



Elsevier Research Intelligence

SciVal

User guide



Empowering Knowledge

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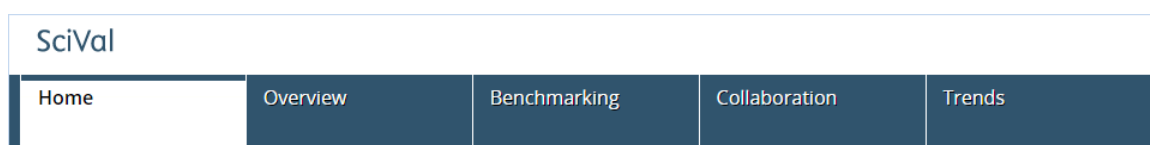
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1 About SciVal

1.1 What is SciVal?

SciVal is a set of integrated modules that enables your institution to make evidence-based strategic decisions. SciVal consists of four modules:

- Overview - Get an overview of the research performance of your institution and others based on output, impact, and collaborations.
[View a short video about the Overview module](#)
- Benchmarking – Determine your strengths and weaknesses. Compare your research institution and teams to others based on performance metrics. Model different test scenarios.
[View a short video about the Benchmarking module](#)
- Collaboration – Identify and analyze existing and potential collaboration opportunities. Identify suitable collaboration partners. See who others are collaborating with.
- Trends - Analyze Research Areas to find top performing universities, authors and journals. Spot growing and declining topics in the field.



SciVal for chancellors and deans

To make the right strategic decisions, you need actionable data. SciVal gives you insights to make evidence-based decisions. Track your research performance, identify your institution's strengths and compare your institution to peers around the world.

SciVal for senior researchers and department heads

With less funding and more competition, it's not enough to do good research. SciVal gives you the tools to evaluate and clearly demonstrate the value of your research to funding agencies and others. Analyze your performance by team or department, compare to peers and identify new collaboration partners.

SciVal for research administrators, development professionals and data experts

SciVal combines the power to perform massive calculations with the flexibility to respond to user-defined queries. You can apply 15 different metrics to any grouping of people or publications. And you can filter the data by more than 330 journal categories.

1.2 What Spotlight and Strata users can expect

SciVal is the successor to SciVal Spotlight and SciVal Strata. SciVal has fully integrated the analytical capabilities of Spotlight and Strata, and made them more comprehensive and intuitive, with more metrics and more sophisticated ways to analyze performance.

- For Strata users – In SciVal, there are more refined analysis capabilities. Instead of five traditional metrics you can benchmark any institution, groups of researchers or publications using 15

different metrics.

- For Spotlight users – In addition to the innovative competencies and collaboration analysis introduced in Spotlight, SciVal offers more traditional indicators for research performance evaluation.

Benefits of the new SciVal include:

- A single integrated platform
SciVal has three modules: Overview, Benchmarking and Collaboration. They form a single integrated platform sharing the same data, entities and metrics. You can navigate from one module to the other with ease.
- Tailored to your needs
In addition to extensive predefined entities, you can also define and analyze your own entities, research teams and topics. This is helpful when tracking performance or planning strategy in a very narrow field, which is not covered by existing entity definitions.
- More metrics and improved visualizations
SciVal goes beyond the basic metrics introduced in Strata. There are more metrics and more flexible ways to analyze the metrics. In seconds, you can see an in-depth analysis.

1.3 Browser requirements

Supported browsers. We strive to fully support the latest full versions of Mozilla® Firefox® and Google Chrome™ on Microsoft Windows and Mac OS X. The following versions were tested for the current SciVal release:

- Firefox version 37.x
- Chrome version 42.x

SciVal also fully supports the following browsers running on Microsoft® Windows operating systems:

- Microsoft Internet Explorer version 9, 10 and 11

SciVal also fully supports the following browsers running on Mac OS X:

- Safari 7 and 8

Note that:

- Other operating systems and browsers may also be able to access Elsevier products; however, the [Elsevier E-Helpdesk](#) cannot provide expert advice or technical support to solve problems you may encounter when using these systems.
- Beta or test versions of browsers are not supported..
- Mobile browsers are not supported.

2 Get started

2.1 Logging in

To log in to SciVal:

1. Go to www.scival.com
2. If you already have access to other Elsevier sites (such as ScienceDirect or Scopus), you can log in with your current user name and password.

Registering as a new user. If you do not yet have an Elsevier username and password, you will need to register as a new user.

1. Go to www.scival.com and click the "Register" link.
3. Your username is your email address. It is not case-sensitive.
4. Create a password. Your password must be 5 -20 characters long, and it must contain at least:
 - 1 uppercase character
 - 1 lowercase character
 - 1 number or special character:
0 1 2 3 4 5 6 7 8 9 * ~ ! @ # \$ % ^ & * _ + { } | : " < > ? ` - = [] \ ; ' , . / "

Remote access. If you are a registered user, there are two ways to access SciVal remotely.

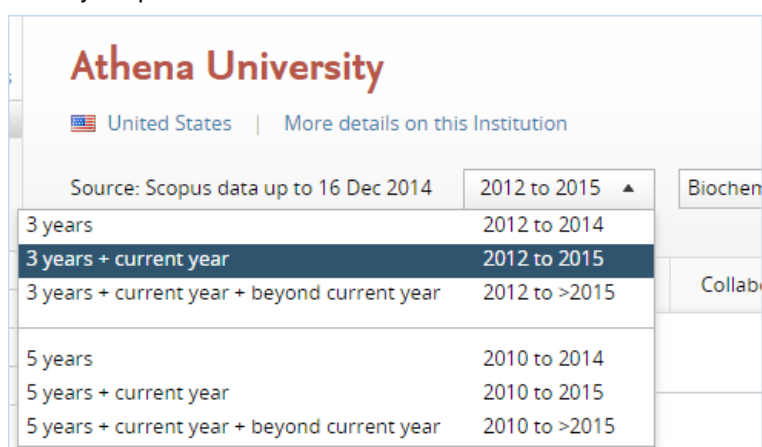
1. You can activate it yourself when you are logged in.
2. Or you can use a registration link provided by Elsevier support staff.

Contact your system administrator for details.

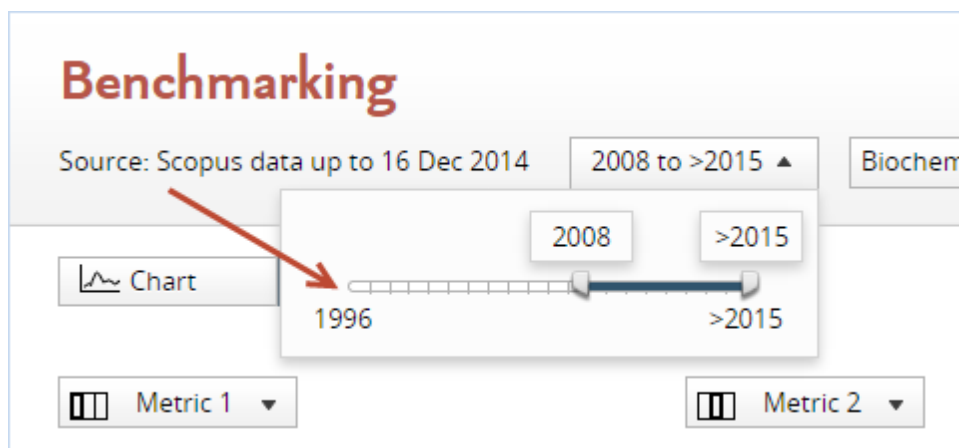
2.2 Selecting a time period

Use the year range selector at the top of the page to select the time period for your analysis. This lets you choose the range of publication years for the publications that are included in your analysis.

- In the Overview and Collaboration and Trends modules, you can analyze performance for a three- or five-year period.



- In the Benchmarking module, you can compare performance from 1996 until the present.



Optionally, you can also include the current year as well as publications in future years. However, you may want to exclude this because, by the end of the current year, Scopus has only received and indexed a certain portion of the current year's journals from other publishers.

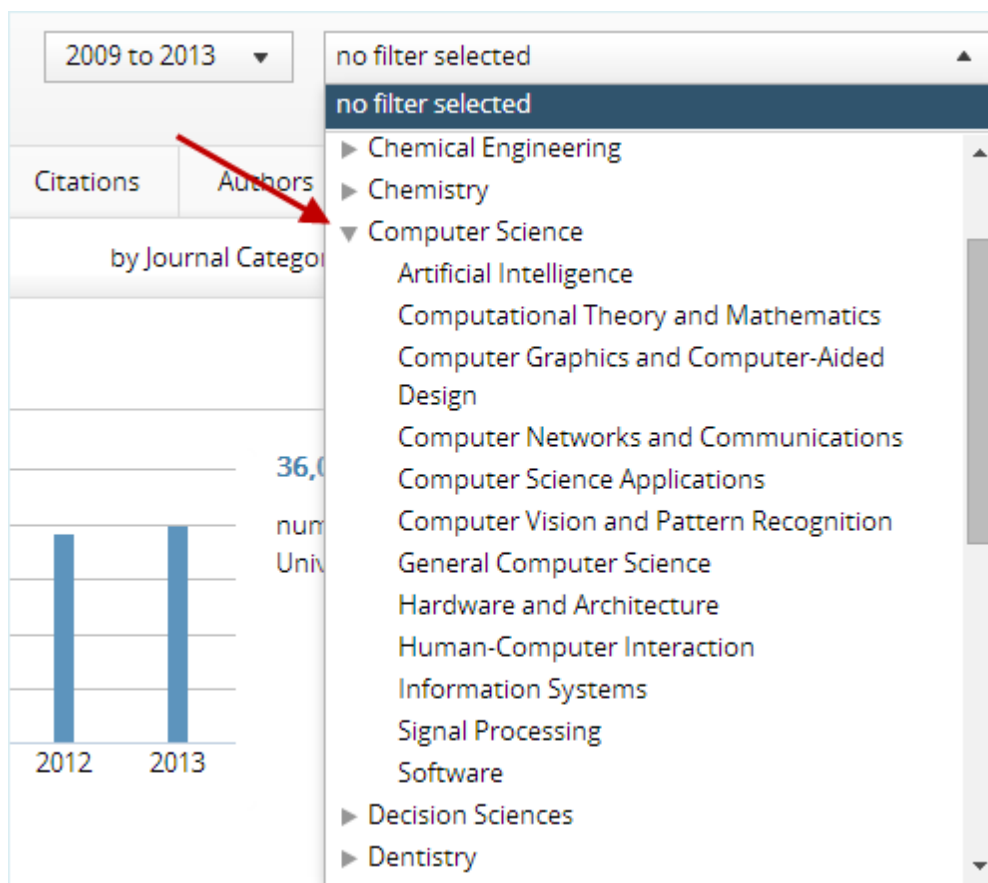
2.3 Filtering by subject area

In SciVal all data can be filtered by subject area. You can choose from 27 main categories and 334 subcategories in the Scopus journal classification. Or use a different journal classification.

[Which journal classifications are available in SciVal?](#)

You can use any of the journal categories as a filter for further analysis.

- The Scopus journal category filter is available in the modules Overview, Benchmarking and Collaboration.
- Click the arrow next to each journal category to display the subcategories.



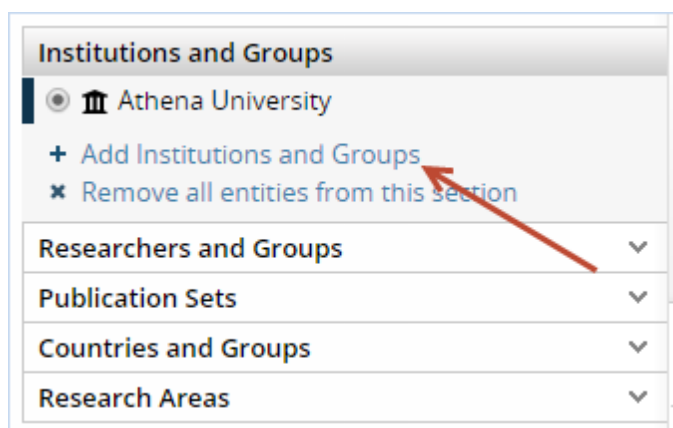
2.4 Selecting entities

An entity is anything that can be viewed in SciVal in terms of academic performance. An entity can be an institution, country, researcher, publication set, or research area. It can also be groupings of these, such as a group of researchers.

Use the entity selection panel to select the entities that you want to analyze. It is on the left side of the screen in each of the three modules. Think of the entity selection panel as a workspace. All your entities of interest are in one clear and organized place.

Choose from the thousands of predefined entities in the SciVal database: institutions or countries. Or define your own entities. Your self-defined entities can be researchers, research teams, publication sets or even research areas.

To add additional items to the entity selection panel, click the “Add” link at the bottom of the currently opened section:



Start typing the name of the entity you will like to add. Then click on the name when it appears in the search results. You can also click on the “Define” links to define an entirely new entity.

You can safely remove entities from the panel. They will not be permanently deleted. You can add them back at any time.

To learn more, see [Selecting entities](#) in the section "Working with entities in SciVal".

