MacDonald Room, 11.30-12.45

Measurement Tools

Chris James (Chair)

Sean Newell

Susan Renoe

Measurement tools

Chris James

Senior Product Manager SciVal,
Elsevier, The Netherlands

AESIS

ELSEVIER

Research Intelligence

Ring growth data and methane measuring. Canada's good at both!

Chris James, Senior Product Manager SciVal
Elsevier, Amsterdam

AESIS Ottawa – 14 June 2018

Empowering Knowledge

What are the latest developments on measuring impact and how do they help create more structured insight in impact-performance?

- What is research impact?
- What tools do we have to measure societal impact?
- Making granular discoveries easier
  - breaking away from subject classifications with Topic Prominence in Science for more structured insights
- Practical application on Canadian research
  - Spoiler alert – climate change is a big topic!

What is research impact?

ELSEVIER

Empowering Knowledge

Research Councils UK (RCUK) research impact definition

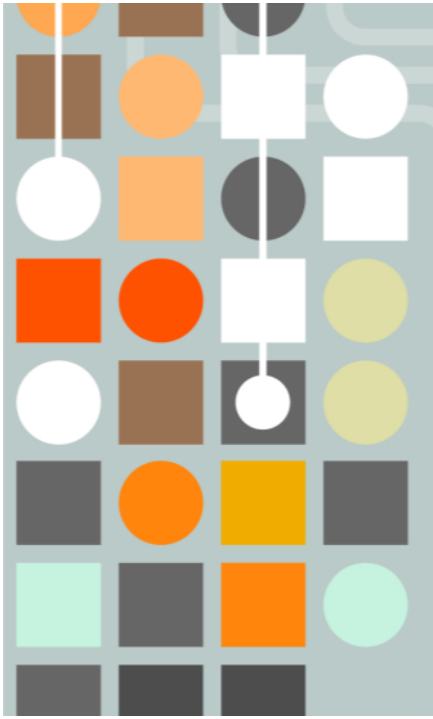
'The demonstrable contribution that excellent research makes to society and the economy'.

This can involve one or both of:

- **Academic impact** - shifting understanding and advancing scientific, method, theory and application across and within disciplines
- **Economic and societal impact** - contribution to society and the economy, and its benefits to individuals, organisations and/or nations.

The impact of research, be it academic, economic and social can include:

- **Instrumental**: influencing the development of policy, practice or service provision, shaping legislation, altering behaviour
- **Conceptual**: contributing to the understanding of policy issues, reframing debates
- **Capacity building**: through technical and personal skill development.



http://www.esrc.ac.uk/research/impact-toolkit/what-is-impact/

The basket of metrics is diverse and available for all entities

F. Qualitative input
Expert feedback on quality and impact of my research

Theme	Sub-theme
A. Funding	**Awards** Can I support my research?
B. Outputs	**Productivity of research outputs** How productive am I?
	Visibility of communication channels What is the impact of the channels that my outputs are published in?
C. Research Impact	**Research influence** How are my outputs used in academia?
	Knowledge transfer How are my outputs used in industry?
D. Engagement	**Academic network** How good is my collaboration network within academia?
	Non-academic network How good is my collaboration network outside academia?
	Expertise transfer How do I transmit knowledge to others within academia?
E. Societal Impact	**Societal Impact** What is my wider impact?

Outputs
e.g. article, research data, blog, monograph

Custom set of outputs
e.g. funders' output, articles I've reviewed

Researcher or group

Institution or group

Subject Area

Serial
e.g. journal, proceedings

Portfolio
e.g. publisher's title list

Country or group

What could research metrics help demonstrate?

- Social media metrics (Shares, likes, +1, Tweets)

- Downloads from Github, RePEc, IRs
- Citations (field normalised, %iles, counts)
- Collaborators on Github
- Full text, pdf, html views on ScienceDirect, Figshare etc

- Wikipedia citations
- Blog mentions
- StackExchange links

- Number of patents filed and granted

- Number of Library holdings (WorldCat OCLC)
- Views on Slideshare
- Plays on YouTube
- Amazon book reviews

- Clinical citations or Health policy/guideline citations
- Government policy citations
- News mentions

- Patent citations
- Academic: Industry partnerships
- Licenses
- Business consultancy activities

Newsflo

Newsflo measures an academic's societal impact by uncovering relevant mentions of their research across tens of thousands of mass media outlets around the world

- Near **real time feed** of news articles
- **45,000 (English-speaking) news outlets**
- **Over 20 countries** including the USA, India, China, Brazil and all major European countries.

- Matches
  - Individual researchers (**uses Scopus author ID and affiliation**)
  - News about academic publications (uses DOIs and URLs to match)

- Integrated into

Mendeley Plum Analytics
SciVal Scopus Pure

Two Golden Rules for using research metrics

Always use both qualitative and quantitative input into your decisions

Benefit from the strengths of both approaches. Don't replace one with the other

Combining both approaches = **closer to the whole story**

Valuable intelligence comes when these approaches **show different messages**

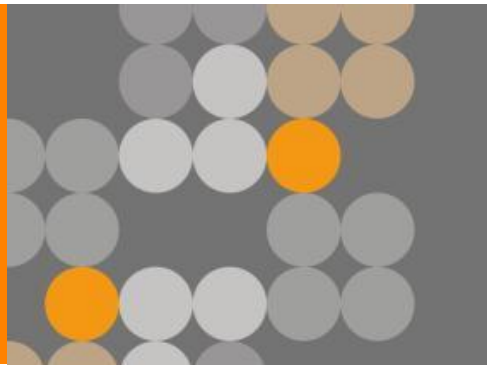
Always use more than one research metric as the quantitative input

One metric's strengths can **complement** the weaknesses of others

There are many different ways of being excellent

Using multiple metrics drives desirable changes in behaviour (harder to game)

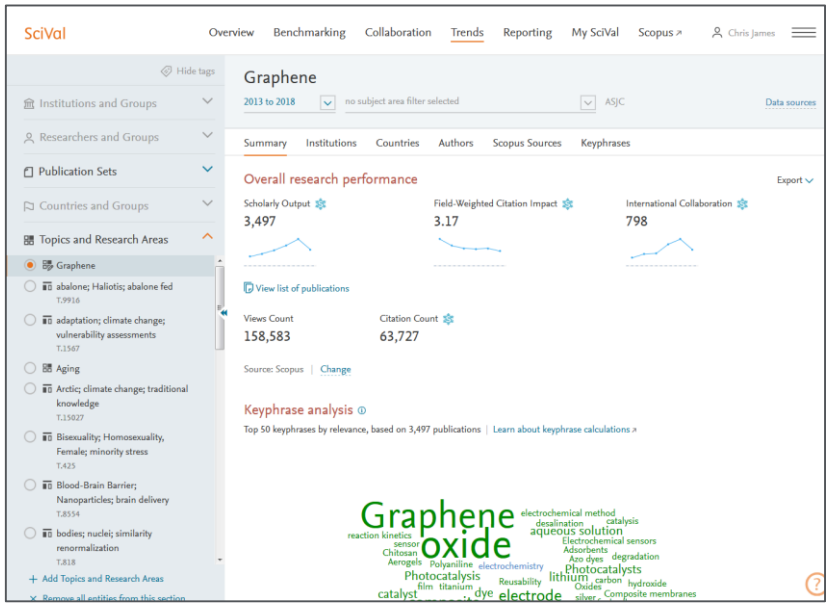
How can we help create more structured insight in impact-performance?

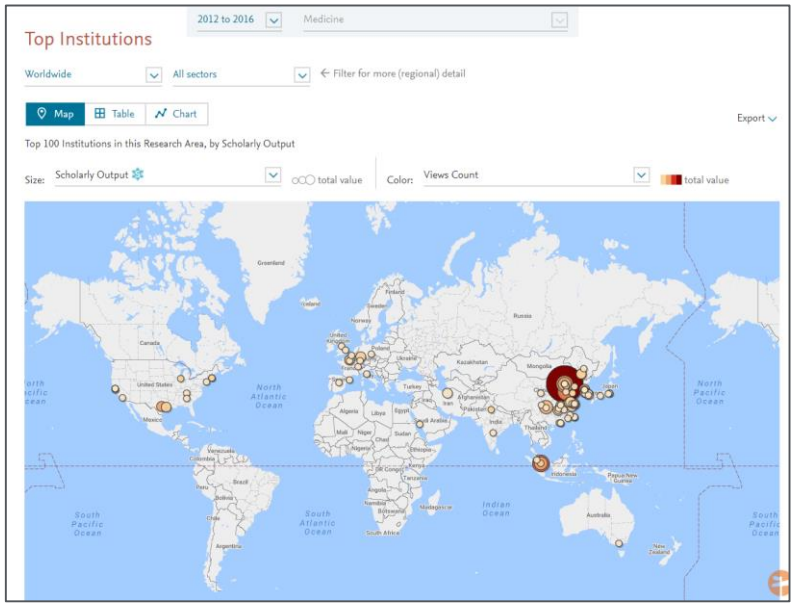


Empowering Knowledge

Let's get granular!

- Often if you are not looking at a physical entity (e.g. an institution), you want to look at areas of research
- One of the most common categorization methods is based on the publication's journal subject areas
  - In Scopus 334 categories
- Other groupings have to be created by the user, which is very unstructured
  - e.g. Research Areas in SciVal





- But what if we could **help the user find their topics of interest at a much more granular level**?

So that we could…

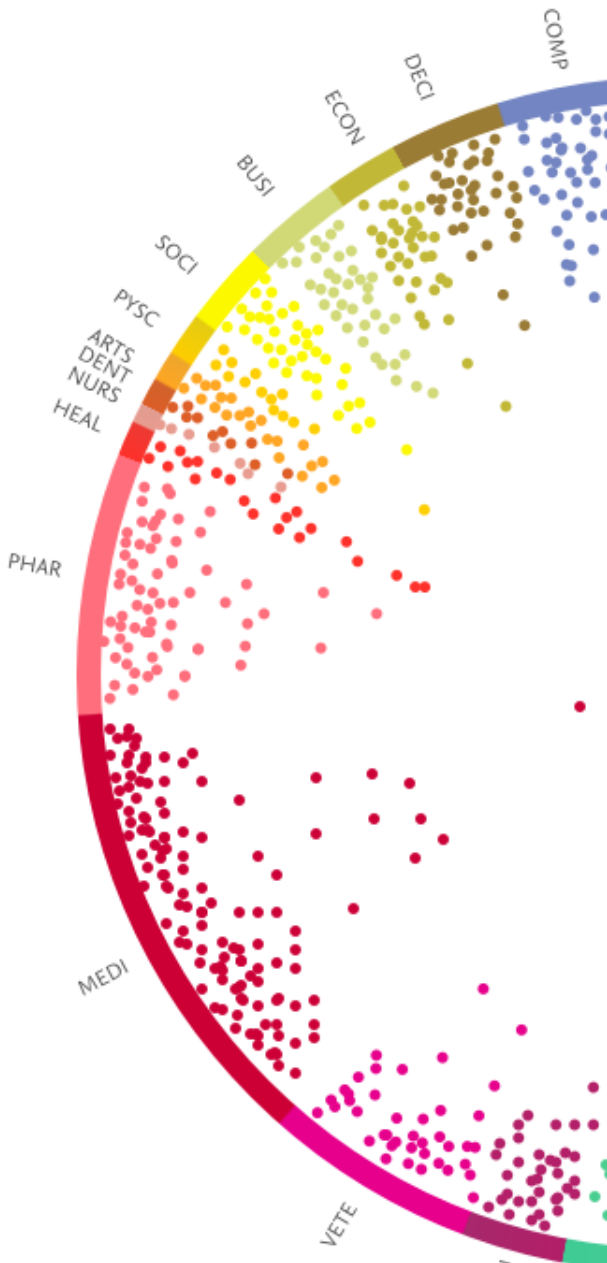
…Help Research managers

- Identify pockets of **well funded research** in the **research portfolio**.
- Find the **top performers** and **rising stars** in those areas for recruitment, tenure and collaboration.
- **Showcase** that their institution is active in topics with high momentum
- **Identify which topics other universities** are active in that have high momentum.

