



Center for Global and Regional
Environmental Research

CGRER, The Center for Global and Regional Environmental Research

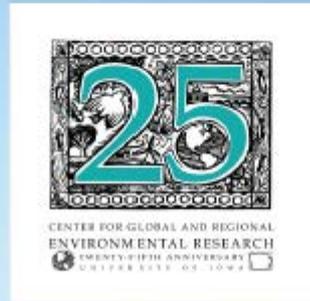
February 18, 2016

Iowa Utilities Board Public Hearing

Des Moines, Iowa



THE CENTER FOR GLOBAL & REGIONAL
ENVIRONMENTAL RESEARCH



Topics Covered:

- ✓ *Overview*
- ✓ *Research*
- ✓ *Grant Programs*
- ✓ *Education and Outreach*
- ✓ *Questions*



The University of Iowa Center for Global and Regional Environmental Research

- *The Center for Global and Regional Environmental Research (CGRER) was established in 1990 with the intent of promoting interdisciplinary efforts that focus on global environmental change.*

CGRER is supported by revenues generated from utilities in the State of Iowa, under the Iowa Energy Act. Funds are used to support research and provide services to faculty, students, and citizens across the state who are interested in environmental change, including climate change.

(CGRER currently is composed of 120 members from 32 departments at seven institutions in Iowa and beyond.)

CGRER Staff



Joe Bolkcom
(outreach)
Amy Parker
(admin)
Jeremy
Moen **(ITS)**



**Co-
directors**
Jerry
Schnoor &
Greg
Carmichael

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- Tim Harden, Alliant Energy
- Mark Kresowik, Sierra Club
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UNIVERSITY OF IOWA

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Stephen D. Hendrix
Diana G. Horton

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A. Umrans Dogan
Charles O. Stanier

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Tori Z. Forbes
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Sara E. Mason
Scott K. Shaw
Elizabeth Stone
Mark Young

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William E. Eichinger
Keri C. Hornbuckle
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Witold F. Krajewski
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Timothy E. Mattes
Marian V. Muste
Wilfrid A. Nixon
A. Jacob Odgaard
A.N. Thanos Papanicolaou
Gene F. Parkin
Michelle Scherer
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Lon D. Drake, Emeritus
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Frank H. Weirich
You-Kuan Zhang

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John L. Solow

Electron Spin Resonance Facility

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Barbara Eckstein
Laura Rigal

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Margaret Carrel
Marc Linderman
George P. Malanson
Michael L. McNulty, Emeritus
R. Rajagopal
Gerard Rushton
Heather A. Sander
Kathleen E. Stewart
Ramanathan Sugumaran
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Paul R. Greenough
Tyler Priest

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Ibrahim Demir
Connie Mutel
Douglas Schnoebelen

Journalism and Mass Communication

Kajsa E. Dalrymple

Law

Jonathan Carlson
Burns H. Weston

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H.S. Udaykumar

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G. Edgar Folk, Emeritus

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Office of Sustainability

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Cory T. Forbes

Sociology

Ion Bogdan Vasi

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Scott Spak
Aaron Strong

IOWA STATE UNIVERSITY

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Richard M. Cruse
Brian K. Hornbuckle

