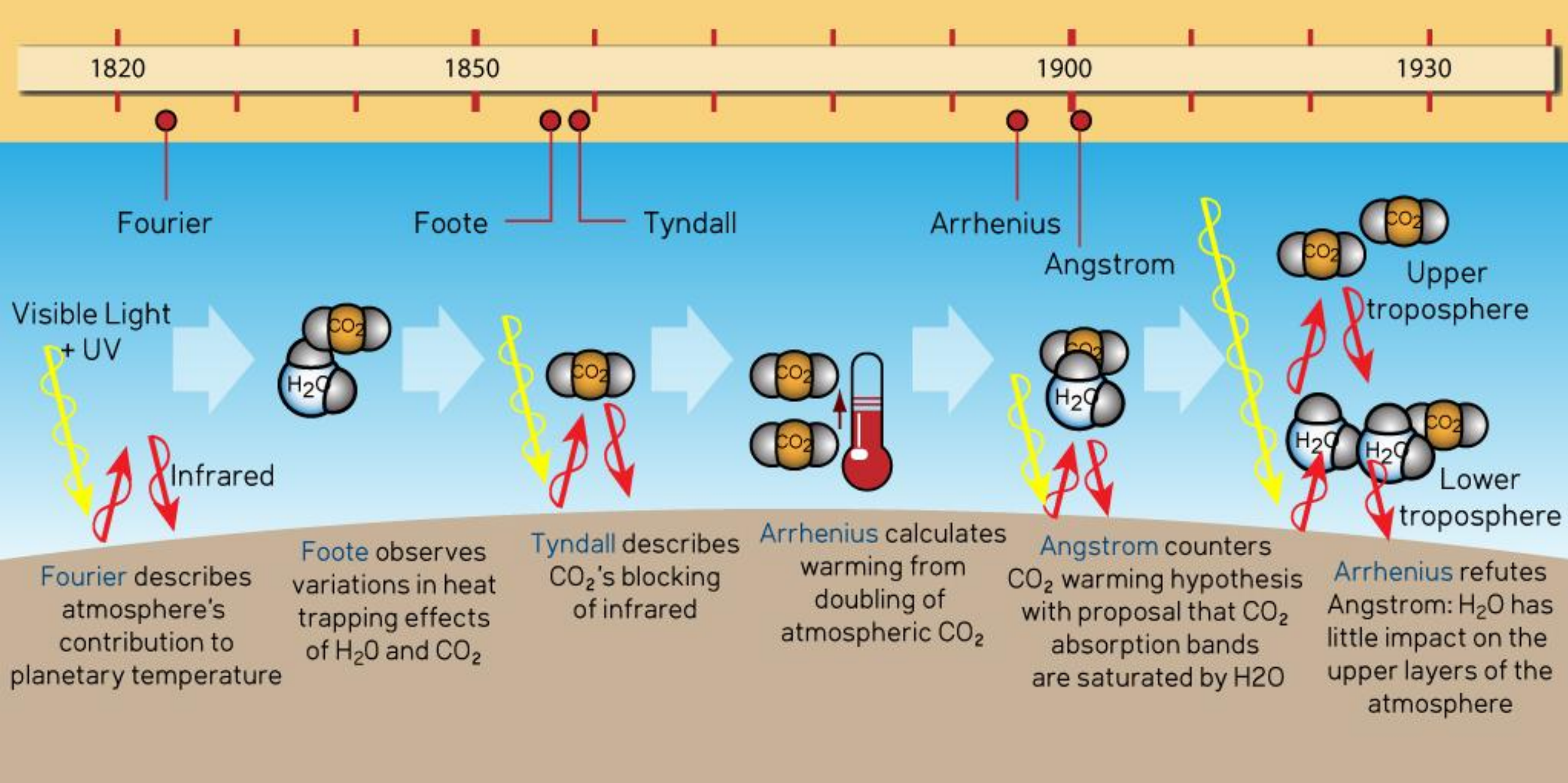
The Paris Agreement signed at the UN's climate change conference bind 195 nations to limiting climate change to below 2°C (3.6°F) warming.

2016

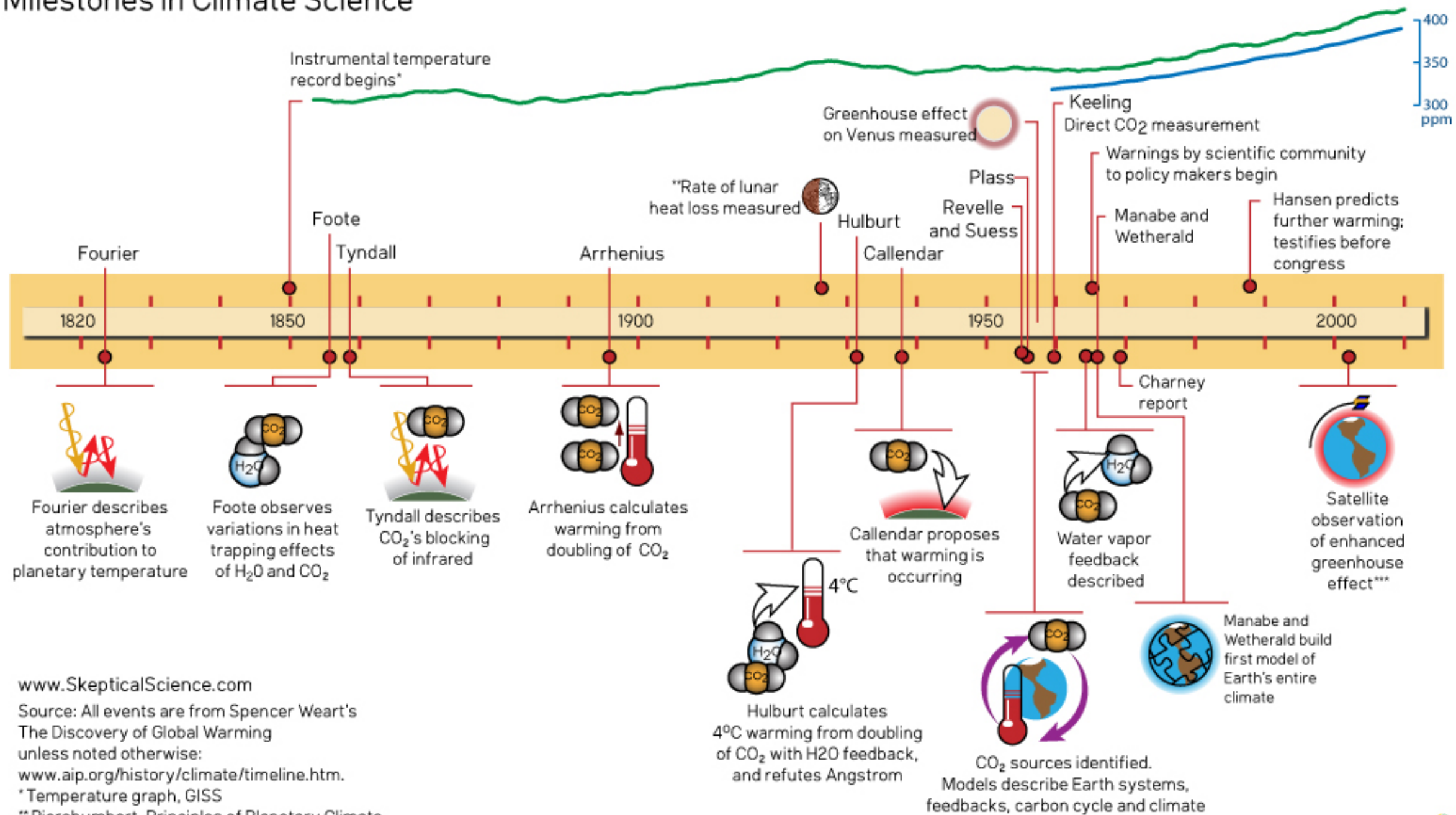
Global temperatures are the highest recorded, reaching 1.1°C above preindustrial times, due to the combination of further global warming and a large El Niño event in the Pacific.