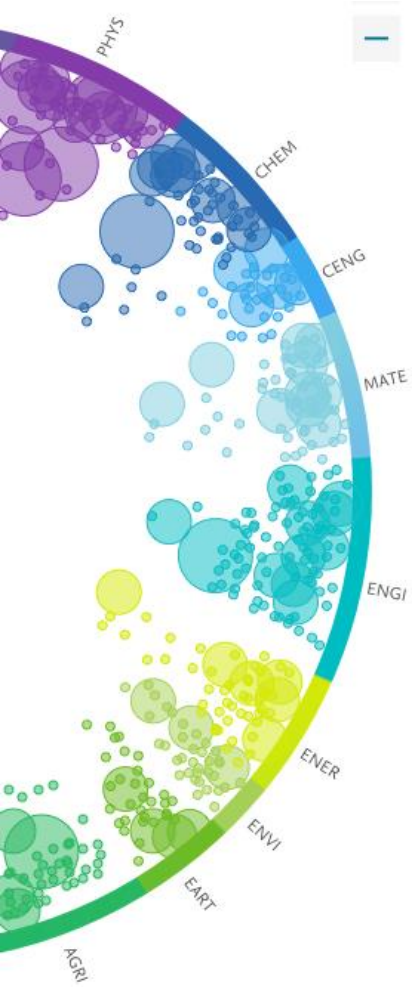
…and uncover the impact

Introducing Topic Prominence in Science

- We have identified **~97.000 global research topics by clustering all of Scopus using direct citation linking** and ranked them by **Prominence.**
- **Prominence is a new indicator** that shows the **current momentum** of a topic by looking at **very recent citations**, **views** and **CiteScore** values.
- **Prominence = momentum (not the same as importance!).**
- **Prominence can predict funding –** helps researchers and research managers identify topics which are likely to be well funded.



First of its kind



The first truly global detailed research portfolio analysis – this has never been done before – we use all of Scopus to form topics.

- **Who's leading the way** – we can identify emergent topics with high momentum to understand who is currently leading the way.
- **What's related** – We can tell you how the topics are related to your research portfolio.
- **A better reflection of reality** – topics are an excellent reflection of reality since they are based on citation patterns and not journal categories and are therefore truly multidisciplinary.

What is a “Topic”?

A topic is a collection of documents with a common intellectual interest – a “research problem”

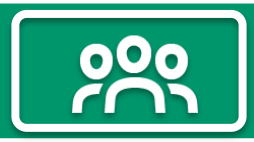
Topics can be large or small, new or old, growing or declining

Topics are dynamic and can evolve

New topics can be born

Many topics are inherently multidisciplinary

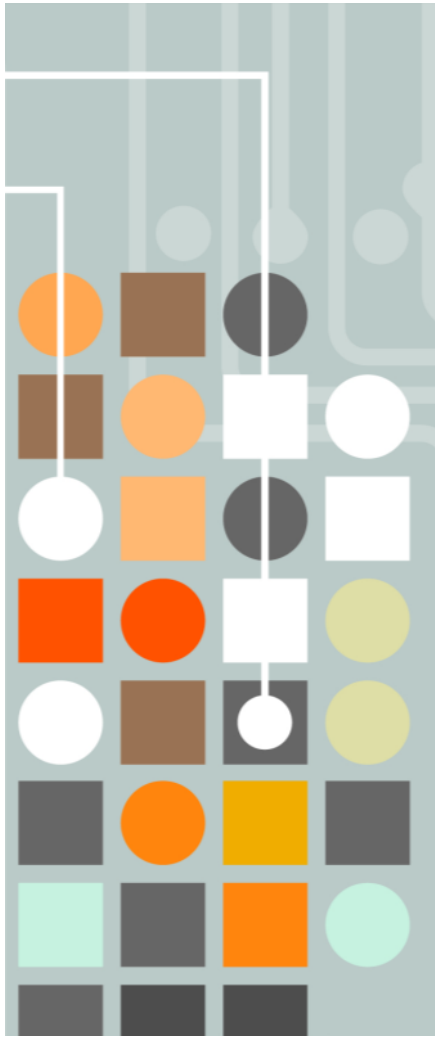
Old topics may be dormant, but still exist



Researchers have mobility and can contribute to multiple topics

But what can we do with this new level of aggregation?

- Look at an institution or country
- Identify areas where they are a key contributor
- Learn more about the area
- See who's doing what and with whom
- Identify the key researcher(s)
- **See what research is providing conceptual or instrumental impact through via the Newsflo media mentions**

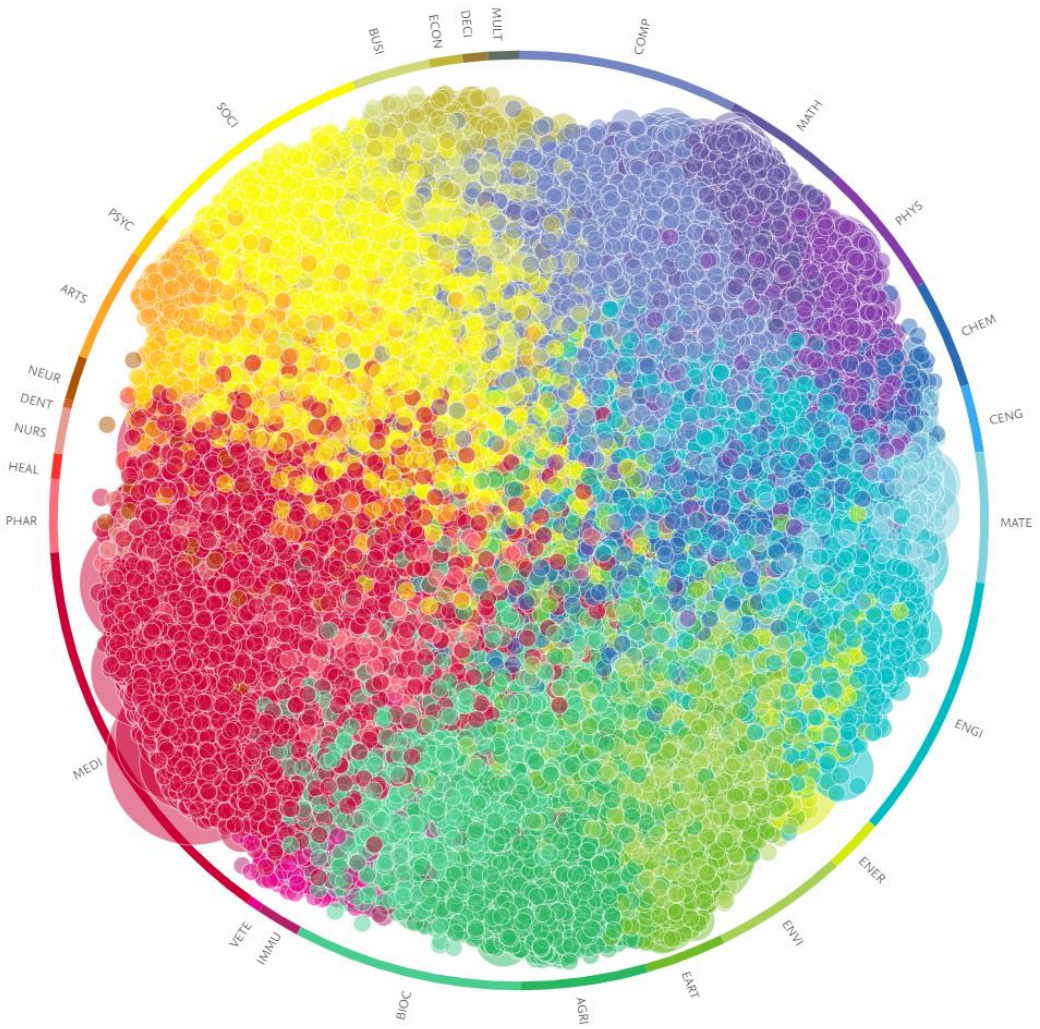


Let's take a look at Canada

Browse Topics

Researchers in Canada have contributed to 60,481 topics between 2013 to 2018

Bubble size: Scholarly Output of Canada



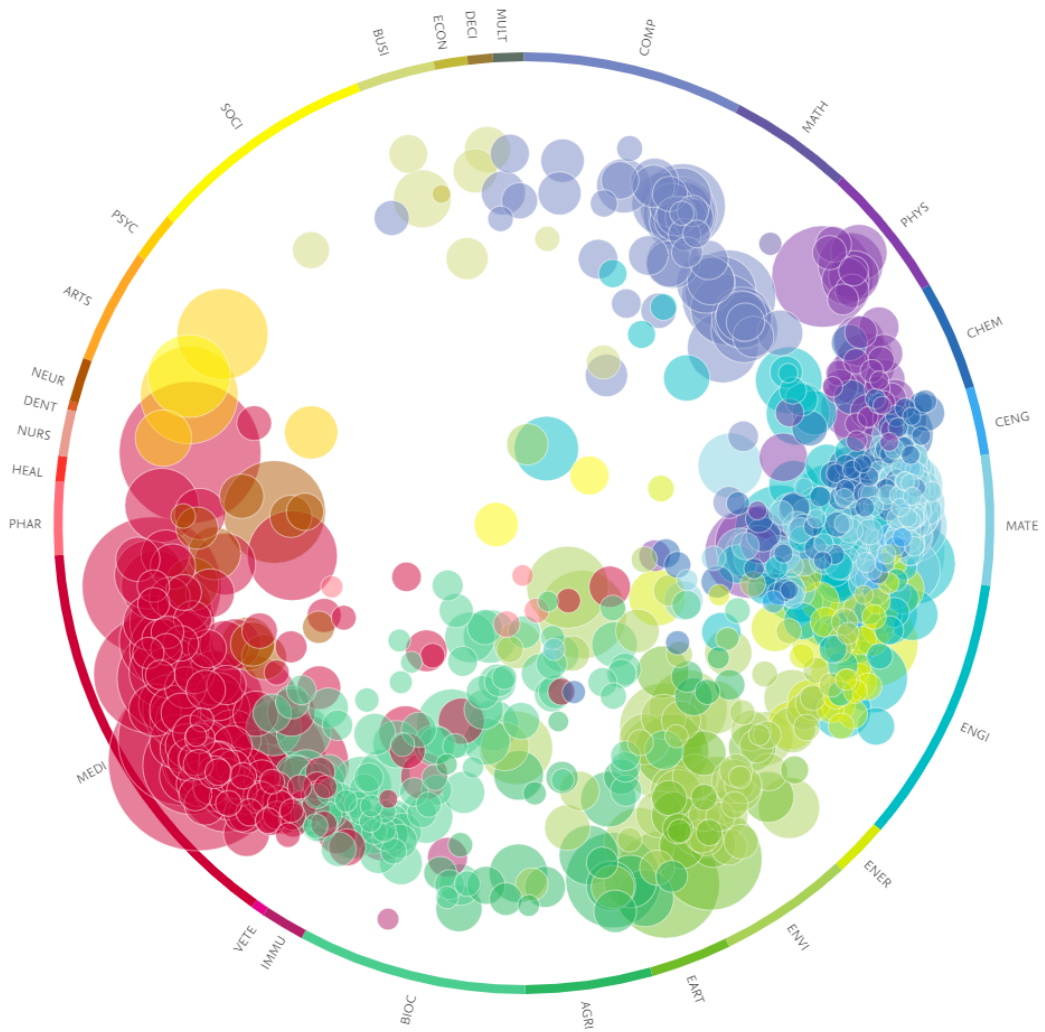
Subject area abbreviations

COMP	Computer Science
MATH	Mathematics
PHYS	Physics and Astronomy
CHEM	Chemistry
CENG	Chemical Engineering
MATE	Materials Science
ENGI	Engineering
ENER	Energy
ENVI	Environmental Science
EART	Earth and Planetary Sciences
AGRI	Agricultural and Biological Sciences
BIOC	Biochemistry, Genetics and Molecular Biology
IMMU	Immunology and Microbiology
VETE	Veterinary
MEDI	Medicine
PHAR	Pharmacology, Toxicology and Pharmaceutics
HEAL	Health Professions
NURS	Nursing
DENT	Dentistry
NEUR	Neuroscience
ARTS	Arts and Humanities
PSYC	Psychology
SOCI	Social Sciences
BUSI	Business, Management and Accounting
ECON	Economics, Econometrics and Finance
DECI	Decision Sciences
MULT	Multidisciplinary

Let's look at the top 1% by prominence

Browse Topics

Researchers in Canada have contributed to 60,481 topics between 2013 to 2018 View: Top 1% of worldwide Topics by Prominence



