



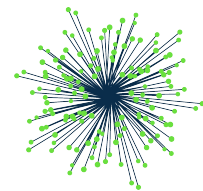
# Data integration and (re-)usability for environmental and climate justice

Katie Hoeberling (she/they)

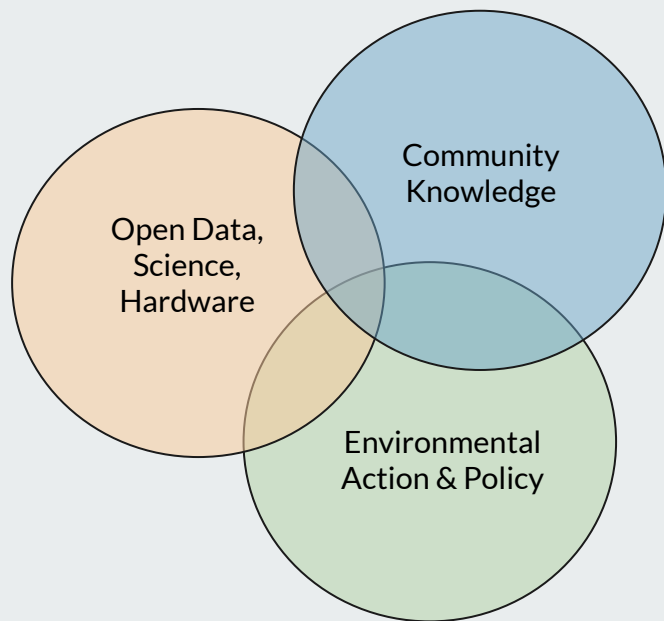
20 April 2023



OPEN ENVIRONMENTAL DATA PROJECT



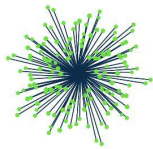
# Our vision



Environmental disasters and climate change impact everyone, **but systemic racism and classism amplify impacts on people of color, and other vulnerable communities.**

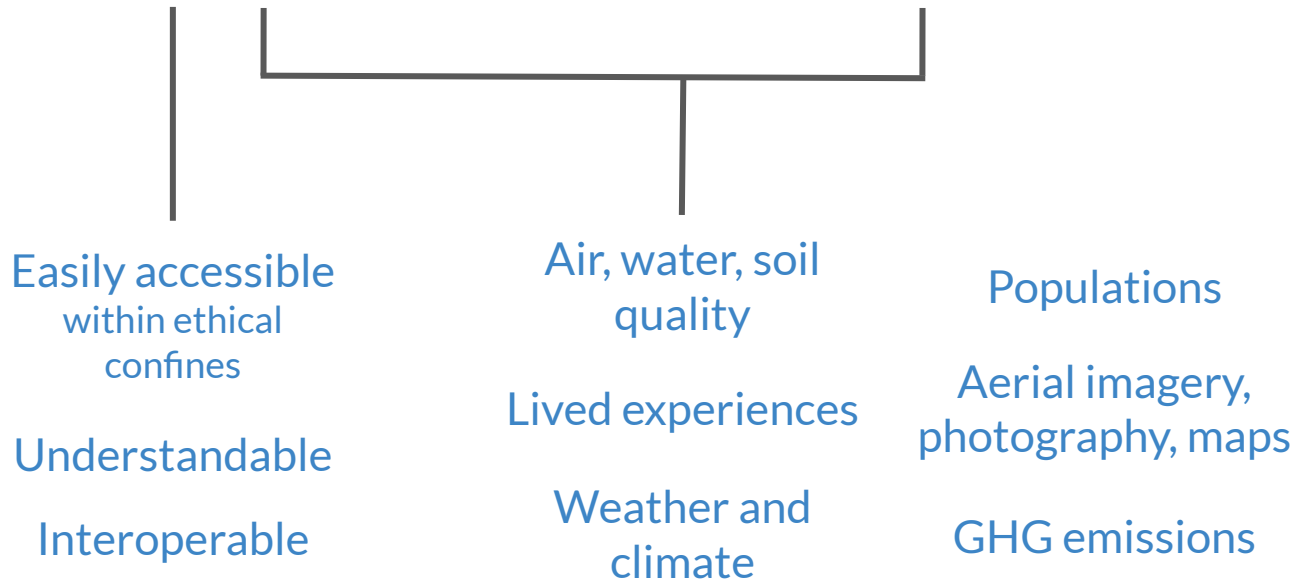
**Better data governance** can make environmental knowledge **more easily accessible, understandable, and usable to everyone**—researchers, communities, government, journalists, lawyers, etc.