2019-20

Record-breaking heat and drought in Australia cause massive wildfires, causing the deaths of at least 34 people. Around 18.6 million hectares (46 million acres) of forest are destroyed and billions of animals die, driving some species to the brink of extinction.



Milestones in Climate Science



www.SkepticalScience.com

Source: All events are from Spencer Weart's
The Discovery of Global Warming

unless noted otherwise:

www.aip.org/history/climate/timeline.htm.

* Temperature graph, GISS

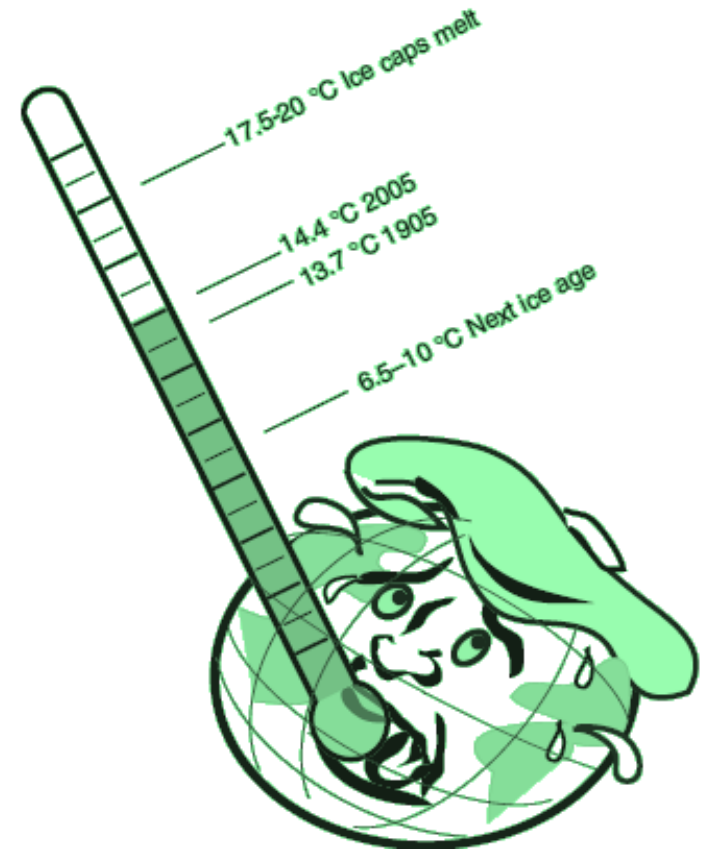
** Pierrehumbert, Principles of Planetary Climate

*** Nature, 15 March 2001



Hotter temperatures

- As greenhouse gas concentrations rise, so does the global surface temperature. The last decade, 2011-2020, is the warmest on record.
- Since the 1980s, each decade has been warmer than the previous one.
- Nearly all land areas are seeing more hot days and heat waves. Higher temperatures increase heat-related illnesses and make working outdoors more difficult.
- Wildfires start more easily and spread more rapidly when conditions are hotter. Temperatures in the Arctic have warmed at least twice as fast as the global average.



More severe storms

- Destructive storms have become more intense and more frequent in many regions.
- As temperatures rise, more moisture evaporates, which exacerbates extreme rainfall and flooding, causing more destructive storms.
- The frequency and extent of tropical storms is also affected by the warming ocean.
- Cyclones, hurricanes, and typhoons feed on warm waters at the ocean surface. Such storms often destroy homes and communities, causing deaths and huge economic losses.

Increased drought

- Climate change is changing water availability, making it scarcer in more regions.
- Global warming exacerbates water shortages in already water-stressed regions and is leading to an increased risk of agricultural droughts affecting crops, and ecological droughts increasing the vulnerability of ecosystems.
- Droughts can also stir destructive sand and dust storms that can move billions of tons of sand across continents.
- Deserts are expanding, reducing land for growing food. Many people now face the threat of not having enough water on a regular basis.

A warming, rising ocean

- The ocean soaks up most of the heat from global warming. The rate at which the ocean is warming strongly increased over the past two decades, across all depths of the ocean.
- As the ocean warms, its volume increases since water expands as it gets warmer.
- Melting ice sheets also cause sea levels to rise, threatening coastal and island communities.
- In addition, the ocean absorbs carbon dioxide, keeping it from the atmosphere. But more carbon dioxide makes the ocean more acidic, which endangers marine life and coral reefs.

Loss of species

- Climate change poses risks to the survival of species on land and in the ocean.
- These risks increase as temperatures climb. Exacerbated by climate change, the world is losing species at a rate 1,000 times greater than at any other time in recorded human history.
- One million species are at risk of becoming extinct within the next few decades.
- Forest fires, extreme weather, and invasive pests and diseases are among many threats related to climate change.
- Some species will be able to relocate and survive, but others will not.

Not enough food

- Changes in the climate and increases in extreme weather events are among the reasons behind a global rise in hunger and poor nutrition.
- Fisheries, crops, and livestock may be destroyed or become less productive.
- With the ocean becoming more acidic, marine resources that feed billions of people are at risk.
- Changes in snow and ice cover in many Arctic regions have disrupted food supplies from herding, hunting, and fishing.
- Heat stress can diminish water and grasslands for grazing, causing declining crop yields and affecting livestock.

More health risks

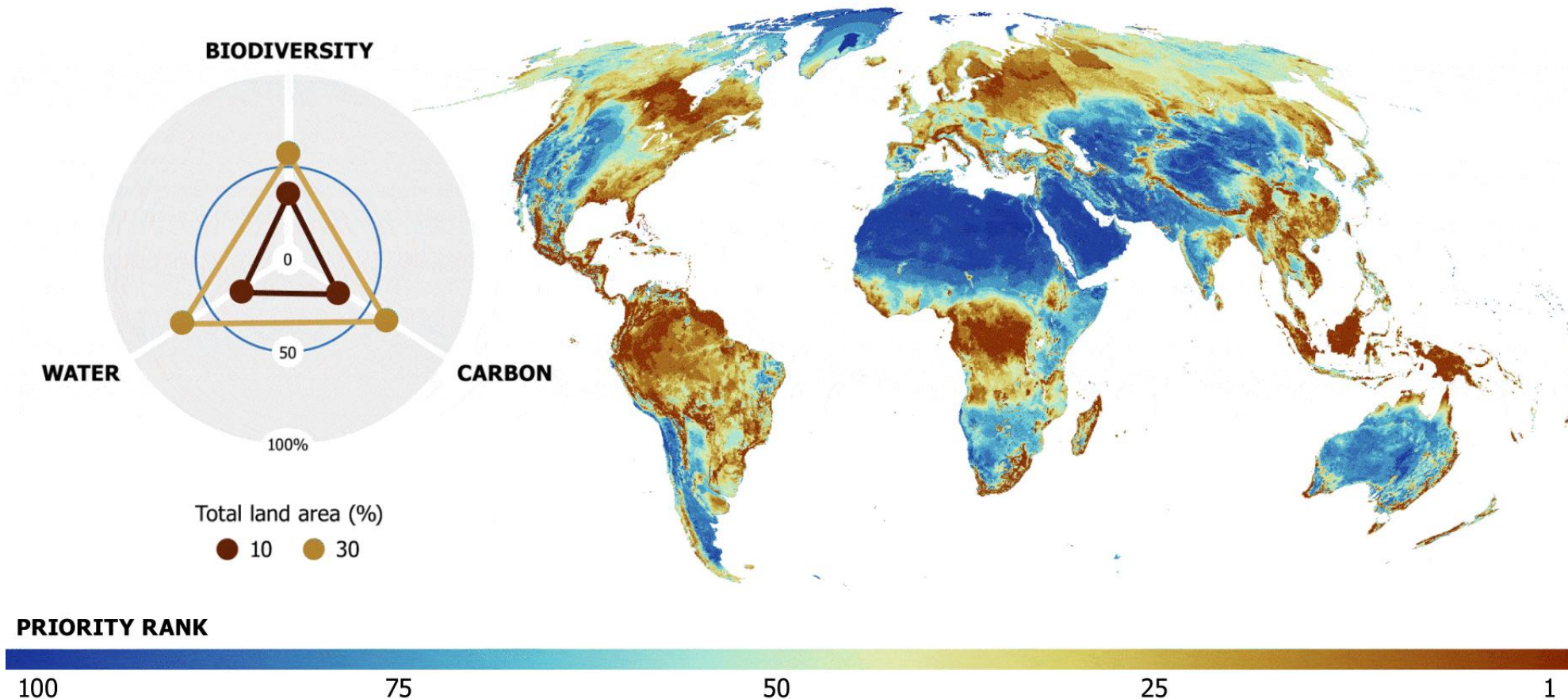
- Climate change is the single biggest health threat facing humanity.
- Climate impacts are already harming health, through air pollution, disease, extreme weather events, forced displacement, pressures on mental health, and increased hunger and poor nutrition in places where people cannot grow or find sufficient food.
- Every year, environmental factors take the lives of around 13 million people.
- Changing weather patterns are expanding diseases, and extreme weather events increase deaths and make it difficult for health care systems to keep up.