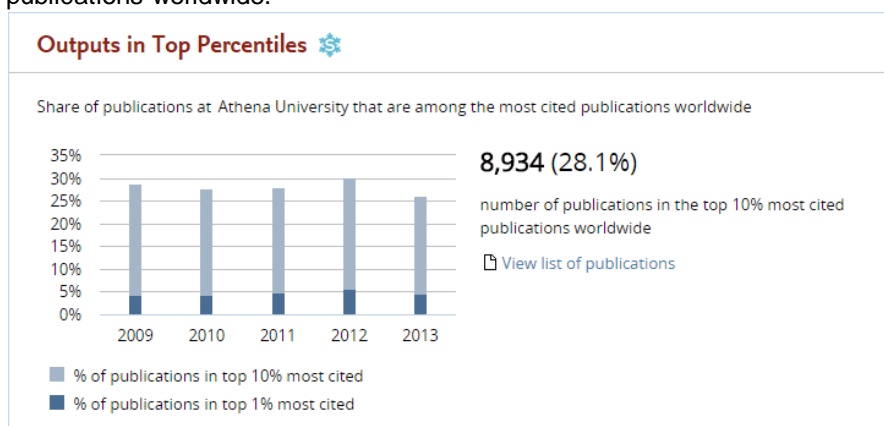
3 How you can use SciVal

3.1 How can my institution demonstrate research excellence?

A number of quality metrics are available in SciVal to demonstrate research excellence at your institution.

Use highly cited publications and publications in leading journals. Two metrics often used to illustrate excellence of research are Outputs in Top Percentiles and Publications in Top Journal Percentiles. These show how much of your institution's publication output was good enough to rank among the world's top publications.

1. Go to the Overview module and select your institution.
2. Go to the Publications tab and find the Outputs in Top Percentiles section. This shows the share of your institution's publications that are within the top 1% and top 10% of the most cited publications worldwide.



3. As you can see in the chart above, some 28% of Athena University's publications were in the top 10 percentiles of the most cited publications worldwide.
4. The Publications in Top Journal Percentiles section shows how many of your institution's publications were in the top 1% and 10% of the world's journals. These top journals are selected by measuring all journals by either SNIP or SJR and selecting the top-ranking ones. You can toggle between SNIP and SJR using the dropdown menu.

See [What are SNIP and SJR?](#) for more information on these journal metrics.



5. As you can see in the chart above, 37.6% of the publications at Athena University were published in the top 10 journals worldwide (measured by SNIP).
6. Go to the Benchmarking module to see the Outputs in Top Percentiles and Publications in Top

Journal Percentiles metrics for your institution over a longer time period (1996 to present). You also have additional metric options available here. And you can compare your institution to other institutions, or the national or global average.

Demonstrate research strengths. The Competencies analysis in the Overview module offers another way to demonstrate excellence.

The Competencies analysis identifies research strengths of your institution – granular areas of research where your institution is a global leader. A competency shows where an institution has a leading position compared to other institutions in terms of number of publications, number of highly cited publications or innovation - the recentness of cited publications.

The competency analysis uses a methodology based on citation patterns called co-citation analysis. Highly cited publications are clustered based on co-citation counts. The clusters are grouped together into competencies.

The analysis is always based on five years of data. For example, if you select 2013, the analysis is based on data from 2009 up until and including 2013.

To learn more, see: [What are competencies?](#)

3.2 How can my institution evaluate the impact of its research portfolio?

To evaluate the impact of your research, you can use SciVal to analyze your institution's citation metrics. Useful metrics include Citation Count, Citations per Publication and Field-Weighted Citation Impact.

1. Go to the Overview module and select your institution from the left-hand entity selection panel (Athena University in this example). If you are interested in a particular field of research or time period, adjust the filters for year range and Scopus journal category.

Athena University
United States | [More details on this institution](#)

Source: Scopus data up to 03 Sep 2014 | 2009 to 2013 | Neurosciences

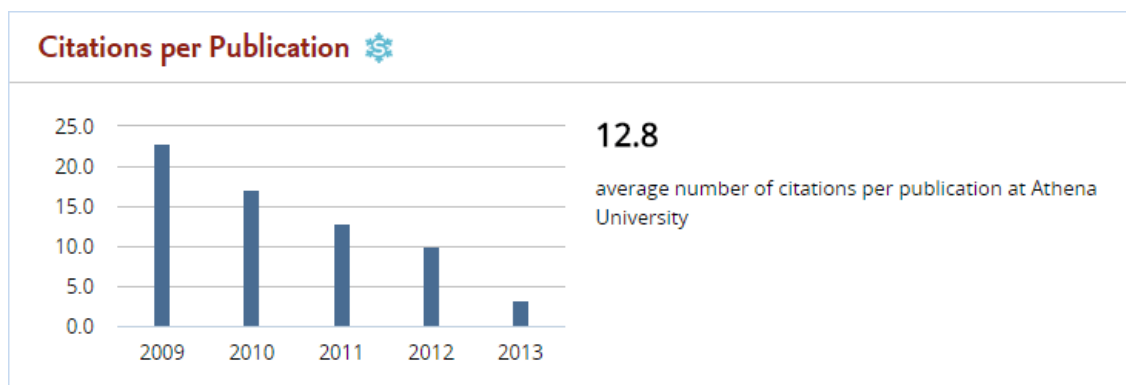
Summary | Publications | Citations | Authors | Collaboration | Competencies

Overall research performance [Download page as PDF](#) [Export](#)

Publications	Citations	Authors	Field-Weighted Citation Impact	Citations per Publication
2,024 ▲	24,801	1,903 ▲	1.75	12.3

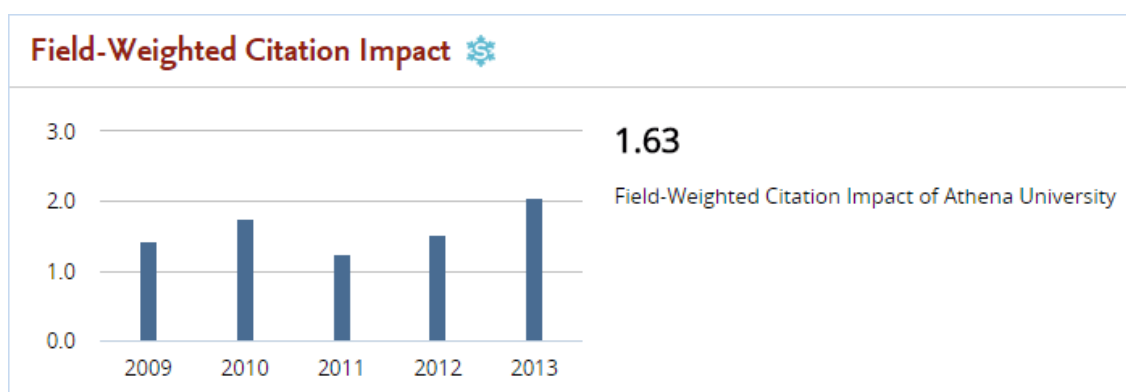
[View list of publications](#)

2. Go to the Citations tab to see metrics for citation impact.
3. As you can see, Athena University has averaged 12.8 citations per publication over a five-year time period.



4. The Field-Weighted Citation Impact of your institution adjusts for the differences in citation behavior across disciplines. Athena's impact is 1.63. Citations are 63% more than expected based on the global average.

- The Field-Weighted Citation Impact is the number of total citations received divided by the total citations expected, based on the global average for the field.
- More than 1.00 means that citations are more than expected.
- Less than 1.00 means the citations are less than expected.



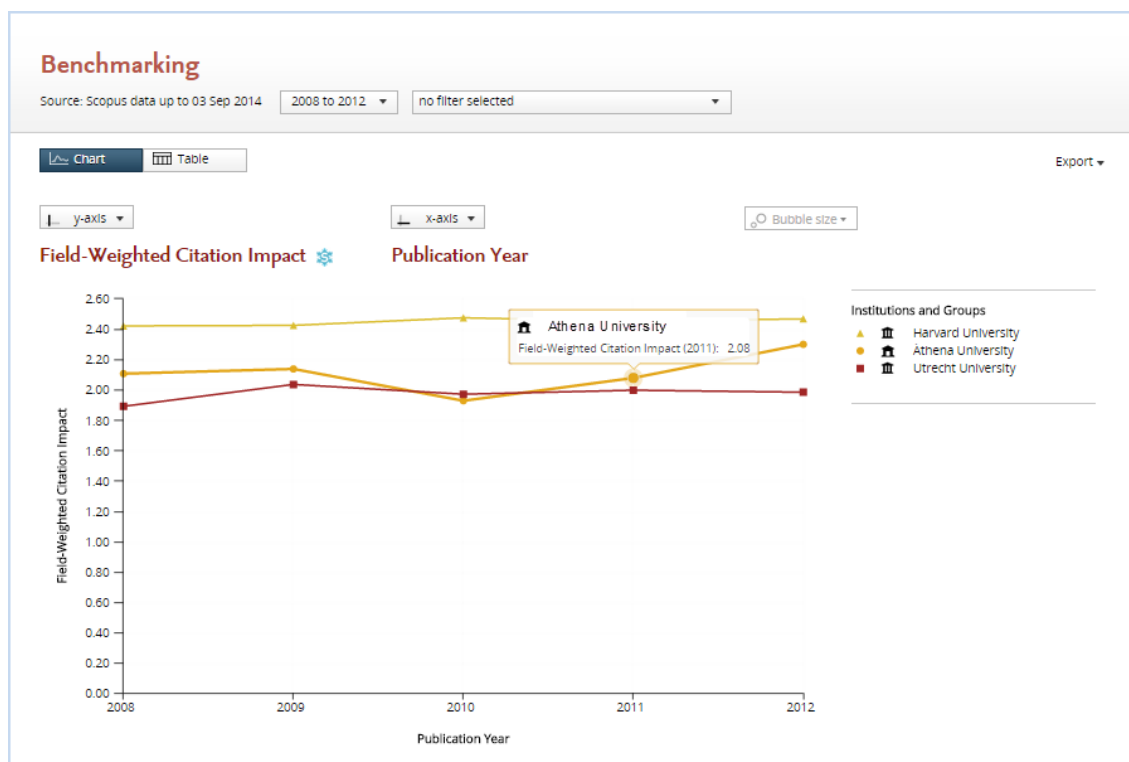
5. Where does your institution have the highest impact? Go to the Overview module (Publications tab) and select "by Journal Category." You can view Field-Weighted Citation Impact by journal category not just in table format, but also as a bar chart.

Publications by Journal Category Export ▼

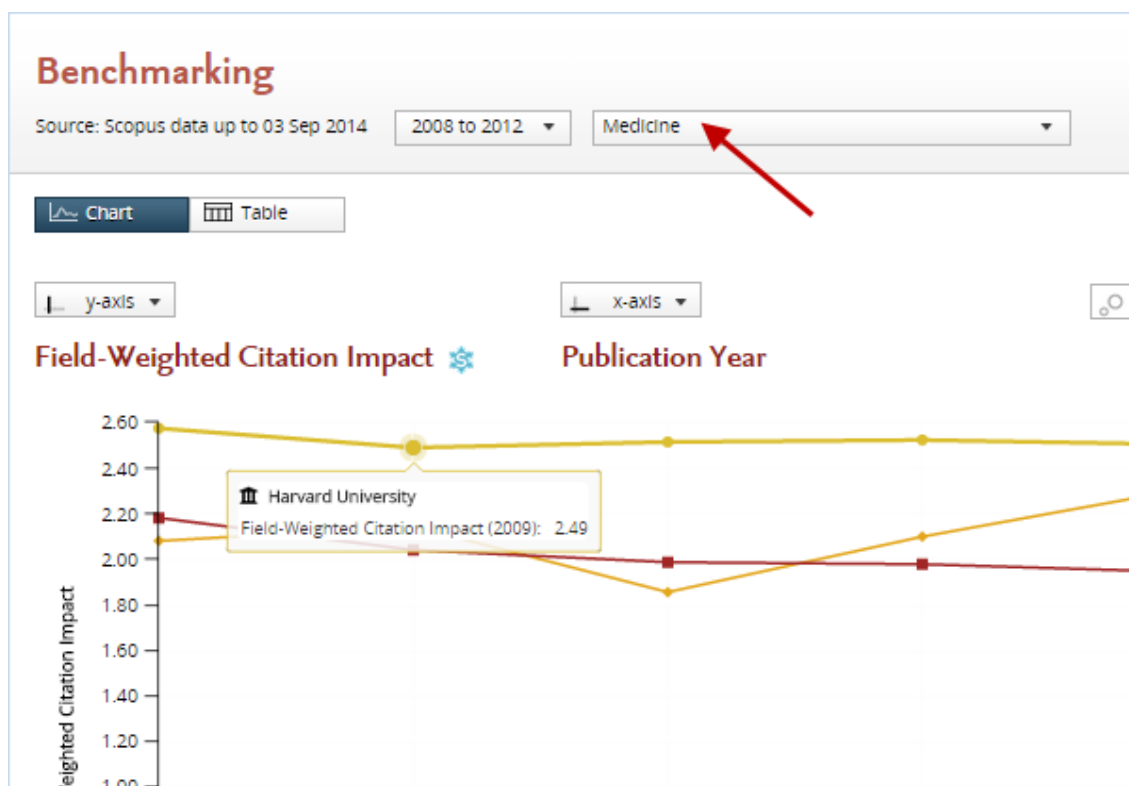
☐ Pie chart
 ☒ Bar chart
 ☐ Table

Journal Category	Publications ▼	Citations	Authors	Field-Weighted Citation Impact
▼ Athena University	35,952 ▲	363,926	20,560 ▲	1.97
▶ Medicine	14,412 ▲	144,745	9,235 ▲	2.08
▶ Biochemistry, Genetics and Molecular Biology	5,823 ▲	82,613	6,333 ▲	1.80
▶ Physics and Astronomy	5,135 ▲	55,173	3,687 ▲	2.13
▶ Engineering	4,208 ▲	30,718	3,794 ▲	1.95
▶ Chemistry	4,078 ▲	63,790	3,876 ▲	2.15

6. To compare the impact of your institution's publications against other institutions or the national average, go to the Benchmarking module.