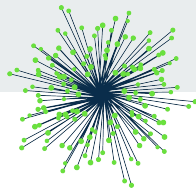
**Open data systems can and should center communities**—they're lived experiences, knowledge, needs, and capacities—empowering them and their allies to bring about environmental policy and action.



# OPEN ENVIRONMENTAL DATA PROJECT

What do we mean by  
**open environmental data?**





# Recent major investments in environmental monitoring and data collection... and opening it up!



## Beacon

A \$100 million boost for environmental justice

Joseph Winters  
Newsletter Reporter

UN Biodiversity Lab is now a registered Digital Public Good

Nature

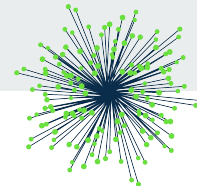
Science & Technology

## EPA awards grants to monitor air quality in 37 states

The Environmental Protection Agency has awarded grants for projects to monitor air quality in 37 states, with a focus on minority communities and other areas overburdened by pollution

By MATTHEW DALY Associated Press  
November 3, 2022, 9:19 AM



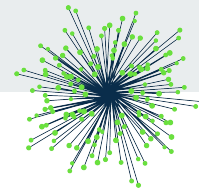


**But much of this data is collected or shared with specific purposes or uses in mind.**

*What if environmental data were managed and shared in ways that enabled multiple uses?*

*How might we use existing datasets to make sense of our surroundings in varied and novel ways?*





## Environmental regulation and compliance data

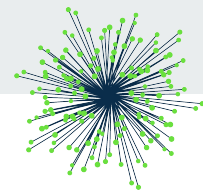


Image from [D. Ross Cameron](#) of the Chevron Refinery in Richmond, CA in 2012

Compliance data flows in the US:

**Facilities and businesses** → **States** →  
**Environmental Protection Agency (EPA)**  
→ ??

- Facilities incentivized to do the bare minimum to collect and share data.
- *How might this data better support community organizing, political advocacy, campaigning, or litigation?*
- *How might it support scientists and journalists in making new connections and framing or answering questions?*

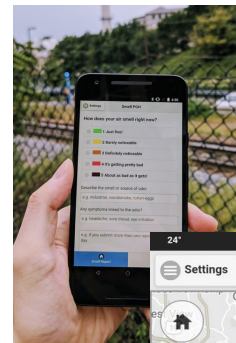


# Community Data

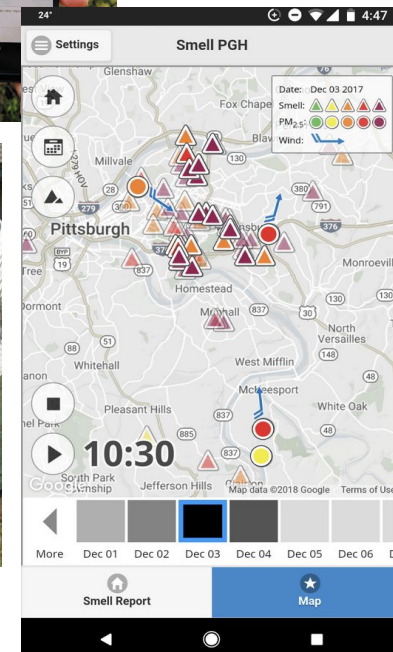
From air and water quality sensors, qualitative records of lived experiences, ecological observations, etc.