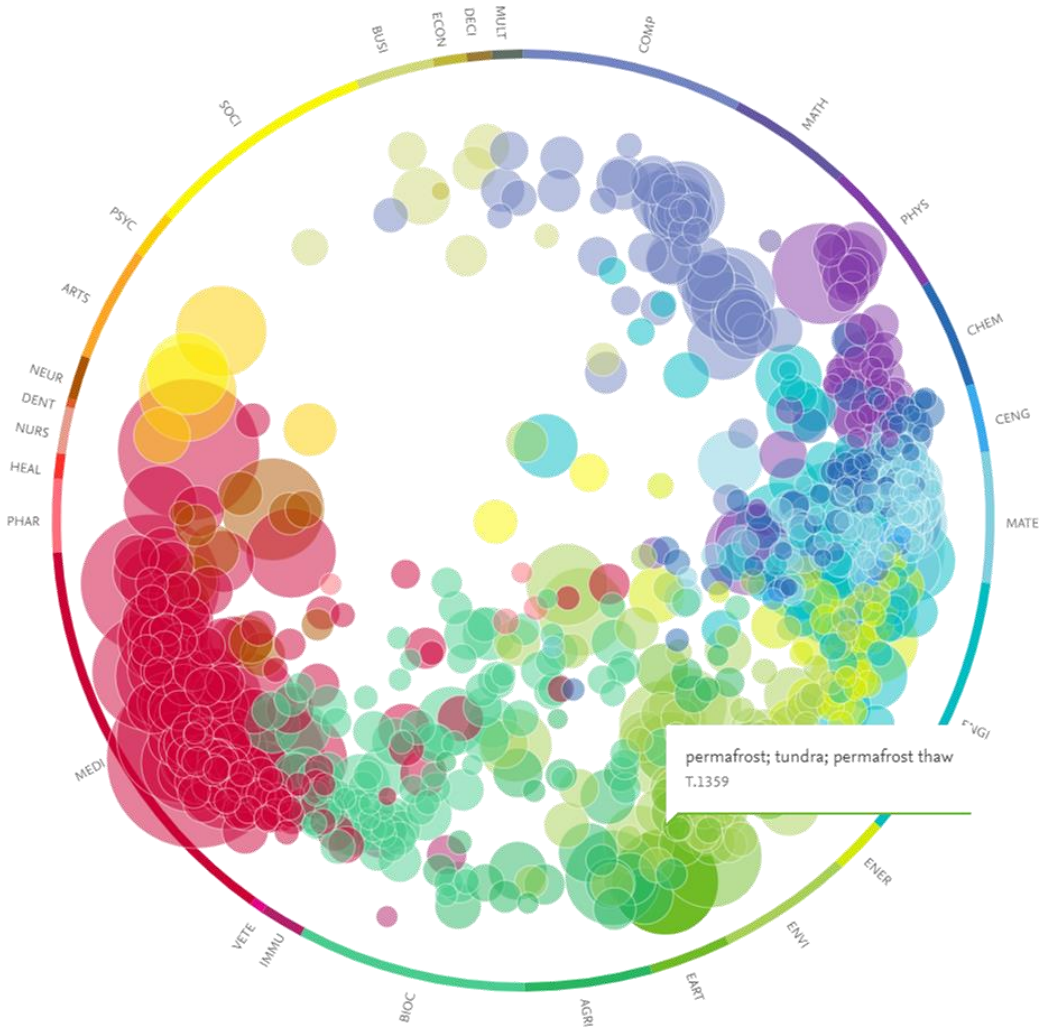
Subject area abbreviations

COMP	Computer Science
MATH	Mathematics
PHYS	Physics and Astronomy
CHEM	Chemistry
CENG	Chemical Engineering
MATE	Materials Science
ENGI	Engineering
ENER	Energy
ENVI	Environmental Science
EART	Earth and Planetary Sciences
AGRI	Agricultural and Biological Sciences
BIOC	Biochemistry, Genetics and Molecular Biology
IMMU	Immunology and Microbiology
VETE	Veterinary
MEDI	Medicine
PHAR	Pharmacology, Toxicology and Pharmaceutics
HEAL	Health Professions
NURS	Nursing
DENT	Dentistry
NEUR	Neuroscience
ARTS	Arts and Humanities
PSYC	Psychology
SOCI	Social Sciences
BUSI	Business, Management and Accounting
ECON	Economics, Econometrics and Finance
DECI	Decision Sciences
MULT	Multidisciplinary

Canada has 20% publication share and can make a difference

Browse Topics

Researchers in Canada have contributed to 60,481 topics between 2013 to 2018 'iew: Top 1% of worldwide Topics by Prominence



permafrost; tundra; permafrost thaw

T.1359

Prominence percentile

99.469

Scholarly Output

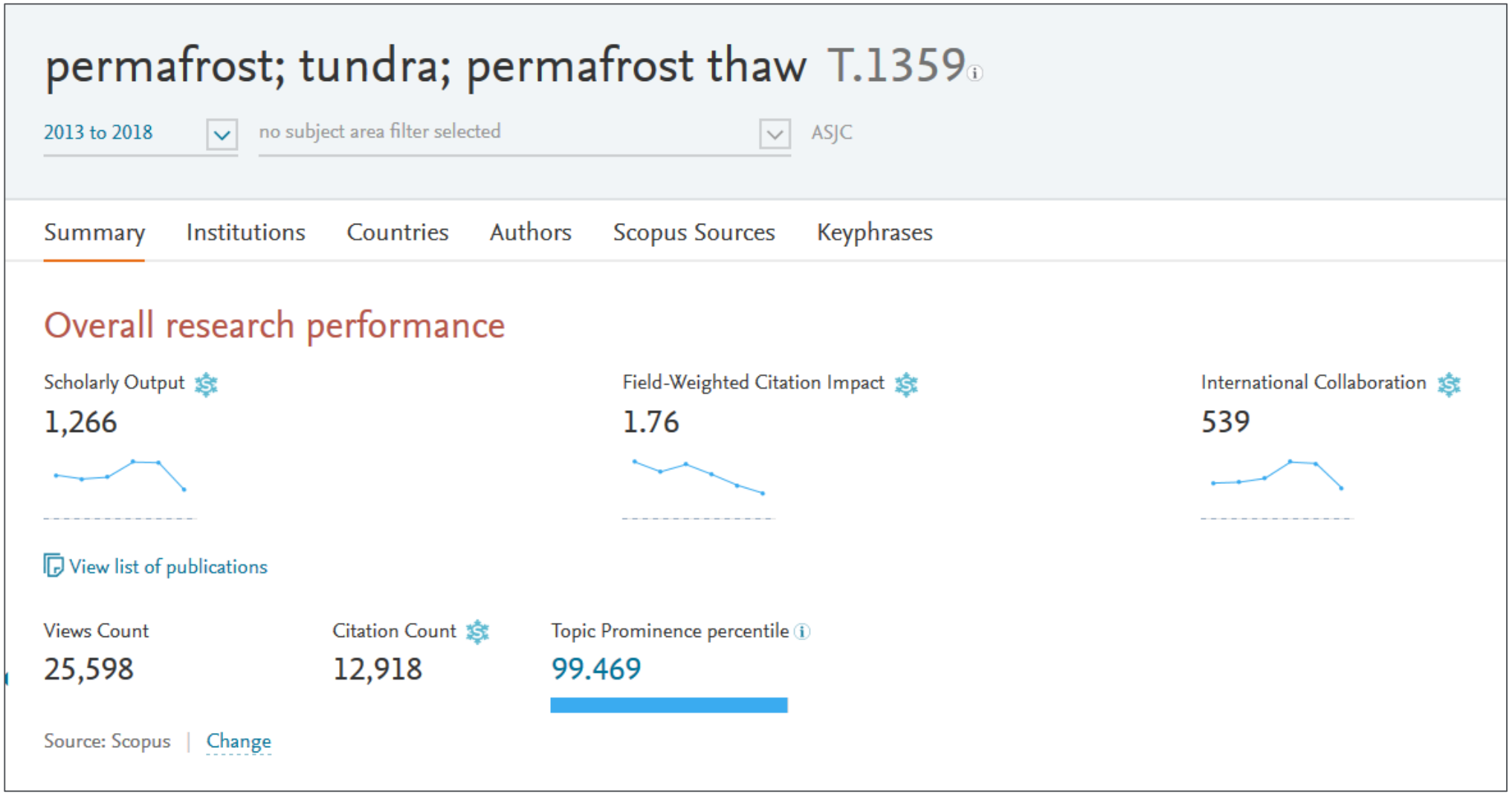
Canada	258
Publication share	20.38% ▼
World	1,266

Analyze Topic

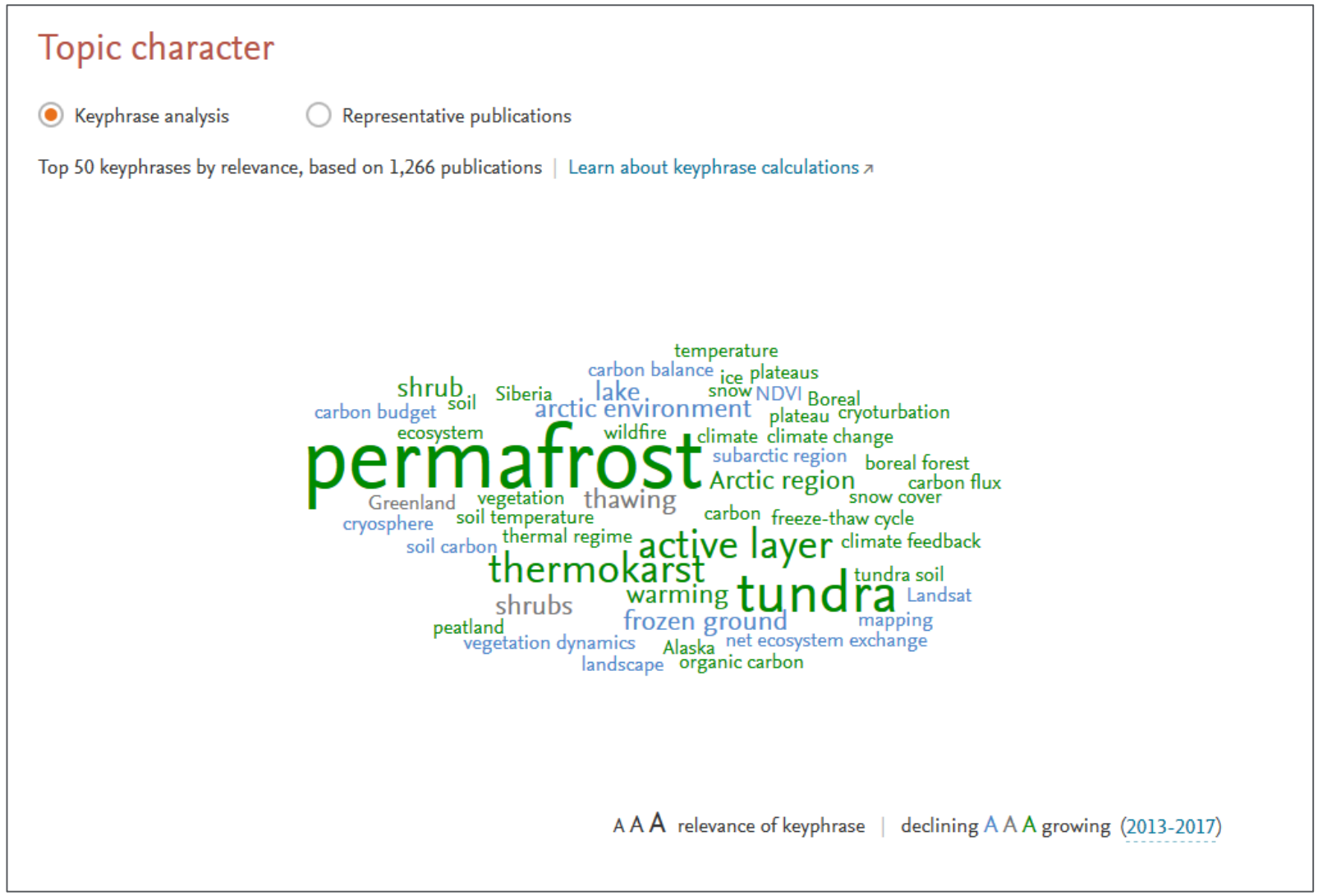
> In Canada

> Worldwide

Learn more about the topic



Topic character



What is this topic about?