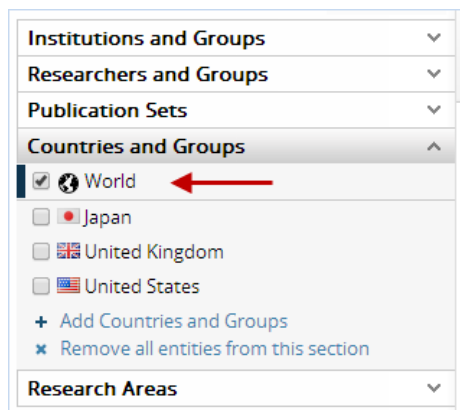
7. You can also compare the same institutions within a particular subject area. Select your field of interest from the 27 main categories and 334 subcategories within the Scopus journal classification. Or use a [different journal classification](#).



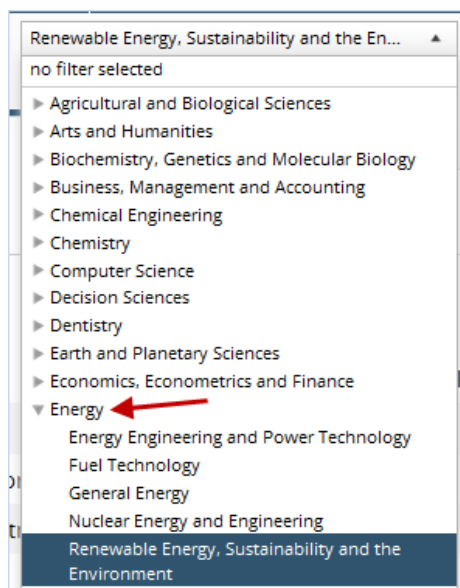
3.3 How can my institution attract talented researchers?

Who are the most talented researchers in my field? Which institutions are they associated with? And how do I find them? The best approach to do this in SciVal is to first determine the top institutions in your field, and then identify the top researchers at those institutions.

1. Go to the Overview module
2. Select your country or the world in the entity selection panel on the left-hand side.



3. Using the dropdown menu at the top of the page, select your field from the 27 main categories and 334 subcategories in the Scopus journal classification (or use a [different journal classification](#)). Say you are interested in renewable energy and sustainability:



4. After selecting your field, you can now see the top institutions in that field, based on number of publications and citation impact.

World

Source: Scopus data up to 31 May 2014 2009 to >2014 Renewable Energy, Sustainability and the En...

Summary Publications Citations Authors Countries **Institutions**

Institutions in the World Export ▼

3,246 of the 4,846 Institutions in the World have publications within Renewable Energy, Sustainability and the Environment (2009 to >2014):

Institution	Publications	Authors	Citations
1. Tsinghua University	924 ▲	1,651 ▲	4,770
2. Chinese Academy of Sciences	820 ▲		
3. Zhejiang University	741 ▲	1,383 ▲	4,613
4. Technical University of Denmark	702 ▲	767 ▲	8,334
5. Shanghai Jiaotong University	694 ▲	1,075 ▲	4,748
6. National Renewable Energy Laboratory	652 ▲	693 ▲	8,099
7. Harbin Institute of Technology	648 ▲	1,107 ▲	3,678
8. Seoul National University	541 ▲	860 ▲	3,952
9. University of Science and Technology of China	520 ▲	829 ▲	3,737
10. Tianjin University	519 ▲	996 ▲	3,094

Note: A red arrow points to the 'Citations' column header, which has a dropdown menu showing 'Citations per Publication' and 'Field-Weighted Citation Impact'.

5. Now take a closer look at these institutions. Go to the entity selection panel and select one of the top institutions.

Institutions and Groups

- Athena University
- Harvard University
- Northwestern University
- University College London
- University of Tokyo
- Utrecht University

Technical ✕

- Technical University of Cluj-Napoca
- Technical University of Crete
- Technical University of Denmark**
- Technical University of Kosice
- Technical University of Liberec
- Technical University of Lisbon

[+ Request a new Group of Institutions](#)

[✕ Remove all entities from this section](#)

Researchers and Groups ▼

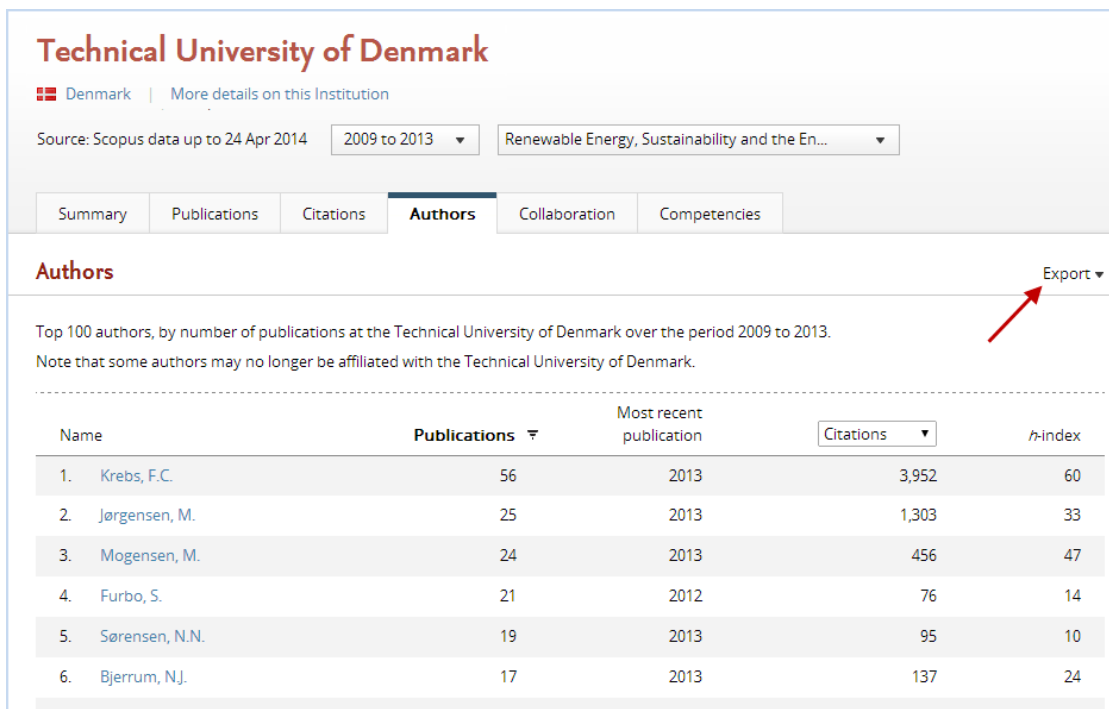
Publication Sets ▼

Countries and Groups ▼

Research Areas ▼

Note: A red arrow points to 'Technical University of Denmark' in the search results.

6. On the Authors tab, you can see the top authors at that institution within the selected field, based on number of publications.
7. You can export the list of authors to a spreadsheet for further analysis, or click on an author's name to see their publication profile.



Technical University of Denmark

Denmark | [More details on this Institution](#)

Source: Scopus data up to 24 Apr 2014 | 2009 to 2013 | Renewable Energy, Sustainability and the En...

Summary | Publications | Citations | **Authors** | Collaboration | Competencies

Authors Export ▼

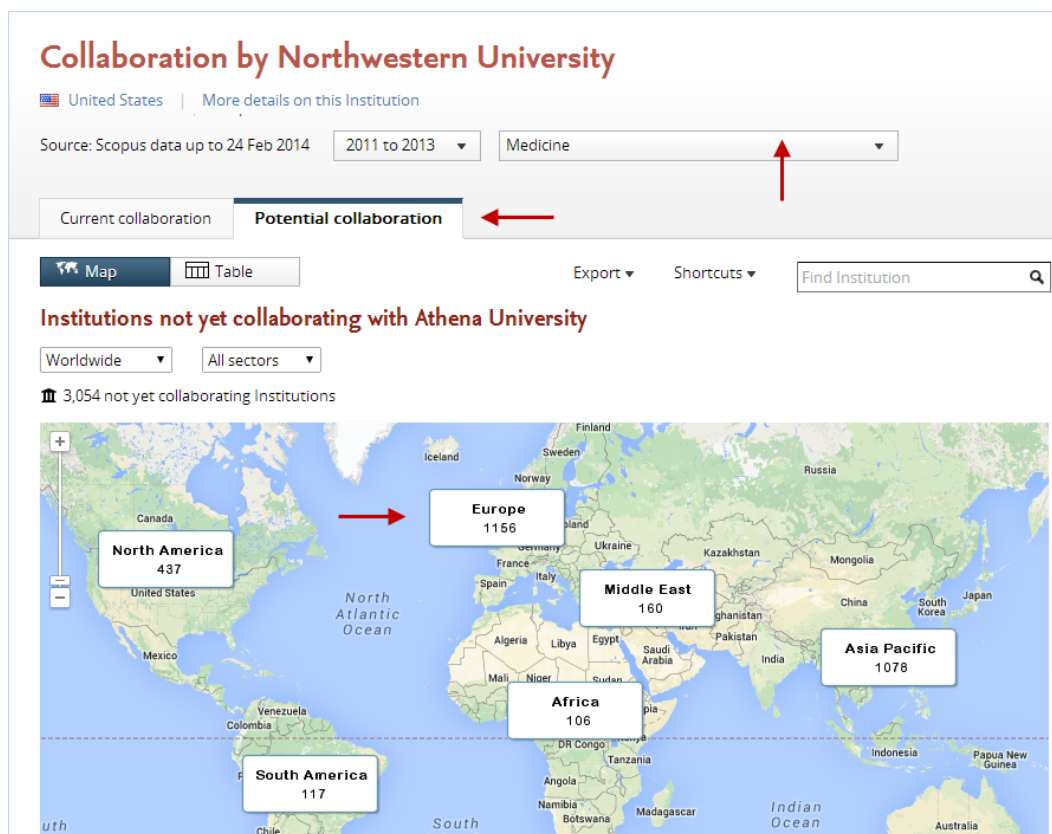
Top 100 authors, by number of publications at the Technical University of Denmark over the period 2009 to 2013.
Note that some authors may no longer be affiliated with the Technical University of Denmark.

Name	Publications ▼	Most recent publication	Citations ▼	h-index
1. Krebs, F.C.	56	2013	3,952	60
2. Jørgensen, M.	25	2013	1,303	33
3. Mogensen, M.	24	2013	456	47
4. Furbo, S.	21	2012	76	14
5. Sørensen, N.N.	19	2013	95	10
6. Bjerrum, N.J.	17	2013	137	24
7. ...	16	2013	16	8

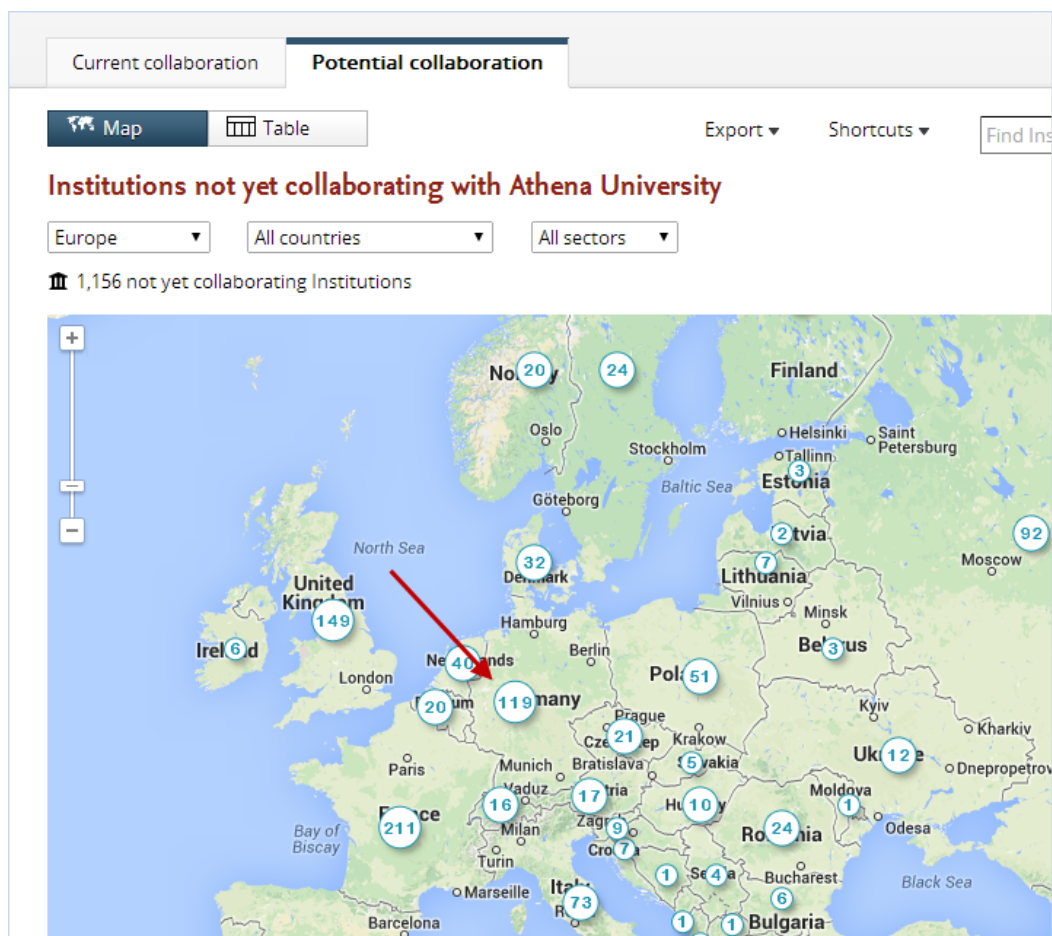
3.4 How can my institution find collaboration partners?