Poverty and displacement

- Climate change increases the factors that put and keep people in poverty.
- Floods may sweep away urban slums, destroying homes and livelihoods.
- Heat can make it difficult to work in outdoor jobs. Water scarcity may affect crops.
- Over the past decade (2010–2019), weather-related events displaced an estimated 23.1 million people on average each year, leaving many more vulnerable to poverty.
- Most refugees come from countries that are most vulnerable and least ready to adapt to the impacts of climate change.

According to a study, conserving 30% of land will safeguard 70% of terrestrial plant and vertebrate animal species, while 68% of all clean water will be made available.

**GLOBAL AREAS OF IMPORTANCE FOR TERRESTRIAL
BIODIVERSITY, CARBON AND WATER**



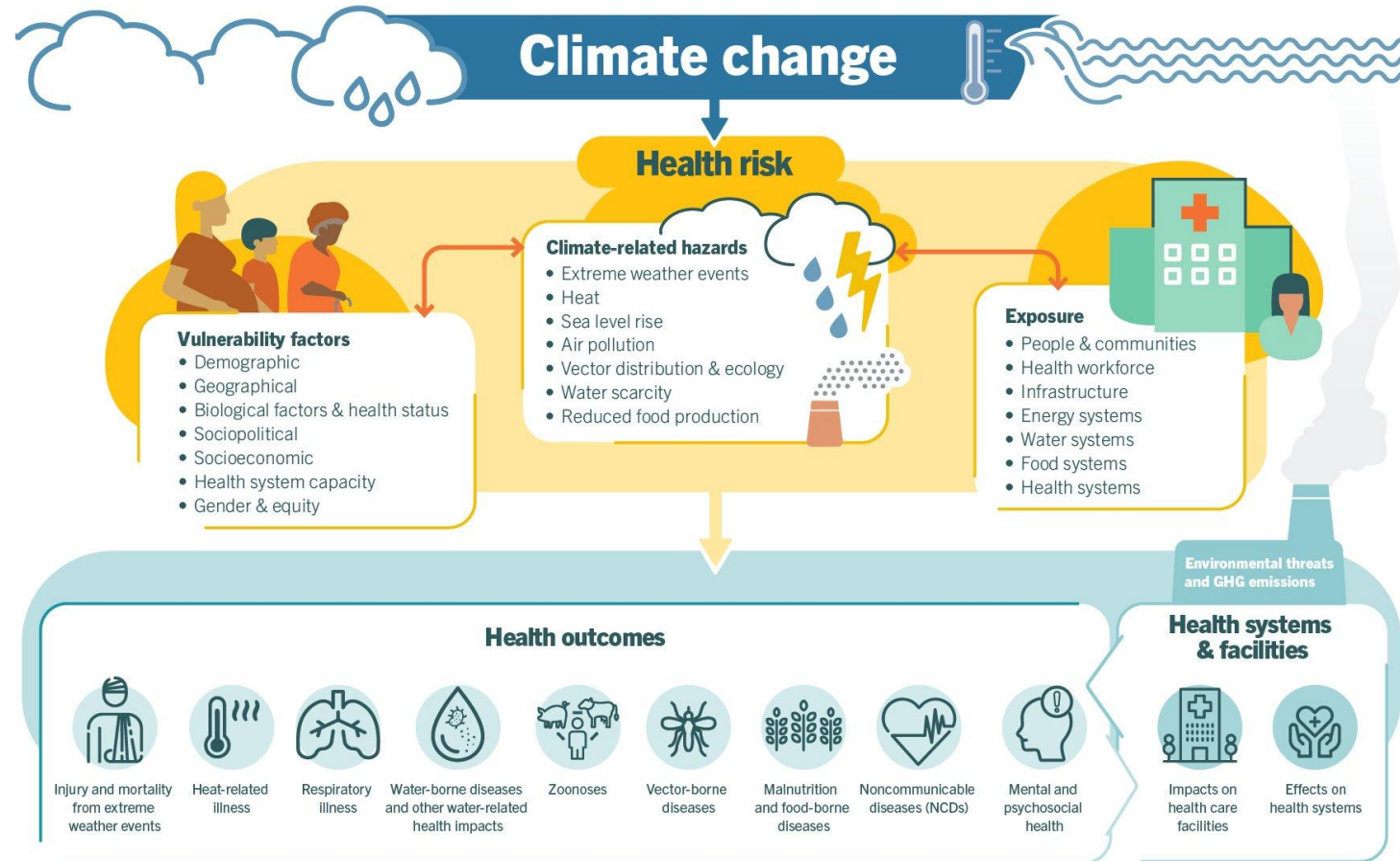
Climate change impacts on health

The Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report (AR6) concluded that climate risks are appearing faster and will become more severe sooner than previously expected, and it will be harder to adapt with increased global heating.

- It further reveals that 3.6 billion people already live in areas highly susceptible to climate change.
- Despite contributing minimally to global emissions, low-income countries and small island developing states (SIDS) endure the harshest health impacts.
- In vulnerable regions, the death rate from extreme weather events in the last decade was 15 times higher than in less vulnerable ones.

- Climate change is impacting health in a myriad of ways, including by leading to death and illness from increasingly frequent extreme weather events, such as heatwaves, storms and floods, the disruption of food systems, increases in zoonoses and food-, water- and vector-borne diseases, and mental health issues.
- Furthermore, climate change is undermining many of the social determinants for good health, such as livelihoods, equality and access to health care and social support structures.
- These climate-sensitive health risks are disproportionately felt by the most vulnerable and disadvantaged, including women, children, ethnic minorities, poor communities, migrants or displaced persons, older populations, and those with underlying health conditions.

An overview of climate-sensitive health risks, their exposure pathways and vulnerability factors. Climate change impacts health both directly and indirectly, and is strongly mediated by environmental, social and public health determinants.



- Although it is unequivocal that climate change affects human health, it remains challenging to accurately estimate the scale and impact of many climate-sensitive health risks.
- However, scientific advances progressively allow us to attribute an increase in morbidity and mortality to global warming, and more accurately determine the risks and scale of these health threats.

