

World Wide Climate

Impacts and Problem-Solving Around the Globe

Climate impacts and solutions transcend borders. Greenhouse gases emitted in one country can be carried around the world, affecting many. Likewise, ideas conceived to aid one community can help others adapt.

"While we are all confronting the same storm, we are in very different boats," said climate activist Vanessa Nakate. People around the world experience similar effects from the changing climate, but not all have the same resources to address the problems.

Ultimately, the damage can be reduced or reversed by stopping greenhouse gas emissions. While work toward that goal progresses, scientists and communities are codeveloping mitigation and adaptation measures that can inspire new solutions to protect the world.



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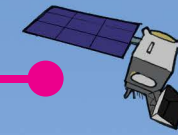
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- ⚠️ Rising temperatures and humidity changes **strain the microclimates** that preserve historic sites and museum collections, inviting pests, mold, and deterioration.
- 💡 Careful management of the **flow of visitors** can reduce the burden on the systems and people who maintain microclimates and preserve humanity's history for longer.



- ⚠️ Temperature fluctuations and changes in the timings and locations of wet/dry cycles alter birds' **migratory and breeding patterns**, sending ripples throughout the food web.
- 💡 **Satellite data** can track global and regional changes in temperature, water availability, vegetation, and biodiversity to inform conservation efforts.



- ⚠️ Intensifying **heat waves and drought** increase competition and conflict over water resources, endanger public health, and raise the risk of wildfires.
- 💡 Switching to water-efficient crops and herds and supplementing with irrigation in arid regions can **stretch limited water resources**.



- ⚠️ **Extreme events** like tropical storms, storm surges, landslides, and winter storms are more intense and more frequent than in the past, claiming lives and causing costly infrastructure damage.
- 💡 Constructing **climate resilient buildings**, ports, and utilities will save more money and lives in the long run than retrofitting existing infrastructure.



- ⚠️ Flagging political commitment to the **2015 Paris Agreement** endangers efforts to reduce emissions and cap global warming at 1.5°C–2°C above preindustrial temperatures.
- 💡 Meaningful, effective **climate action** requires sustained public and political will around the world to create long-lasting change.



- ⚠️ Temperature and precipitation changes aggravate many **infectious diseases** and push wildlife and pests closer to human-inhabited areas, inviting animal-to-human transmission.
- 💡 Climate indicators can **predict the spread** of some pest-borne illnesses and regions at risk of disease transmission, allowing those areas to develop preventive measures to protect public health.



- ⚠️ Older **urban infrastructure** uses power generated by fossil fuels, heats and cools interior air and water inefficiently, and produces excess wastewater.
- 💡 Structures can be built or retrofitted to be **net-zero and environmentally friendly** through green energy production, adaptive cooling, water reclamation, and other innovative engineering practices.



- ⚠️ **Cities** built with heat-absorbing materials are several degrees hotter than surrounding natural areas and don't cool down as much at night.
- 💡 **Heat reflective materials** and coatings for roofs, pavement, and buildings, coupled with green roofs and urban farming, can cool the air inside and out.



- ⚠️ The Arctic and Antarctic are heating up **several times faster** than lower latitudes, contributing to rising sea levels and jeopardizing global ocean circulation.
- 💡 High-resolution, long-term **ice sheet mapping** can quantify melting and freshwater runoff rates, supporting more accurate predictions of cryosphere changes.



- ⚠️ Low rainfall and changes to wet seasons alter **rivers and freshwater ecosystems** affecting the people, wildlife, and trade that depend on them.
- 💡 Advanced **meteorological models** can predict changes to the El Niño–Southern Oscillation, allowing people to adjust behaviors to changing water conditions.



- ⚠️ **Rising sea levels** damage coastal communities and ecosystems, particularly those already at low elevations or experiencing land subsidence.
- 💡 Low-tech tools like tide gauges coupled with satellite-based sea level data can inform high-resolution **localized maps** of sea level rise to help communities plan.



- ⚠️ Warming and acidifying oceans accelerate **bleaching** of coral ecosystems, havens of biodiversity and barriers against storm surges.
- 💡 Translocating heat-resistant corals, shading, or managed selection could revitalize bleached reefs, but ethics must guide **responsible development** of new conservation strategies.

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