International collaborations can increase your impact and visibility, which could lead to more funding opportunities. How can you identify suitable international collaboration partners? Which countries should we focus on? And which institutions are active in which disciplines?

1. Let's say that your institution is Athena University. It is located in the U.S. and it is looking for a collaboration partner in Europe for its expanding medical school.
2. Go to the Potential Collaboration tab in the Collaboration module. Select the Scopus journal category "Medicine" from the dropdown menu at the top of the page.
3. The analysis shows 1,156 institutions in Europe that haven't yet collaborated with Athena. In other words: Athena has not co-authored any publications with these institutions within the selected time period.



4. Click on Europe to see which European countries are active in medicine. The numbers in the white circles represent the number of institutions in each country that have not yet collaborated with Athena.
5. Let's take a closer look at Germany, which has 119 institutions that have not yet collaborated with Athena.



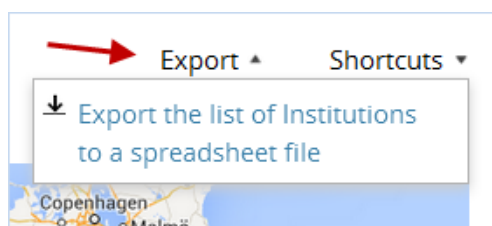
6. Click on Germany to see which institutions in this country are active in medicine but are not yet collaborating with Athena in this field.
7. Each orange circle in Germany represents an institution. The number inside the circle shows the publication output at that institution within the selected field. You can also switch to a different metric (Citations, Citations per Publication or Field-Weighted Citation Impact) to see the collaborating institutions by citation impact.
8. Humboldt-Universitat zu Berlin stands out. There are 974 authors within medicine at this institution, with 850 publications in this field.



9. You can also view the list of institutions in a table and sort the 100 most productive institutions by citation impact, using the metrics Citation Count, Citations per Publication and Field-Weighted Citation Impact.

10 To view only hospitals and other medical institutions in Germany, select "Medical" from the rightmost of the drop-down menus along the top of the map.

11 You can export a list of all institutions to a spreadsheet for further review.



12 For more details on this institution, click on the marker for Humboldt in the map to open the institutional details pop-up. Here, you can compare the research output of Humboldt to the output of your own institution. You can also see a list of potential co-authors at Humboldt.

13 In the institution details pop-up, select "View a high-level performance overview of Humboldt-Universität zu Berlin" from the Shortcuts menu to view Humboldt in the Overview module and explore this institution in even more detail. In which fields of medicine are they most active? Who are the top authors at that institution? How much of their publication output is among the most cited worldwide, and how much of it is published in the top journals? How much are they collaborating internationally?

14 Go back to the Collaboration module and select Humboldt from the entity selection panel. You can now see who they are already collaborating with. Are they working mostly with other German institutions or do they have a large international collaboration network?

15 In the Benchmarking module, select Humboldt and Athena University from the entity selection panel. Now you can compare the two institutions by various metrics. Does Humboldt have more or less citation impact than your institution?

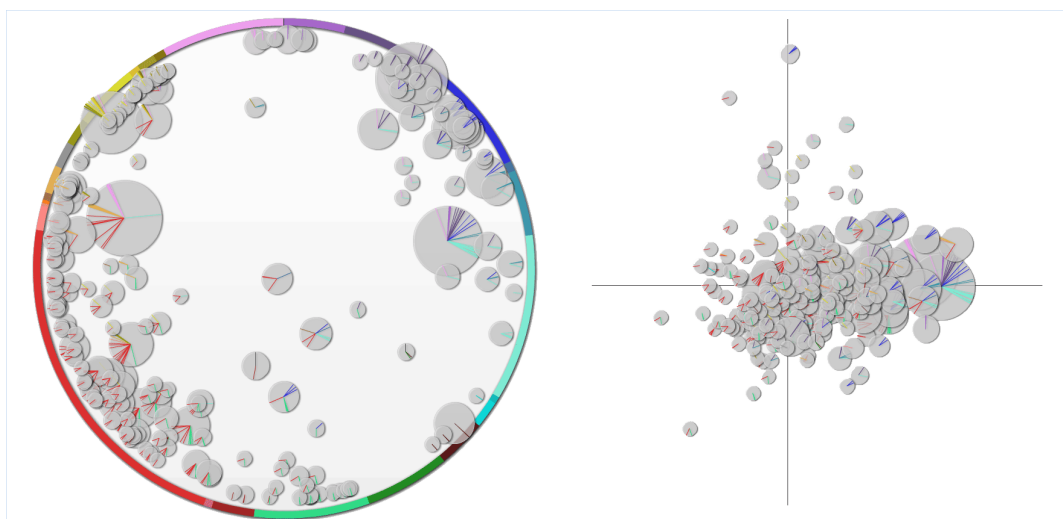
3.5 How can my institution identify its research strengths?

Under the Competencies tab in the Overview module, you can see an analysis of your institution's research strengths, or "competencies" as they are known in SciVal.

The Competencies analysis identifies areas of research in which your institution is a global leader in terms of publications, citations, or innovation. You can get detailed information on each of these areas, such as:

- How is your institution positioned in this field?
- Which researchers are most active in this field?
- What is your institution's unique contribution to this field?
- What are the overall trends – is this an emerging or declining field?

To learn more, see [What are competencies?](#)



View the list of research strengths. To see the list of your institution's research strengths:

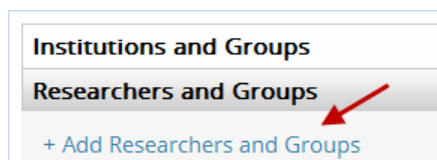
1. Go to the Overview module and select your institution from the left-hand entity selection panel.
2. Click on the Competencies tab and view the list of strengths in the Table view.
3. The Circle graph plots the competencies on a big wheel representing the world of science. This allows you to spot in which subject areas your institution's competencies are concentrated, and how interdisciplinary they are. The closer a competency to the center of the wheel, the more interdisciplinary that competency is.
4. The Matrix graph plots the share of your institution within each competency against the growth of that field of research. This allows you to, for instance, spot emerging fields of research where your institution isn't yet playing a leading role.
5. Click on a competency in the Table, Circle or Matrix to open a modal window with more detailed information about that competency, such as the top institutions and researchers contributing to that field.

3.6 What is the impact of adding a new researcher to my team?

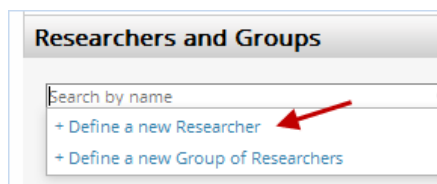
SciVal allows you to do “what if” scenario modeling. If I add researcher X to my team, how would my team perform?

Let’s define a research team and then compare its performance to a team made up of the current team plus a new recruit.

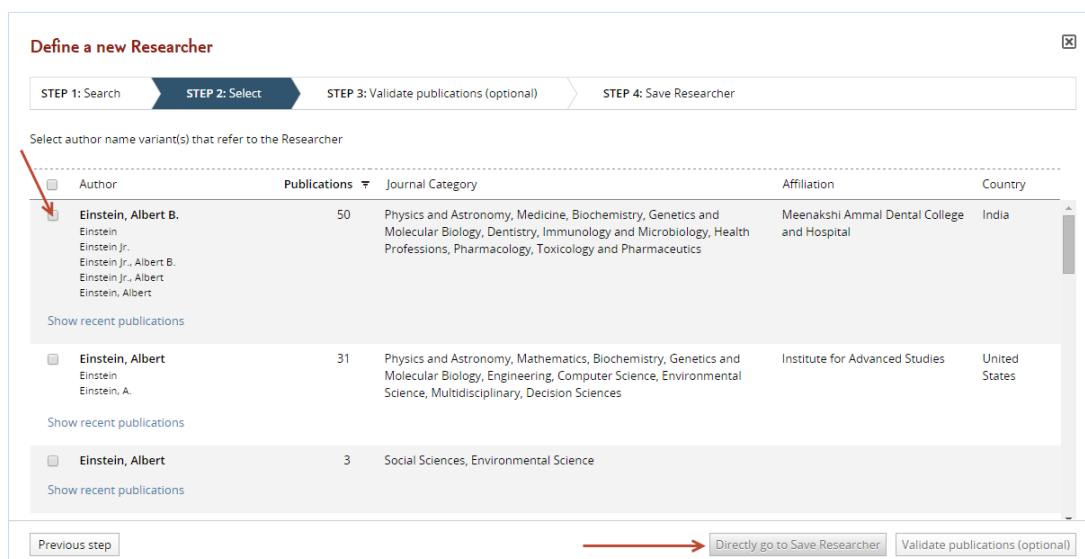
1. Go to the Benchmarking module.
2. In the entity selection panel (on the left side of screen), click “Add Researchers and Groups”.



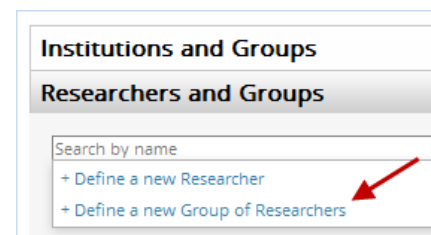
3. Click “Define new researcher”.



4. Define your team member.



5. Follow this process for each researcher on your team.
6. Now go to the entity selection panel and click “Define a new Group of Researchers”.



7. Select your researchers from the left side of your screen and drag each one across to the right side of the screen.

8. Save as "My current project team"

9. Define a second group with the same researchers, plus the researcher you want to recruit. Save this group as “My current Project team + new recruit.”
- 10 Now you can compare the two groups. in Benchmarking. Click on the “x-axis” button and select the metric Field-Weighted Citation Impact.



- 11 Compare the performance of the current team versus the expanded team. As you can see, the . addition of the new recruit would significantly strengthen the performance of your team.
- 12 Try a few additional metrics. Other useful metrics for comparison include Scholarly Output, . Citation Count, Citations per Publication, and Collaboration Impact.

4 The Overview module

4.1 What is the Overview module?

The Overview module provides a high-level overview of your institution's research performance based on publications, citations, and collaboration.

In addition, you can review the performance of any of the 5,500+ institutions and 200+ countries in our database. You can even define your own research areas, publication sets and groups of researchers and review their performance.

All data can be filtered by a specific subject area. The data can be exported, and you can review the underlying list of publications behind every publication count.

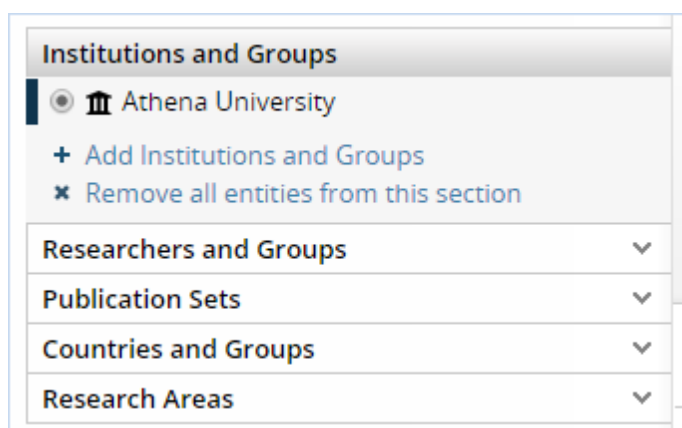
[View a short video about the Overview module](#)

4.2 Working with the Overview module

4.2.1 Selecting an entity

Use the entity selection panel on the left-hand side to select the entity you want to view.

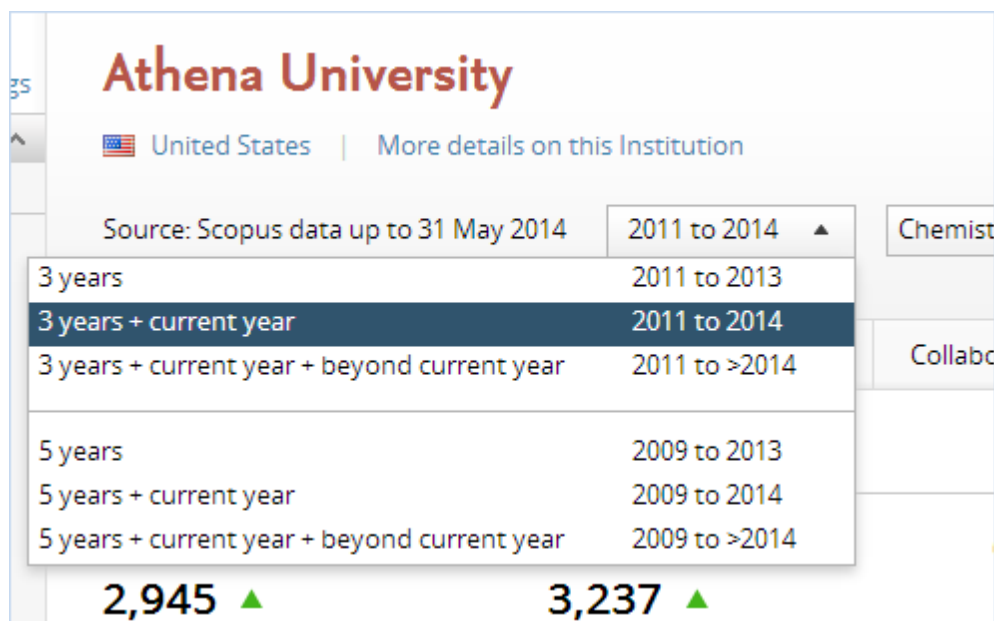
1. Open the section that contains the entity you want, e.g. "Institutions and Groups" for an institution.
2. If the entity you want is not listed, click on the "Add" link and start typing the name, then click on the name when it appears in the search results.
3. You can also define your own groups of researchers, publication sets and research areas.



