

GeoHealth Section Comments on the AGU Climate Position Statement

Submitted by Aubrey Miller (President) and Claire Horwell (President-Elect) on behalf of the GeoHealth Section Leadership (October 11, 2019).

The GeoHealth Section commends the American Geophysical Union for an excellent, succinct, and timely statement, “Society Must Address the Growing Climate Crisis Now,” and appreciates the opportunity to provide feedback. Overall, the statement does a respectable job covering a number of important topics including causes and solutions in the allotted space. In particular, we want to commend the writing team for embedding equity and health throughout the statement, including mental health.

Our comments focus on issue framing and a few additional considerations for inclusion in the statement. Organized by section in the following list:

The Challenge

- We deeply appreciate inclusion of benefits to human health and well-being to the opening sentence, but the very first reason the statement gives for promptly addressing climate change is that it will be “less costly than remaining on the current trajectory...” While economic cost/benefit is certainly on the list of considerations, we feel that it should not be first. As a minimum solution to this framing, please swap the order of the sentence so that health and well-being come first and cost second.

The Consequences

- The current list of impacts on human health do not include biological and ecosystem services impacts related to deforestation and landslides, uncertainty in agriculture and food supply, or aquatic impacts from changes in water quality and quantity and related to fish populations. The list also does not include vector-borne diseases. Tribal and coastal communities are additional groups that are exceedingly vulnerable to changes in food supply expected to be impacted by climate change. Food as an impact to human health is distinctive to the economic impact to commercial food industries.

Proposed edited sentence: Preserving the habitability of the planet for humans, flora, and fauna is paramount. Further, the impacts of climate change on human health and well-being include heat-related death, illness, and loss of labor productivity; increased exposures to allergens, vector-borne and other infectious diseases, and algal toxins; changing patterns and increasingly severe hazards such as landslides, flooding and wildfires, and water scarcity; uncertainty in aquatic and traditional food systems, and decreased mental health.

- The second paragraph of the “consequences” section begins with a statement about differential impacts on lower-income populations. In this discussion, it is important to also mention additional populations vulnerable to climate change, including communities of color, children, and the elderly. While the current framing is important and correct, it feels incomplete without inclusion of additional susceptible groups. In particular, a discussion about income while not acknowledging race is incomplete, as there is an ample body of evidence demonstrating that environmental injustices, starting with the landmark “Toxic Waste and Race” in 1987, are often driven by race independent of income.

Proposed edited sentences: Climate change presents new challenges, and is also a threat multiplier. Impacts will vary based not only on geography and availability and quality of infrastructure (e.g. the disruption of normal healthcare delivery during a storm), but also by race, age, and

socioeconomic status. People of color, children, the elderly, and low income communities are some of the most vulnerable to climate change.

- The latter half of the second paragraph is repetitive.

Proposed edited sentences: It will continue to severely damage threatened ecosystems, such as coral reefs, permafrost landscapes and the Arctic, and cause loss of biodiversity on land and in the oceans. It can affect the spread of invasive species, pests and diseases as well as impact the habitats of threatened and endangered species.

The Needed Responses

- Consider adding “youth” to the categories of people scientists and engineers must continue to engage (last paragraph of the statement).
- Consider adding local, State, and tribal governments. This scale of decision makers hold most of the burden, and currently have the least scientific resources.

This section should begin with a positive message on the outlined approach that depends first on public information and partnership. The section should also be easier to read, in an ordered priority list that the scientific community collectively supports.

Proposed edited section:

Effective climate policies will rely on innovative and responsive science to inform and weigh response options. Scientists and engineers must continue to engage broadly with youth, community, business and non-profit leaders; local, state, and tribal government resource managers and planners; and federal policy makers, to undertake solution-oriented research and analysis. Scientific organizations, including academic institutions and government agencies, should expand their support for research, application, and information dissemination that addresses the climate crisis.

Deleterious consequences of global climate change can be moderated by taking prompt actions. We have included broader political and societal recommendations, as well as recommendations specifically targeted for the geophysical scientific community:

Political and Societal Recommendations:

- transition to renewable sources of energy,
- reduce demand for high greenhouse gas emitting products and services,
- implement existing and novel technologies and practices to remove CO₂ from the atmosphere,
- change diets and promote sustainable food systems,
- improve access to family planning and women's education,
- promote collective action/mobilization in engaging with policymakers,
- promote active transport and smart design of cities,
- develop processes that enhance and diversify decision making based on direct input from the geoscience community, including scientifically accurate technical explanations of Earth processes and climate change impacts to humanity,
- support innovative geoscience communication efforts which improve individual data reasoning in a digital world,
- prepare for changes already underway.

Scientific Community Recommendations:

- measure and model the feedback of moderating actions (listed above) using current observations and climate predictions,

- expand diverse, inclusive and culturally relevant geoscience education that enables growth of a global digitally-enabled geoscience research, education and information management workforce, which can be used to
- translate and deliver high-impact, accessible, geoscience research products to the public, education and scientific research communities, in order to
- advance our understanding of changes already underway.

Climate intervention approaches, such as carbon dioxide removal and albedo modification, cannot substitute for deep cuts in emissions or the need for adaptation, but might contribute to a comprehensive climate risk-management strategy. These actions must involve integration of knowledge, risks, and solutions with scales of impact across local, regional, national, and global communities. With creativity and innovation, our actions to address global climate change can also yield significant economic, environmental, health, and social benefits. Positive impacts of our actions could include new employment opportunities in clean energy and digital infrastructure, opportunities to enhance political diplomacy and maintain collaborative agreements, risk-informed economic stability, natural hazard preparedness, life-saving planning and communication systems, protection of endangered species and threatened ecosystems, equitable access to public global geoscience information resources, and improved public health for all of Earth's geographically diverse communities.

In addition, we suggest the following minor copy/edits in the statement:

- Change "uses" to "consumption" in the first paragraph when referencing energy "sources and uses" in the first paragraph.
- Swap the order of the words "levels unprecedented" in the first sentence of the second paragraph.