

Part of the Session “Community Science:  
Strengthening Community Capacity to Use  
Science Effectively”  
AAAS Meeting, 2017

Raj Pandya

**Advancing Community Science**

Scaling Impact



**Unprecedented impact,  
inequity, and interdependence**



***“Our scientific power has outrun our spiritual power. We have guided missiles and misguided men.”***



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**We need an additional approach**



# Community Science



**Individual Action**

Boston, Massachusetts  
Assessing Flood Risk of Food Distribution Centers

[more](#)

Boulder, Colorado  
Deepening a City-Wide Commitment

[more](#)

Brandywine, Maryland  
Interpreting Local Air Quality Data to Support Pollution Monitoring

[more](#)

Brookline, Massachusetts  
Building Community Resilience to Extreme Heat

[more](#)

Chelsea, Massachusetts  
Synthesizing Climate Vulnerability Assessments

[more](#)

Colebrook, New Hampshire  
Remediating Groundwater Dioxane to Mitigate Marl Pond Degradation

[more](#)

Colorado  
Encouraging Air Quality Data Collection and Education

[more](#)

Colorado  
Optimizing Local Thresholds for Flash Flood Prediction

[more](#)

Denver, Colorado  
Assessing Unhealthy Air in Homes

[more](#)

Ethiopia, Horn of Africa  
Modeling Water Availability and Use  
Regional Environment Centre and Network

[more](#)

Eugene, Oregon  
Setting Ambitious Greenhouse Gas Targets

[more](#)

Evanston, Illinois  
Developing an Environmental Impact Monitoring Plan

[more](#)

Farmington, New Mexico  
Designing a Makerspace to Support Innovation in Economic Diversity Opportunities

[more](#)

Global  
Opening Up the World's Real-Time Air Quality Data

[more](#)

Granite City, Illinois  
Improving Local Air Quality

[more](#)

Hayward, California  
Gauging the Impact of Sea Level Rise on Wetlands

[more](#)

Hermosa Beach, California  
Exploring Renewable Energy Options

[more](#)

Jackson, Wyoming  
Protecting a Crucial Stream

[more](#)

Kennedale, Texas  
Evaluating Water Quality and Flood Risk

[more](#)

Kentucky  
Using Local Data to Improve Water Management

[more](#)

Las Vegas, Nevada  
Assessing Drought Risk and Vulnerability

[more](#)

Los Angeles, California  
Addressing Air Quality and Heat

[more](#)

Louisville, Kentucky  
Addressing Air Quality and Heat

[more](#)

Marin County, California  
Addressing Air Quality and Heat

[more](#)

Midway, Georgia  
Designing a Weather-Ready City Hall

[more](#)

Missoula, Montana  
Mapping Heat Vulnerability

[more](#)

New Orleans, Louisiana  
Creating Community Through Neighborhood Environment Monitoring

[more](#)

Northern Great Plains  
Supporting Traditional Tribal Agriculture

[more](#)

Oakland, California  
Designing Resilient Storm Water Management

[more](#)

Ontario, California  
Addressing Bacterial Contamination in a Constructed Wetland

[more](#)

Pamir Mountains, Afghanistan and Tajikistan  
Adapting Ecological Calendars to a Changing Climate

[more](#)

Pittsburgh, Pennsylvania  
Improving Greenhouse Gas Inventories

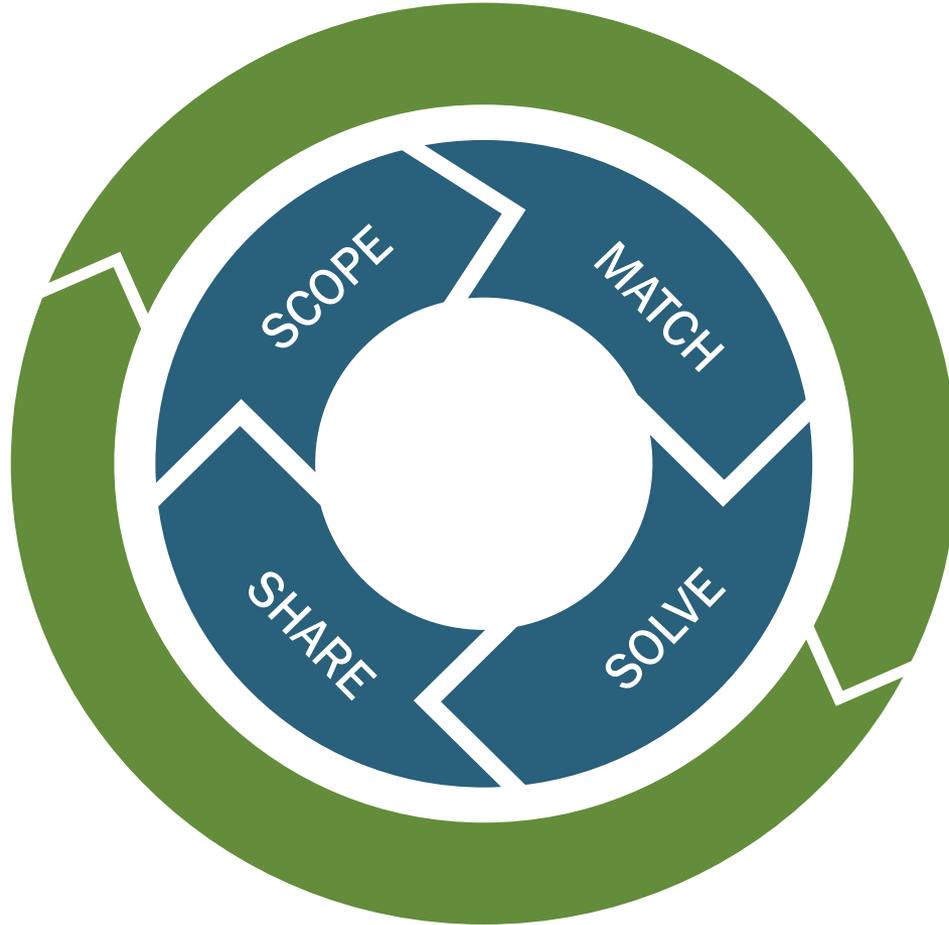
[more](#)

