

July 17, 2014¹

Governor Steve Bullock
P.O. Box 200801
Helena, MT 59620-0801

Senator Jon Tester
204 Russell Senate Office Building
Washington, D.C. 20510-2604

Senator John Walsh
511 Hart Senate Office Building
Washington, D.C. 20510-2602

Representative Steve Daines
206 Cannon House Office Building
Washington, D.C. 20515

Dear Governor, Senators, and Congressman:

We write to you as Montana scientists with Ph.D. or M.S. degrees or the equivalent. We work in Montana and around the world in a variety of scientific fields. Some of us study the atmosphere while others collect and analyze data on the impacts of climate on our waters, forests, fish, wildlife, agriculture, and more. Some of us are retired. Others of us may not research climate change directly, but as scientists, we understand the scientific facts that prove climate change is occurring and the rigorous process that was required to acquire the large body of evidence to that effect.

Science is about gathering a preponderance of evidence that leads to an understanding of how the world works. We develop theories. We make predictions and test them. We critique our colleagues' work. Every published study helps us make progress in understanding how systems work. It is a very slow and rigorous process. General agreements are rare.

That is why it is remarkable that 97% of climate scientists are in agreement that climate-warming trends over the past century are largely due to human activities. Most of the leading scientific organizations worldwide have issued public statements endorsing this position.ⁱ Recently, the National Academy of Sciences and the Royal Society issued a report that states:

Scientists know that recent climate change is largely caused by human activities from an understanding of basic physics, comparing observations with models, and fingerprinting the detailed patterns of climate change caused by different human and natural influences. All major climate changes, including natural ones, are disruptive. Past

¹ This is a corrected version of a letter originally sent on June 30, 2014.

climate changes led to extinction of many species, population migrations, and pronounced changes in the land surface and ocean circulation. The speed of the current climate change is faster than most of the past events, making it more difficult for human societies and the natural world to adapt.ⁱⁱ

The latest National Climate Assessment, released on May 6, 2014, substantiates these trends and projections, with the most exhaustive review of climate science for the country ever published.ⁱⁱⁱ Regional scientists have already documented spring snowpack melting on average two weeks earlier than the 1950s. They have reported a two-month extension in the wildfire season since the 1980s. They have observed August stream flows averaging 20% lower than summer flows of the 1950s. The thousands of acres of beetle-killed pine trees are evident to all of us.

These changes have resulted from a 1.5°F rise in global temperature. Depending on the cumulative global emissions of greenhouse gasses, the amount of warming by the end of this century is projected to be roughly 3°F to 5°F under a lower emissions scenario. This scenario would involve substantial reductions in emissions. A higher emissions scenario, which assumes continued increases in emissions, projects a 5°F to 10°F increase.^{iv} While some changes will bring potential benefits, such as longer growing seasons, many will be disruptive to society because our institutions and infrastructure have been designed for the relatively stable climate of the past, not the changing one of the present and future.^v According to climate researchers Kevin Anderson and Alice Bows: “Our current emissions path, or ‘business as usual’, will lead to global temperatures that will devastate the majority of ecosystems and destabilize human civilization.”^{vi}

As scientists, we are very concerned. We are not experts on policy solutions but we do know that the solutions need to be commensurate with the gravity of the issue at hand. We know there must be action at the individual, local, state, federal, and international levels.

While the solutions will be diverse, one solution is essential. The amount of carbon pollution that humans put into the atmosphere each year must be reduced. The need for reduction is no longer debatable. Solutions are available. We call on you to support reductions such as reducing carbon emissions from power plants. The science is clear. It is now your job to use the extensive body of scientific evidence to institute solutions. That is why we, as scientists, strongly urge you, our elected officials, to find, support, and implement solutions to this scientifically accepted problem.

