



# AAG

AMERICAN ASSOCIATION  
*of* GEOGRAPHERS

## AAG CLIMATE EMERGENCY STATEMENT

The American Association of Geographers (AAG) is a scholarly, non-profit organization that seeks to advance professional studies in geography, and to encourage the application of geography in education, business, and government. Founded in 1904 and based in Washington, D.C., the AAG represents approximately 10,000 members in nearly 100 countries whose professional specialties span a broad spectrum of the physical, biological, and social sciences. As such, the AAG is uniquely qualified to warn the global community that human and other species habitation of Planet Earth is in extreme danger of collapse due to the impacts of anthropogenic climate change.

Levels of atmospheric carbon dioxide—the chief driver of global warming, along with methane—rose from 310 parts per million (ppm) in 1960 to 415 ppm in January 2021, according to readings at Mauna Loa Observatory in Hawaii.<sup>1</sup> Ice core analysis of past climate conditions reveals this to be the highest concentration of atmospheric carbon dioxide since three million years ago, when the world was 3-4° Celsius warmer and sea level was several meters higher than it is today.<sup>2</sup> Global warming, due significantly to human emissions of greenhouse gases (GHGs), is fast approaching 1.5° C above pre-industrial levels—the likely threshold of serious or irreversible impacts on the world’s life support systems, according to a report of the Intergovernmental Panel on Climate Change (IPCC), which is prominently informed by geographers’ research.<sup>3</sup>

Arctic surface air temperatures are rising at more than double the global average rate over the last two decades, as amplified by feedbacks from loss of sea ice and snow cover. Atmospheric warming is accelerating glacial retreat and mass loss from the Greenland ice sheet. Warming in northern polar regions also endangers ecological habitats and wildlife, causes wildfires (in boreal forest regions), damages physical infrastructure, and threatens food supplies and cultures of indigenous peoples.<sup>4</sup> In Antarctica, ongoing collapse of coastal ice shelves threatens to accelerate the shrinkage of its vast deposits of land ice. Rapid melting of Arctic and Antarctic land ice will cause rising sea levels to inundate portions of coastal cities and fertile river deltas worldwide by mid-century. Meanwhile, deglaciation of mountainous regions threatens water supplies and hydropower generation for hundreds of millions of people in Asia, Europe, western Latin America, and the Pacific Northwest.

Catastrophic impacts of climate change have already begun. Due substantially to human activities, the Earth is experiencing intensified and more costly disasters in many forms—more frequent and prolonged drought, wildfires, stronger hurricanes and cyclones, coastal and river flooding, and extreme temperatures, such as heat waves. The United States, Europe (EU-27) and China are currently responsible for 50% of global annual carbon dioxide emissions, whereas the African continent is responsible for less than 4%. The US and Europe bear greater historical responsibility because emissions warm the atmosphere for decades; US emissions per person at more than 16 tons/capita are also among the highest in the world, compared to a global average of 4.7 t/c. The economic and social impacts of climate change are accruing disproportionately to smaller and less developed countries that have contributed least to the problems.<sup>5</sup>

Higher ocean temperatures are causing more active hurricane/cyclone seasons.<sup>6</sup> Recent research reports that tropical storm systems are intensifying closer to the shoreline than in the past, especially along the Gulf of Mexico, posing dramatic challenges for local, state, and federal emergency managers in the U.S.<sup>7</sup>

When coupled with the high vulnerability of human systems, such extreme events affect nations and communities worldwide each year, costing lives and livelihoods—threatening human health and safety, biodiversity, infrastructure, and economies—while exacerbating racial, gender, and socioeconomic inequalities.

Climate change also threatens food systems around the world through more extreme weather events, changes in precipitation patterns, and rising temperatures. These trends are projected to intensify in the coming decades, giving rise to serious food shortages and loss of nutritional quality.<sup>8</sup> Climate impacts on water resources will most heavily burden those who already suffer from inadequate drinking water, constrained agricultural production, environmental degradation, and rising food prices.<sup>9</sup>

These observations and predictions of serious climate impacts signal the urgency of emissions reductions, but also highlight the relevance of action to adapt to climate changes such as sea level rise, severe storms, droughts, and heatwaves. Research, especially by geographers, has shown the importance of local and indigenous knowledge in adaptation, and the need to ensure that adaptation reduces vulnerability and increases resilience.<sup>10</sup>