Reno, Nevada  
Evaluating Local Climate Risk and Identifying Resilience Opportunities

[more](#)

# New Programs

Scope  
**begins** with  
community  
priorities



Match is a  
**vett**ed  
volunteer

Share is  
shared

Solve aims  
for **impact**

# How TEX does Community Science



THE KRESGE FOUNDATION



**I.C.L.E.I**  
Local Governments for Sustainability



Resilience Dialogues



Climate CoLab

U.S. Global Change Research Program

INSTITUTE FOR Sustainable Communities

AMERICAN SOCIETY OF ADAPTATION PROFESSIONALS

**ICMA**  
INTERNATIONAL CITY/COUNTY MANAGEMENT ASSOCIATION



experiment

# New Partners



I FLOOD AND I VOTE



coming clean

PIONEERED BY THE ROCKEFELLER FOUNDATION

100 RESILIENT CITIES

College/Underserved Communities Partnership Program



ISeeChange | Investigatic x

Secure | <https://www.iseechange.org/investigations/5749ffb4245032597e8c643d>

**I SEE CHANGE** INVESTIGATIONS SIGHTINGS STORIES ABOUT LOGIN + POST

Destiny Bell  
Investigating: **Flooding**



2 2 63.2°

# New Models



# New Education Approaches



experiment

Search Projects, Topics & Lab Notes

Discover Start a Project Sign In

# Investigating Indoor Air Quality in Northeast Denver

By Ashley M. Collier, George Ware, PG Iwasaki, LaShonn Billingsley, Debbi Main, Raj Pandya, and Brian Fauver

Backed by Vidyut Pandya, Gina McAfee, Rajul Pandya, George Ware, Debbi Main, Evan, Denny Luan, Billy Williams, Carol Jones & Greg Withers, Gail Ryan, and 25 other backers



**\$4,250**

Raised

**100%**

Funded on 8/26/15

## New Funding Models



University of Colorado - Boulder

Boulder, Colorado

Engineering

Earth Science

Open Access

DOI: 10.18258/5329



# New Ethics





**Science with Humility and Grace**





# EarthConnections

Community Pathways to Geoscience Careers



# Water Utility Climate Alliance

COMMUNITY  
SCIENCE  
*CONNECT*

**{cSD}**  
Center for  
Science and Democracy  
at the Union of Concerned Scientists

**Science to Action**

Phil More, David Bell, Emily Sylek-Glassman, Andrew Rosenberg, Laina Kaatz, Anna Wilson, Jilly Yano, Melissa Marga, Susan Sullivan, Cathy Manduca, Dan Ferguson, Sarah Close, Lawrence Bujac, Heather Luzzo, James Arpitt, Chris Hamilton

# New Communities of Practice





# New Rewards and Incentives



1867

HOWARD  
UNIVERSITY



RISA

Regional Integrated  
Sciences and Assessments



HASKELL INDIAN  
NATIONS UNIVERSITY

# Institutional Leadership

# Thank you

[rpandya@agu.org](mailto:rpandya@agu.org)



# Thank you

[rpandya@agu.org](mailto:rpandya@agu.org)





**Science with Humility and Grace**

# Thank you

[rpandya@agu.org](mailto:rpandya@agu.org)



