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. 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°C Celsius warmer and sea level was several meters higher than it is today. Global warming, due significantly to human emissions of greenhouse gasses (GHGs), is fast approaching 1.5°C above pre-industrial levels—the likely threshold of irreversible impacts on the world’s life support systems, according to the Intergovernmental Panel on Climate Change (IPCC).

Arctic surface air temperatures are rising at more than double the global average 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 culture of indigenous peoples. 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. While 58 percent of carbon emissions is attributable to China, the U.S., the European Union, and India, the economic and social impacts of climate change are accruing disproportionately to smaller and less developed nations.
Higher ocean temperatures are causing more active hurricane/cyclone seasons. 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. 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. Climate impacts on water resources will most heavily burden those who already suffer from constrained agricultural production, environmental degradation, and rising food prices. Government policies must reflect local and Indigenous knowledge regarding adjustments to climate variability.

Recent research discloses that extreme heat and humidity are “pushing the planet’s tropical regions toward the limits human livability . . . .” Forty percent of humanity now lives in tropical zones roughly bounded by the 20° North and 20° South parallels of latitude. Climate-induced mass migrations to more temperate regions have already begun in Central America and the Middle East, leading to detentions, family separation, human rights abuses, and potential military conflict as migrants seek refuge in North America and Europe. 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). 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.” Twenty-five years later, 15,364 scientists in 184 countries signed a “Warning to Humanity: Second Notice” after carbon dioxide emissions had increased by 62% and world temperature had risen by 0.5° C since 1992. In 2018, both the IPCC and the U.S. Fourth National Climate Assessment 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 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 emissions only by one percent by 2030 compared with 2010, while a reduction of 45 percent is required to meet the IPCC goal of holding global temperature rise to 1.5°–2.0° C by 2050. 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 renders many areas of the globe uninhabitable, mass population migrations and competition for water, arable land, and living space will heighten the likelihood of armed conflict, either conventional or nuclear. At the least, this...
process will 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” pursuant to the latest IPCC and 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, and encourage new approaches to food governance that expand climate-friendly agricultural practices and dietary choices;

3. Reduce carbon emissions through incentives, taxes, regulations, public transit, carbon recapture and other means;

4. Strengthen U.S. and international capacity to adapt to the actual and future impacts of climate change, to reduce risks to human health, food and water supply and ecosystems, and to restore critical infrastructure (“lifelines”);

5. Encourage innovation by states and local governments and the private sector to conserve energy and reduce dependence on fossil fuels (e.g. through “LEED” green building codes\textsuperscript{1}, tree planting, watershed management, bikeways, and other means);

6. Elevate and effectuate U.S. carbon reduction goals (“Nationally Determined Contributions” or NDCs) as a model for other developed nations to achieve the IPCC target of limiting global temperature increase 1.5°–2.0° C over pre-industrial levels.

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

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\textsuperscript{1} https://www.esrl.noaa.gov/gmd/ccgg/trends/

\textsuperscript{10} Peter Brannen, “Our climate models could be missing something big” The Atlantic, March, 2021, 60-75.
iv https://www.ipcc.ch/srocc/chapter/chapter-3-2 Personal communication, Mark Serreze, University of Colorado, Boulder.

vi 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.


xii “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


xvi 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/

xvii The Paris Climate Agreement seeks to limit global temperature rise to less than 2°C Celsius above pre-industrial levels. As of March, 2019, 185 nation-states out of 197 original signers have ratified the agreement: https://unfccc.int/process/the-paris-agreement/status-of-ratification.

xviii The 2015 Paris Agreement specified that national carbon reduction goals (“Nationally Determined Contributions” or NDCs) are meant to be upgraded periodically. Most signatory nations including the U.S. have not significantly tightened their initial NDCs as of Feb. 2021.