

Iowa Climate Statement 2013: A Rising Challenge to Iowa Agriculture

Our state has long held a proud tradition of helping to “feed the world.” Our ability to do so is now increasingly threatened by rising greenhouse gas emissions and resulting climate change. Our climate has disrupted agricultural production profoundly during the past two years and is projected to become even more harmful in coming decades as our climate continues to warm and change.

Swings from one extreme to another have characterized Iowa’s 2013 weather patterns. Iowa started the year under the widespread drought that began in 2011 and persisted throughout 2012. But the spring of 2013 (March-May) was the wettest in the 140 years of record-keeping, creating conditions that hampered the timely planting of corn and soybean fields. During those months, sixty-two Iowa counties experienced storms and flooding severe enough to result in federal disaster declarations.

By mid-August, very dry conditions had returned to Iowa, subjecting many of the state’s croplands to moderate drought. These types of weather extremes, which are highly detrimental to Iowa’s crops, were discussed in our 2012 Iowa Climate Statement, where we also noted that globally over the past 30 years extreme high temperatures are becoming increasingly more common than extreme low temperatures. In a warming climate, wet years get wetter and dry years get dryer and hotter. The climate likely will continue to warm due to increasing emissions of heat-trapping gases.

Climate change damages agriculture in additional ways. Intense rain events, the most notable evidence of climate change in Iowa, dramatically increase soil erosion, which degrades the future of agricultural production.

As Iowa farmers continue to adjust to more intense rain events, they must also manage the negative effects of hot and dry weather. The increase in hot nights that accompanies hot, dry periods reduces dairy and egg production, weight gain of meat animals, and conception rates in breeding stock. Warmer winters and earlier springs allow disease-causing agents and parasites to proliferate, and these then require greater use of agricultural pesticides.

Local food producers, fruit producers, plant-nursery owners, and even gardeners have also felt the stresses of recent weather extremes. Following on the heels of the disastrous 2012 loss of 90% of Iowa’s apple crop, the 2013 cool March and record-breaking March-through-May rainfall set most ornamental and garden plants back well behind seasonal norms. Events such as these are bringing climate change home to the many Iowans who work the land on a small scale, visit the Farmer’s Market, or simply love Iowa’s sweet corn and tomatoes.

Iowa’s soils and agriculture remain our most important economic resources, but these resources are threatened by climate change. It is time for all Iowans to work together to limit future climate change and make Iowa more resilient to extreme weather. Doing so will allow us to pass on to future generations our proud tradition of helping to feed the world.

Signed by -

Gene Takle
Director, Climate Science Program
Professor of Geological & Atmospheric
Sciences
Department of Agronomy
Iowa State University

Jerald Schnoor
Co-Director
Center for Global and Regional
Environmental Research
University of Iowa

Chris Anderson
Research Assistant Professor
Assistant Director, ISU Climate
Science Program
Iowa State University

Greg Carmichael
Co-Director
Center for Global and Regional
Environmental Research
University of Iowa

David Courard-Hauri
Associate Professor
Environmental Science and Policy Program
Drake University

Neil Bernstein
Chair, Department of Natural and
Applied Sciences
Mount Mercy University

Marc P. Armstrong
Professor and CLAS Collegiate Fellow
Department of Geography
University of Iowa

Mark Aronson
Department of Biology
Scott Community College

Rajeev Arora
Professor
Horticulture
Iowa State University

Richard G. Baker
Professor Emeritus
Department of Geoscience
University of Iowa

Paul E. Bartelt
Professor
Department of Biology
Waldorf College

William D. Beavis
Interim Director of Plant Sciences
Professor of Agronomy
Department of Agronomy
Iowa State University

Russ Benedict
Professor and Chair
Biology Department
Central College

David Bennett
Professor and Chair
Department of Geography
University of Iowa

Peter Berendzen
Associate Professor
Department of Biology
University of Northern Iowa

Art Bettis
President, American Quaternary
Association, Environmental Sciences
Program
Department of Geoscience
University of Iowa

Ryan Bezy
Assistant Professor of Biology
Dept. of Natural & Applied Sciences
Mount Mercy University

Diane Birt
Distinguished Professor
Food Science and Human Nutrition
Iowa State University