Keyphrases are derived from the article data using NLP

Topic character

Are the centrally linked and very recent publications in the Topic

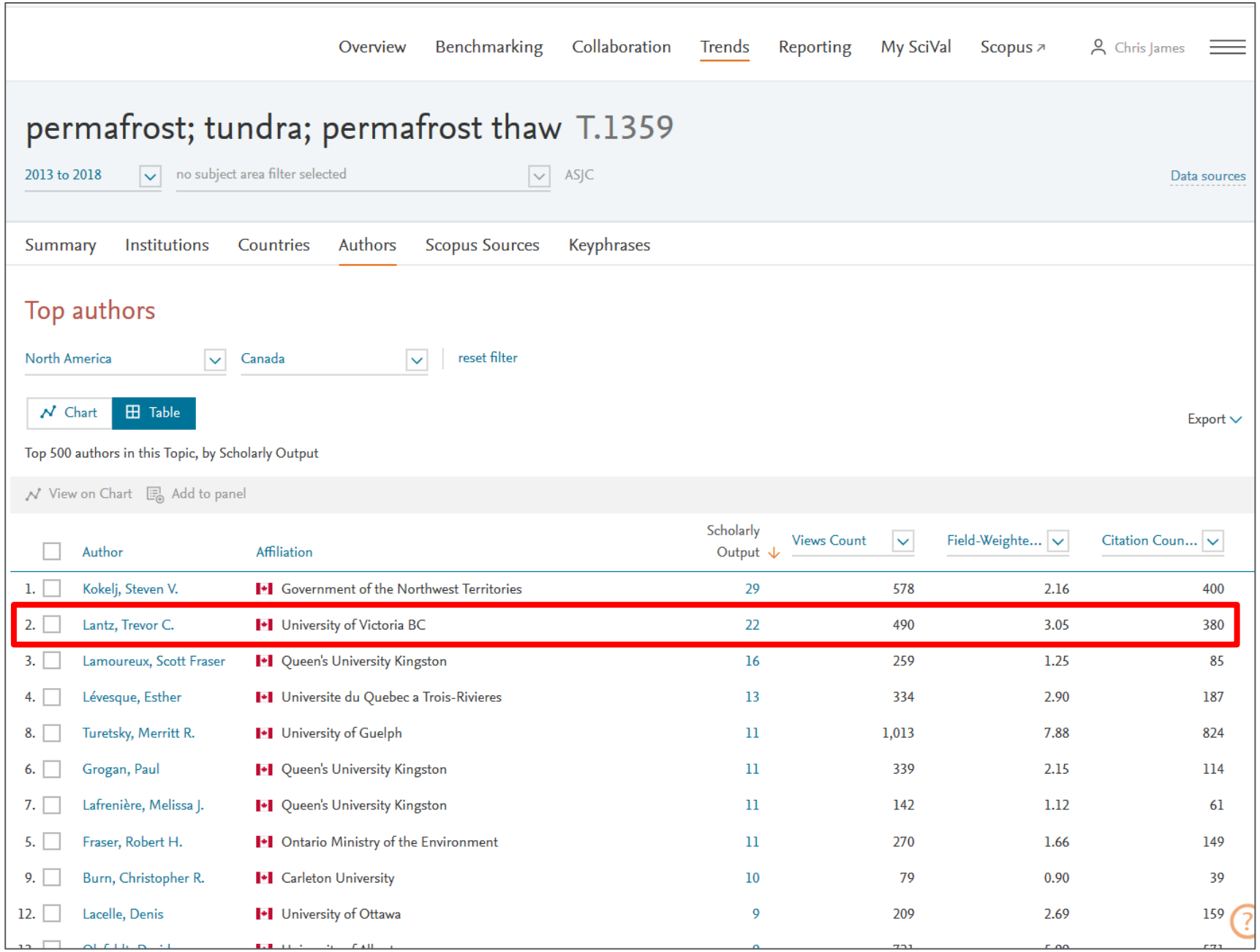
○ Keyphrase analysis ◉ Representative publications

Top 10 representative publications, published 2013 - 2018

Publication	Citations
Climate change and the permafrost carbon feedback. Schuur, E.A.G., McGuire, A.D., Schädel, C. and 14 more (2015) Nature, 520 (7546), pp. 171-179. View in Scopus ↗	428
Estimated stocks of circumpolar permafrost carbon with quantified uncertainty ranges and identified data gaps. Hugelius, G., Strauss, J., Zubrzycki, S. and 14 more (2014) Biogeosciences, 11 (23), pp. 6573-6593. View in Scopus ↗	261
Climate sensitivity of shrub growth across the tundra biome. Myers-Smith, I.H., Elmendorf, S.C., Beck, P.S.A. and 30 more (2015) Nature Climate Change, 5 (9), pp. 887-891. View in Scopus ↗	106
Advances in thermokarst research. Kokelj, S.V., Jorgenson, M.T. (2013) Permafrost and Periglacial Processes, 24 (2), pp. 108-119. View in Scopus ↗	85

Discover the more about the Topic including top:

- Institutions
- Countries & regions
- Authors
- Scopus sources



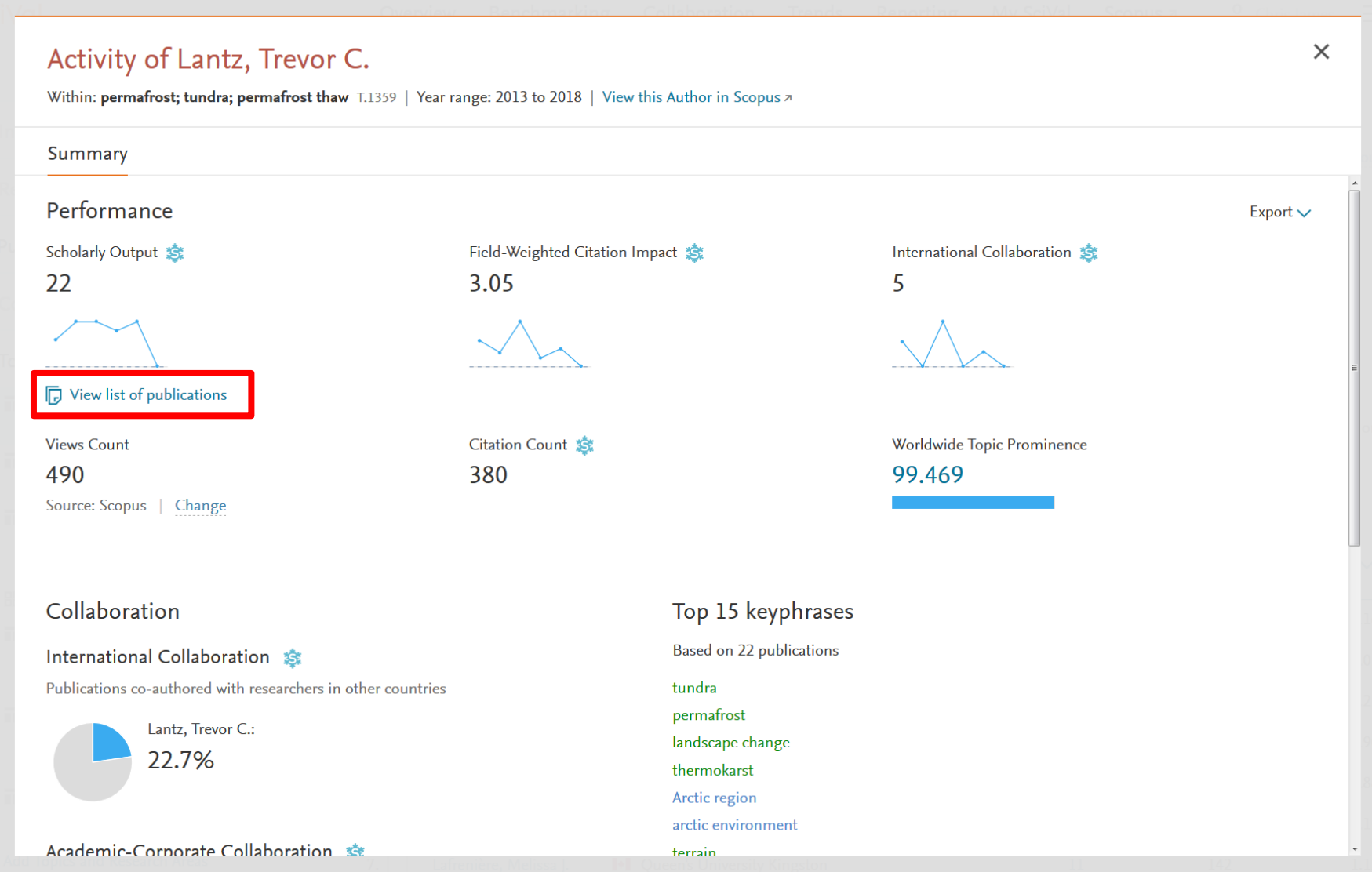
	Author	Affiliation	Scholarly Output	Views Count	Field-Weighte...	Citation Coun...
1.	Kokelj, Steven V.	Government of the Northwest Territories	29	578	2.16	400
2.	Lantz, Trevor C.	University of Victoria BC	22	490	3.05	380
3.	Lamoureux, Scott Fraser	Queen's University Kingston	16	259	1.25	85
4.	Lévesque, Esther	Universite du Quebec a Trois-Rivieres	13	334	2.90	187
8.	Turetsky, Merritt R.	University of Guelph	11	1,013	7.88	824
6.	Grogan, Paul	Queen's University Kingston	11	339	2.15	114
7.	Lafrenière, Melissa J.	Queen's University Kingston	11	142	1.12	61
5.	Fraser, Robert H.	Ontario Ministry of the Environment	11	270	1.66	149
9.	Burn, Christopher R.	Carleton University	10	79	0.90	39
12.	Lacelle, Denis	University of Ottawa	9	209	2.69	159

Let's get more specific!

I want to identify the top Canadian researchers and see if their research is being picked up in the media.

Let's take a look at Trevor Lantz.

Trevor works a lot in this Topic!



- 22 publications in 5.5 years
- 23% international collaboration
- Excellent citation impact

- Let's take a look at all his publications

Remember this publication?

Scopus

Search Sources Alerts Lists Help SciVal Chris James

Document details

1 of 1

Save to Mendeley Download Print E-mail Save to PDF Save to list More...

Full Text Library Catalogue Order Document

Nature Climate Change
Volume 5, Issue 9, 21 August 2015, Pages 887-891

Climate sensitivity of shrub growth across the tundra biome (Article)

Myers-Smith, I.H.[a], Elmendorf, S.C.[bc], Beck, P.S.A.[de], Wilmking, M.[f], Hallinger, M.[fg], Blok, D.[h], Tape, K.D.[i], Rayback, S.A.[j], Macias-Fauria, M.[k], Forbes, B.C.[l], Speed, J.D.M.[m], Boulanger-Lapointe, N.[no], Rixen, C.[p], Lévesque, E.[n], Schmidt, N.M.[q], Baittinger, C.[r], Trant, A.J.[st], Hermanutz, L.[t], Collier, L.S.[t], Dawes, M.A.[p], Lantz, T.C.[s], Weijers, S.[u], JØrgensen, R.H.[v], Buchwal, A.[w], Buras, A.[f], Naito, A.T.[x], Ravolainen, V.[y], Schaepman-Strub, G.[z],

View additional authors

[a]School of GeoSciences, University of Edinburgh, Edinburgh, United Kingdom
[b]National Ecological Observatory Network, 1685 38th Street, Boulder, CO, United States
[c]Department of Ecology and Evolutionary Biology, University of Colorado, Boulder, CO, United States

View additional affiliations

Abstract View references (30)

Rapid climate warming in the tundra biome has been linked to increasing shrub dominance. Shrub expansion can modify climate by altering surface albedo, energy and water balance, and permafrost, yet the drivers of shrub growth remain poorly understood. Dendroecological data consisting of multi-decadal time series of annual shrub growth provide an underused resource to explore climate-growth relationships. Here, we analyse circumpolar data from 37 Arctic and alpine sites in 9 countries, including 25 species, and â 1/442,000 annual growth records from 1,821 individuals. Our analyses demonstrate that the sensitivity of shrub growth to climate was: (1) heterogeneous, with European sites showing greater summer temperature sensitivity than North American sites, and (2) higher at sites with greater soil moisture and for taller shrubs (for example, alders and willows) growing at their northern or upper elevational range edges. Across latitude, climate sensitivity of growth was greatest at the boundary between the Low and High Arctic, where permafrost is thawing and most of the global permafrost soil carbon pool is stored. The

Metrics View all metrics

108 Citations in Scopus
99th Percentile

22.67 Field-Weighted Citation Impact

PlumX Metrics
Usage, Captures, Mentions, Social Media and Citations beyond Scopus.

Usage
Abstract Views: 59
Link-outs: 22

Captures
Readers: 224
Exports-Saves: 1

Mentions
News Mentions: 1

Social Media
Tweets: 6

Conceptual impact

PLUMX Sign in

Climate sensitivity of shrub gro... Embed Widget

Climate sensitivity of shrub growth across the tundra biome

Citation data: Nature Climate Change, ISSN: 1758-678X, Vol: 5, Issue: 9, Page: 887-891
Publication Year: 2015

Explore PlumX Metrics

What are PlumX Metrics? How can they help tell the story about this research? How can I use them?