- Can be time- and resource-intensive, especially for overburdened or underserved communities
- Not always taken seriously or trusted by public agencies or researchers
- *How can data be collected, structured, and shared so that it can be integrated into decision making?*
- *How can data be shared while respecting community values and privacy?*

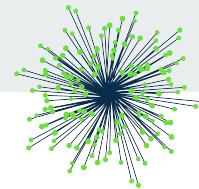
[Louisiana Bucket Brigade](#)



[Smell Pittsburgh](#)



Images from (clockwise from left): Yes! Magazine (Marc Pagani), Smell Pittsburgh, Smell Pittsburgh



## 'Research' Data

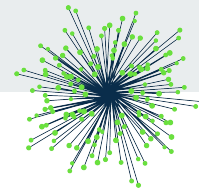


### Individual studies and large collaborations like IPCC, US National Climate Assessment

- States, tribes, cities across the US are increasingly engaged in climate planning—or are actively dealing with ecological emergencies
- *How might data and global models be applied to local geographies?*
- *How might data be shared so that it's understandable to actors of various levels of data experience?*

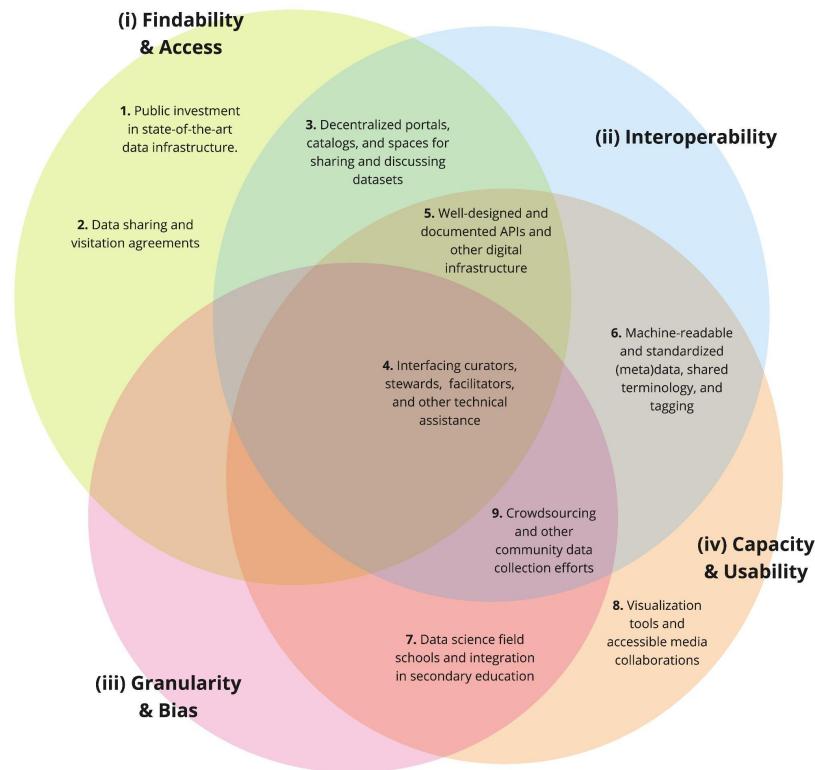
← From the NSF Arctic Data Center [Permafrost Discovery Gateway](https://www.permanfrostdiscoverygateway.org/) ([doi:10.18739/A2K35MF71](https://doi.org/10.18739/A2K35MF71))