Andrea Bixler
Associate Professor
Department of Biology
Clarke University

Brian Bristow
Associate Professor
Biology
Iowa Lakes Community College

Amy Blair
Assistant Professor
Department of Biology
St. Ambrose University

Richard B. Hall
Professor of Biology
Natural Resource Ecology and Management
Iowa State University

Garry R. Buettner
Professor
Free Radical and Radiation Biology
Department of Radiation Oncology College
of Medicine
University of Iowa

Anya Butt
Associate Professor of Biology, Program
Director, Environmental Studies Program
Central College

Beth E. Caissie
Assistant Professor
Department of Geological and Atmospheric
Sciences
Iowa State University

David G. Campbell
Professor of Biology and
Chair of Environmental Studies
Department of Biology
Grinnell College

James Cheaney
Associate Professor of Biology
Science and Mathematics
Ellsworth Community College

Silvia Cianzio
Professor
Department of Agronomy
Iowa State University

Russell Ciochon
Director of Museum Studies
Department of Anthropology
University of Iowa

Ronald J. Cisar
Instructor
Biological Sciences
Iowa Western Community College

James T. Colbert
Associate Professor, Undergraduate Biology
Program Director
Department of Ecology, Evolution and
Organismal Biology
Iowa State University

John Collins
Instructor
Sustainable Living Department
Maharishi University of Management

Charles Connerly
Professor and Director
School of Urban and Regional Planning
University of Iowa

James Cornette
Emeritus Professor of Mathematics
Iowa State University

Kate Cowles
Associate Professor
Department of Statistics and Actuarial
Science
University of Iowa

Travis Cox
Co-Director, Undergraduate Sustainable
Living Program
Sustainable Living Department
Maharishi University of Management

Richard Cruse
Professor and Director of the Iowa Water
Center
Department of Agronomy
Iowa State University

Dennis Dahms
Professor
Quaternary Geochronology &
Paleoenvironment, Department of
Geography
University of Northern Iowa

John Dawson
Associate Professor
Department of Mathematics
Kirkwood Community College

Robert L. De Haan
Chair, Environmental Studies Department
Professor of Biology
Dordt College

Diane Debinski
Professor
Ecology, Evolution, and Organismal Biology
Iowa State University

Rhawn Denniston
Chair, Environmental Studies Program,
Associate Professor of Geology
Department of Geology
Cornell College

Gary Donnermeyer
Biology Professor
Math-Science Department
Kirkwood Community College

Julie Ehresmann
Advanced Instructor, Science
Science Department
Iowa Central Community College

Kenneth Elgersman
Assistant Professor
Department of Biology
University of Northern Iowa

Kamyar Enshayan
Director, Center for Energy &
Environmental Education
University of Northern Iowa

R. William Field
Professor
Department of Occupational &
Environmental Health,
Department of Epidemiology,
College of Public Health
University of Iowa

Andrew A. Forbes
Assistant Professor
Department of Biology
University of Iowa

Johanna Foster
Associate Professor
Department of Biology
Wartburg College

Lonnie Gamble
Co-Director, Undergraduate Sustainable
Living Program
Sustainable Living Department
Maharishi University of Management

Lenny Gannes
Assistant Professor
Departments of Biology and Environmental
Studies
Cornell College

Stratis Giannakouros
Assistant Director
Center for Sustainable Communities
Luther College

Jack Gittinger
Professor
Science Education
Simpson College

Charles Glatz
Professor
Chemical and Biological Engineering
Iowa State University

Vicki F. Grassian
Wendell F. Miller Professor
Departments of Chemistry & Chemical and
Biochemical Engineering
University of Iowa

David Grewell
Associate Professor
Agriculture and Biosystems Engineering
Iowa State University

Bill Gutowski
Professor of Meteorology
Department of Geological and Atmospheric
Sciences
Iowa State University

Joel Haack
Dean, College of Humanities,
Arts and Sciences
University of Northern Iowa

Richard B. Hall
Professor of Forestry
Natural Resource Ecology and Management
Iowa State University

Emily Heaton
Assistant Professor, Biomass Crop
Production
Department of Agronomy
Iowa State University

Steve Hendrix
Professor
Department of Biology
University of Iowa

Brian Hornbuckle
Associate Professor
Department of Agronomy
Iowa State University

Keri C. Hornbuckle
Professor, Department of Civil &
Environmental Engineering
Associate Dean for Academic Programs,
College of Engineering
University of Iowa

Diana Horton
Associate Professor Emerita
Department of Biology
University of Iowa