Ecology, Evolution, and Organismal Biology

Diane M. Debinski
John Nason
James W. Raich
Amy Toth
Brian J. Willsey

Economics

David A. Swenson

Geological and Atmospheric Sciences

William J. Gutowski
Eugene S. Takle

Natural Resource Ecology and Management

Jan Thompson

UNIVERSITY OF NORTHERN IOWA

Biology

Laura Jackson

Center for Energy and Environmental Education

Kamyar Enshayan

Physical Geography

Dennis E. Dahms

CORNELL COLLEGE

Geology

Rhawn Denniston

HYDROLOGIC RESEARCH CENTER, SAN DIEGO, CA

Konstantine P. Georgakakos

RICE UNIVERSITY

Civil and Environmental Engineering

Pedro Alvarez

UNIVERSITY OF WYOMING

College of Engineering

Robert Etema

HACETTEPE UNIVERSITY, TURKEY

Geological Engineering Department

Meral Dogan

CGRER is, first and foremost, a research center

- Many research grants/publications/awards each year
 - Pablo Saide, Scott Spak, and Greg Carmichael had new paper published in *Geophysical Research Letters* (AGU) on the role of smoke from fires increasing the severity of tornadoes
 - Tori Forbes received a *National Science Foundation* (NSF) early CAREER award
 - David Cwiertny et al. had paper published in *Science* on nighttime reversion of potent hormone chemicals used in the beef cattle industry
 - Gabriele Villegas et al. with paper on more severe storms in Midwest published in *PNAS*
 - Witold Krajewski and Larry Weber continue to garner millions of dollars for *Iowa Flood Center* research

CGRER Research reaches out to Iowa and Iowans...

Clean Air in the River Valley
Environmental Education, Technology,
Partnerships, & Planning

CLE4R
CLEan Air in the River Valley
Environmental Education • Technology
Partnerships • Planning

THE UNIVERSITY OF IOWA
IHR
Hydrosience & Engineering
College of Engineering

Home What is CLE4R? Events CLE4R in the News Get Involved Current Air Quality Photos

Home

Welcome to CLE4R!

Search

CLE4R is a new collaborative effort between the University of Iowa, the City of Dubuque, and Dubuque-area partners to improve air quality in Dubuque and the surrounding Upper Mississippi River Valley communities. The "CLEAR" in CLE4R stands for

- CLEAN
- Air in the
- River Valley

The "4" in CLE4R stands for

News & Events

- [The effects of snow on air quality](#)
- [Current air quality, Tues Dec 22](#)
- [Article in the Dubuque Telegraph Herald](#)



Low Cost Sensors as a Training and Engagement Tool



CLE4R is a collaborative effort between the EPA, University of Iowa, the City of Dubuque, and Dubuque-area partners to improve air quality in Dubuque and the surrounding communities.

- **Aim 1:** Increased awareness, knowledge, decision-making skills, and commitments to action by local stakeholders
- **Aim 2:** See if low-cost air quality sensors are a good training tool
- **Aim 3:** Assess outcomes

Partners

- Local government
- K-12 School District
- Businesses
- Advocacy Organizations
- Local Universities

The Iowa Small Community Wastewater Research Program

Professor Craig Just, The University of Iowa

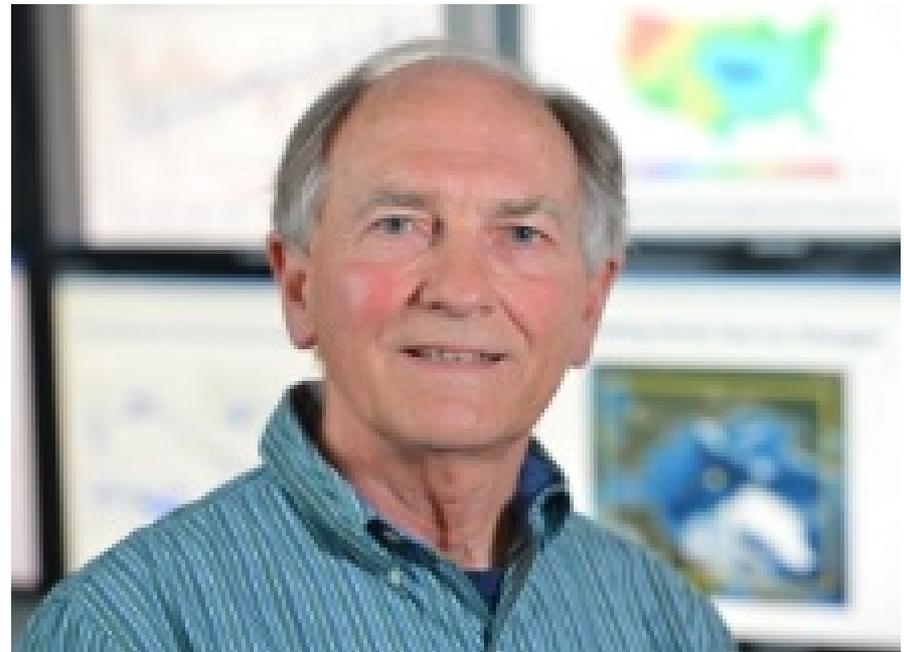
Raw and insufficiently treated sewage from small communities is a contributor to point-source nutrient and human pathogen pollution in Iowa. Most conventional wastewater treatment options are prohibitively expensive, costing more than these communities can afford. Small Iowa communities need economical wastewater treatment options that are proven effective in Iowa's varied climate.