4.2.2 Selecting a year range

You can view publication data for a period of either three or five years. Use the year range selector at the top of the page to select the desired year range.

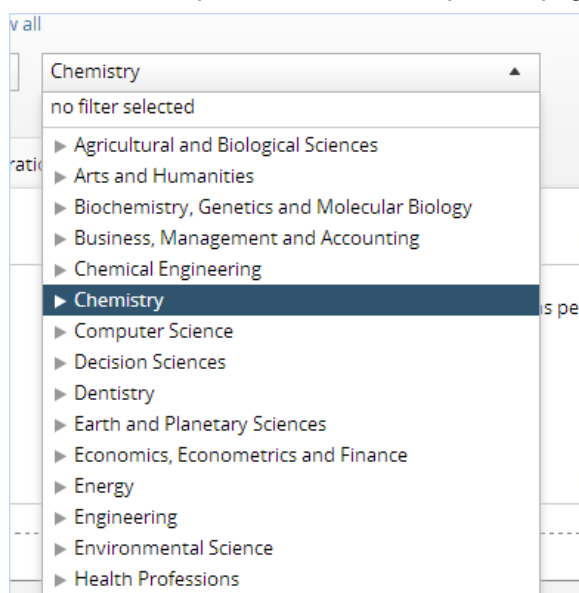
Optionally, you can also include the current year and future publications. However, you may want to exclude this because, by the end of the current year, Scopus has only received and indexed a certain portion of the current year's journals from other publishers.



4.2.3 Filtering by journal category

Interested in evaluating or comparing your performance within a specific discipline? Choose from 27 categories and 334 subcategories in the Scopus journal classification. Or use a [different journal classification](#).

1. Use the filter dropdown menu at the top of the page to select a specific journal category.



2. The subcategories appear when you click on the arrow in a category.
3. After you select a journal category, all data shown in SciVal will be filtered by that category. That is to say, the data will be limited to publications in journals within that category.
4. Choose "no filter selected" from the menu to remove the filter and show all data.

4.3 How can you use the Overview module?

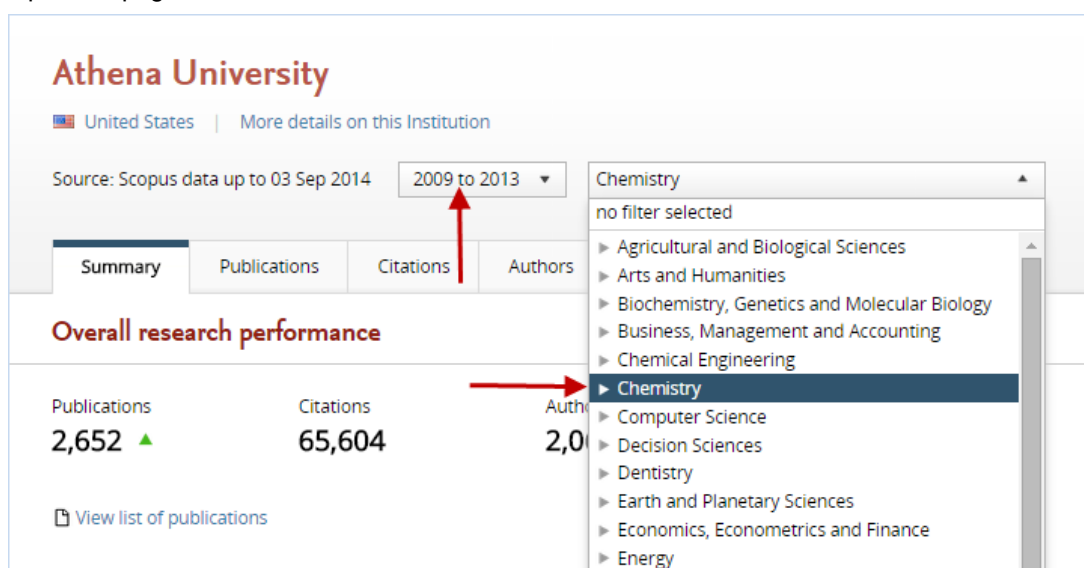
4.3.1 Get an overview of your institution's research performance

You can get an overview of your institution's research performance in terms of publications and citations, and answer questions such as:

- Who are the most prolific or most cited authors at my institution?
- In which disciplines is my institution most active?
- In which journals is my institution publishing the most?
- What are the most cited publications of my institution?
- Who are the top collaboration partners of my institution?

To view your institution in Overview:

1. Go to the Overview module and make sure your institution is selected in the entity selection panel on the left-hand side.
2. Select the year range you want from the first dropdown menu at the top of the page when you click on the arrow in a category.
3. Do you want to view your institution's research performance within a specific discipline (such as chemistry or engineering)? Then select a journal category from the second dropdown menu at the top of the page



4. Click between the Summary, Publications and Citations tabs to get an overview of your institution's research performance in terms of publications and citations.

4.3.2 Explore the publication output of your institution

You can see the total list of publications at your institution by clicking on "View list of publications" on the Summary tab. The most cited publications are at the top.

- The filter options on the left-hand side allow you to explore your institution's publications in various ways. For example, you can see the top authors and journals, the top collaborating institutions and countries, and the top keywords.
- Try filtering the publications by any of the filter options. The breakdown is now recalculated to reflect the new subset.

Publications at Athena University

Year range: 2011 to 2013

22,784 publications

Authors

- ☒ All authors
- ☐ Iashvili, I. 328
- ☐ Park, S.K. 327
- ☐ Bazterra, V.E. 324
- ☐ Claes, D. 324
- ☐ Bloom, K. 322

[Show more](#)

Institutions

- ☒ All institutions
- ☐ Athena University 22,784
- ☐ Harvard University 1,101
- ☐ Johns Hopkins University 888
- ☐ University of Illinois at Chicago 833
- ☐ University of California at Los Angeles 812

[Show more](#)

Countries

Journals

Journal Categories

Keywords

Publication years

Publication types

Title	Authors	Year	Journal	Citations
Review of particle physics	Beringer, J. et al.	2012	Physical Review D - Particles, Fields, Gravitation and Cosmology	2,098
Observation of a new boson at a mass of 125 GeV with the CMS experiment at the LHC	Chatrchyan, S. et al.	2012	Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics	1,292
The diagnosis of dementia due to Alzheimer's disease: Recommendations from the National Institute on Aging-Alzheimer's Association workgroups on diagnostic guidelines for Alzheimer's disease	McKhann, G.M. et al.	2011	Alzheimer's and Dementia	831
Metal-organic framework materials as chemical sensors	Kreno, L.E. et al.	2012	Chemical Reviews	548
π -Conjugated polymers for organic electronics and photovoltaic cell applications	Facchetti, A.	2011	Chemistry of Materials	478
Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: A systematic analysis for the Global Burden of Disease Study 2010	Lozano, R. et al.	2012	The Lancet	449
Structure, function and diversity of the healthy human microbiome	Huttenhower, C. et al.	2012	Nature	432
Classification of primary progressive aphasia and its	Gorno-Tempini, M.L.	2011	Neurology	392

4.3.3 Get an overview of your institution's research strengths

Under the Competencies tab in the Overview module, you can see an analysis of your institution's research strengths, or “competencies” as they are known in SciVal.

The Competencies analysis identifies areas of research in which your institution is a global leader in terms of publications, citations, or innovation. You can get detailed information on each of these areas, such as:

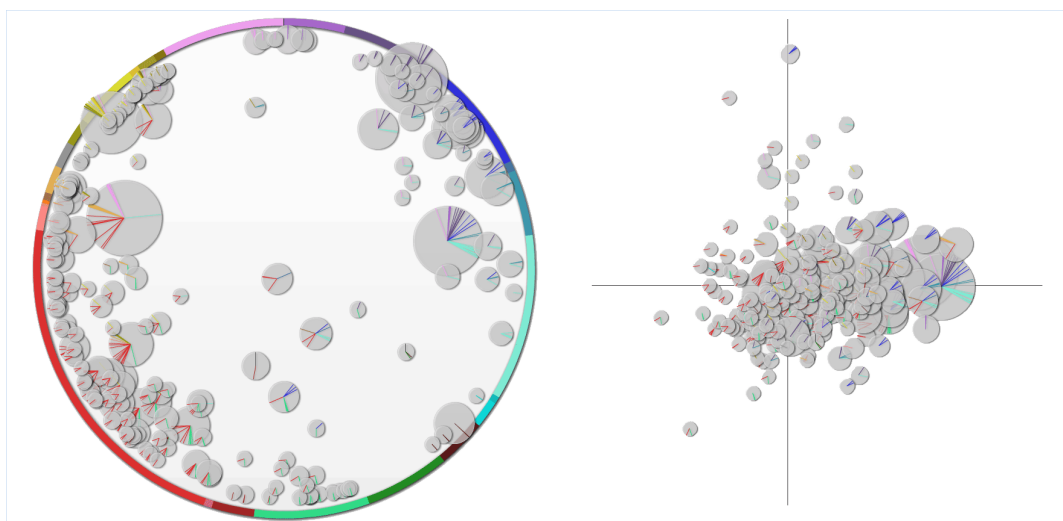
- How is your institution positioned in this field?
- Which researchers are most active in this field?
- What is your institution's unique contribution to this field?
- What are the overall trends – is this an emerging or declining field?

To learn more, see [What are competencies?](#)

View the list of research strengths. To see the list of your institution's research strengths:

1. Go to the Overview module and select your institution from the left-hand entity selection panel.
2. Click on the Competencies tab and view the list of strengths in the Table view.
3. The Circle graph plots the competencies on a big wheel representing the world of science. This allows you to spot in which subject areas your institution's competencies are concentrated, and how interdisciplinary they are. The closer a competency to the center of the wheel, the more interdisciplinary that competency is.
4. The Matrix graph plots the share of your institution within each competency against the growth of that field of research. This allows you to, for instance, spot emerging fields of research where your institution isn't yet playing a leading role.
5. Click on a competency in the Table, Circle or Matrix to open a modal window with more detailed

information about that competency, such as the top institutions and researchers contributing to that field.



4.3.4 Get an overview of collaboration by your institution

The Overview module also shows the top external collaboration partners of your institution, and how much your institution is collaborating (including international collaboration). Collaboration is measured in terms of co-authored publications.

- The filter options on the left-hand side allow you to explore your institution's publications in various ways. For example, you can see the top authors and journals, the top collaborating institutions and countries, and the top keywords.
- Go to the Collaboration module for a much more detailed view of external collaboration at your institution.

4.3.5 Evaluate the performance of a researcher or research team

SciVal lets you define and evaluate individual researchers as well as groups of researchers.

Groups of researchers can be research teams at your institution, but also larger units such as institutes, departments, and faculties. You can even define fantasy researcher groups. For example, you can simulate what would happen when you add a top researcher from another institution to an existing research team at your institution.

To define and view a researcher:

1. Go to My SciVal and click on "Define a new Researcher"
2. Now go to Overview and select your new researcher.
3. You can now evaluate the research performance of this researcher. You can also see the collaborating institutions and co-authors of this researcher.

To define and view a group of researchers:

1. Go to My SciVal and click on "Define a new Researcher" to define the individual researchers that will make up your group.

2. Click on “Define a new Group of Researchers” to define the group.
3. Now go to Overview and select your new group.
4. You can now evaluate the research performance and collaboration of this group.

The “Top Researchers” section on the Summary tab shows the top 5 researchers in that group by number of publications, number of citations or *h*-index. Go to the Researchers tab to see the complete list of researchers that make up the group.

If different units of your institution have been predefined in SciVal as groups of researchers, select one of these groups of researchers in Overview and go to the Collaboration tab. You can now see how much internal collaboration is taking place within the group, and how much collaboration with other groups within the same parent group, for example other departments within the same faculty.

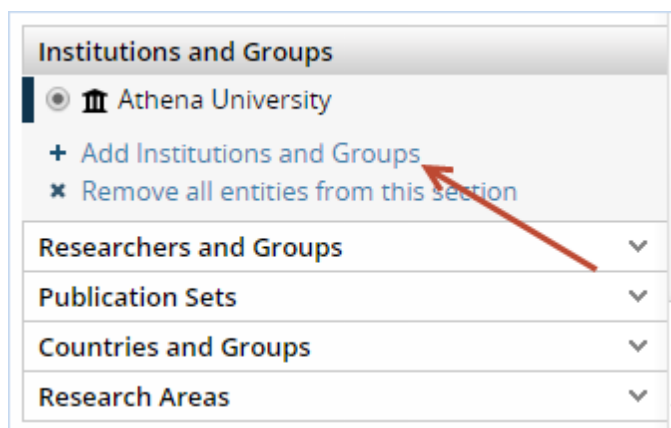
4.3.6 Investigate other institutions

In Overview, you are not limited to your own institution, but you can view the research performance of any other institution. You can, for instance, find out:

- In which journals are the world's top institutions publishing the most?
- Would this institution be a suitable collaboration partner for my own institution?
- Who are the other collaboration partners of my institution's collaboration partners?
- Who at this institution would be good to approach for potential collaboration?

Use the entity selection panel on the left-hand side to select the institution you want to view.