Stephen Howell
Professor
Plant Sciences Institute
Iowa State University

Mohammad Iqbal
Professor of Geology & Environmental
Science
Department of Earth Science
University of Northern Iowa

Erin Irish
Associate Professor of Biology
University of Iowa

Laura Jackson
Director, Tallgrass Prairie Center
Professor of Biology
Department of Biology
University of Northern Iowa

Sam James
Adjunct Associate Professor
Department of Biology
University of Iowa

Fredric Janzen
Professor
Ecology, Evolution, and Organismal Biology
Iowa State University

Laura R. Jarboe
Assistant Professor
Chemical and Biological Engineering
Iowa State University

John Jorstad
Science Instructor
Western Iowa Tech Community College

Craig Just
Assistant Professor
Department of Civil & Environmental
Engineering
University of Iowa

Kristopher J. Keuseman
Assistant Professor of Chemistry, Medical
Laboratory Science Program Director
Department of Natural & Applied Sciences
Mount Mercy University

Frederick Kirschenmann
Distinguished Fellow
Leopold Center for Sustainable Agriculture
Iowa State University

Andrew Kitchen
Assistant Professor
Department of Anthropology
University of Iowa

Erwin Klaas
Professor Emeritus
Natural Resources Ecology Management
Iowa State University

Witold Krajewski
Director, Iowa Flood Center,
Rose & Joseph Summers Chair in Water
Resources
University of Iowa

David Laird
Professor
Department of Agronomy
Iowa State University

Rick Lampe
Professor
Department of Biology
Buena Vista University

Louis Licht
Associate Professor, Adjunct
Department of Civil & Environmental
Engineering
University of Iowa

Matt Liebman
Henry A. Wallace Endowed Chair for
Sustainable Agriculture / Professor of
Agronomy
Iowa State University

Ronald Lindblom
Science Instructor, VESTA Coordinator,
Outdoor Learning Lab Manager
Northeast Iowa Community College

Marc Linderman
Associate Professor
Department of Geography
University of Iowa

Gabriele Ludewig
Professor
Department of Occupational &
Environmental Health
University of Iowa

J. Elizabeth Maas
Science Instructor
Math/Science Department
Kirkwood Community College

Mark T. Madsen
Professor
Department of Radiology
University of Iowa

Amy Madsen-Smith
Science Faculty
Clinton Community College

Sunil Malapati
Associate Professor
Biochemistry
Clarke University

Dave May
Professor
Department of Geography
University of Northern Iowa

Paul Mayes
Professor of Biology-Retired
Eastern Iowa Community College

M. Patrick McAdams
Assistant Professor of Geology
Division of Health and Life Science
William Penn University

Katherine McCarville
Associate Professor of Geosciences
School of Science and Mathematics
Upper Iowa University

David McCullough
Professor of Biology, Co-coordinator
Environmental Science and Studies
Wartburg College

Paulina Mena
Assistant Professor of Biology
Central College

Laura C. Merrick
Lecturer
Department of Agronomy
Iowa State University

Kenneth J. Moore
Charles F. Curtiss Distinguished Professor
Department of Agronomy
Iowa State University

Peter L. Moore
Adjunct Assistant Professor
Natural Resources Ecology & Management
Iowa State University

Forest Morrisett
Instructor of Biology
Biology Department
Southeastern Community College

Marian Muste
Research Engineer and Adjunct Professor
IIHR-Hydroscience & Engineering
University of Iowa

Connie Mutel
Senior Science Writer
IIHR-Hydroscience & Engineering
University of Iowa

Robert Mutel
Professor of Astronomy
Department of Physics and Astronomy
University of Iowa

Maurine Neiman
Assistant Professor
Department of Biology
University of Iowa

Fred Ochs
Professor of Chemistry & Earth Science
Kirkwood Community College

Dale W. Olson
Professor of Physics
Department of Physics
University of Northern Iowa

Steve Openshaw
Professor of Science
Iowa Central Community College

David Osterberg
Associate Clinical Professor
Occupational and Environmental Health
University of Iowa

Reuben J. Peters
Professor & Director of Graduate Education
Department of Biochemistry, Biophysics, &
Molecular Biology
Iowa State University

Gary Phillips
Professor
Environmental Studies Department
Iowa Lakes Community College

Jim Raich
Professor
Department of Ecology, Evolution and
Organismal Biology
Iowa State University