- WHO data indicates 2 billion people lack safe drinking water and 600 million suffer from foodborne illnesses annually, with children under 5 bearing 30% of foodborne fatalities.
- Climate stressors heighten waterborne and foodborne disease risks. In 2020, 770 million faced hunger, predominantly in Africa and Asia.
- Climate change affects food availability, quality and diversity, exacerbating food and nutrition crises.

- Temperature and precipitation changes enhance the spread of vector-borne diseases.
- Without preventive actions, deaths from such diseases, currently over 700 000 annually, may rise.
- Climate change induces both immediate mental health issues, like anxiety and post-traumatic stress, and long-term disorders due to factors like displacement and disrupted social cohesion.

- Recent research attributes 37% of heat-related deaths to human-induced climate change.
- Heat-related deaths among those over 65 have risen by 70% in two decades.
- In 2020, 98 million more experienced food insecurity compared to the 1981–2010 average.
- The WHO conservatively projects 250 000 additional yearly deaths by the 2030s due to climate change impacts on diseases like malaria and coastal flooding.
- However, modelling challenges persist, especially around capturing risks like drought and migration pressures.

- The climate crisis threatens to undo the last 50 years of progress in development, global health and poverty reduction, and to further widen existing health inequalities between and within populations.
- It severely jeopardizes the realization of UHC in various ways, including by compounding the existing burden of disease and by exacerbating existing barriers to accessing health services, often at the times when they are most needed.
- Over 930 million people – around 12% of the world's population – spend at least 10% of their household budget to pay for health care.
- With the poorest people largely uninsured, health shocks and stresses already currently push around 100 million people into poverty every year, with the impacts of climate change worsening this trend.

Climate change and equity

- In the short- to medium-term, the health impacts of climate change will be determined mainly by the vulnerability of populations, their resilience to the current rate of climate change and the extent and pace of adaptation.
- In the longer-term, the effects will increasingly depend on the extent to which transformational action is taken now to reduce emissions and avoid the breaching of dangerous temperature thresholds and potential irreversible tipping points.

While no one is safe from these risks, the people whose health is being harmed first and worst by the climate crisis are the people who contribute least to its causes, and who are least able to protect themselves and their families against it: people in low-income and disadvantaged countries and communities.

Addressing climate change's health burden underscores the equity imperative: those most responsible for emissions should bear the highest mitigation and adaptation costs, emphasizing health equity and vulnerable group prioritization.

Climate change on global transportation

- Transport is responsible for about one-quarter of all greenhouse gas emissions. The sector's emissions are set to double by 2050.
- But humanity can reduce that tally by up to **4.7 Gt** by embracing electric vehicles, both privately and in public transit systems, and by creating safe spaces where people can walk, cycle and use other forms of non-motorized transport.
- Doing those things would have other benefits, as well. For instance, without action to cut vehicle emissions, deaths from exposure to exhaust fumes in urban areas are set to increase by over 50 per cent by 2030.

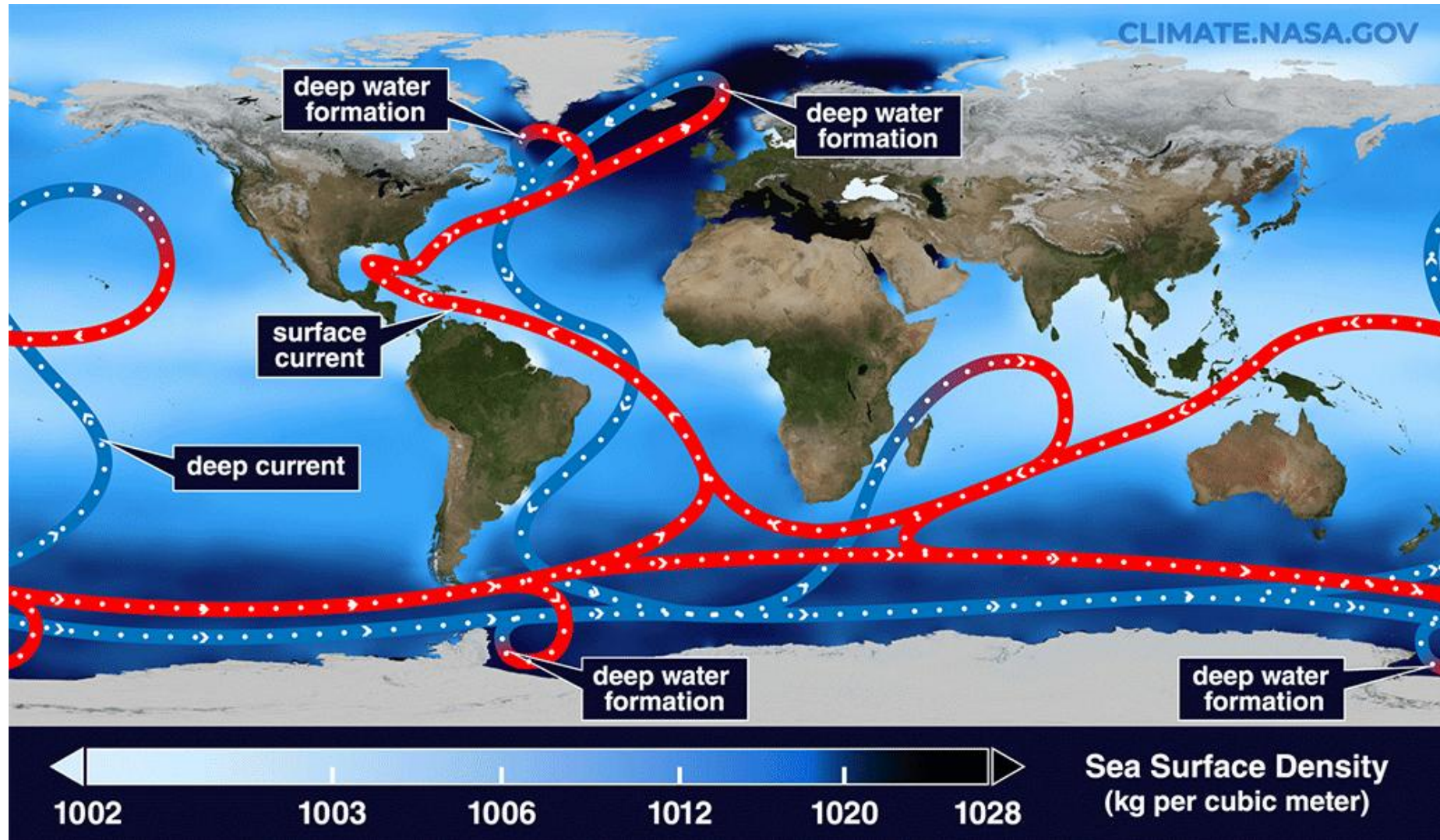
- The lowest income countries produce one-tenth of emissions, but are the most heavily impacted by climate change.

Vulnerable populations in these countries suffer damaging outcomes in terms of health, food and water, education and more.

Developing countries have a window of opportunity to put mitigating policies in place.