Learn more

USAGE 81	CAPTURES 225	MENTIONS 1	SOCIAL MEDIA 6	CITATIONS 108
Abstract Views 59	Readers 224	News Mentions 1	Tweets 6	Citation Indexes 108
Link-outs 22	Exports-Saves 1			

ARTICLE SUMMARY
NEWS
TWEETS

This article has 1 News Mention across 1 URL.

Tundra study uncovers impact of climate warming in the Arctic

July 6, 2015 | PhysOrg.com

Scientists are using ring growth data, like these shown in a willow shrub, to assess the age and growth of shrubs in a huge study

Read full Article

> One of the biggest studies to date of key vegetation in the Arctic tundra provides strong evidence that dramatic changes in the region are being driven by climate warming.

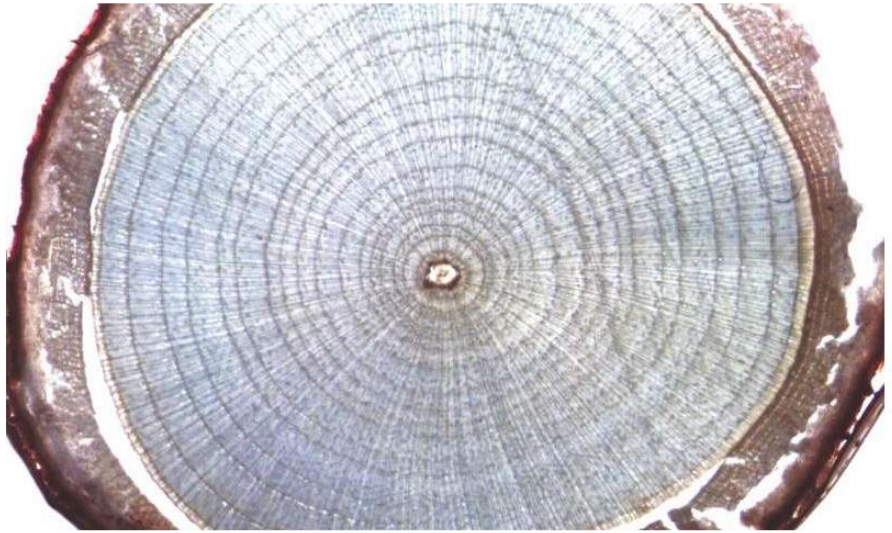
Dr Isla Myers-Smith, of the University of Edinburgh's School of GeoSciences, who co-ordinated the study, said: "Arctic shrub growth in the tundra is one of the most significant examples on Earth of the effect that climate change is having on ecosystems. Our findings show there is a lot of variation across this landscape. Understanding this should help improve predictions of climate change impacts across the tundra."

PHYS.ORG Nanotechnology Physics Earth Astronomy & Space Technology Chemistry

Home » Earth » Environment » July 6, 2015

Tundra study uncovers impact of climate warming in the Arctic

July 6, 2015, University of Edinburgh



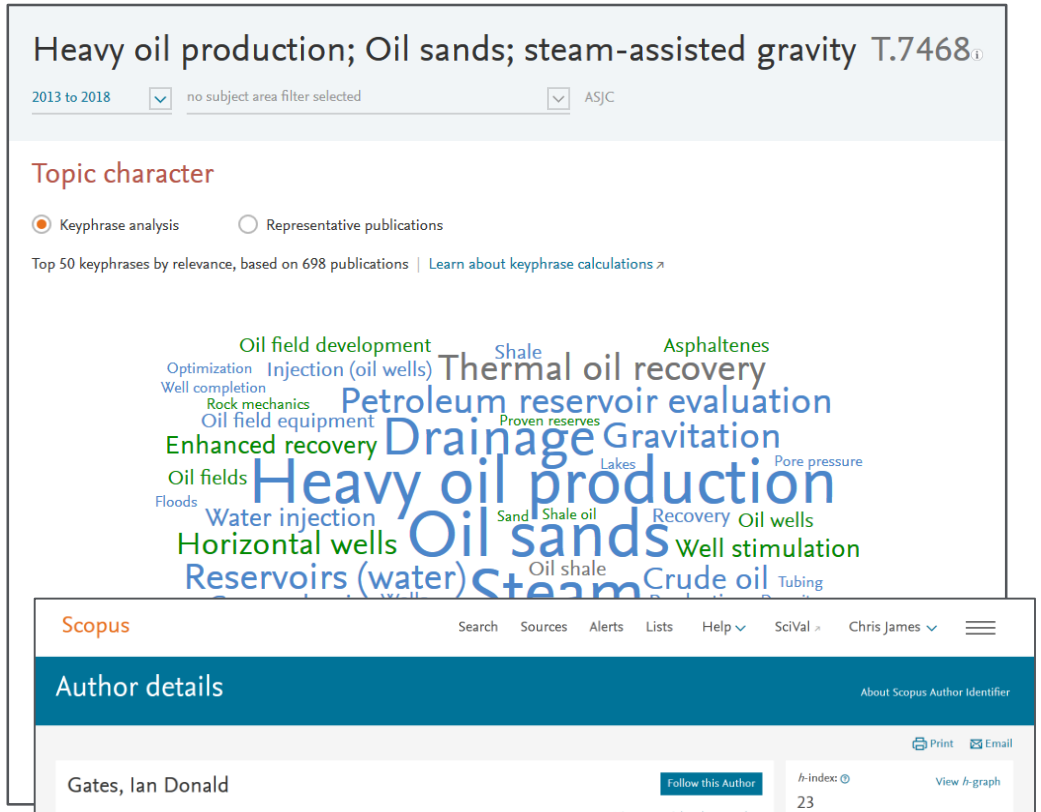
Scientists are using ring growth data, like these shown in a willow shrub, to assess the age and growth of shrubs in a huge study of the Arctic tundra. Credit: Isla Myers-Smith

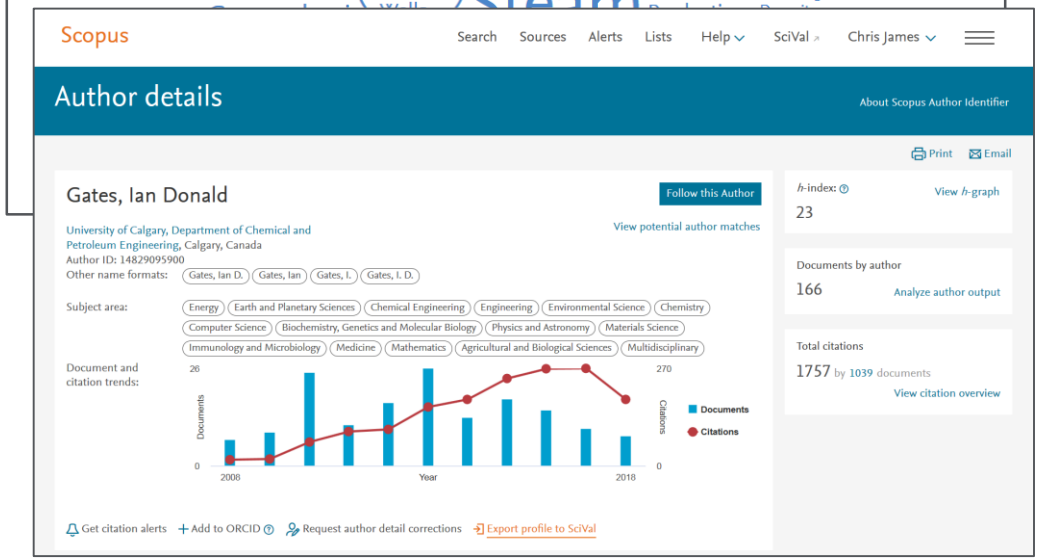
Significant changes in one of the Earth's most important ecosystems are not only a symptom of climate change, but may fuel further warming, research suggests.

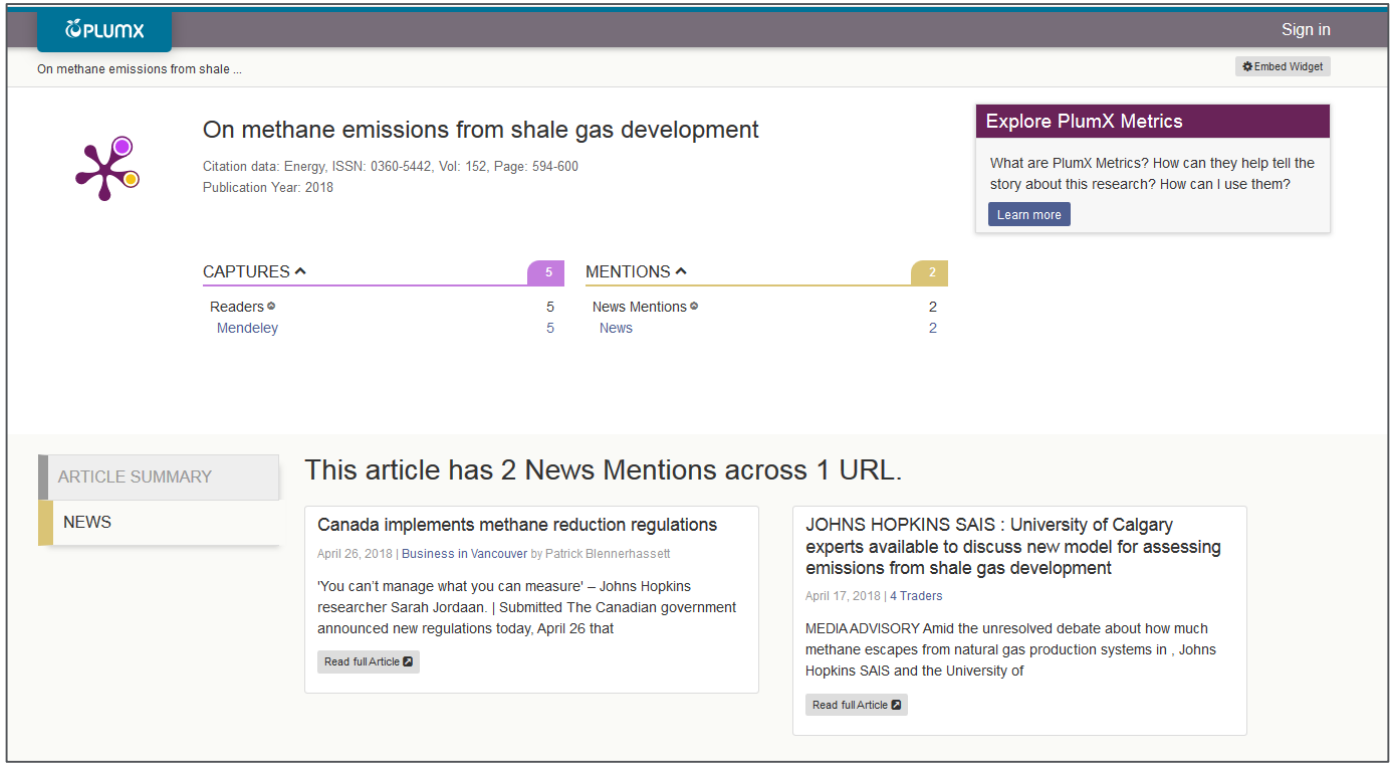
One of the biggest studies to date of key vegetation in the Arctic tundra provides strong evidence that dramatic changes in the region are being driven by climate warming.

Studies of tundra shrubs - which act as a barometer of the Arctic environment - show that they grow more when temperatures are warmer. Increased shrub growth, driven by recent and future warming in the Arctic, could cause more warming in tundra ecosystems and for the planet as a whole.

It's all about discovery – here's another example







- A Topic where Canada has a +41% article share
- Most prolific global researcher – Ian Gates – Univ Calgary
- Uncovers a related paper from June 2018
- Already 2 news articles about it

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Environment

Canada implements methane reduction regulations

Researchers say new modelling more accurately estimates methane emissions

By Nelson Bennett | April 26, 2018, 4:12pm

"Without a robust baseline, reduction targets lose meaning" –Sarah Jordaan, Johns Hopkins. | Submitted

The Canadian government announced new regulations today, April 26 that aim to cut methane emissions in the oil and gas sector in half.

The announcement follows on Alberta's announcement earlier this week that it has also introduced new regulations to cut methane emissions in the natural gas sector by 45%.

B.C. has similar plans, which have yet to be implemented, as do federal governments in the U.S. and Mexico.

There's just one problem: 45% of what?

One of the problems with methane emissions is that there isn't a lot of reliable data on what they are now, so until better measurements and estimates are developed, it will be difficult to know if the

The Canadian government says its new regulations would reduce GHG emissions by 20 millions tonnes per year.