Sincerely,

Loren Acton, Ph.D., Astro-Geophysics

Ryan Anderson, Ph.D., Chemical and Biological Engineering

James A. Bailey, Ph.D., Wildlife Biology

Ashley Ballantyne, Ph.D., Bioclimatology

Scott Bischke, M.S., Chemical Engineering

Dona Boggs, Ph.D., Biological Science

Lex Blood, D.Sc., Geological Engineering

Christine Brick, Ph.D., Hydrogeology

Tara Carolin, M.S., Ecology

Duane Catlett, Ph.D., Nuclear Chemistry, Materials Science

Elaine Caton, Ph.D., Wildlife Biology, Education Specialist

Sarah Certel, Ph.D., Neurogenetics

David M. Chambers, Ph.D., Geophysics

Howard Christianson, M.S., Chemistry

Amy Cilimburg, M.S., Wildlife Biology

Douglas Coffin, Ph.D., Molecular Genetics

Cathy L. Cripps, Ph.D., Biological Science

Molly Cross, Ph.D., Ecosystem Ecology

Michael DeGrandpre, Ph.D., Chemistry

Shannon Downey, M.S., Ecology

Doug Emlen, Ph.D., Evolutionary Biology

Ron Erickson, Ph.D., Organic Chemistry

Elton Erp, Ph.D., Biochemistry

Steve Eshbaugh, M.S., Environmental Science

Ron J. Fenex, M.A., Biological Sciences

Catherine Filardi, Ph.D., Conservation Biology

Chris Filardi, Ph.D., Conservation Biology

Paul E. Gannon, Ph.D., Chemical Engineering

William H. Geer, M.S., Limnology

James F. Gore, M.S., Wildlife Biology

Erick P. Greene, Ph.D., Zoology, Wildlife Biology

Bruna Irene Grimberg, Ph.D., Physics

Mark Grimes, Ph.D., Cellular & Molecular Biology

Eric Grimsrud, Ph.D., Analytical & Atmospheric Chemistry

Wayne Hadley, Ph.D., Fish Biology

Kathleen Hadley, M.S., Biology

Beth Hahn, Ph.D., Ecology

Amanda Hardy, Ph.D., Wildlife Ecology

Neva Hassanein, Ph.D., Environmental Science

Paul Hendricks, M.S., Zoology

Heather Higinbotham, M.S., Environmental Science

Richard Hutto, Ph.D., Wildlife Biology, Avian Ecology

Donald W. Hyndman, Ph.D., Igneous Petrology

Roger A. Jenkins, Ph.D., Analytical Chemistry

Gayle L. Joslin, M.S., Wildlife Biology

Patrick Judge, M.S., Environmental Studies

Richard B. Keigley, Ph.D., Biology

Myla Kelly, M.S., Forestry, Resource Conservation

Eloise Kendy, Ph.D., Environmental Engineering

Jack S. Kirkley, Ph.D., Zoology, Wildlife Biology

Anna Klene, Ph.D., Systems Ecology

Angela Kociolek, M.S., Biology

Gerald Kowalski, M.S., Wildlife Biology

Paul Lachapelle, Ph.D., Forestry

Peter Landres, Ph.D., Ecology

Bradley Layton, Ph.D., Biomedical Engineering

Erik Lehnhoff, Ph.D., Ecology, Environmental Sciences

Janene Lichtenberg, M.S., Wildlife Biology

Bob Martinka, Ph.D., Wildlife Biology

Mary McFadzen, M.S., Ecology

Fabian D. Menalled, Ph.D., Weed Ecology and Management

Natalie Meyer, M.S., Land Resources & Environmental Science

Sterling Miller, Ph.D., Wildlife Biology

Carol Miller, Ph.D., Fire Ecology

Curtis W. Noonan, Ph.D., Epidemiology

David Parsons, Ph.D., Fire Ecology

Stacie Barry Peterson, Ph.D., Environmental Science

Caroline Pharr, Ph.D., Chemistry

Nicky Phear, Ph.D., Climate Change Studies

Kenneth L. Pierce, Ph.D., Geology

Jim Posewitz, M.S., Fish & Wildlife Management

Benjamin Poulter, Ph.D., Ecosystem Ecology

Tarn Ream, M.S., Interdisciplinary Studies

Bob Ream, Ph.D., Wildlife Biology

Cathy Ream, Ph.D., Zoology

Bruce Rieman, Ph.D., Fisheries Biology

Sheila Roberts, Ph.D., Geology

Frank Rosenzweig, Ph.D., Evolutionary Genetics

Steve Running, Ph.D., Forest Ecophysiology

Vicki Saab, Ph.D., Research Biology

Anna Sala, Ph.D., Plant Physiology

Scott Samuels, Ph.D., Molecular Biology

George Seielstad, Ph.D., Astronomy, Earth Systems

Mark Shapley, Ph.D., Geology and Quaternary Paleoclimatology

Brandon A. Sheafor, Ph.D., Biology

Elizabeth Sheafor, M.A., Physiology

Gerald F. Shields, Ph.D., Biology

Diana L. Six, Ph.D., Forest Entomology

Bruce Smith, Ph.D., Zoology

Andrea Stierle, Ph.D., Biochemistry

Don Stierle, Ph.D., Biochemistry

Padraic Stoy, M.S., Land Resources & Environmental Science

Kyle Strode, Ph.D., Chemistry

Leigh Jones Sturges, M.S., Atmospheric Science

Anthony M. Szpilka, Ph.D., Applied Physics

Gary Tabor, VMD, M.S., Ecological Health

Tony J. Ward, Ph.D., Chemistry

Vicki Watson, Ph.D., Aquatic Ecology

J. Kirwin Werner, Ph.D., Herpetology

Cathy Whitlock, Ph.D., Geology

Art Woods, Ph.D., Physiological Ecology

Michael J. Yochim, Ph.D., Geography

ⁱ National Aeronautics and Space Administration, "Consensus: 97% of climate scientists agree," <http://climate.nasa.gov/scientific-consensus>.

ⁱⁱ National Academy of Sciences. *Climate Change: Evidence and Causes: Set of 5 Booklets*. Washington, DC: The National Academies Press, 2014.

ⁱⁱⁱ Melillo, Jerry M., Terese (T.C.) Richmond, and Gary W. Yohe, Eds., 2014: Climate Change Impacts in the United States: The Third National Climate Assessment. U.S. Global Change Research Program, 841 pp. doi:10.7930/J0Z31WJ2, <http://nca2014.globalchange.gov/>.

^{iv} *Ibid.*, p. 29.

^v *Ibid.*, p. 1.

^{vi} Anderson K, Bows A. 2011 Beyond 'dangerous' climate change: emission: scenarios for a new world. *Phil. Trans. R. Soc. A* 369, (doi:10.1098/rsta.2010.0290), <http://rsta.royalsocietypublishing.org/content/369/1934/20.full.pdf+html>.