1. Open the “Institutions and Groups” section in the entity selection panel
2. If the institution you want is not listed, click on the “Add Institutions and Groups” link and start typing the name, then click on the name when it appears in the search results.



4.3.7 See your institution's national or global position

How is your institution positioned? What is your institution's position, nationwide or worldwide, in terms of publication output or impact?

1. Select your country from the entity selection panel on the left-hand side.
2. If the country is not listed, click on the “Add Countries and Groups” link and start typing the name, then click on the name when it appears in the search results.
3. The Institution tab ranks all the institutions in your country by number of publications, citations, or authors. You can see who the top players in your country are, and how your institution ranks among them.

United States

Source: Scopus data up to 03 Sep 2014 2009 to 2013 Spectroscopy

Summary Publications Citations Authors Competencies **Institutions**

Institutions in the United States Export ▾

595 of the 847 Institutions in the United States have publications within Spectroscopy (2009 to 2013):

Institution	Publications ▾	Authors	Citations ▾
1. Purdue University	278 ▲	421 ▼	3,300
2. National Institute of Standards and Technology	242 ▼	303 ▼	4,007
3. Athena University	220 ▼	364 ▼	1,451
4. Harvard University	210 ▲	316 ▲	4,308
5. University of Washington	192 ▼	376 ▲	2,294
6. Massachusetts Institute of Technology	175 ▲	309 ▲	2,162
7. Texas A and M University	168 ▲	244 ▲	1,389
8. University of Michigan	159 ▲	305 ▲	2,182
9. University of Texas at Austin	157 ▲	220 ▲	1,278
10. University of Wisconsin	157 ▼	288 ▲	1,569

- 4 You can view and compare the citation impact of each institution by selecting Citations per Publication or Field-Weighted Citation Impact from the drop-down menu.

You can also get a picture of what's happening worldwide:

1. Select "World" from the "Countries and groups" sections of the entity selection panel.
2. The Institutions tab ranks all institutions worldwide.
3. You can also see the top journals worldwide (under "Publications by journal").

4.3.8 Identify potential collaboration partners

The Institutions and Authors tabs for a country can also be used to identify potential collaboration partners - both institutions and individual researchers.

Say you are looking for collaboration partners in the United States within the field of chemistry:

1. Select United States in the entity selection panel
2. Select Chemistry from the dropdown menu at the top of the page
3. Go the Institutions and Authors tabs to find out who the key players in that country are.

United States

Source: Scopus data up to 31 May 2014 2009 to >2014 Chemistry

Summary Publications Citations Authors Competencies **Institutions**

Institutions in the United States Export ▼

773 of the 835 Institutions in the United States have publications within Chemistry (2009 to >2014):

Institution	Publications ▼	Authors	Citations ▼
1. Athena University	4,459 ▲	4,138 ▲	67,122
2. Massachusetts Institute of Technology	3,828 ▲	3,613 ▲	64,136
3. University of California at Berkeley	3,454 ▼	3,371 ▲	69,757
4. Harvard University	3,180 ▲	4,017 ▲	50,254
5. Stanford University	3,044 ▲	3,056 ▲	57,448
6. University of Texas at Austin	3,012 ▲	2,550 ▲	45,570
7. Georgia Institute of Technology	2,931 ▲	2,651 ▲	41,213
8. Texas A and M University	2,839 ▲	2,400 ▲	36,528
9. University of Michigan	2,828 ▲	3,065 ▲	40,892
10. Pennsylvania State University	2,723 ▲	2,363 ▲	30,978

- For more details on any of the institutions in this list (such as the top authors at that institution or how much it is collaborating internationally), select it from the entity selection panel.
- To identify key players worldwide, select the World in the entity selection panel. You can also view the top institutions and authors in a group of countries (like the European Union, South America or BRICS) or in a group of institutions (like the Russell Group).

4.3.9 See your institution's performance in a specific research area

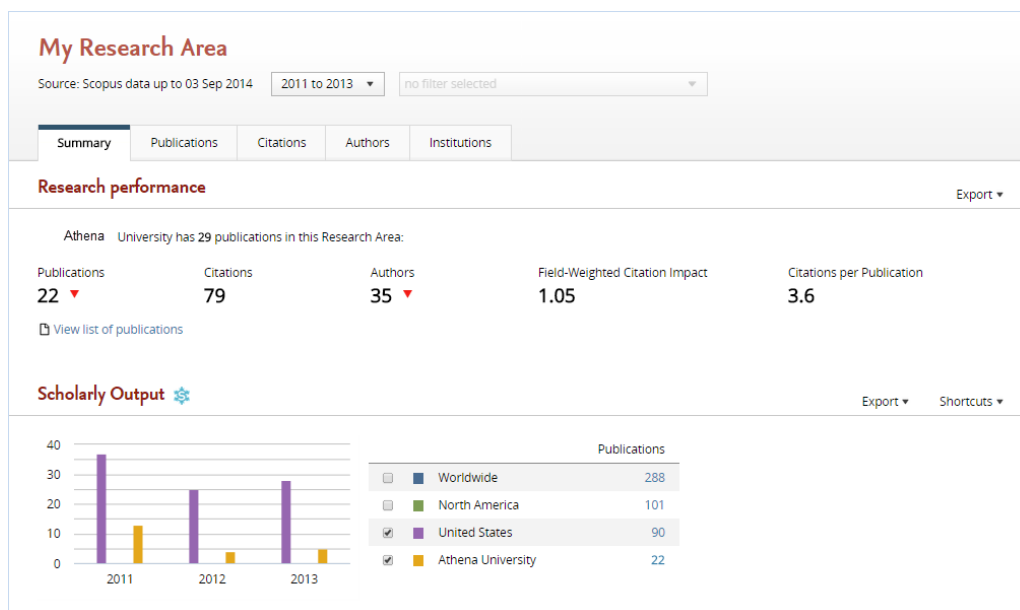
SciVal allows you to define a specific field of research. They can for instance represent a strategic priority of your institution or an emerging area of science. Unlike the fixed, broad categories of the Scopus journal classification, these research areas can be as granular or interdisciplinary as you like.

Once you have defined a research area, you can :

- See how your institution is performing in that field
- Spot national and international trends
- Identify collaboration partners

Say that you are interested in how much research is happening at your institution on neuroinformatics within the field of computer science.

- Click on “Add Research Areas”, then “Define a new Research Area” in the entity selection panel on the left-hand side of the Overview module.
- Define your Research Area using the search term “neuroinformatics”.
- Narrow down your definition by limiting it to publications in computer science journals only.
- Name and save the research area
- You can now select and view the research area in the Overview module.



You can define a whole series of research areas, for instance a list of strategic goals of your institution, and see how your institution is performing in all of these.

1. Define your research areas.
2. Go to Overview and select your institution from the entity selection panel on the left-hand side.
3. The “Publications by Research Area” section under the Publications tab gives you an overview of your institution’s performance in each of the research areas you have defined.

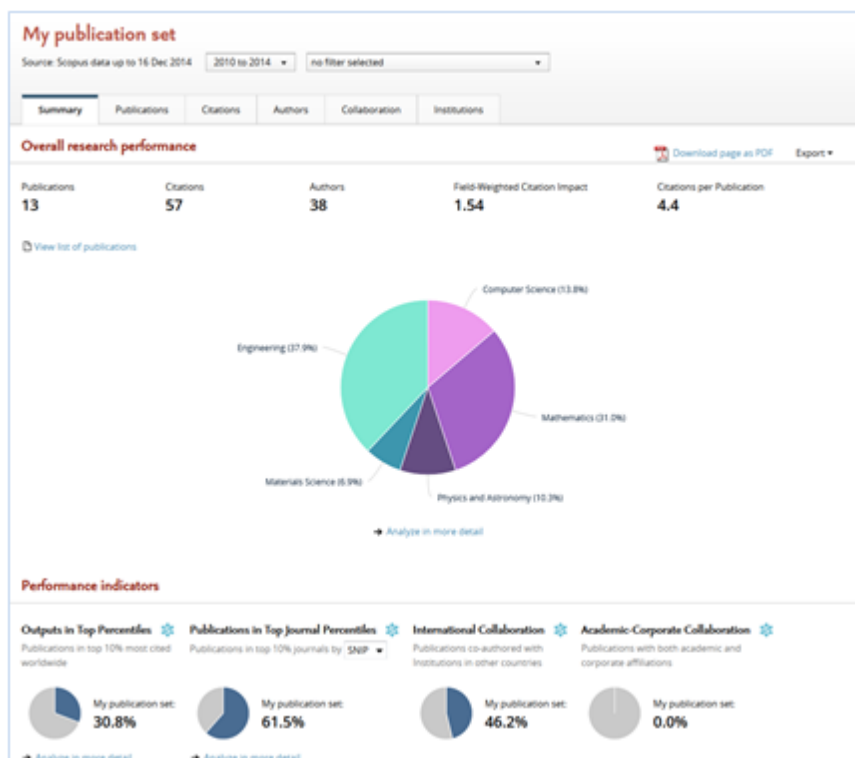
4.3.10 Get instant performance snapshots of your Publication Sets

SciVal gives you the flexibility to define and evaluate your own Publication Sets in the Overview module. Here you can dive deeper to see the authors, intuitions and countries that have contributed to them and the impact they have.

A Publication Set is a fixed set of publications which you can create either by using a subset of a researcher’s career (e.g. most cited publications) or by selecting publications on a particular topic.

To define and view a Publication set:

- Go to the Overview module and click on Publications Sets
- Click on Add Publication Sets
- Select a researcher from the list
- Select the most cited publications of the researcher and save it
- You can now evaluate the research performance of this Publication Set



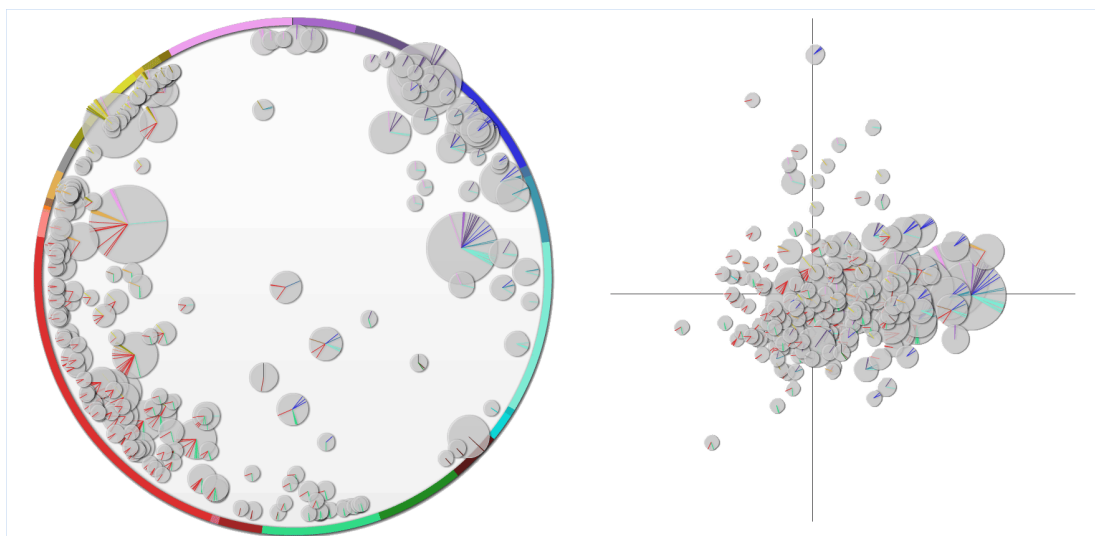
Similarly to other entity types, you can get an instant view of the output of the Publication Set in the Overview module. For example, you can find out to what extent the publications are present in the top 10% most cited publications worldwide. In addition, you can further analyze the Publication Set based on citations, collaboration, authors and institutions.

4.4 Using the Competencies analysis to identify research strengths

4.4.1 What are competencies?

Under the Competencies tab in the Overview module, you can see an analysis of your institution's research strengths, or "competencies" as they are known in SciVal. You can use this to identify or demonstrate areas of research strength at your institution. You may even identify pockets of excellence at your institution that you were not yet aware of.

This analysis can also be used to identify research strengths of any other institution, such as a potential collaboration partner. And you can see the research strengths of your country as a whole, and see what your institution contributes to each of those national strengths.



You can use the Competencies analysis to:

- identify and analyze any institution's or country's interdisciplinary areas of research excellence related to any other institution or country worldwide
- evaluate different strengths of researchers and research teams based on publication output, impact and innovativeness
- identify institutions and individual researchers for collaboration to strengthen your leadership position

How is the Competencies analysis different from the traditional ways of evaluating research?

The Competencies analysis gives you an alternative way of looking at research performance. The methodology is based on citation patterns (co-citation analysis), as opposed to the traditional publication and citation rankings, which are based on journal-based classifications. For example, traditionally, if a publication was published in the journal *Water Treatment*, it would be considered to be 100% about that field. The Competencies methodology might find that this same publication has 20% of its references to computer sciences and 10% to economics fields, giving a more accurate view of the publication and the interdisciplinary fields to which it contributes.

Using this methodology, SciVal competencies helps you identify:

- Top researchers in granular fields of research, who may not be visible in traditional publication and citation rankings due to high thresholds.
- Emerging areas of science. Since SciVal competencies are based on 5 years of data, it helps you see current research topic trends for an institution or country. If a research topic shows positive significant growth over 5 years, it may be an area that you want to focus on.
- Multidisciplinary research areas. In a traditional journal-level classification, publications are clustered into subject categories based on the journals in which they have been published. Interdisciplinary publications could be ignored if published in single-disciplinary publications. In SciVal, publications are clustered based on co-citation patterns. In other words, we apply an article-based classification. Since citations often cross multiple scientific disciplines, SciVal is able to map performance at an interdisciplinary level.