But while CO_2 emissions from combustion are easy to estimate and measure, methane from upstream sources – wells, pumps, valves, pipelines, processing plants – is far more challenging.

But researchers at the University of Calgary Johns Hopkins and Canadian Energy Research Institute have come up with a new modelling approach that may help governments develop more accurate baselines to work from.

Although it is shorter lived in the atmosphere, methane has higher heat insulating properties than CO_2, making it even worse, from a global warming perspective.

Instrumental: influencing the development of policy, practice or service provision, shaping legislation, altering behaviour

Conceptual: contributing to the understanding of policy issues, reframing debates

Summary

What are the latest developments on measuring impact and how do they help create more structured insight in impact-performance?

- Topic Prominence aids discovery and provides a granular structure to measure impact-performance
- Societal impact can be demonstrated using tools like SciVal, PlumX, Pure and Scopus
- Always remember the 2 Golden Rules for the responsible use of metrics!

Research Intelligence

Thanks and questions

www.elsevier.com/research-intelligence

Chart | Table

+ Add to Reporting Export

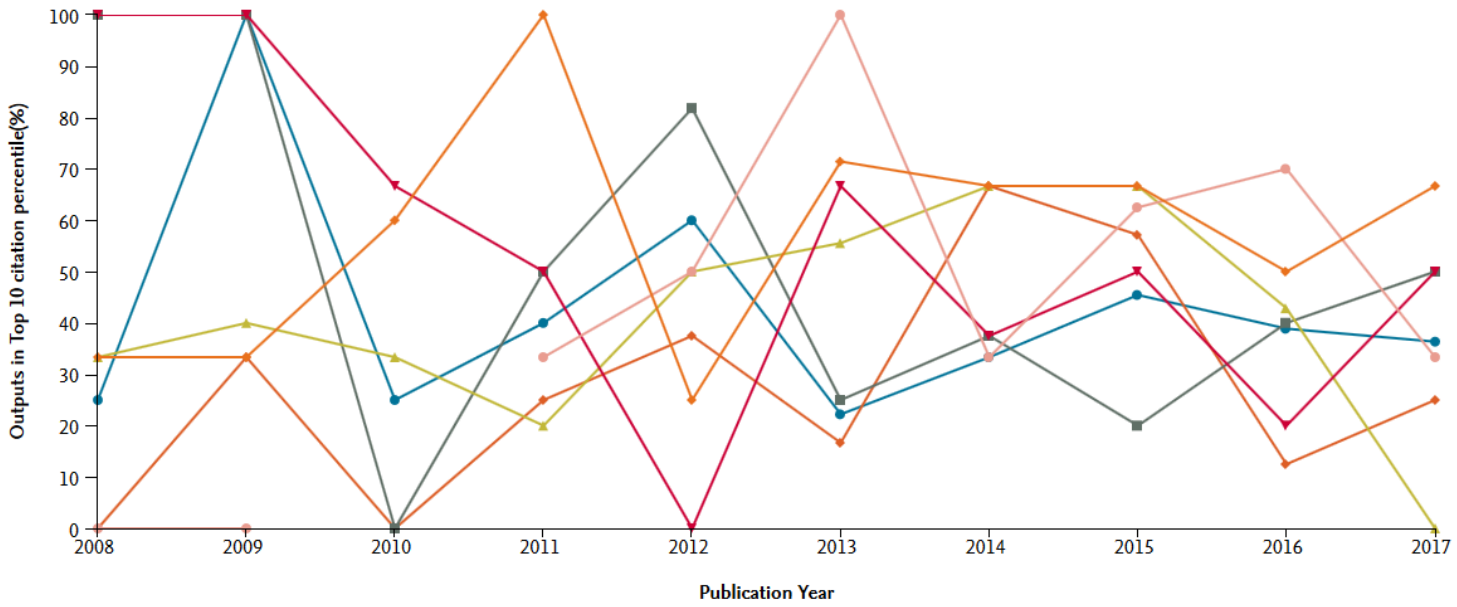
y-axis

Outputs in Top Citation Percentiles

x-axis

Publication Year

Bubble size



Researchers and Groups

- Jones, Benjamin M.
- Kuhry, Peter
- Lantz, Trevor C.
- Natali, Susan M.
- Shaver, Gaius R.
- Walker, Donald A.
- Welker, Jeffrey M.

View list of Scopus Sources for the selected Researchers and Groups

Metrics details

y-axis: **Outputs in Top 10 citation percentile (In top 10% of World, %)**
Types of publications included: all. Self-citations included: yes. Field-weighted: no
Why do I see no data for the current year?

x-axis: **Publication Year**

Measurement tools

Sean Newell

Chief Executive Officer,
Researchfish, United Kingdom

AESIS

A Structured, Shared Approach to Research Impact Assessment

AESIS 2018 Ottawa

Sean Newell, CEO Research Fish Ltd

www.researchfish.com

How do we track the Impact of Research?

I have been struck again and again by how important measurement is to improving the human condition

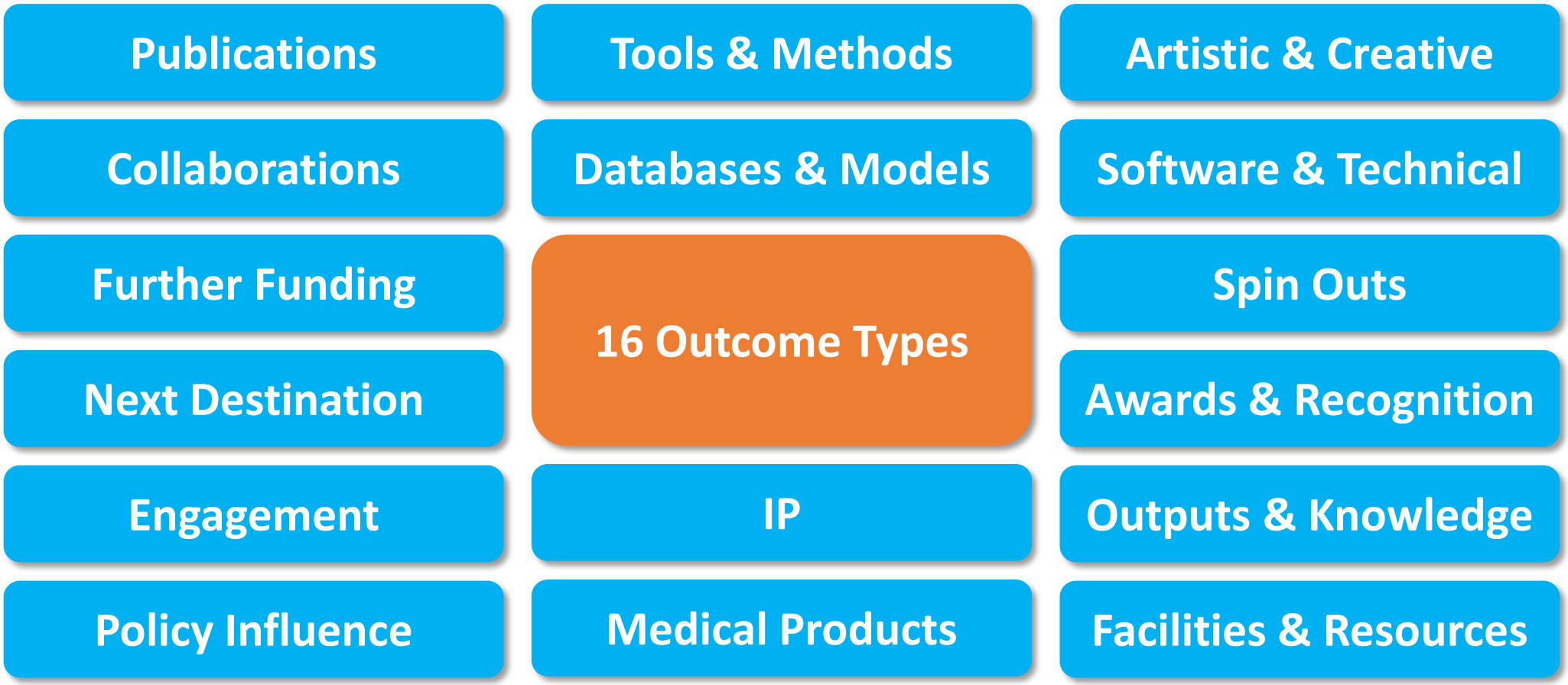
- Bill Gates

chfish®

Success was measured by the amount funded…

Then came publications…

And now …


Publications
Tools & Methods
Artistic & Creative
Collaborations
Databases & Models
Software & Technical
Further Funding
16 Outcome Types
Spin Outs
Next Destination
Awards & Recognition
Engagement
IP
Outputs & Knowledge
Policy Influence
Medical Products
Facilities & Resources

Research Fish History

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Some of our Members

Why a Common Question Set?

- Speak the same language
- Share data
- Collaborate internationally
- Publish impact reports
- Learn from each other – best practice
- Common Question Set is available to all and is not owned by Research Fish

How Does it Work?

The Researchers provide the data

- Proven to be the best source of information
- As much information as possible is harvested automatically
- Acutely aware of reporting burden on Researchers
  - Average time is 45 minutes per year
  - Aim for “write once, read many”
- Platform integration is key

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Data Exchange

It’s not just about the numbers

- Counting records provides only part of the story
- Researchers are encouraged to use narrative

Sample Reports

https://www.researchfish.com/why-report

Community

- International Community of like-minded people
- Development is guided by the members
- Best practice is shared
- Annual Strategy of Impact Conference open to all members and non-members

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“By adopting Researchfish you will be able to collect data immediately and gain a systematic knowledge of output. It is also good for researchers as they will have one system to report into rather than many.”

Thomas Alslev Christensen, PhD, Chief Operating Officer of the Novo Nordisk Foundation

Biomedical Catalyst Fund

- Started at £90m UK government research fund
- MRC provided data gathered through Researchfish
- Consequently the fund grew to £180m, announced by Prime Minister David Cameron
- Government cited the evidence provided
- Supporting collaboration between academia and industry

Summary

- Common questions yield a structured, consistent data set, backed-up by narrative
- Authenticated by researcher
- Provides far deeper insights than automated harvesting alone
- Stakeholders can evidence the impact of their research
- Allows the research community to better understand, track and measure the impact of funded research

Thank You

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Measurement tools

Susan Renoe

Assistant Vice Chancellor for Research, Extension & Engagement

Principle Investigator, National Alliance for Broader Impacts

AESIS

Broader Impacts Network Data, Evaluation, & Research System

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Assistant Vice Chancellor for Research, Extension & Engagement
Principle Investigator, National Alliance for Broader Impacts

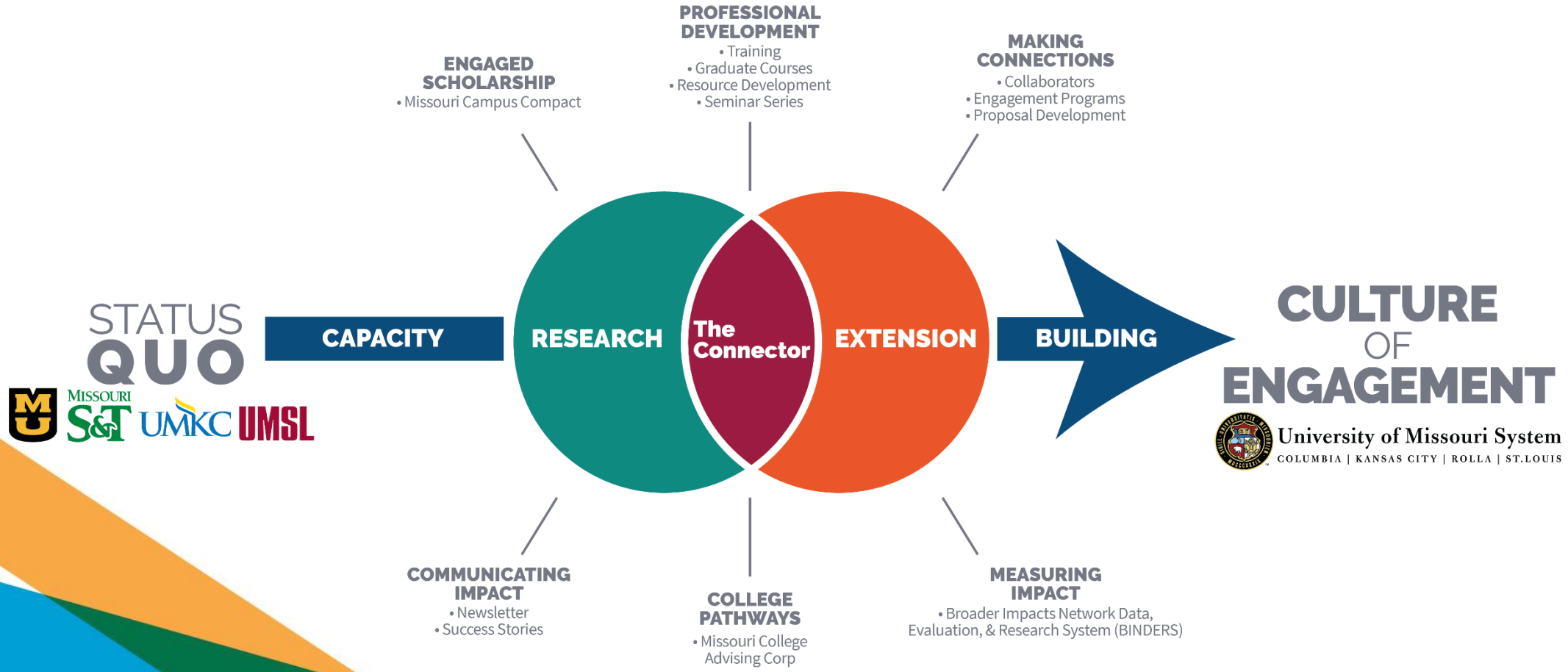
THE connector

con · nect · or (noun)
/kəˈnektər/

Building active, reciprocal, and sustained relationships between research and communities.

