



Open Science Across AGU and in Scientific Societies

Brooks Hanson
Executive VP, Science
AGU
bhanson@agu.org



The 21st century (and beyond) will be the century of convergent science for the benefit of humanity

1 habitable planet

All major sustainability issues are core to convergent/transdisciplinary science:

- Population 7-10 billion; food?
- Major health issues are convergent science: include clean air, soil, and water, geohealth, etc.
- All ecosystems and biogeochemical cycles are human dominated
- Huge climate change experiment underway
- Key limited resources
- Imminent energy transition
- Transportation, navigation, trade (e.g., economy) all convergent science based
- Natural hazards, weather, and climate forecasting

Outline: Evolving open science at AGU and in scholarly societies: It's much more than publications

Meetings:

Open posters and presentations, expanding use of preprints, open engagement policies, virtual access

Publications:

Expanding access, availability

Open data

Increased trust, integrity, and engagement; addressing predatory publishing

Data

Data position statement

FAIR data project

Thriving Earth Exchange, Citizen science, Community Engagement

Fostering a culture in support of open science with integrity

Societies are key for support of disciplinary communities

Rewarding open through:

Research assessment

Awards and rewards

Ethics and equity, diversity and inclusion

Addressing implicit bias (policies and data)

We need a broader collective of leadership involving societies, academies, international funders, universities...

We can work together much better than we are

We can work at a higher level of discussion and urgency

Integrity, trust, and open science must go together

Meetings

In Earth and space science there are:

- ~100,000 meeting presentations each year—AGU Fall Meeting 27,000 abstracts in 2019
- ~50,000 of these are posters (most discarded or hung on walls afterward)

Much of this science has not been open for non-attendees—even attendees only have access to abstracts afterward.

AGU:

- Developed a Preprint Server (ESSOAr.org) that includes archiving posters and eposters (growing uptake; open for any ESS meeting; one-click submission)
 - Will consider expanding for presentations (ppt with audio; author controls deposition)
- Developed virtual program (100 sessions/2000)—archived on youtube channel-require participation if in designated session
- Opt-out photo policy to help sharing on social media started in 2018 (most stayed in)
- Expanding remote participation and engagement
- Satellite meeting will be tested this year (in DC for main meeting in SF)
- All these also address carbon footprint and travel restrictions and open up science. Win-win-win..

Expanding access to Publications



- Implemented 2-year delayed open access to all content from 1997-on in 2014
- Hybrid OA growing; Projekt DEAL
- All new journals are Gold OA (6 since 2010)
- Additional content released for news, social media; free access from news stories in participating news outlets
- Liberal green policy (VoR at 6 months); CHORUS
- Public library access experiment in CA, UK—very little uptake (registration required)
- Open commentaries (like news and views) across all journals
- Implementing one-click submission to preprint server(s)
- Planning to flip one journal to Gold OA in 2020

Article Category	Open	Behind Paywall	Total Published	% Open/Free
Total from 1997-2018	106,864	4,856	111,720	96%
Papers Published 2017-2018	7,483	4,856	12,339	61%
OA Journal Content	694	0	694	100%

Ensuring Integrity and Trust in an OA (APC) Future

Societies have a key role in ensuring integrity in an OA publishing world (transparency, independent oversight of operations, support for scientists worldwide, explaining/communicating science).

APC's incentivize predatory publishing, race to the bottom in quality, volume publishing, and inhibit broad participation from unfunded scientists.

- About 10% of AGU papers list no funding source; about 30% in ESS overall

Key is dialog among societies funders, libraries, institutions (and publishers too) around support for high-integrity publishing

COPDESS

Coalition for Publishing Data in the Earth and Space Sciences

The Coalition for Publishing Data in the Earth and Space Sciences ▾

Enabling FAIR Data Project ▾



ENABLING FAIR DATA PROJECT

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Funded by the Laura and John Arnold Foundation

OVERVIEW

LEADERSHIP

COMMITMENT STATEMENT

RESOURCES

FAQS

- Commitment to Open Data
- Developed by 300 volunteers representing repositories, publishers, societies
- Being implemented by most ESS publishers and major interdisciplinary journals (*Nature*, *Science*, *PNAS*)
- Common author guidelines and FAQ's

<https://ethicsandequitycenter.org/>

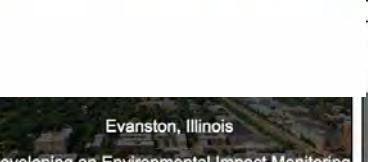
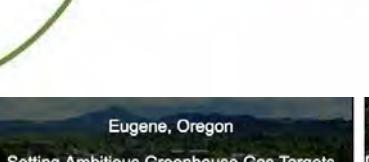
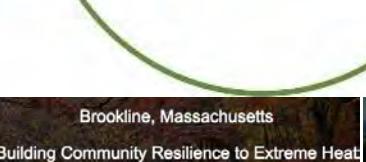
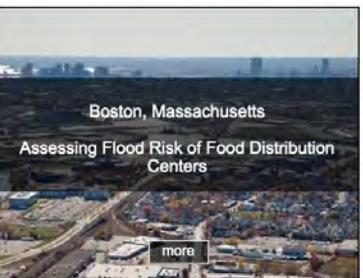
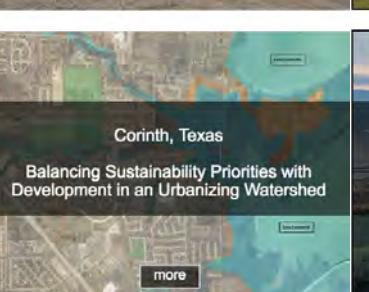
Ethics/diversity/equity
program

ABOUT BEST PRACTICES WORKSHOPS RESOURCES WORK CLIMATE TOOLS CONTACT US



- Leading a culture change for equity and inclusion
- Research on implicit bias
- Leading practices in meetings (training for conveners)
- Addressing harassment and bullying





Connects science and society for the benefit of both.

- Nearly 100 projects in local communities (in 4 years)
 - Expanding internationally

Fostering a Culture in Support of Open Science



- These pieces all fit together and work symbiotically
- Integrity, trust, and open science must go together and they need support
- Societies are key for support of disciplinary communities and broader coordination means societies need to work together and with other key stakeholders

Can act better to reward open through:

- Improving research assessment to reward open and outreach better (another way to work with institutions, libraries, academies)
- Include these principles in awards, fellowship, and rewards
- Lead in ethics and equity, diversity and inclusion and addressing harassment.
- Open participation and equity in participation is part of open science
- Address implicit bias (policies and data)

We need a large, coordinated effort across science stakeholders to catalyze broad culture change and assemble these pieces:



- Societies, Publishers, NGO's, Academies, Funders, Science-partners (everyone) are key, and we need common, collective voice and urgency.
- Need to implement support at all levels and TOGETHER.
- Implement demonstrable collective actions (awards, support, practices, policies, messages, credit..)
- Broad engagement to support infrastructure and culture change internationally
- Talk about societal and collective impacts, not personal ones