This Association hereby adds its voice to the multitude of organizations and scientists who have warned of rapid and extreme climate change since Dr. James Hansen of the U.S. National Oceanographic and Atmospheric Administration first delivered a bleak assessment to Congress in 1988. In 1992, the “Earth Summit” of nations in Rio De Janeiro, Brazil, adopted the United Nations Framework Convention on Climate Change (UNFCCC).<sup>11</sup> After the Rio Summit, 1,700 scientists from 71 countries (including 104 Nobel Laureates) signed a “World Scientists’ Warning to Humanity” that declared: “*Human beings and the natural world are on a collision course. . . A great change in our stewardship of the earth and the life on it is required, if vast human misery is to be avoided and our global home on this planet is not to be irretrievably mutilated.*”<sup>12</sup> Twenty-five years later, 15,364 scientists in 184 countries signed a “Warning to Humanity: Second Notice”<sup>13</sup> after carbon dioxide emissions had increased by 62% and world temperature had risen by 0.5° C since 1992. In 2018, the IPCC<sup>14</sup> and the U.S. Fourth National Climate Assessment,<sup>15</sup> in both of which geographers were well represented among authors, reaffirmed the urgency of the climate crisis.

Despite near-unanimity of the world’s climate scientists, political response to the climate crisis has been tentative at best. We applaud the Biden Administration for rejoining the 2015 Paris Climate Agreement,<sup>16</sup> but four precious years were lost during the anti-science Trump Administration. As of February 2021, the United Nations has determined that carbon reductions under current Paris Agreement national commitments will lower global emissions only by one percent by 2030 compared with 2010, while a reduction of 45 percent from 2010 to 2030 is required to meet the IPCC goal of holding global temperature rise to 1.5°–2.0° C by 2050.<sup>17</sup>

The greatest obstacle to climate change mitigation is a lack of political will, both within and among the world’s nations. Decarbonizing the world economy is technologically feasible and increasingly affordable but is adamantly opposed by the global fossil fuel industry and its political surrogates. The longer we wait, the more dire the costs of inaction. As climate change increases hazardous conditions and decreases habitability in many regions, intensified competition for and conflict over water, land, and living space will, at best, further aggravate existing inequities in wealth, health, housing, food systems, and social well-being within and among the world’s societies. At worst, there is no way to imagine what the world will look like by mid-century.

The American Association of Geographers hereby urges the U.S. President and Congress to:

1. Declare a “National Climate Emergency” in line with the latest IPCC and U.S. National Climate Assessment Reports;

2. Accelerate the transition of the U.S. economy to embrace energy conservation and substitution of sustainable energy sources in place of fossil fuels, including encouraging innovation by states and local governments and the private sector to conserve energy (e.g., through “LEED” green building codes<sup>18</sup>, tree planting, watershed management, bikeways, and other means);
3. Rapidly reduce carbon emissions through incentives, taxes, regulations, public transit, education, and other means;
4. Encourage new approaches to food governance that expand climate-friendly agricultural practices and dietary choices;
5. Strengthen U.S. and international capacity to adapt to the actual and future impacts of climate change, to reduce vulnerability and risks to human health, food security, water supply and ecosystems, making communities more resilient, and to restore critical infrastructure;
6. Elevate and effectuate U.S. carbon reduction goals to achieve zero emissions by 2050, in line with achieving the target of limiting global temperature increase to 1.5°C over pre-industrial levels.

This Statement was written by the Ad Hoc AAG Climate Emergency Group:

Rutherford H. Platt, University of Massachusetts Amherst

Ian Burton, University of Toronto

Trenton Wayne Ford, Illinois State Climatologist; Chair, Climate SG

Colleen Hammelman, UNC at Charlotte; Chair, Food and Agriculture SG

Diana Liverman, Regent’s Professor, University of Arizona

Linda Mearns, National Center on Atmospheric Research, Boulder

Jacob Petersen-Perlman, East Carolina University; Chair, Water Resources SG

Ronald Schumann, University of North Texas; Chair, Hazards, Risks, Disasters SG

Mark Serreze, University of Colorado at Boulder

Scott Stephenson, Rand Corporation, Chair, Polar SG

Jill Trepanier, Louisiana State University

Emily T. Yeh, University of Colorado Boulder; Vice President, AAG

---

<sup>1</sup> <https://www.esrl.noaa.gov/gmd/ccgg/trends/>

<sup>2</sup> Peter Brannen, “Our climate models could be missing something big” *The Atlantic*, March, 2021, 60-75.