TheConnector.Missouri.edu • theconnector@missouri.edu • (573) 884-4334

Connecting the people, resources, tools, and ideas of UM System research and creative activities for the purposes of growing research, strengthening communication, and increasing engagement to benefit the people of Missouri, the nation, and the world.

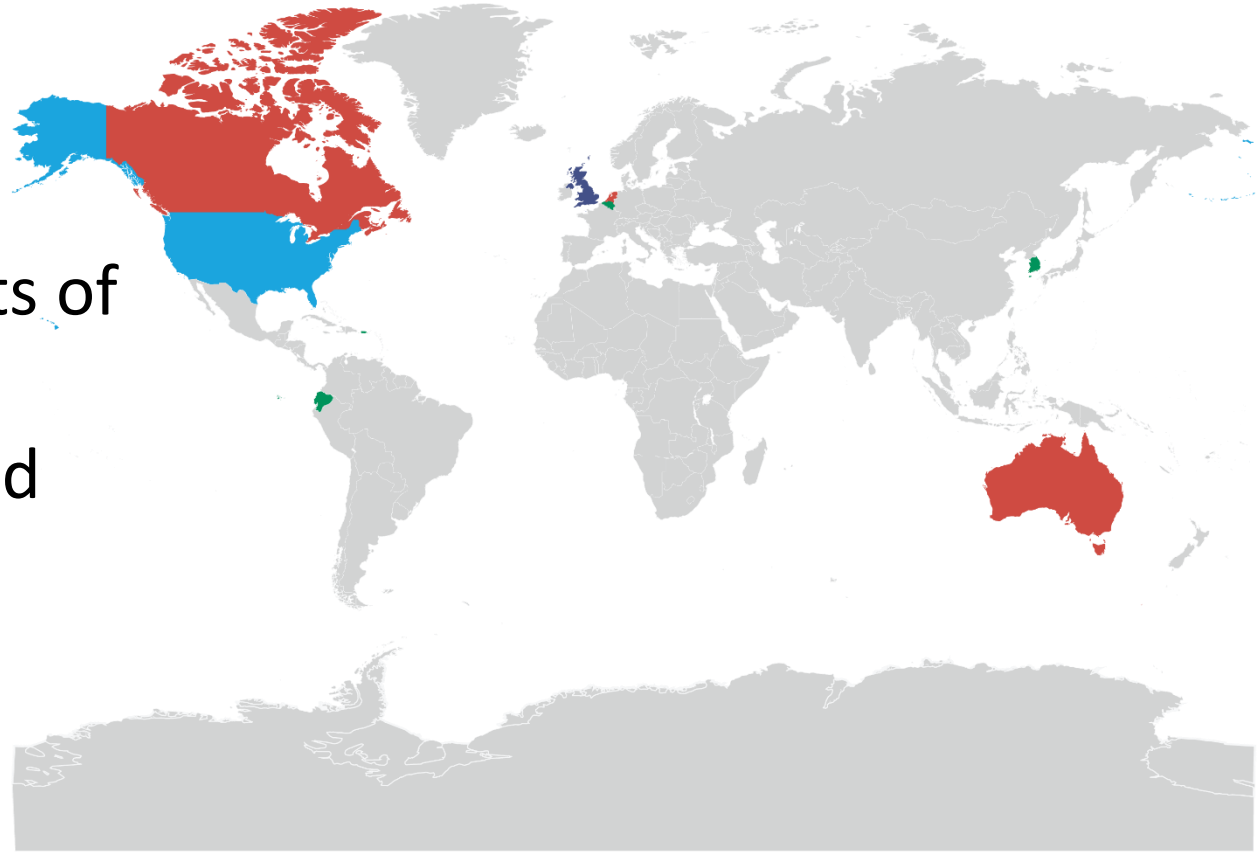


Missouri S&T UMKC UMSL

University of Missouri System
COLUMBIA | KANSAS CITY | ROLLA | ST.LOUIS

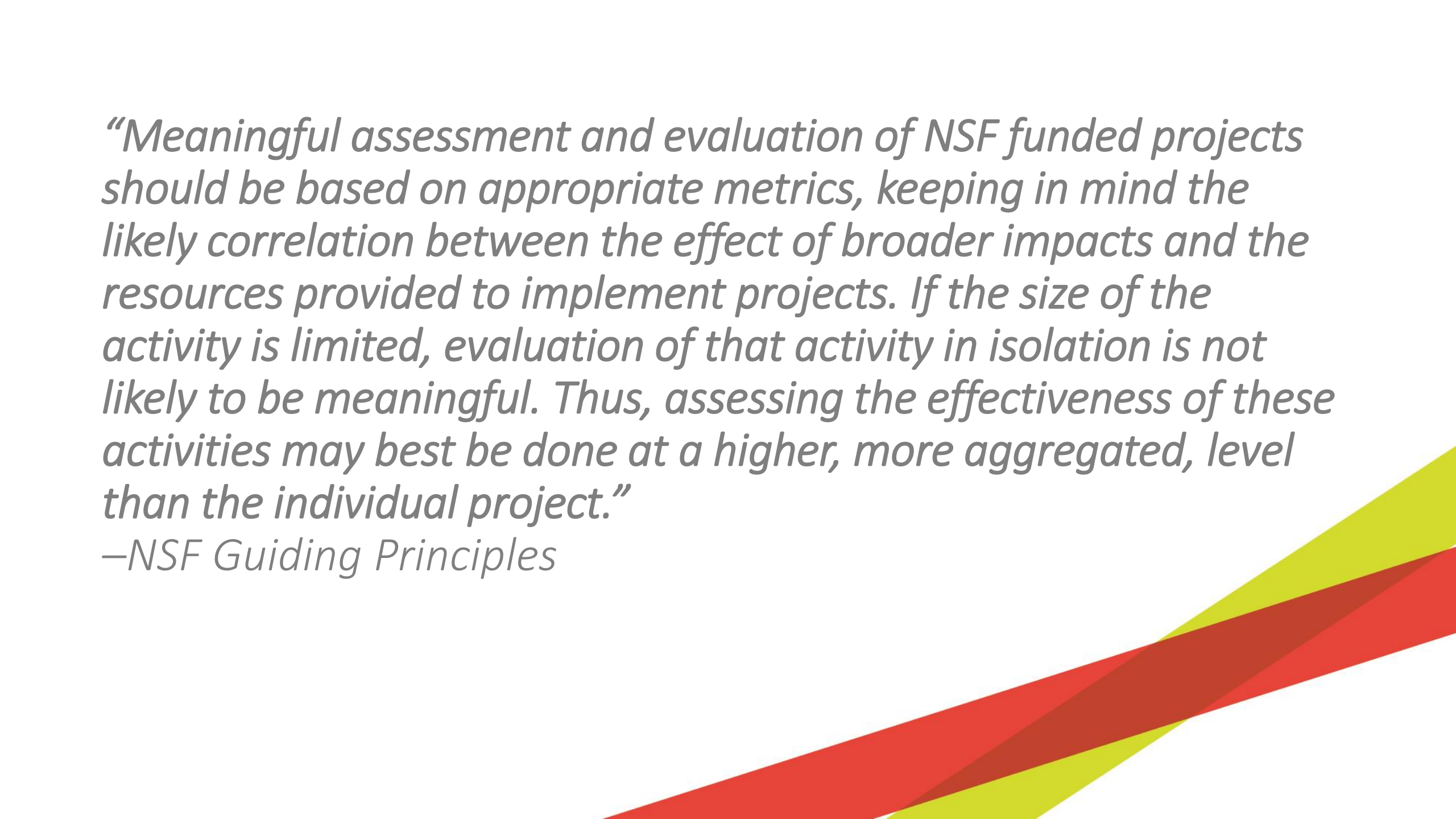
- **718 members representing 50 states, D.C., Puerto Rico, and 8 countries**
- Building individual & institutional capacity,
- Advancing broader impacts,
- Demonstrating the societal benefits of research,
- Working between policymakers and policy implementers.

NABI
National Alliance for Broader Impacts



"Meaningful assessment and evaluation of NSF funded projects should be based on appropriate metrics, keeping in mind the likely correlation between the effect of broader impacts and the resources provided to implement projects. If the size of the activity is limited, evaluation of that activity in isolation is not likely to be meaningful. Thus, assessing the effectiveness of these activities may best be done at a higher, more aggregated, level than the individual project."

–NSF Guiding Principles



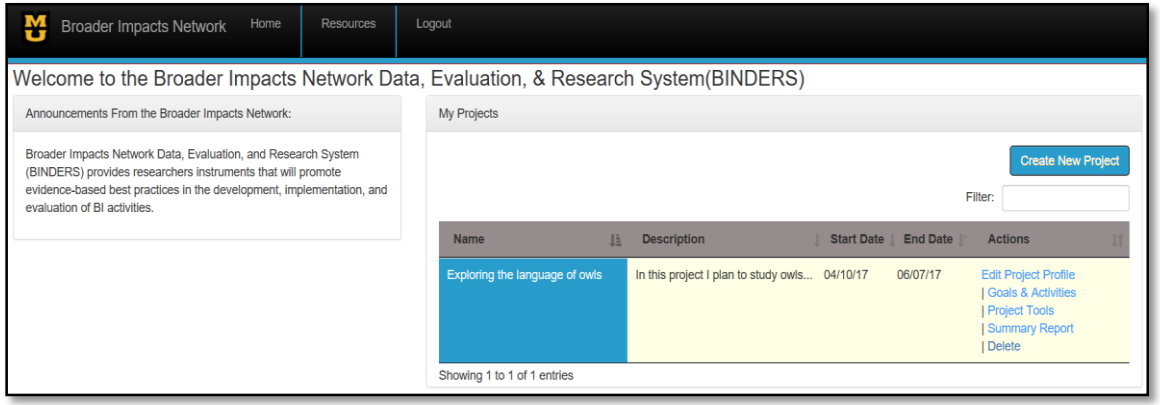
BINDERS PLATFORM

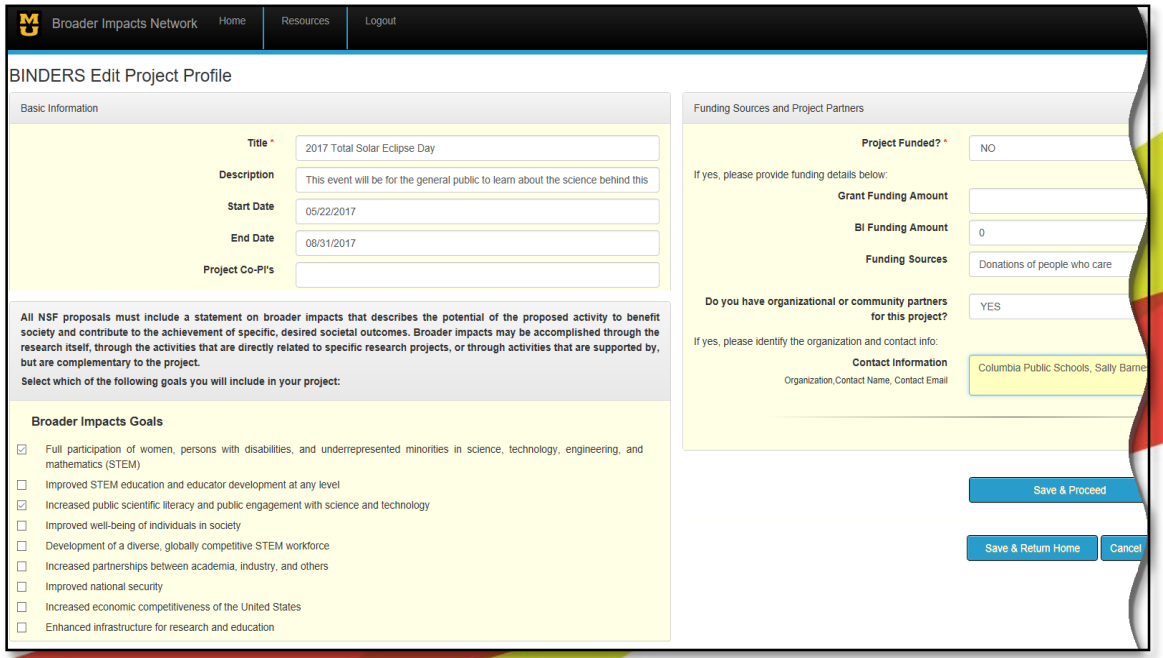
- **Create Projects**
- **Create Goals and Activities**
- **Survey Dashboard – Online Surveys, Combined Surveys**
- **Project Tools (Annual Forms)**