See also [How SciVal identifies competencies](#)

4.4.2 How can you use competencies?

You can use the Competencies analysis to:

- identify and analyze any institution's or country's interdisciplinary areas of research excellence

- evaluate different strengths of researchers and research teams based on publication output, impact and innovativeness
- identify institutions and individual researchers for collaboration to strengthen your leadership position

Identify or demonstrate research strengths of your institution. You can use the Competencies analysis to identify or demonstrate areas of research strength at your institution. You may even identify pockets of excellence at your institution that you were not yet aware of.

For each competency identified for your institution, you can examine:

- What is your institution's unique contribution to this field?
- Which researchers at your institution are most active in this field?
- What are the overall trends – is this an emerging or declining field?
- Which institutions are most active in this field, and how is your institution positioned?
- Who are your institution's collaboration partners in this field? Who are you not yet collaborating with?

To view the Competencies analysis for your own institution:

1. Go to the Overview module
2. Select your institution from the left-hand entity selection panel
3. Click on the Competencies tab

ID	Keywords	Most published authors	Publications	Citations
DC #1	Movement; Muscles; Stroke	Kuiken T.A., Rymer W.Z., Dewald J.P.A.	438 ▲	2,687
DC #2	Finite element method; Cracks; Models	Schatz G.C., Belytschko T.B., Mirkin C.A.	465 ▲	7,237
DC #3	Research; effect; Emotions	Galinsky A.D., Forbus K.D., Leonard W.R.	378 ▲	2,147

View current collaboration partners and identify potential new partners. For each area of research identified as a competency of your institution, you can see which institutions your institution is collaborating with in that field. You can also see which institutions you are not yet collaborating with.

To see the list of collaborating and not yet collaborating institutions:

1. Go to the Overview module and select your institution from the left-hand entity selection panel
2. On the Competencies tab, click on a competency in the table (or on the Circle or Matrix graph) to open a modal window with more details about the competency
3. In the modal window, select the Institutions tab
4. Click on "View another set of institutions" and select either "Collaborating Institutions" or "Not yet collaborating Institutions"
5. Select the Compare tab to compare an institution's contribution to the field to your own institution's contribution. Here you can see where you overlap and also what your unique

contributions to the field are.

Find potential new hires. For each area of research identified as a competency of your institution, you can see who the top authors within that field are by number of publications. This can be useful to find potential new hires to strengthen your institution's competencies. You can also identify specific researchers at other institutions for potential collaboration.

1. On the Competencies tab, click on a competency in the table (or on the Circle or Matrix graph) to open a modal window with more details about the competency
2. In the modal window, select the Authors tab
3. Click on "View the top authors for a different set of institutions" and select "Other contributing Institutions" to see the top authors in this field at institutions other than your own institution

Identify research strengths of another institution. You can view not only the research strengths of your own institution, but also the strengths of any other institution. For instance, you can identify pockets of excellence of an institution that you are considering as a potential collaboration partner.

To view the Competencies analysis for your own institution:

1. Go to the Overview module
2. Select an institution from the left-hand entity selection panel
3. Click on the Competencies tab

View nationwide research strengths. You can also use the Competencies analysis to see the research strengths of your country as a whole (or any other country). This allows you to compare the strengths of your institution to the nationwide strengths. To what extent your institution is your institution aligned with national research priorities?

To view the Competencies analysis for your own institution:

1. Go to the Overview module
2. Select a country from the left-hand entity selection panel
3. Click on the Competencies tab

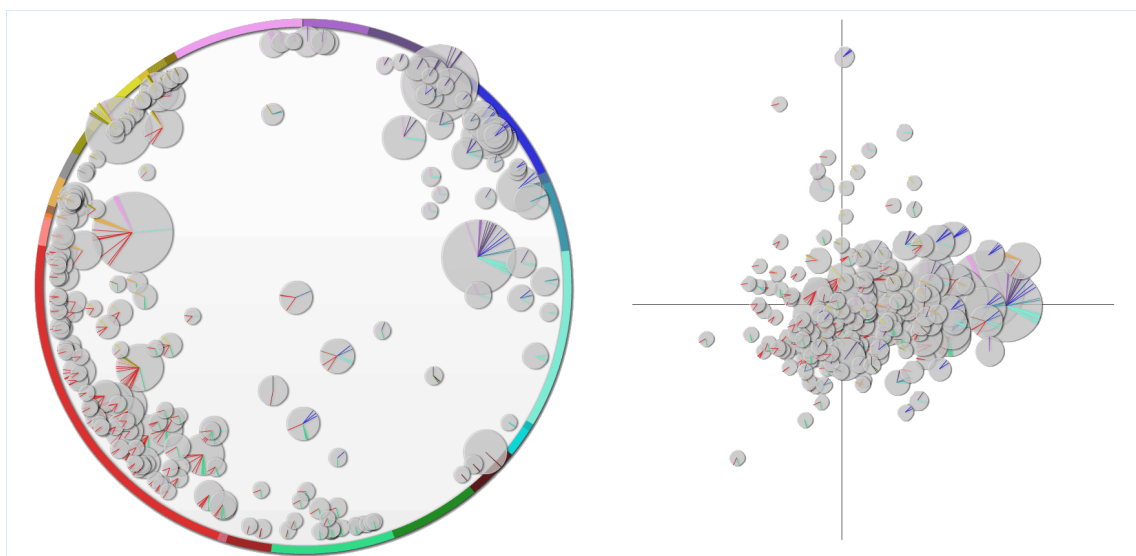
4.4.3 Working with competencies

View the Competencies analysis for your institution. To view the Competencies analysis:

1. Go to the Overview module and select your institution (or any other institution or country) from the left-hand entity selection panel
2. Click on the Competencies tab
3. Select the Table view to see the list of research strengths for your selected entity

Summary	Publications	Citations	Authors	Collaboration	Competencies
Browse competencies Search for competencies					
Browse competencies Export ▼ Shortcuts ▼					
Competencies of Athena University in 2013 ▼ based on an analysis of publications over the period 2006-2010					
Table Circle Matrix Filter competencies by ▼					
ID	Keywords	Most published authors	Publications	Citations	
DC #1	Movement; Muscles; Stroke	Kuiken T.A., Rymer W.Z., Dewald J.P.A.	438 ▲	2,687	
DC #2	Finite element method; Cracks; Models	Schatz G.C., Belytschko T.B., Mirkin C.A.	465 ▲	7,237	
DC #3	Research; effect; Emotions	Galinsky A.D., Forbus K.D., Leonard W.R.	378 ▲	2,147	

View your competencies in a graph. In addition to the table view, there are two different types of visualizations available to you: the Circle and Matrix graphs.



The Circle graph plots the competencies on a big wheel representing the world of science. This allows you to spot in which subject areas your institution's competencies are concentrated, and how interdisciplinary they are. The closer a competency to the center of the wheel, the more interdisciplinary that competency is.

- The outer circle represents all the published articles in Scopus across the main Scopus journal categories. The size of the pie represents the relative publication output in a specific journal category. The Circle plots the competencies on a big wheel representing the world of science. This allows you to spot in which subject areas your institution's competencies are concentrated, and how interdisciplinary they are. The closer a competency to the center of the wheel, the more interdisciplinary that competency is.
- Each bubble represents a competency for the selected institution/country.
- Bubble size of the competency represents the volume of publications published worldwide, indicating the size of the field. The larger the circle, the more publications are in that competency. The smaller the bubble, the more specialized the field it represents.
- The colored lines in the competency point to the related journal categories.
- Competencies positioned towards the middle indicate an interdisciplinary mix. Competencies

positioned towards the edge of the circle indicate a strong distinctive competency in the color-coded subject area.

The Matrix graph plots the share of your institution within each competency against the growth of that field of research. This allows you to, for instance, spot emerging fields of research where your institution isn't yet playing a leading role.

- The size of a circle is based on the number of publications published by the institution/country. The larger the circle, the more publications are in that competency.
- The colored lines in the circles represent the subject areas and disciplines of the publication clusters in the competency.
- The horizontal position shows the leadership position of the institution/country within that competency. The vertical position shows how fast the number of publications in that competency is growing.

The Matrix view can help you answer high-level strategic questions such as:

- How stable are our competencies?
- Which competencies require investment of our time and resources?
- Is our institution or country maintaining the lead in a certain research field?

Filter the list of competencies. Click on "Filter by" to filter the list of competencies by a specific journal category. This is useful if you are interested only in a single subject area (for instance chemistry or engineering).

You can also filter by other criteria. For instance, you could choose to view only competencies within research areas that are growing over time in terms of publication output.

The screenshot shows the 'Filter competencies by' dropdown menu in the SciVal Matrix view. The menu is open, displaying two main sections: 'Journal Categories' and 'Type of competency'.

Journal Categories:

- ☐ Mathematics (6)
- ☐ Physics and Astronomy (20)
- ☐ Chemistry (20)
- ☐ Chemical Engineering (2)
- ☐ Materials Science (14)
- ☐ Engineering (21)
- ☐ Energy (0)
- ☐ Environmental Science (1)
- ☐ Earth and Planetary Sciences (4)
- ☐ Agricultural and Biological Sciences (1)
- ☐ Biochemistry, Genetics and Molecular Biology (46)
- ☐ Immunology and Microbiology (5)
- ☐ Veterinary (0)
- ☐ Medicine (105)
- ☐ Pharmacology, Toxicology and Pharmaceutics (1)
- ☐ Health Professions (4)
- ☐ Nursing (1)
- ☐ Dentistry (2)
- ☐ Neuroscience (18)

Type of competency:

- ☐ Distinctive competency (32)
- ☐ Emerging competency (184)
- Leadership of this Institution**
 - ☐ Publication leader (127)
 - ☐ Reference leader (75)
 - ☐ Innovation leader (77)
- Publication share of this Institution**
 - ☐ Growing share (117)
 - ☐ Declining share (99)
- Size of field (worldwide)**
 - ☐ Relatively large field (105)
 - ☐ Relatively small field (111)
- Trend of field (worldwide)**
 - ☐ Growing field (143)
 - ☐ Declining field (73)

Search for competencies. You can search for a specific institution or researcher in order to find competencies where that institution or researcher is active. For instance, you can search for a specific researcher at your institution to find the competencies to which that person has contributed publications. You can also search through the competencies by journal category (subject area) or journal.

1. In the Overview module, click on the Competencies tab, then click on "Search for competencies"
2. Choose to search by author (researcher name), institution, journal category or journal
3. Type the search string and use the dropdown menu marked "Limit search to:" to select whether you want to search only within your own institution, only within your own country or region, or worldwide
4. Click Search

Summary Publications Citations Authors Collaboration **Competencies**

Browse competencies Search for competencies

Search competencies Shortcuts ▼

Competencies of Athena University in 2010 based on an analysis of publications over the period 2006-2010

Search for competencies of Athena University (2010) by contributing author, keyword, Journal Category or contributing Institution.

☒ Author ☐ Keyword ☐ Journal Category ☐ Institution

last name initials Search

e.g. 'Smith' or 'Martinez' e.g. 'p' or 'p.j.'

Limit search to:
Northwestern University ▼

Analyze your competencies in detail. Click on a competency in Table, Circle or Matrix to open a pop-up window where you can explore that competency in detail. For instance, this shows you:

- Which institutions are most active in this field, and how is your institution positioned?
- Who are your institution's collaboration partners in this field? Who are you not yet collaborating with?
- Which researchers at your institution are most active in this field?
- What is your institution's unique contribution to this field?
- What are the overall trends – is this an emerging or declining field?
- How did SciVal identify this field as a competency of your institution?

Competency DC #5

Carcinoma, Hepatocellular; Uterine Artery Embolization; Leiomyoma

Export Shortcuts ▼

Summary Trends Journal Categories Institutions Authors Compare Methodology

Based on an analysis of publications over the period 2006-2010, SciVal has identified DC #5 as a distinctive competency of Athena University

[See why this field is a distinctive competency of Athena University](#)

At the top of the window are the top three keywords for the field overall. Below that, on the Summary

tab, you can see the top 10 keywords for the publication output of your institution in this field. The top 10 authors, journal categories and journals for your institution are also shown. You can switch to "all contributing institutions worldwide" to see the top 10 keywords, authors, journal categories and journals for the entire field.



Combine competencies. Are two or more competencies actually part of the same area of research strength at your institution? Then you can combine them into a self-defined "research area".

1. In the Overview module, go to the entity selection panel on the left-hand side of your screen.
2. In the Research Areas section, click on "Add Research Areas", then "Define a new Research Area"
3. A popup window now opens where you can define a research area. Select the "Use competencies" tab.
4. Drag the competencies that you want to combine from the left side to the right side of the screen. When you are done, click Next Step.
5. Name and save the research area.
6. The new research area will now be computed and shown in Overview.

For more information on self-defined research areas, see [About research areas in SciVal](#)

4.4.4 How SciVal identifies competencies

The Competencies analysis identifies research strengths of your institution – interdisciplinary areas of research where your institution is a global leader.

The methodology behind it is based on citation patterns (co-citation analysis) instead of a traditional journal classification. Highly cited publications are clustered based on co-citation counts. These publication clusters are then grouped together into competencies. Competencies are classified as either *distinctive* or *emerging* competencies.

