

### 2021 Year in Review

#### Massive Melt

A midsummer heat wave across parts of the North Atlantic caused enough of Greenland's ice cap to melt in a single day to submerge the entire state of Florida beneath 5 cm of water.

#### Hottest Month

July was the world's hottest month globally on record, which NOAA said was part of a "disturbing and disruptive path that climate change has set for the globe." Death Valley, California, had the planet's hottest temperature on record — 54 degrees Celsius on July 9.

#### Earthquakes

Haiti suffered another devastating temblor on Aug. 14 when an intense quake killed 2,248 people and injured nearly 13,000 others. • An aftershock of Japan's devastating 2011 temblor injured more than 150 people and caused widespread damage around the meltdown-plagued Fukushima nuclear power plant on Feb. 13. • At least 90 people perished when a magnitude 6.5 quake struck Indonesia's Sulawesi Island on Jan. 15.

### In Hot Water

Oceans have become so warm under global heating that temperatures are now too high near the equator for some marine species to live. Analysis of nearly 50,000 marine species between 1955 and 2015 found that many were moving away from the equator, “on a global scale.”

### Human Domination

A new study finds that human activities have transformed nearly a fifth of the planet’s land surface since the 1960s, roughly equivalent to the areas of Europe and Africa combined. During that period, Earth’s forest cover alone has been reduced by nearly 1 million square km, with farmland and grazing pastures increasing by about the same amount.

### Volcanoes

Months of swift lava flows and piles of deep ash from La Palma’s Cumbre Vieja volcano destroyed nearly 2,750 homes and forced thousands to evacuate in the Canary Islands. • Fast-flowing lava and tremors from Nyiragongo volcano in the Democratic Republic of Congo killed at least 32 people around Goma in late May. • Massive amounts of ash from La Soufrière volcano brought chaos to St. Vincent during April. Ash covering most of the island knocked out power and water supplies, creating a humanitarian crisis.

### Current Collapse

The Atlantic Meridional Overturning Circulation, which includes the Gulf Stream, was weaker in 2021 than at any other time in the past 1,000 years, causing alarm among scientists. The complex of warm and cold currents began to destabilize in the 20th century and could cause even further weather chaos should it collapse.

### Tropical Cyclones

The Atlantic hurricane season was the third-most active on record, with 21 named storms. • At least 14 people were killed from Louisiana to the Northeast as Hurricane Ida inflicted some of the most costly damage of any natural disaster in U.S. history from late August through early September. • Developing Cyclone Seroja killed at least 160 people as it triggered catastrophic flooding in East Timor and adjacent provinces of Indonesia. • Cyclone Gulab-Shaheen killed at least 36 people as it raked southeastern India to Oman in late September. • Cyclone Tauktae left more than 100 dead in mid-May as the worst cyclone to strike western India in 30 years. • Unprecedented Cyclone Eloise killed at least 15 people across five African countries in late January.

### Record Smoke

Huge clouds of smoke from wildfires that again blackened parts of Siberia this year blew northward almost 3,000 km, reaching the North Pole for the first time in recorded history. Forestry officials say more than 35 million acres burned over the summer, making it the second-worst fire season this century. Some of the uncontrolled blazes raged on top of permafrost in Russia's largest and typically coldest region.

### Earth's Vital Signs

An international coalition of more than 14,000 scientists signed an initiative declaring that world leaders are consistently failing to cope with the main causes of climate change and the deepening climate emergency. Writing in the journal "BioScience," the group calls for the elimination of fossil fuel use, the slashing of pollutants, the restoration of ecosystems, a switch to plant-based diets and the stabilisation of the planet's human population.

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