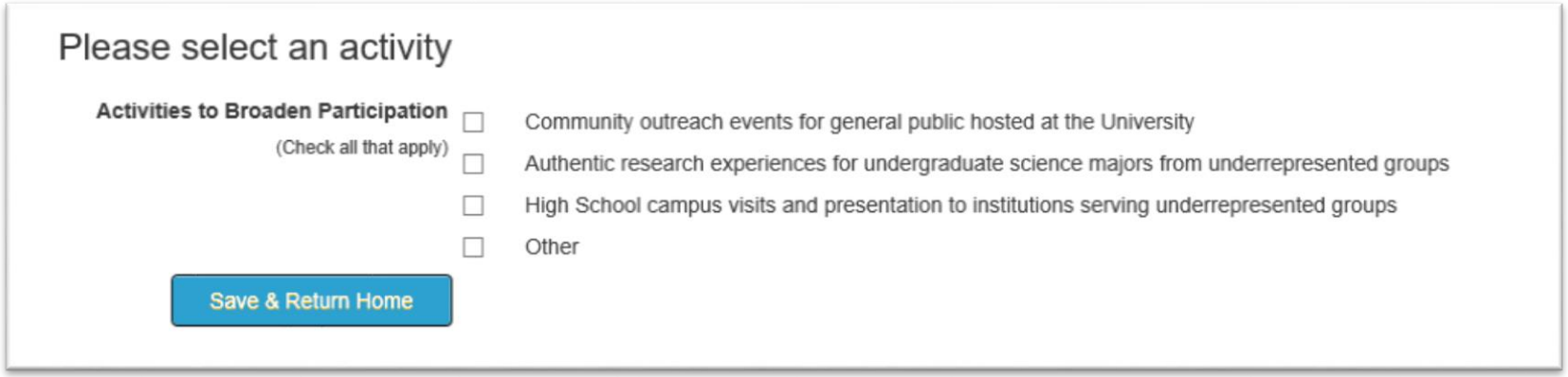
Broader Impacts Network Data, Evaluation, & Research System (BINDERS)

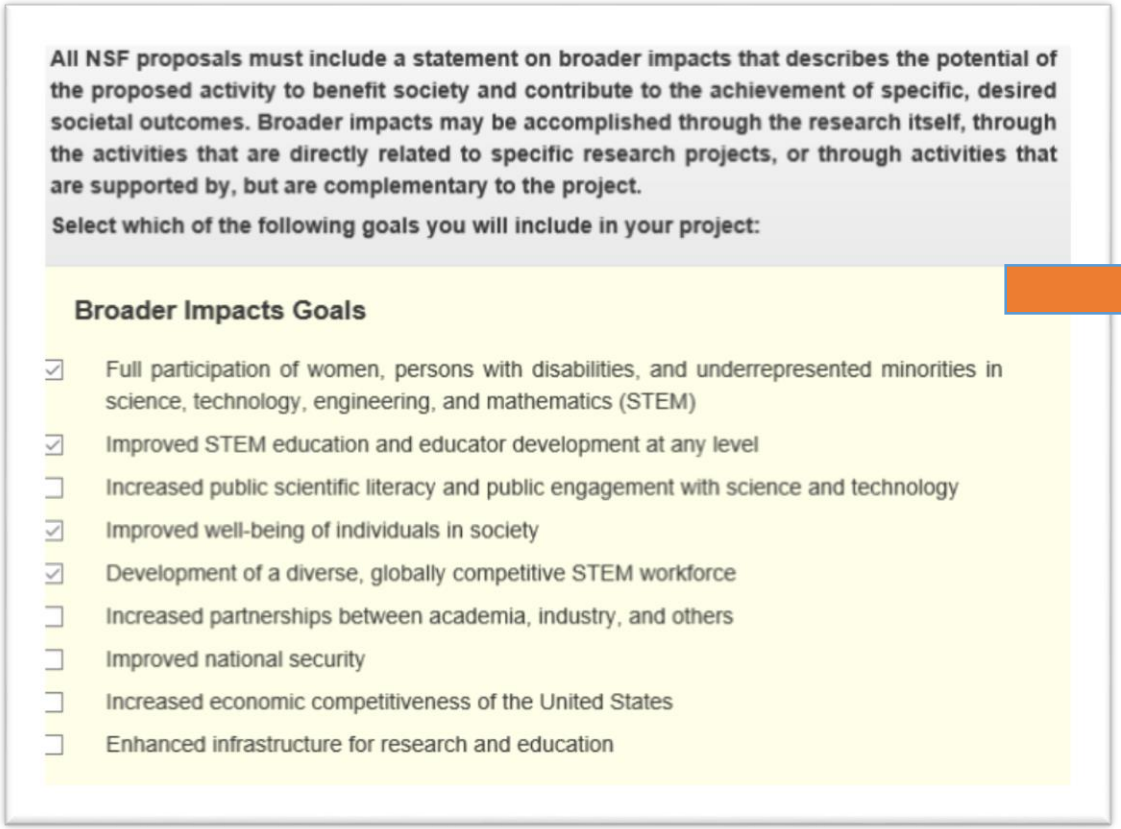
- Online platform for entering, collecting, and tracking BI evaluation data related to broadening participation, undergraduate research, high school outreach, and public out reach
- Completely free and links easily with myVITA
- Created in partnership with the MU Assessment Resource Center.

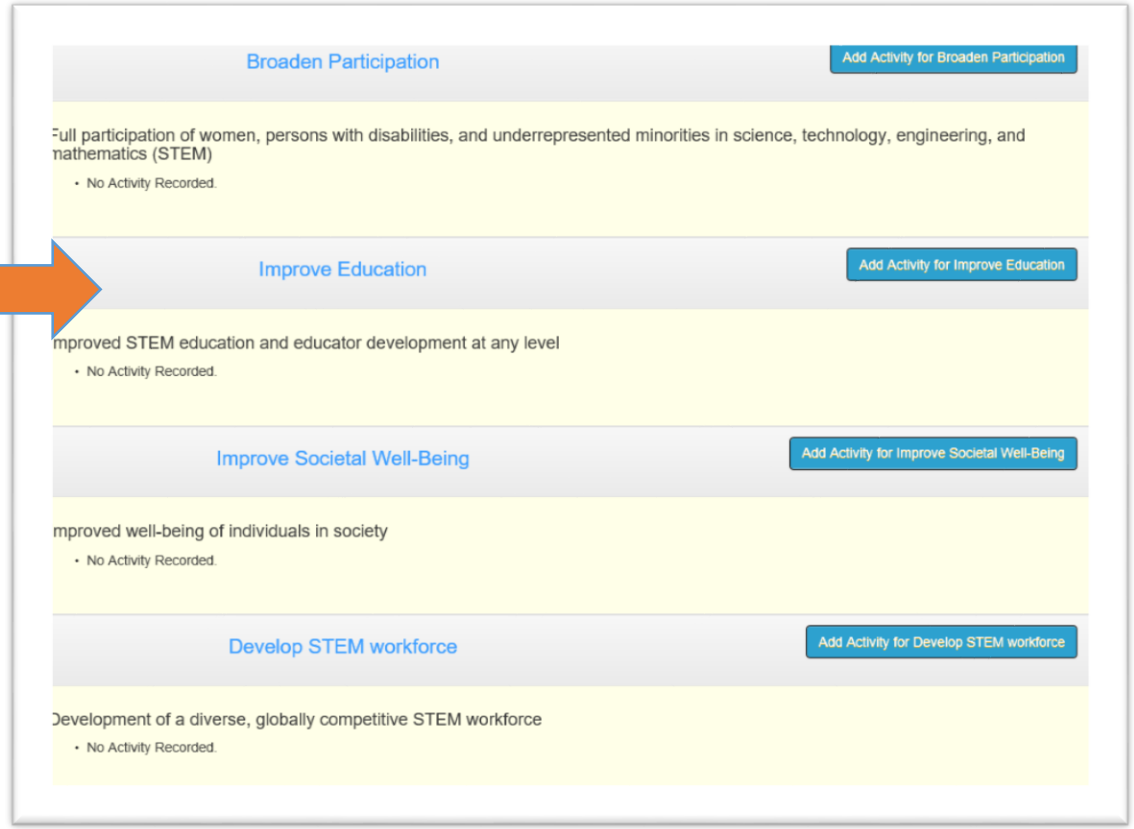
http://arc-binders.missouri.edu






Please select an activity
Activities to Broaden Participation
(Check all that apply)
Community outreach events for general public hosted at the University
Authentic research experiences for undergraduate science majors from underrepresented groups
High School campus visits and presentation to institutions serving underrepresented groups
Other
Save & Return Home


All NSF proposals must include a statement on broader impacts that describes the potential of the proposed activity to benefit society and contribute to the achievement of specific, desired societal outcomes. Broader impacts may be accomplished through the research itself, through the activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to the project.
Select which of the following goals you will include in your project:
Broader Impacts Goals
Full participation of women, persons with disabilities, and underrepresented minorities in science, technology, engineering, and mathematics (STEM)
Improved STEM education and educator development at any level
Increased public scientific literacy and public engagement with science and technology
Improved well-being of individuals in society
Development of a diverse, globally competitive STEM workforce
Increased partnerships between academia, industry, and others
Improved national security
Increased economic competitiveness of the United States
Enhanced infrastructure for research and education


Broaden Participation
Add Activity for Broaden Participation
Full participation of women, persons with disabilities, and underrepresented minorities in science, technology, engineering, and mathematics (STEM)
No Activity Recorded.
Improve Education
Add Activity for Improve Education
mproved STEM education and educator development at any level
No Activity Recorded.
Improve Societal Well-Being
Add Activity for Improve Societal Well-Being
mproved well-being of individuals in society
No Activity Recorded.
Develop STEM workforce
Add Activity for Develop STEM workforce
Development of a diverse, globally competitive STEM workforce
No Activity Recorded.

List of Surveys in progress

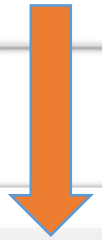
NOTE: Below is a list of surveys that are in the progress.

Please use the following link (http://arc-qaweb1.missouri.edu/BindersSurvey) to share in an email to allow users to fill out a survey using the survey token in the far right column of the survey row.

Please remember that the token(s) listed below are case sensitive and **WILL NOT WORK** unless entered as exactly as given.

Filter:

Group Id	Event Name	Form Name	Start Date	End Date	Days Remaining	No. Respondents	Survey Token	Actions
58	Testing New Project for UAT12 07 2017	High School Outreach Survey	11/01/2017 12:00 am	12/31/2017 12:00 am	24	1	YX7QKN	Close Survey | Edit Survey Email Participants



Completed Surveys

Filter:

Group Id	Event Name	Form Name	Combined Survey Name	Start Date	End Date	No. Respondents	Actions	Add to Aggregate Report
58	Testing New Project for UAT12 07 2017	High School Outreach Survey	High School Outreach Survey	11/01/2017 12:00 am	12/06/2017 8:23 am	1	Download to CSV	☐

Showing 1 to 1 of 1 entries

Combined surveys take time to process. You will receive an email when combined surveys are ready.

Combine Surveys

National Alliance for Broader Impacts

Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation. This work is supported by the National Science Foundation under grant MCB-1408736.