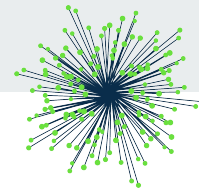




# Needs, barriers, and opportunities

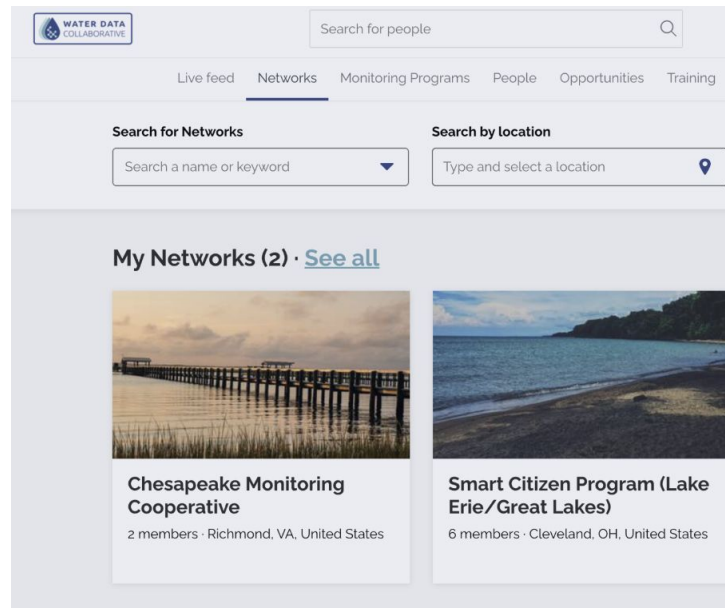
- (i) How can we ensure environmental data is **findable** and **accessible**?
- (ii) How can data collection and management practices, as well as infrastructure, support **interoperability**?
- (iii) What approaches can fill in gaps created by limited data **granularity** and circumvent **biases** embedded in data?
- (iv) How can we support diverse data users representing a **spectrum of capacities** in understanding, analyzing, and applying environmental data?

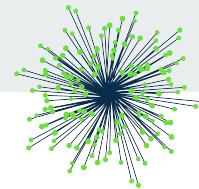




## Opportunity: **Shared spaces for storing or pointing to related datasets**

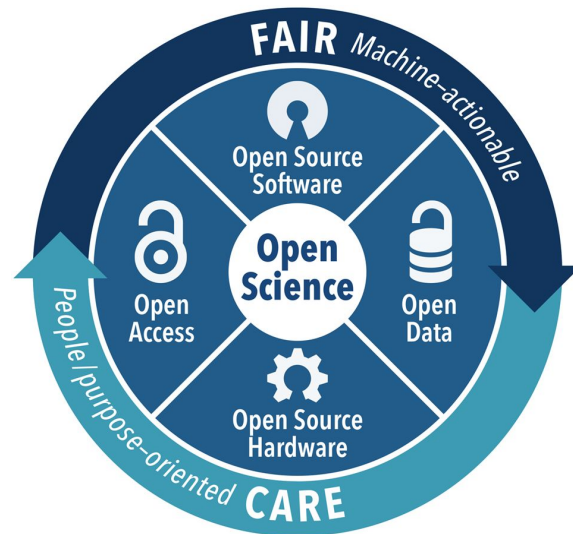
- Centralized repositories can be important especially within scientific disciplines, but they're often siloed or require affiliation
- Decentralization can support more diverse sources of information, communication, and incorporation of community data
- *Something happening:* Mainstem Network (Water Data Collaborative) ----->
- *In the works:* Community Data Hubs (OEDP)