The Iowa Small Community Wastewater Research Program (IWWRP) will explore and evaluate a wide range of cost-effective wastewater treatment options suitable for communities of less than 5,000 inhabitants. The multi-year effort has the potential to positively impact over 800 communities and reach each of Iowa's 99 counties.



Gene Takle and ISU Climate Center are important collaborators and contributors

- Professor Eugene Takle, meteorologist, climatologist, and renowned researcher
- Member Board of Trustees, University Corporation for Atmospheric Research (2010 -)
- Research and field observations of meteorological conditions in wind farms





Go to old article view

PDF
Information

Geophysical Research Letters

AN AGU JOURNAL

Research Letter

Central American biomass burning smoke can increase tornado severity in the U.S.

P. E. Saide, S. N. Spak, R. B. Pierce, J. A. Otkin, T. K. Schaack, A. K. Heidinger, A. M. da Silva, M. Kacenelenbogen, J. Redemann, G. R. Carmichael

First published: 13 February 2015 Full publication history

DOI: 10.1002/2014GL062826 View/save citation

Cited by: 0 articles Check for new citations

Am score 174

Funding Information

Water Sustainability Initiative - Meet the Faculty

Introducing The University of Iowa's Water Sustainability Initiative

[Read More](#)



Education and Outreach

At CGRER, we believe coping with environmental change requires objective research data to make informed decisions.

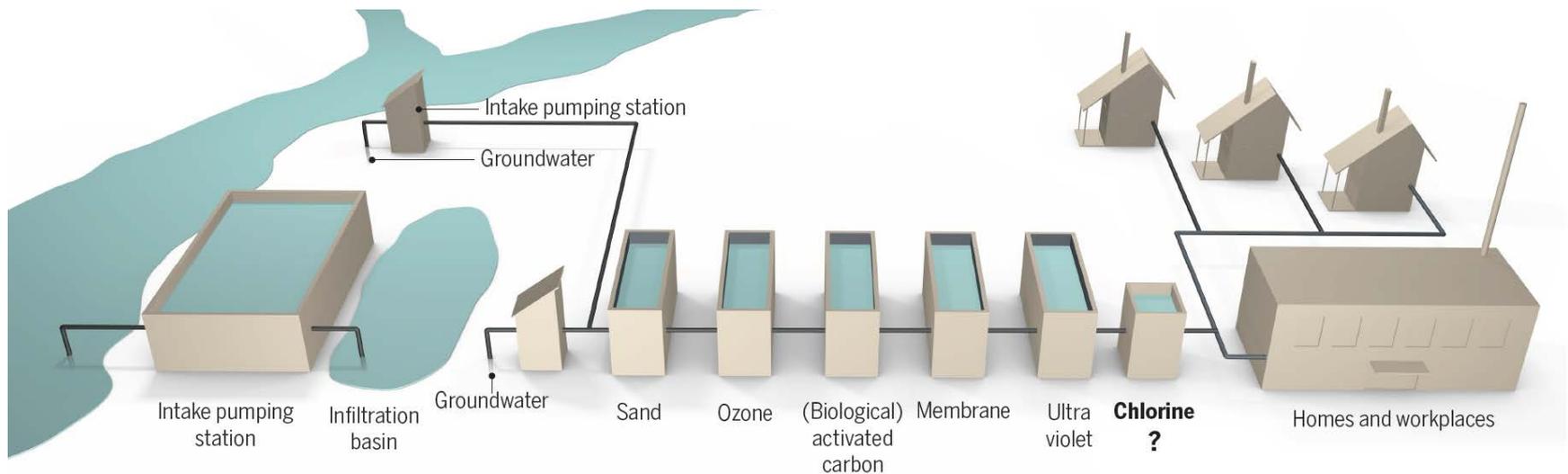
Though we're a research institute first and foremost, we also stress education and outreach efforts to help Iowans