Mark Rasmussen
Director
Leopold Center for Sustainable Agriculture
Iowa State University

Mark Reagan
Professor & DEO
Department of Geoscience
University of Iowa

Ryan Rehmeier
Associate Professor and Chair
Department of Biology and Environmental
Science
Simpson College
Peter Reilly
Anson Marston Distinguished Professor in
Engineering
Chemical and Biological Engineering
Iowa State University

Larry Robertson
Professor
Department of Occupational &
Environmental Health
University of Iowa

Nilda E. Rodriguez
Assistant Professor of Biology
Department of Biology
University of Northern Iowa

Thomas Rosburg
Professor of Biology,
Department of Biology
Drake University

Amber D. Ruskell-Lamer
Natural Sciences Instructor
Department of Math and Sciences
Southeastern Community College

Ann Russell
Affiliate Assistant Professor
Natural Resources Ecology & Management
Iowa State University

Melanie H. Sadeghpour
Program Chair, Environmental Science
Co-Chair, DMACC Sustainability Task Force
Associate Professor, Environmental Science
and Ecology
Des Moines Area Community College

J. Michael Sallee
Biology Instructor
Southeastern Community College

Paula Sanchini
Professor
Department of Biology
Coe College

Lisa Schulte Moore
Associate Professor
Natural Resource Ecology & Management
Iowa State University

Robert D. Seager
Professor of Biology
Department of Biology
University of Northern Iowa

Holmes A. Semken
Professor Emeritus
Department of Geoscience
University of Iowa

David A. Shealer
Associate Professor of Biology
Loras College

Mack Shelley II
Professor of Statistics Political Science, and
Educational Leadership and Policy Studies
Iowa State University

Derin A. Sherman
Professor of Physics
Cornell College

William Simpkins
Professor of Hydrogeology
Department of Geological and Atmospheric
Sciences
Iowa State University

Mindy Skarda
Instructor
Biology Department
Southwestern Community College

Daryl Smith
Tallgrass Prairie Center
University of Northern Iowa

Tex A. Sordahl
Professor of Biology
Department of Biology
Luther College

Scott Spak
Assistant Professor
Urban and Regional Planning and the UI
Public Policy Center
University of Iowa

Martin St. Clair
Professor
Department of Chemistry
Coe College

Charles Stanier
Associate Professor of Chemical and
Biochemical Engineering
College of Engineering
University of Iowa

Bill Stigliani
Professor of Environmental Science
Center for Energy & Environmental
Education
University of Northern Iowa

Elizabeth A. Stone
Assistant Professor
Department of Chemistry
University of Iowa

Monica R. Storm
A&P Instructor
Biological Sciences
Iowa Western Community College

Jim Stroh
Professor
Biology and Chemistry Department
Morningside College

Robert Summerfelt
Professor Emeritus
Department of Natural Resource Ecology
and Management
Iowa State University

Keith Summerville
Environmental Science and Policy
Drake University

Elwynn Taylor
Extension Climatologist
Iowa State University

Peter S. Thorne
Professor and Head
Department of Occupational &
Environmental Health, Director,
Environmental Health Sciences Research
Center
University of Iowa

H.S. Udaykumar
Professor
Mechanical and Industrial Engineering
University of Iowa

Richard L. Valentine
Professor
Department of Civil and Environmental
Engineering
University of Iowa

Kristina Walkup
Science Instructor, Biology
Des Moines Area Community College

Michael Walter
Associate Professor
Department of Biology
University of Northern Iowa

Larry Weber
Director, Edwin B. Green Chair in Hydraulics
IHHR Hydroscience and Engineering
University of Iowa

Paul Weihe
Associate Professor
Biology & Environmental Science - Biology
Department
Central College

Darrell Wiens
Professor of Biology
Department of Biology
University of Northern Iowa

Brian Wilsey
Associate Professor
Department of Ecology, Evolution and
Organismal Biology
Iowa State University

Sally Wilson
Associate Professor of Biology and
Agriculture
Marshalltown Community College
Iowa Valley Community College

Danielle Wirth
Adjunct Assistant Professor
Drake University

Lee Wymore
Professor and Program Director
Science and Mathematics
Indian Hills Community College

Mark A. Young
Associate Professor
Department of Chemistry
University of Iowa

Catherine Zeman
Professor, Environmental Health
Health Division
University of Northern Iowa