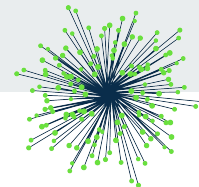




## Opportunity: **Leverage data stewards to integrate community priorities**

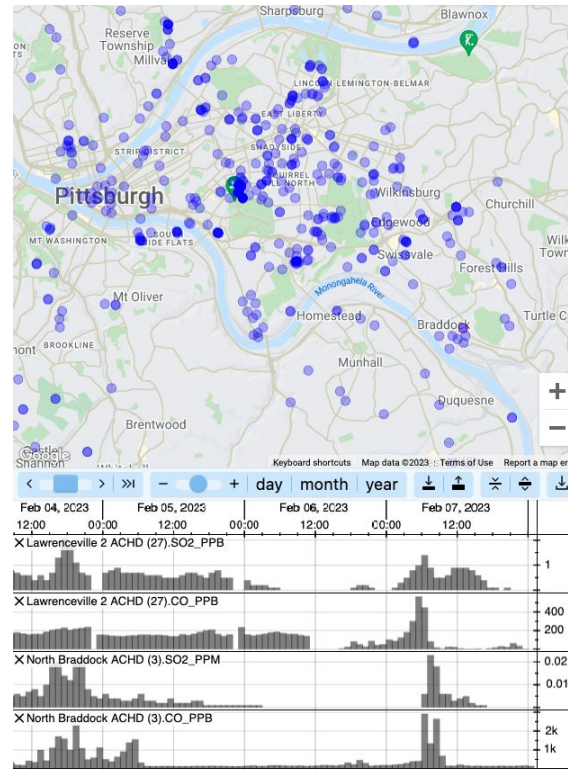
- Data stewards already supporting FAIR-ification of data. How might **CARE** be prioritized?
- Could Chief Data Officers or “Community Data Integration Officers” take this on?
- *Something happening: **Indigenous and Traditional Knowledge (ITK) Memo*** from White House Office of Science and Technology Policy
- *In the Works: **SEEKCommons Network*** (Notre Dame, OEDP, HDF Group)
  - Data Facilitators Consortium —————>

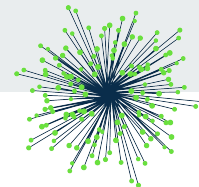




## Opportunity: **Well-designed and well-documented APIs**

- Accessible visualizations for data seekers of various levels of experience
- Connect datasets from different sources and integrate data
- Creation process can support collaboration by creating space to deliberate on design and uses
- **Lots happening!**
  - [Water Reporter](#) (The Commons)
  - [OpenAQ](#)
  - [EnvironmentalData.org](#) (CREATE Lab) ———>
- **In the works:** California Senate Bill [\(SB\) 674](#) “Refinery Air Pollution Transparency and Reduction Act”





# Opportunity: Machine-readable and human-readable data and metadata

- Enabling dataset comparisons and harmonization
- Standardizing nomenclature
- Supporting ethical data use
- *Something happening:* Internet of Water (IOW) [Water Terminology Collection](#) —————>
- *In the works:* [Beyond Compliance](#) advocacy toolkit for machine-readable (meta)data

Term	Definition	Source
All	All	
Reclaimed Wastewater	Treated wastewater that can be reused for beneficial purposes such as irrigation (See also Recycled water).	CA Water Boards Water Words
Recycled Water	Water that is used more than one time before it passes back into the natural hydrologic system and is suitable for a beneficial use (See also Reclaimed wastewater).	CA Water Boards Water Words
Recycled Water Task Force	Established in 2002, the Recycled Water Task Force was created to make recommendations on approaches to increase California's supply and use recycled water. The Task Force was made up of experts on the safe and beneficial uses of recycled water, including a broad range of community participants, and representatives from environmental organizations and industry. Task Force recommendations can be found in the June 2003 Recycle Water Task Force Final Report.	CA Water Boards Water Words

Download Related Terms as CSV

Term	Source
Recycled Water	NM Water Rights Allocation Program Glossary
Recycled Water	UT Division of Water Rights Glossary
Recycled water	TX-PWD Glossary of River Terminology
recycled water	CA-DWR Glossary
Recycling	AZ DEQ Glossary of Environmental Terms
water recycling	CA-DWR Glossary



# Questions or ideas?

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tw: [@OpenEnviroData](https://twitter.com/OpenEnviroData) or [@shrubberling](https://twitter.com/shrubberling)

web: <https://OpenEnvironmentalData.org>