WATER INFRASTRUCTURE

Drinking Water Research

“Safe drinking water may not need to contain a residual disinfectant”

By **Fernando Rosario-Ortiz, Joan Rose, Vanessa Speight, Urs von Gunten, Jerald Schnoor** sciencemag.org **SCIENCE** 26 FEBRUARY 2016 • VOL 351 ISSUE 6276



Protection of water resources

- Active watershed management
- Riverbank filtration
- Artificial recharge
- Groundwater

Water treatment

Multibarrier treatment (ozone, UV, AOPs, biological filtration, membranes, chlorine)

Distribution system

- Maintain and replace infrastructure
- Water quality monitoring
- Hydraulic integrity

Seed Grants

Faculty Research Seed Grants (\$150K/yr)



Conference Travel Grants for Graduate Student (\$15K/yr)

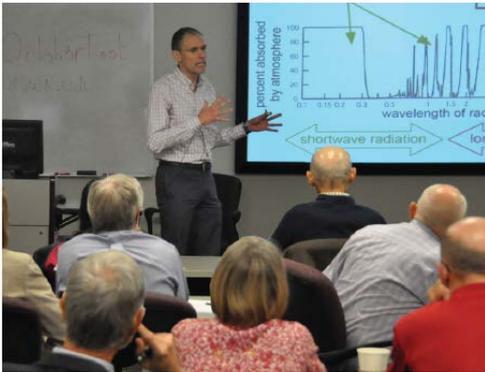


Field Research Travel Grants for Graduate Student (\$20K/yr)





Peoples Weather Map Project



Iowa Climate Science Educators Forum



Mobile Museum Water Exhibit



Diane Debinski presents her research.

Annual Symposiums

OUTREACH



Press conference for the Iowa Climate Statement 2015

Iowa Climate Statement



CGRER members visit with legislators at the CGRER-IFC Legislative Breakfast at the Iowa State Capitol.

Legislative Breakfast receptions



Above photos: Elizabeth Stone works with Nick Fetty and KC McGinnis on recording CGRER radio segments.

Iowa Environmental Focus and radio segments



CENTER FOR GLOBAL AND REGIONAL ENVIRONMENTAL RESEARCH
TWENTY-FIFTH ANNIVERSARY
UNIVERSITY OF IOWA

CGRER Education and Outreach

- Betsy Stone organized Iowa Climate Festival on April 11, 2015 (two years running)
- Joe Bolkom led annual climate statements (health in 2014 and on the upcoming caucuses, 2015) signed by over 160 Iowa climate educators and news events to release the statement
- CGRER sponsored breakfast program for Iowa Legislators and flood symposium in Des Moines
- CGRER sponsored two events with the Iowa Public Policy Center on *Renewable Energy* and on *Water and Food*
- CGRER sponsored colloquiums on climate change with Iowa United Nations Association, April 18
- CGRER members continue to help lead the U Iowa Water Sustainability Initiative (WSI) and the Informatics Initiatives to hire clusters of faculty members

Iowa Climate Statements (180 researchers at 38 colleges and universities)

- 2015 on climate and the elections
- 2014 on climate and health
- 2013 on climate and agriculture
- 2012 on climate science



CGRER Symposiums

- Anatomy of Iowa Floods-
Preparing for the Future,
2010
- Adapting to Weather
Extremes – The Economic
Impact in Iowa, 2013
- Living with Floods – 7
Community Tour, 2013
- Meeting the Renewable
Energy Challenge, 2014



*CGRER has a close collaboration with
the Iowa Flood Center*

CGRER Annual Legislative Breakfast in Des Moines State Capitol



CGRER's Iowa Environmental Focus: on-line and on the radio weekly



From right to left:
Prof. Betsy Stone,
(UI Chemistry Dept)
Nick Fetty and
KC McGinnis (UI
Journalism M.S.
students)

CGRER sponsored students to learn about climate policy at COP21 Paris, December 2015