Extreme Climate Impacts From Collapse of a Key Atlantic Ocean Current Could be Worse Than Expected, a New Study Warns



LETTER

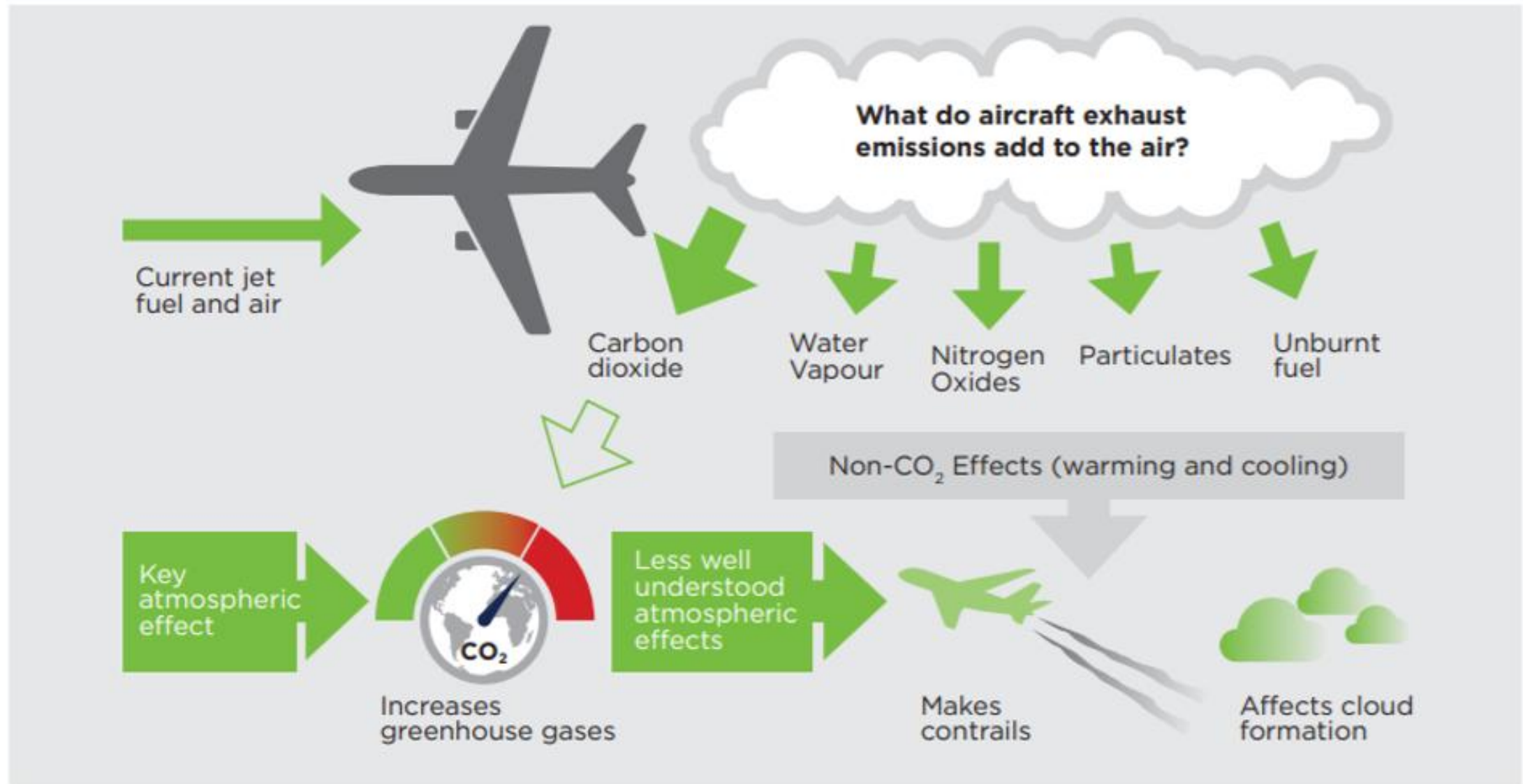
The impacts of rising temperatures on aircraft takeoff performance

Ethan D. Coffel^{1,2} · Terence R. Thompson³ ·
Radley M. Horton^{2,4}

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Global Aviation contributions to Greenhouse gases and climate change



Climate change and airline takeoff

Hotter temperatures at ground level therefore make it more difficult for airplanes to gain enough lift to take flight. Hotter temperatures can cause weight restrictions for flight take-off — meaning fewer passengers and reduced capacity for luggage, cargo, and fuel.

CLIMATE CHANGE IMPACTS AIR TRAVEL



**Severe storms disrupt
air travel**



**Stronger wind shear
increases turbulence**



**Shifting wind patterns
impact travel routes**



**Rising seas threaten
coastal airports**



**Hotter air affects
takeoff**

Actions are required at every level: government, private sector and the public

- Switch fleets to electric vehicles
- Incentivize a transition to zero-emission transportation, including for cars, taxis, buses, trucks and trains
- Invest in and remove barriers to non-motorized mobility infrastructure, like protected bicycle lanes or paths for pedestrians Promote the significant public health benefits of low-carbon policies, including increased public transportation and non-motorized mobility

Climate change and poverty

- The effects of climate change are hitting many of the world's poorest people first, and hardest. And they're making poverty worse.
- Extreme weather patterns, natural hazards and food and water shortages are threatening the lives of people living in poverty and, the poorer people are, the harder it is to recover from failed harvests, destroyed homes, and health crises.
- It has been estimated that, by 2030, **climate change could push more than 120 million more people into poverty.**
- That's why ActionAid is working with communities around the world to help build resilience, adapt to the effects of climate change, respond to disasters and support the specific needs of women and girls.

The relationship between climate change and poverty

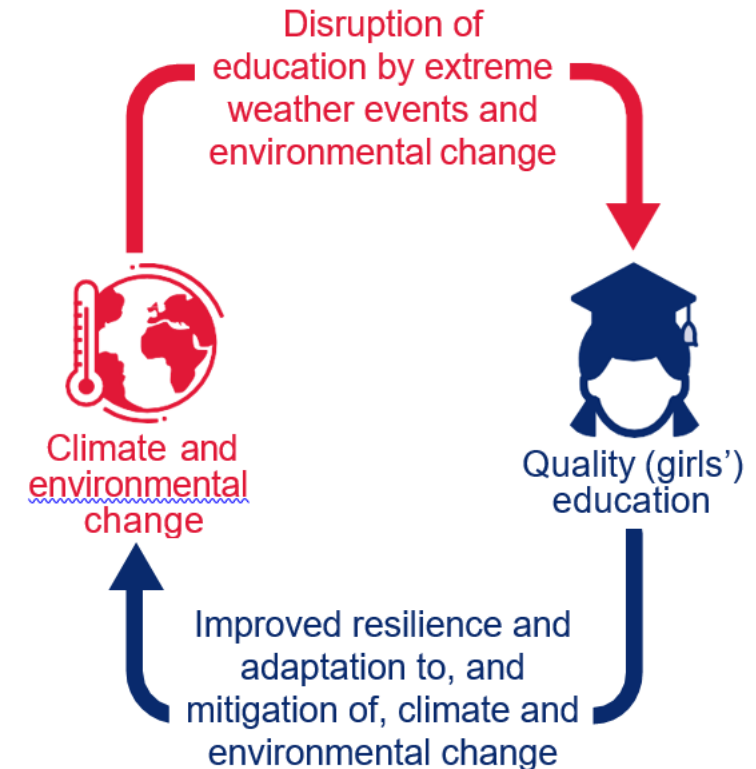
- Despite historically being the least likely to contribute to rising CO₂ emissions, **people living in poverty are often the worst affected.**
- Meanwhile, many of the world's richest and highest-polluting countries are feeling the impact of climate change the least.
- Richer countries tend to have the resources and networks to adapt to the changing climate, and more resilient infrastructure (such as water systems and housing) to cope with erratic weather events and disasters.
- While poorer countries almost always have **fewer resources and weaker infrastructure, making them more vulnerable to the effects of climate change.**

Water scarcity

- Access to water is becoming threatened by climate change. Frequent droughts, increased evaporation and changes in rainfall patterns and run-off particularly impact water availability in areas like the sub-tropics, which already experience water scarcity.
- By 2025, there will be 5 billion people on the planet, up from the current 1.7 billion who will be affected by water scarcity.

Education

Many families will survive economic downturns brought on by decimated crops through counter-productive means such as pulling their children out of school to save on fees and/or putting them to work to make up for lost income.