<sup>3</sup> IPCC, *Special Report: Global Warming of 1.5° C* (8 October 2018) <https://www.ipcc.ch/sr15/>

<sup>4</sup> <https://www.ipcc.ch/srocc/chapter/chapter-3-2> Personal communication, Mark Serreze, University of Colorado, Boulder.

<sup>5</sup> Carbon dioxide is about 75% of all greenhouse gas emissions, with additional warming from methane, nitrous oxide and industrial F-gases. Information is from 2019 from [ourworldindata.org](http://ourworldindata.org) which sources data from the Global Carbon Project. Also see Hickel, Jason. 2020. “Quantifying national responsibility for climate breakdown: An equality-based attribution approach for carbon dioxide emissions in excess of the planetary boundary.” *Lancet Planet Health* 4:e399-404.

<sup>6</sup> For example, multiple tropical hurricanes made landfall on the Gulf Coast in 2020, including two within three weeks (Hurricanes Laura and Sally) that were particularly devastating. Trepanier, J. C. (2020), North Atlantic Hurricane Winds in Warmer than Normal Seas. *Atmosphere*, 11, 293. Personal Communication, Jill Trepanier, Louisiana State University.

---

<sup>7</sup> Benedetto, K. M. and J. C. Trepanier (2020), Climatology and Spatiotemporal Analysis of North Atlantic Rapidly Intensifying Hurricanes (1851–2017). *Atmosphere*, 11, 291.

<sup>8</sup> IPCC. (2020). Special report on climate change and land: Summary for policymakers.

[https://www.ipcc.ch/site/assets/uploads/sites/4/2020/02/SPM\\_Updated-Jan20.pdf](https://www.ipcc.ch/site/assets/uploads/sites/4/2020/02/SPM_Updated-Jan20.pdf)

<sup>9</sup> FAO. (2015). Climate change and food security: Risks and responses. <http://www.fao.org/3/i5188e/i5188e.pdf>

<sup>10</sup> Boillat, S. and Berkes, F., 2013. Perception and interpretation of climate change among Quechua farmers of Bolivia: indigenous knowledge as a resource for adaptive capacity. *Ecology and society*, 18(4). Makondo, C.C. & Thomas, D.S. (2018) Climate change adaptation: Linking indigenous knowledge with western science for effective adaptation. *Environmental science & policy*, 88, 83-91. Galappaththi, E.K., Ford, J.D., Bennett, E.M., Berkes, F. Adapting to climate change in small-scale fisheries: Insights from indigenous communities in the global north and south *Environmental Science and Policy*, Volume 116, February 2021.

<sup>11</sup> “The ultimate objective of this Convention ... Is to achieve ... stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.” The Convention further provided: “The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed countries should take the lead in combating climate change and the adverse effects thereof.” <https://unfccc.int/resource/docs/convkp/conveng.pdf>

<sup>12</sup> <https://www.ucsusa.org/resources/1992-world-scientists-warning-humanity>

<sup>13</sup> “World Scientists’ Warning to Humanity: A Second Notice,” *Bioscience*, Nov. 13, 2017. A further statement: “World Scientists’ Warning of a Climate Emergency” with 11,258 signers appeared in *Bioscience*, Jan. 2020.

<sup>14</sup> <https://unfccc.int/topics/science/workstreams/cooperation-with-the-ipcc/ipcc-special-report-on-global-warming-of-15-degc>

<sup>15</sup> The Fourth National Climate Assessment, Volume II was released in November, 2018. Based on the findings of thirteen U.S. Government agencies and other scientists, it focuses on the human welfare, societal, and environmental elements of climate change and variability for 10 regions and 18 national topics,

<https://nca2018.globalchange.gov/chapter/front-matter-about/>

<sup>16</sup> The Paris Climate Agreement seeks to limit global temperature rise to less than 2° Celsius above pre-industrial levels and preferably limit to 1.5° C As of March 2021, 190 states and the EU have ratified the agreement:

<https://unfccc.int/process/the-paris-agreement/status-of-ratification>.

<sup>17</sup> <https://unfccc.int/news/greater-climate-ambition-urged-as-initial-ndc-synthesis-report-is-published>

<sup>18</sup> LEED refers to “Leadership in Energy and Environmental Design”: <https://new.usgbc.org/leed>