Goal: to reduce GHG emission to limit global temp increase to 2 °C

- A legally binding agreement by all nations
- “Pledges” are now called INDCs Intended Nationally Determined Contributions



Paris Climate Talks



Jerry, Nick, and KC at COP 21 reporting on climate talks from Paris

COP21 Paris Climate Talks: Cities are major players in reducing emissions



Mayor Frank Cownie, Des Moines, was interviewed by CGRER interns during COP21



Mayor Roy Buol, Dubuque, was active in the cities agenda at COP21

CGRER Budget for 2015

CGRER received approximately **\$700,000** for the year

CGRER expended the following:

Research and Education 56%

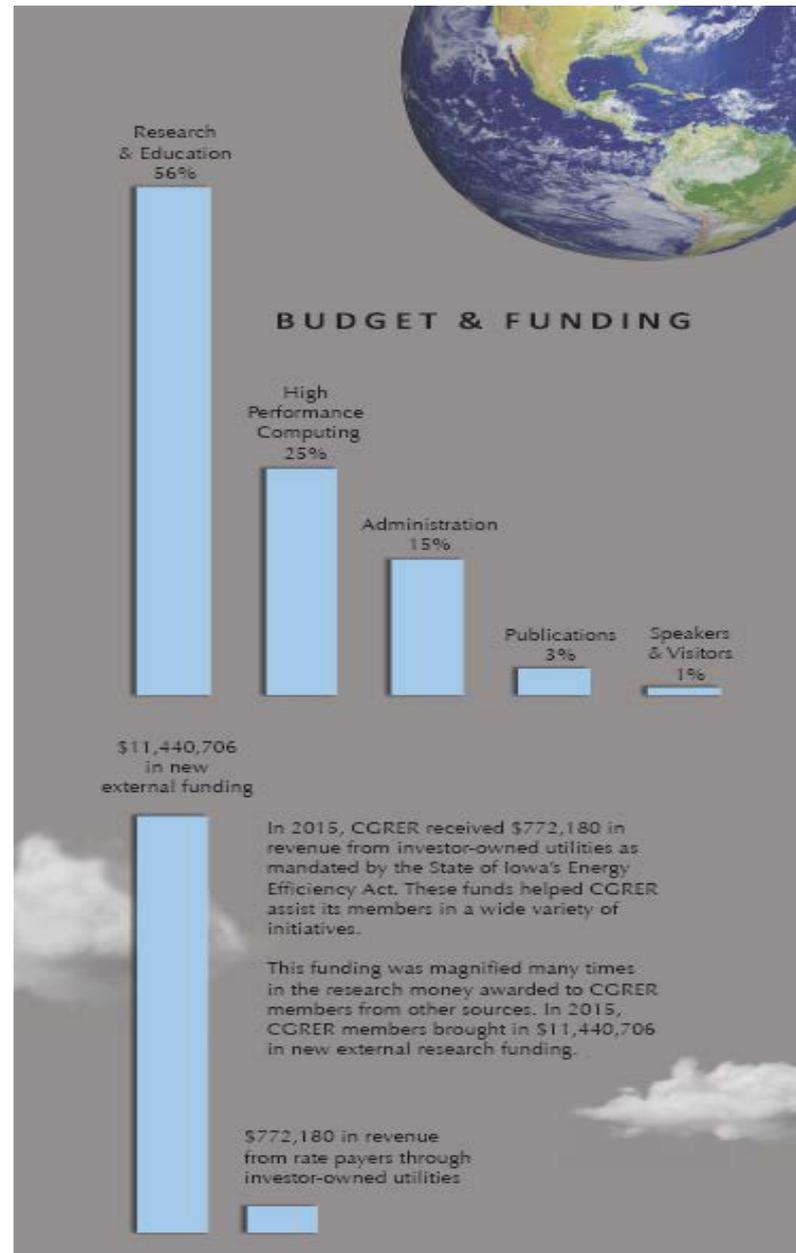
Hi-Performance Computing 25%

Administration 15%

Publications 3%

Speakers and Visitors 1%

CGRER members at the University of Iowa were awarded **\$11.4 million** in external research funding



Questions ?



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UNIVERSITY OF IOWA