Creating refugees

- Climate change is a powerful driver of internal migration because of its impacts on people's livelihoods and loss of liveability in highly exposed locations.
- By 2050, 216 million climate refugees will have been displaced in six world regions, with the top three being in sub-Saharan Africa (86 million), East Asia and the Pacific (49 million), South Asia (40 million).

Work-related hazards

- Excessive heat during work creates occupational health risks; it restricts a worker's physical functions and capabilities, work capacity and productivity.
- Heat stress is projected to reduce total working hours worldwide by 2.2% and global GDP by \$2.4 billion in 2030.



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Crime, weather, and climate change



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ABSTRACT

This paper estimates the impact of climate change on the prevalence of criminal activity in the United States. The analysis is based on a 30-year panel of monthly crime and weather data for 2997 US counties. I identify the effect of weather on monthly crime by using a semi-parametric bin estimator and controlling for state-by-month and county-by-year fixed effects. The results show that temperature has a strong positive effect on criminal behavior, with little evidence of lagged impacts. Between 2010 and 2099, climate change will cause an additional 22,000 murders, 180,000 cases of rape, 1.2 million aggravated assaults, 2.3 million simple assaults, 260,000 robberies, 1.3 million burglaries, 2.2 million cases of larceny, and 580,000 cases of vehicle theft in the United States.

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Climate, weather and crime

HOW WEATHER AFFECTS CRIME IN LOS ANGELES

Offense totals include PC 187, PC 192, PC 261, PC 211,
PC 240, PC 459, PC 484 and PC 487.
Violent crime includes PC 187, PC 192, PC 261 and PC 211.

SOURCE: Governing analysis of FBI UCR Data

1.72- 1.90%

INCREASE CRIME
DURING SUMMER

967

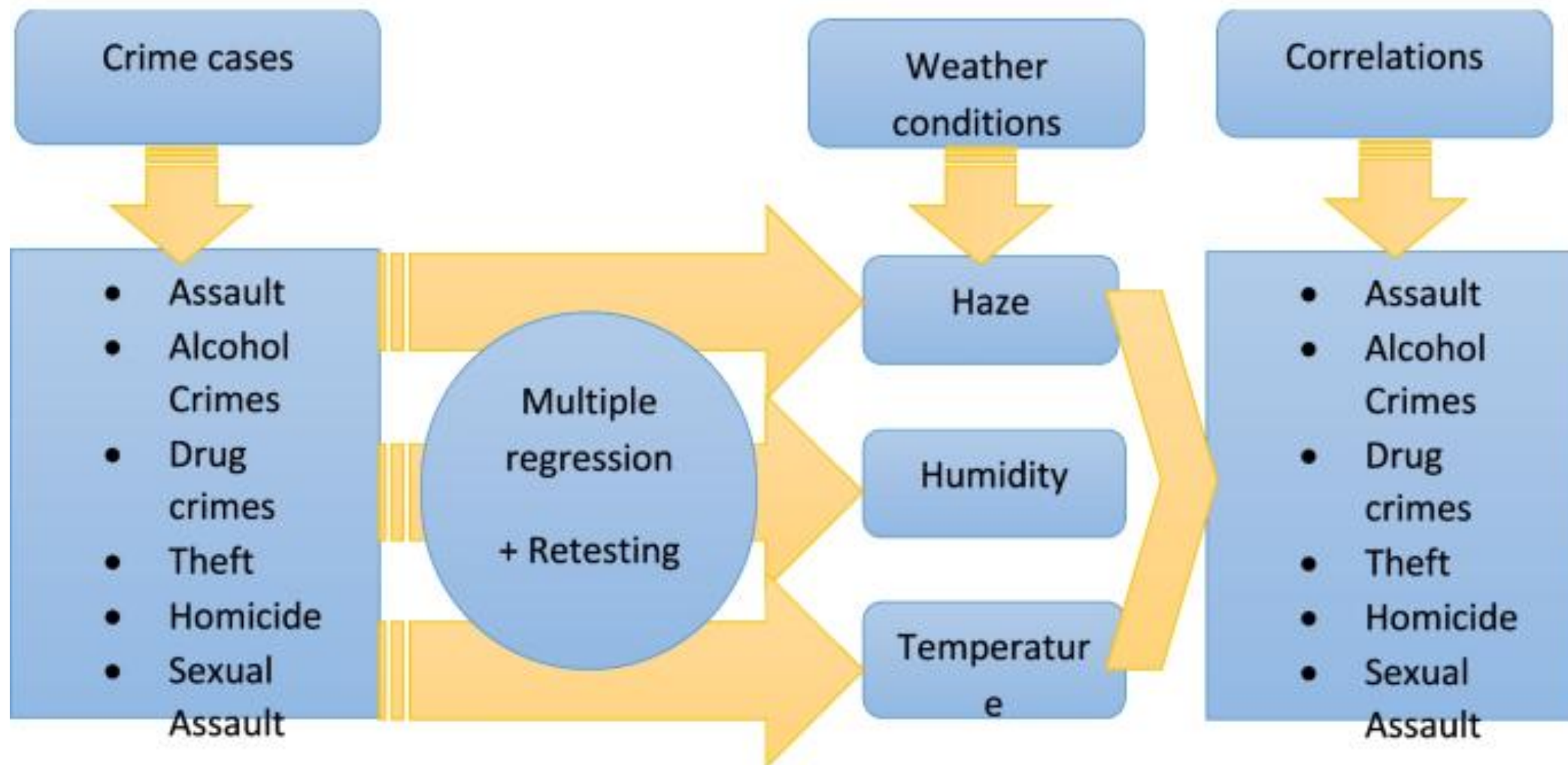
AVERAGE MONTHLY
VIOLENT OFFENSES:
JUNE-AUGUST

11,919

AVERAGE MONTHLY
OFFENSES:
JUNE-AUGUST

5%

INCREASE VIOLENT
CRIME DURING SUMMER



NEWS

Does unusual weather cause more crime?



A dog sits as Indian Hindu devotees walk through a dust storm after taking a holy dip at the Sangam, the confluence of the rivers Ganges, Yamuna and mythical Saraswati, in Allahabad on April 18, 2014. AFP PHOTO/SANJAY KANOJIA (Photo credit should read Sanjay Kanojia/AFP/Getty Images)