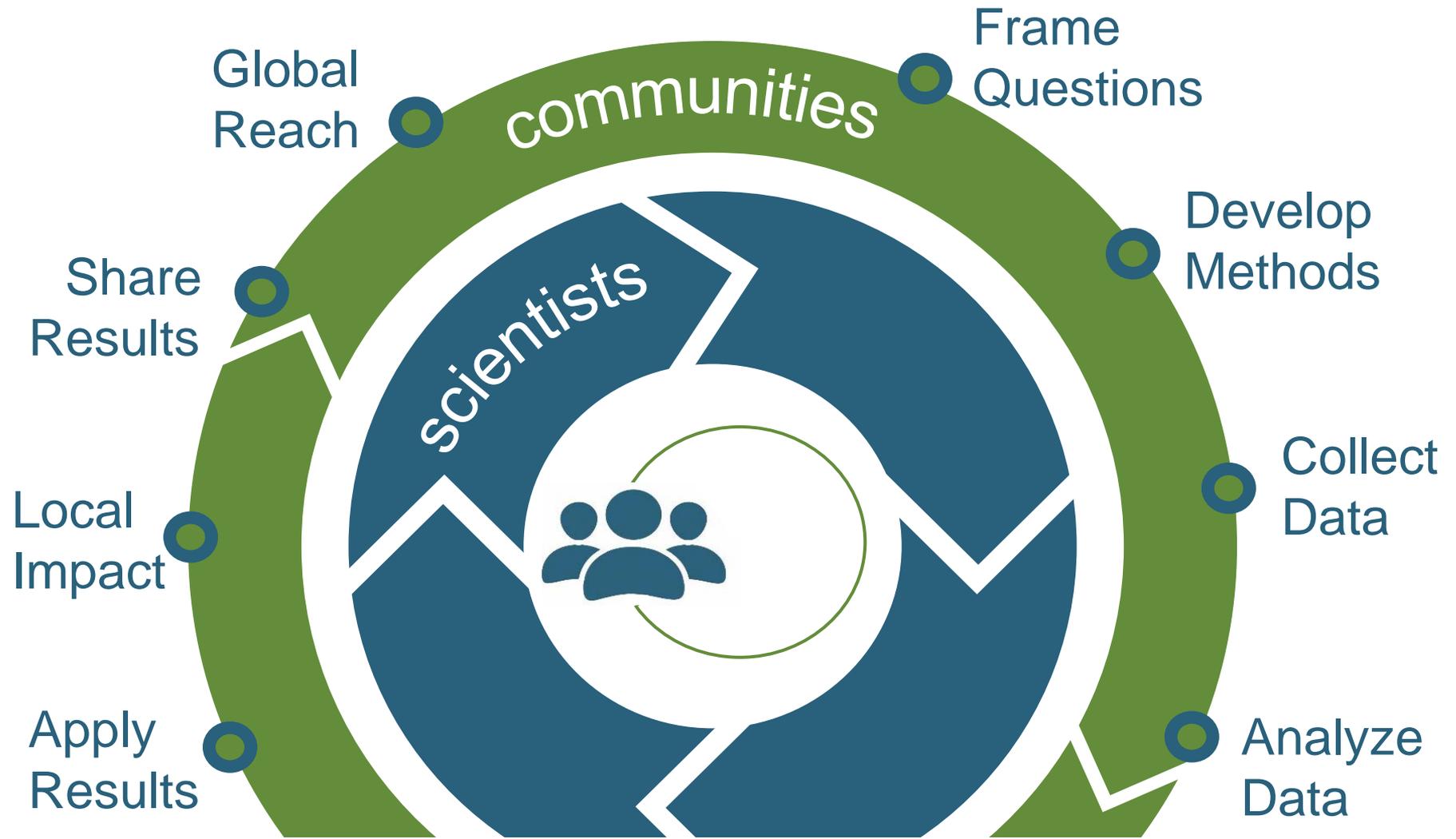


# Thank you

[rpandya@agu.org](mailto:rpandya@agu.org)



	Scientists	Community Decision-making
Timescales	Next steps wait until information is available	Deadlines drive action with or without available information
Deliverables	Process and communication oriented, null results are still useful	Decision-oriented, null results are often seen as time lost
Typical Output	Papers – methods and results primarily for peers	Tools to help non-peers make decisions: cost-benefit analyses, scenarios, etc.
Orientation	Toward highest possible precision and accuracy	Learn enough to make a decision and move on
Budgets	Tight and scrutinized	Tighter and, if possible, even more scrutinized
Science	Primary factor	One of many factors
Collaboration	Shared values	Negotiating compromises across different values
Decision-making	Evidence-based (credibility-based)	Consensus-based (legitimacy based)
Publicity	Project leads decide when to publicize	Part of a larger public process
Motivation	Actions and Solutions	Questions or Understandings



# Community Science

Draw  
Conclusions



**Wicked problems**



**THRIVING EARTH EXCHANGE**  
Exchange of Ideas and Knowledge for a Thriving Planet



**Get Involved**  
Contribute Science  
Support Communities



# New Communities of Practice



**Advancing Community Science**

# Resilience Dialogues

Resilience Dialogues helps you explore and discuss climate-related risks facing your community and take the first steps toward resilience.

[Start a Dialogue](#)

New & Noteworthy: [Lorem ipsum dolor sit amet, consectetur adipiscing elit.](#)



Resilience Dialogues is a public-private collaboration that works to build climate-resilient communities through facilitated dialogues among scientists, practitioners, and community leaders. It is coordinated by the [U.S. Global Change Research Program \(USGCRP\)](#) and the [American Geophysical Union's Thriving Earth Exchange](#), and oversees a [leadership team](#). The online platform is developed by the [Massachusetts Institute of Technology \(MIT\) Center for Collective Intelligence](#).

## New Tools