By **SLATE**

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Carbon dioxide per person

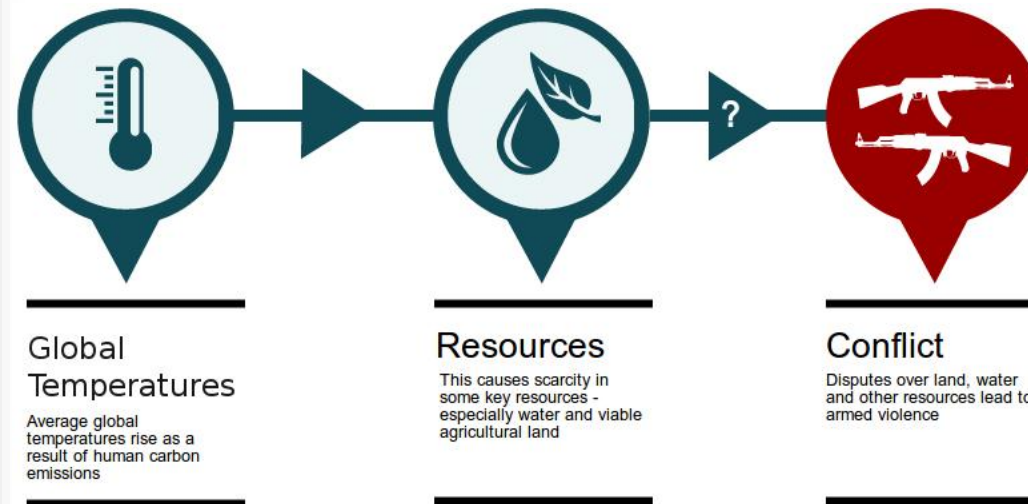
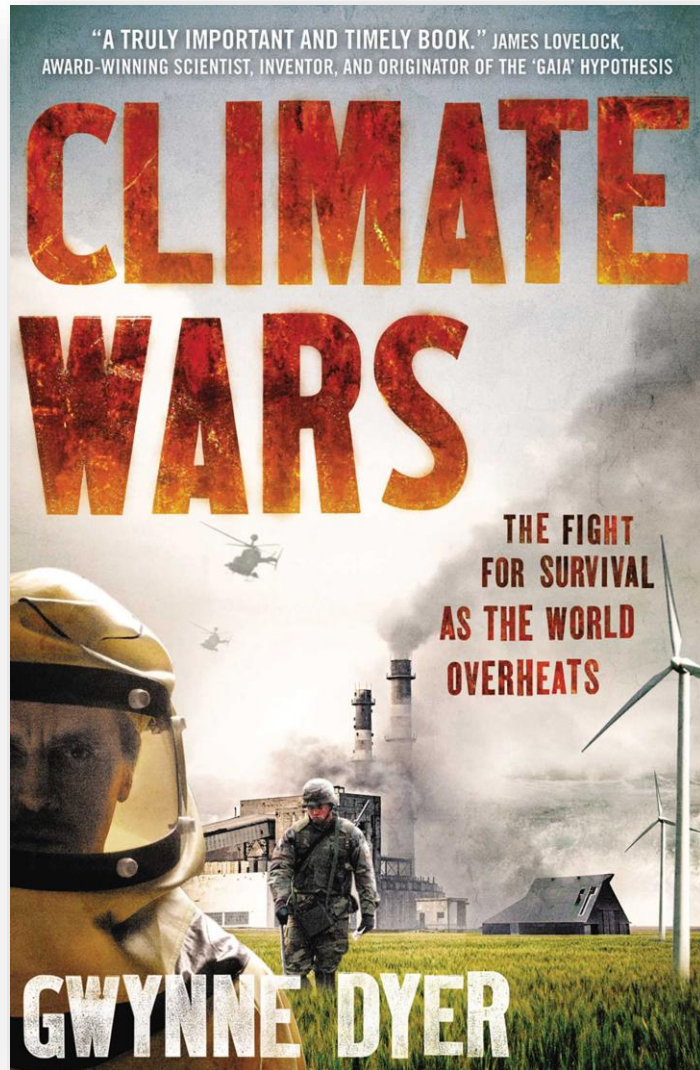
The size of the flags above indicates the average amount of CO₂ released per annum (p.a.) by each citizen of a range of nations. They show that, although China burns the most fossil fuel, its large proportion means the average carbon footprint of each Chinese citizen is relatively small.

The international politics of climate change

MATTHEW PATERSON AND
MICHAEL GRUBB

The signing of a convention which would begin to tackle the threat of human-induced climate change is expected to be a centrepiece of the June 1992 UN Conference on Environment and Development. Negotiations to date have already revealed serious divisions of interest, of which those dividing North and South still predominate. This article suggests that the best prospects for building an effective long-term regime will arise from seeking to develop non-traditional alliances across the North-South divide, so as to form a central coalition that more reluctant states will ultimately have to accept. The convention to be signed at Rio will not solve the greenhouse problem, but it could form the basis for negotiations that can start effectively to address it.

Climate change and conflicts



Climate Change Organizations

- [Adaptation Fund](#): Finances projects and programs that help vulnerable communities in developing countries adapt to climate change.
- [BIS - Climate Change and Green Finance](#): Gathers the various strands of work produced by the BIS, its committees and hosted associations, as well as its stakeholders on topics relating to climate change, green finance and sustainability.
- [C40 Cities](#): C40 is a network of the world's megacities committed to addressing climate change.

- [CDP](#): CDP is a not-for-profit charity that runs the global disclosure system for investors, companies, cities, states and regions to manage their environmental impacts.
- [Carbon Tracker](#): Independent financial think tank that carries out in-depth analysis on the impact of the energy transition on capital markets and the potential investment in high-cost, carbon-intensive fossil fuels.
- [Center for Climate and Energy Solutions](#): Independent, nonpartisan, nonprofit organization working to forge practical solutions to climate change
- [Climate Bonds Initiative](#): An international organization working to mobilize global capital for climate action. Developer of the Climate Bonds Standard and Certification Scheme.

- [Climate Investment Coalition](#): Works to accelerate climate action and a green recovery to help meet the goals of the Paris Agreement and the net-zero transition by mobilising investments for clean energy and climate by 2030.
- [Climate Investment Funds](#): Accelerates climate action by empowering transformations in clean technology, energy access, climate resilience, and sustainable forests in developing and middle income countries.
- [Coalition for Rainforest Nations](#): International organization of over 50 rainforest nations. Created the global rainforest conservation mechanism REDD+ which now protects 90% of the world's tropical rainforests.
- [Environmental Defense Fund](#): Nonprofit environmental advocacy group.
- [FAO - Climate Change](#): Supports countries to both mitigate and adapt to the effects of climate change through a wide range of research based and practical programs and projects.

- [Glasgow Financial Alliance for Net Zero \(GFANZ\)](#): GFANZ, chaired by Mark Carney, UN Special Envoy on Climate Action and Finance, unites over 160 firms (together responsible for assets in excess of US\$70 trillion) from the leading net zero initiatives across the financial system to accelerate the transition to net zero emissions by 2050 at the latest.
- [Green Climate Fund](#): World's largest climate fund, mandated to support developing countries raise and realize their Nationally Determined Contributions (NDC) ambitions towards low-emissions, climate-resilient pathways.
- [IEA](#): The IEA is committed to shaping a secure and sustainable energy future for all
- [Inside Climate News](#): Pulitzer Prize-winning, nonprofit, nonpartisan news organization that provides essential reporting and analysis on climate change, energy and the environment, for the public and for decision makers.

- [IPCC](#): The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change.
- [NDC Partnership](#): The NDC Partnership brings together more than 200 members, including more than 115 countries, developed and developing, and more than 80 institutions to create and deliver on ambitious climate action that helps achieve the Paris Agreement and the Sustainable Development Goals (SDGs).
- [NGFS](#): The Central Banks and Supervisors Network for Greening the Financial System (NGFS) is a group of Central Banks and Supervisors willing, on a voluntary basis, to exchange experiences, share best practices, contribute to the development of environment and climate risk management in the financial sector, and to mobilize mainstream finance to support the transition toward a sustainable economy.
- [OMFIF Sustainable Policy Institute](#): A community designed to meet the policy, regulatory and investment challenges posed by ESG factors

- [REDES](#): The Network of Regulators for Sustainable Development (REDES) aims to promote sustainable regulation and supervision among Latin American and the Caribbean countries and consolidate a regional forum to identify common challenges and facilitate the coordination of policies and initiatives in the face of the global agenda.
- [TCFD](#): The Financial Stability Board created the Task Force on Climate-related Financial Disclosures (TCFD) to improve and increase reporting of climate-related financial information.
- [TNFD](#): Taskforce on Nature-related Financial Disclosures (TNFD) will deliver a framework for organisations to report and act on evolving nature-related risks, to support a shift in global financial flows away from nature-negative outcomes and toward nature-positive outcomes.

- [UNDP Climate Promise](#): Tackling the climate crisis requires that all countries make bold pledges under the Paris Agreement to reduce emissions of the greenhouse gases (GHG) that cause global warming. The Climate Promise is our commitment to ensure that any country wishing to increase the ambition of their national climate pledge is able to do so.
- [United Nations Environment Programme \(UNEP\)](#): Leading global environmental authority
- [World Climate Foundation](#): An impact-oriented organisation that works with inspiring leaders from government, business, financial institutions and civil society organisations to build resilience, and enabling the necessary transformation that addresses both the climate change and biodiversity crises.

- World Meteorological Organization (WMO): Specialized agency of the United Nations responsible for promoting international cooperation on atmospheric science, climatology, hydrology and geophysics.

Global Climate Change Policies

1988 Intergovernmental Panel on Climate Change (IPCC) established

World Meteorological Organization (WMO) and UN Environment Programme (UNEP) establish the Intergovernmental Panel on Climate Change (IPCC). Membership is open to all members of the WMO and UN with thousands of scientists and other experts contributing to the understanding of human-induced climate change, its potential impacts and options for adaptation and mitigation. The IPCC provides an internationally accepted authority on climate change, producing reports that have the agreement of leading climate scientists and consensus from participating government.

1990 - IPCC's First Assessment Report (AR1)

The report concludes that emissions resulting from human activities are substantially increasing the atmospheric concentrations of the greenhouse gases, resulting on average in an additional warming of the Earth's surface and calls for a global treaty on climate change.

1990 UN General Assembly Negotiations on a Framework Convention begin

The UN General Assembly establish the Intergovernmental Negotiating Committee (INC) for a Framework Convention on Climate Change around binding commitments, targets and timetables for emissions reductions, financial mechanisms, technology transfer, and 'common but differentiated' responsibilities of developed and developing countries.

1992 United Nations Framework Convention on Climate Change

The text of the United Nations Framework Convention on Climate Change is adopted at the United Nations Headquarters in New York. The objective of the treaty is to "stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system" and provides a framework for negotiating specific international treaties (called "protocols") that may set binding limits on greenhouse gases.

1992 Rio Earth Summit

The UNFCCC opens for signature at the Earth Summit in Rio, bringing the world together to curb greenhouse gas emissions and adapt to climate change.

1994 UNFCCC Enters into Force

The UNFCCC enters into force. Countries that sign the treaty are known as 'Parties' who meet annually at the Conference of the Parties (COP) to negotiate multilateral responses to climate change.

1995 Conference of Parties 1, Berlin

Delegates agreed that commitments in the Convention were 'inadequate' and established a process to negotiate strengthened commitments for developed countries, thus laying the groundwork for the Kyoto Protocol.

1997 Kyoto Protocol Adopted

The third Conference of the Parties achieves an historical milestone with adoption of the Kyoto Protocol, the world's first greenhouse gas emissions reduction treaty. The Protocol operationalises the UNFCCC by committing developed countries to limit and reduce greenhouse gases (GHG) emissions in accordance with agreed individual targets and places a heavier burden on them under the principle of “common but differentiated responsibility and respective capabilities”.

2011 COP 17, Durban

At the seventeenth Conference of the Parties, governments commit to a new universal climate change agreement by 2015 for the period beyond 2020, leading to the launch of the Ad Hoc Working Group on the Durban Platform for Enhanced Action.

2012 COP 18, Doha

At the eighteenth Conference of the Parties, governments agree to speedily work toward a universal climate change agreement by 2015 and to find ways to scale up efforts before 2020 beyond existing pledges to curb emissions. They also adopt the Doha Amendment, launching a second commitment period of the Kyoto Protocol.

2014 - IPCC's Fifth Assessment Report (AR5)

"Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level"

2015 The 2030 Agenda for Sustainable Development

The 17 interconnecting Sustainable Development Goals (SDGs) are a “call to action to end poverty, protect the planet and improve the lives and prospects of everyone everywhere” setting out a plan to achieve the goals. No. 13 addresses Climate Action with an objective to; take urgent action to combat climate change and its impacts by regulating emissions and promoting developments in renewable energy.

2015 COP 21 – Paris Agreement

2018 IPCC Confirms Importance of 1.5C Goal

A special Global Warming of 1.5C report by the IPCC makes clear that climate change is already happening, upgraded its risk warning from previous reports, and warned that every fraction of additional warming would worsen the impact. According to the report, global warming will likely rise to 1.5 °C above pre-industrial levels between 2030 and 2052 if warming continues to increase at the current rate. Limiting warming below or close to 1.5 °C would require a decrease in net emissions of around 45% by 2030 and reach net zero by 2050.

2018 Katowice Climate Package

At COP 24 in Poland, governments adopt a robust set of guidelines for implementing the landmark 2015 Paris Climate Change Agreement. The agreed 'Katowice Climate Package' operationalizes the climate change regime contained in the Paris Agreement, promotes international cooperation and encourages greater ambition.

Conference of the Parties (COP)

Location	Session	Conference
Belém, Brazil	<u>COP 30</u>	<u>UN Climate Change Conference - Belém, November 2025</u>
Baku, Azerbaijan	<u>COP 29</u>	<u>UN Climate Change Conference Baku – November 2024</u>
Dubai, UAE	<u>COP 28</u>	<u>UN Climate Change Conference – December 2023</u>
Sharm el-Sheikh, Egypt	<u>COP 27</u>	<u>Sharm el-Sheikh Climate Change Conference - November 2022</u>
Glasgow, United Kingdom	<u>COP 26</u>	<u>Glasgow Climate Change Conference – October-November 2021</u>
Madrid, Spain	<u>COP 25</u>	<u>UN Climate Change Conference - December 2019</u>
Katowice, Poland	<u>COP 24</u>	<u>Katowice Climate Change Conference – December 2018</u>
Bonn, Germany	<u>COP 23</u>	<u>UN Climate Change Conference - November 2017</u>
Marrakech, Morocco	<u>COP 22</u>	<u>Marrakech Climate Change Conference - November 2016</u>
Paris, France	<u>COP 21</u>	<u>Paris Climate Change Conference - November 2015</u>
Lima, Peru	<u>COP 20</u>	<u>Lima Climate Change Conference - December 2014</u>
Warsaw, Poland	<u>COP 19</u>	<u>Warsaw Climate Change Conference - November 2013</u>
Doha, Qatar	<u>COP 18</u>	<u>Doha Climate Change Conference - November 2012</u>
Durban, South Africa	<u>COP 17</u>	<u>Durban Climate Change Conference - November 2011</u>

Location	Session	Conference
Cancun, Mexico	<u>COP 16</u>	<u>Cancún Climate Change Conference - November 2010</u>
Copenhagen, Denmark	<u>COP 15</u>	<u>Copenhagen Climate Change Conference - December 2009</u>
Poznan, Poland	<u>COP 14</u>	<u>Poznan Climate Change Conference - December 2008</u>
Bali, Indonesia	<u>COP 13</u>	<u>Bali Climate Change Conference - December 2007</u>
Nairobi, Kenya	<u>COP 12</u>	<u>Nairobi Climate Change Conference - November 2006</u>
Montreal, Canada	<u>COP 11</u>	<u>Montreal Climate Change Conference - December 2005</u>
Buenos Aires, Argentina	<u>COP 10</u>	<u>Buenos Aires Climate Change Conference - December 2004</u>
Milan, Italy	<u>COP 9</u>	<u>Milan Climate Change Conference - December 2003</u>
New Delhi, India	<u>COP 8</u>	<u>New Delhi Climate Change Conference - October 2002</u>
Marrakech, Morocco	<u>COP 7</u>	<u>Marrakech Climate Change Conference - October 2001</u>
Bonn, Germany	<u>COP 6-2</u>	<u>Bonn Climate Change Conference - July 2001</u>
The Hague, Netherlands	<u>COP 6</u>	<u>The Hague Climate Change Conference - November 2000</u>
Bonn, Germany	<u>COP 5</u>	<u>Bonn Climate Change Conference - October 1999</u>
Buenos Aires, Argentina	<u>COP 4</u>	<u>Buenos Aires Climate Change Conference - November 1998</u>
Kyoto, Japan	<u>COP 3</u>	<u>Kyoto Climate Change Conference - December 1997</u>