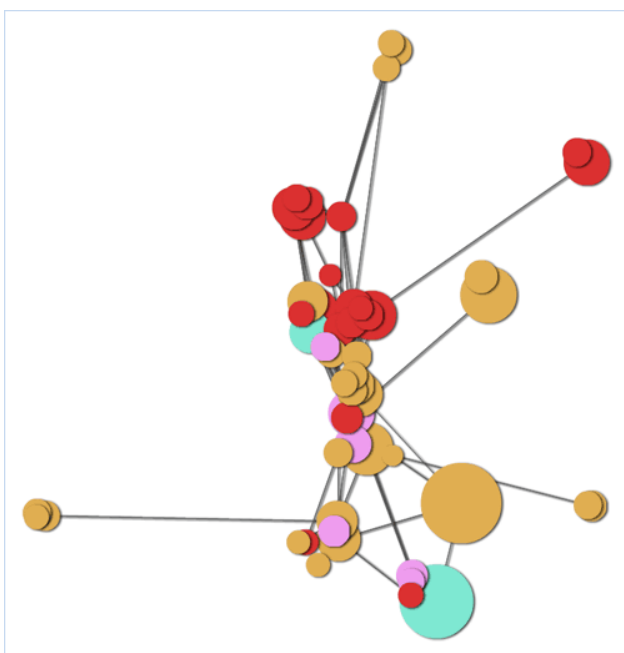
The analysis is always based on five years of data. For example: If you select 2013, the analysis is based on data from 2009 up to and including 2013.

[View a presentation explaining the Competencies methodology](#) (PowerPoint, 3MB)

For a detailed, step-by-step explanation of how a particular specific competency was identified:

1. Go to the Overview module and select the Competencies tab
Click on a competency in the table (or on the Circle or Matrix graph) to open a modal window with details about that competency
2. In the modal window, select the Methodology tab for a full explanation

3. Scroll down to the bottom of the page and click the "View the graph at full size" link to see a graph showing the publication clusters that make up the competency and how these clusters are connected.



How are competencies created in SciVal?

SciVal performs a co-citation analysis on all the publications published in a specific year (e.g. 2013). This citation analysis groups the references into publication clusters representing specific areas of research. These clusters are then grouped to become competencies.

Competencies are created in three steps:

Step 1. Create publication clusters

Researchers organize themselves around highly specific research topics in which they cite each other's work. To identify these research topics, SciVal performs a co-citation analysis on all the publications published in a specific year (e.g. 2013). This analysis groups the references cited by those publications into "publication clusters" that represent specific areas of research. Publication clusters are groups of highly cited publications and the current publications that cite them.

Once the clusters have been identified, all publications published in the past 5 years (e.g. 2009-2013)

are assigned to publication clusters based on their references.

Step 2. Determine which publication clusters are strengths

Next, SciVal determines which publication clusters represent the individual institution's or country's strengths. These are the clusters where the institution/country as a whole has a significant presence, in terms of publication contribution, compared to other institutions/countries worldwide.

To determine what can be considered a significant presence, SciVal first calculates the Relative Publication Share (RPS) of each institution/country for each of the approximately 100,000 clusters. RPS is the publication output of the institution/country (over a 5-year period) divided by the publication output of the institution/country ranked #1 worldwide within a particular competency. SciVal uses a different RPS value depending on whether the competency is for an institution or a country:

Institutions	<p>For a cluster to be selected for a competency, it must have a Relative Publication Share (RPS) greater than a specified threshold. The threshold is determined by size of the specific institution/country on a sliding scale between 0.2 and 0.6.</p> <p>The threshold may vary from year to year, since it is based on a comparison with the 5-year output of Stanford University, which has been selected as the benchmark because it is representative of a large institution. The following is the formula for determining an institution's threshold; note since that the number must be between 0.2 and 0.6, the result is rounded up or down accordingly.</p> <p>Threshold = $0.112 + (0.494 * \sqrt{((\text{institution's 5-year publication output}) / (\text{Stanford's 5-year publication output}))})$</p> <p>Example: Chiba University</p> <p>Chiba University's threshold (in 2009) is 0.34. This is because its 5-year output is 8,406 publications and Stanford's 5-year output is 38,733 publications:</p> <p>$0.34 = 0.112 + (0.494 * \sqrt{(8,406 / 38,733)})$</p>
Countries	<p>For countries, the U.S. has been selected as the benchmark because it is representative of a large country.</p> <p>The RPS of a country is calculated as part of a formula which determines the number of clusters to be selected for competencies:</p> <p>Number of clusters = (number of publications belonging to the country / number of U.S. publications) * number of U.S. publication clusters with RPS > 1.0</p> <p>Example: Denmark</p> <p>Number of Denmark publications: 69,124</p> <p>Number of U.S. publications: 2,406,043</p> <p>Number of U.S. clusters with RPS > 1.0 : 64,516</p> <p>Number of clusters to include in the competencies for Denmark: 1,854</p> <p>$1,854 = (69,124 / 2,406,043) * 64,516$</p>

Step 3. Group publication clusters into competencies

The publication clusters identified in Step 2 are then grouped together to form competencies that represent an individual institution's or country's strengths. The clusters are grouped together when they share one or more publications from the institution/country.

The competencies represent research areas where the (entire!) institution or country has obtained a leading position in terms of number of publications, number of highly cited publications or innovativeness - the recentness of cited publications. These leadership criteria are described under the Methodology tab for each of the competencies.

How are competencies assigned to journal categories?

Each competency is assigned to one or more ASJC journal categories (subject areas) based on the journal categories of the publication clusters that make up the competency. Each cluster is

assigned to the dominant journal category in that cluster.

What is the difference between distinctive and emerging competencies?

Competencies be classified as either *distinctive* or *emerging* competencies, depending on size of the field and whether or not the leadership criteria have been met.

In order to classify as *distinctive*, a competency must meet the size criterion:

- it is a significantly large field of research.

This means that the worldwide publication output in the field over the five-year period exceeds a specified threshold. The threshold is related to the size of the institution/country. For a large institution like Harvard or Yale, the fractionalized publication count of the publication output in the field must exceed 500. Smaller institutions are given a lower threshold.

And it must also meet at least one of the three leadership criteria:

- the institution/country is ranked #1 worldwide in this field of research in terms of publication output.

The Relative Publication Share of the institution/country is greater than 1, meaning that it is has a larger fractionalized publication count than any other institution/country in that field.

- the institution/country is ranked #1 worldwide in this field of research by number of highly cited publications.

The Relative Reference Share of the institution/country is greater than 1, meaning that it is has a larger number of "reference publications" (highly cited publications) than any other institution/country in that field.

- the institution/country is ranked #1 worldwide in this field of research in terms of innovativeness - the recentness of cited publications.

This is determined using the State of the Art value, an indicator of the recency of the work cited by the institution/country relative to the average recency of work cited in this field. To meet this criterion, the institution/country must have a larger State of the Art value than any other institution/country in that field. In addition, it must also have a Relative Publication Share larger than 0.8, meaning that the publication output of the institution/country should be the largest in the field, or else at least 80% of the output of the institution/country ranked #1.

Competencies that do not meet the criteria for distinctive competencies are classified as *emerging*. Emerging competencies may not meet any of the criteria, or it may meet the field size criterion but not any of the leadership criteria, or it may meet at least one of the leadership criteria but not the size criterion.

A full explanation of why a particular competency is classified as distinctive or emerging is given on the Methodology tab.

5 The Benchmarking module

5.1 What is the Benchmarking module?

The Benchmarking module lets you easily evaluate your research performance in comparison to others. How does your institution compare to others in your region, country or the world?

Choose from a broad range of metrics. You can use 15 different metrics to compare the performance of different types of entities, such as institutions, research teams and individual researchers.

[View a short video about the Benchmarking module](#)

[Which metrics are available to use in SciVal?](#)

5.2 Working with the Benchmarking module

5.2.1 Selecting metrics

Select the metric you want to view. By default, the metric Scholarly Output (number of publications) is shown. To view a different metric, click on the “y-axis” button along the top of the chart and select it from the list. Then click on the “Choose as y-axis” button.

[Which metrics are available to use in SciVal?](#)

Choose metric options. Each metric has different options, but all let you choose the types of publications to include. For instance, you can choose to include only articles and reviews, or only conference papers.

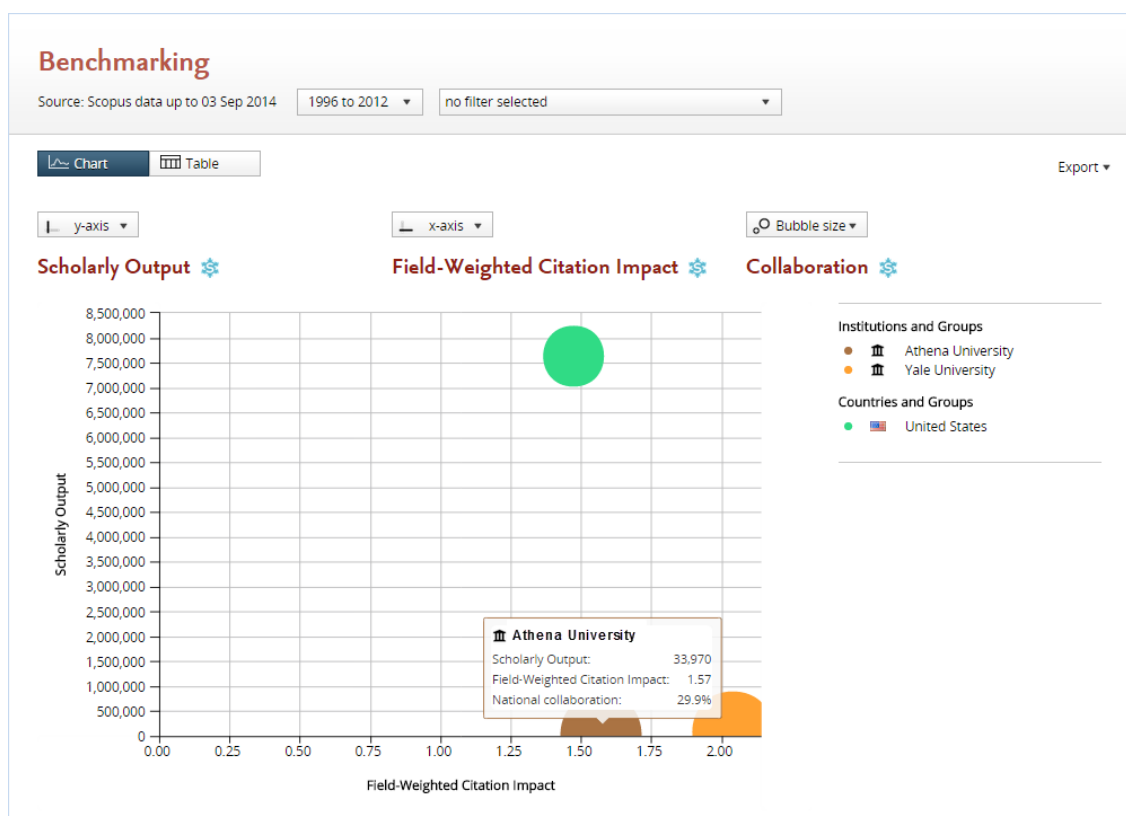
Citation metrics also let you choose whether or not you want to include self-citations.

Plot metrics against each other. You can plot two or even three different metrics against each other. Two metrics are shown as a scatter plot. Three metrics are shown as a bubble chart, where the size of the bubbles (circles) on the chart indicates the value of the third metric.

Select a second metric from the “x-axis” button. This will replace “Publication Year” with that metric. If you want, you can select a third metric from the “bubble size” button.

Let's compare Athena, Yale and the United States on three metrics: Scholarly Output, Field-Weighted Citation Impact and International Collaboration.

1. Select Athena University, Yale and the United States from the entity selection panel on the left-hand side of the screen.
2. Click on the “y-axis” button and select Scholarly Output, if this wasn't already selected
3. Click on the “x-axis” button and select Field-Weighted Citation Impact.
4. Click on the “Bubble size” button and select Collaboration. In the options for this metric, select “International collaboration”.
5. The chart now shows that the Field-Weighted Citation Impact of Athena is lower than Yale's, but higher than the United States average. The amount of international collaboration is slightly lower than Yale's.

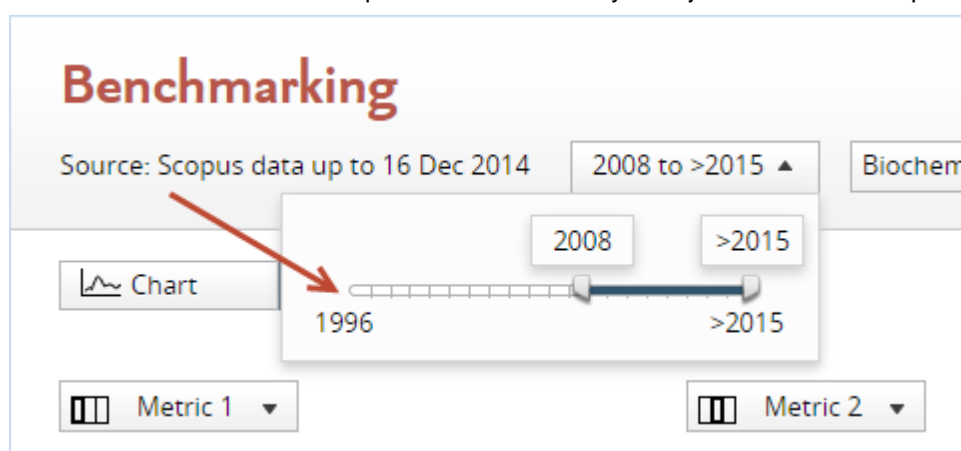


You don't have to select two *different* metrics necessarily. Instead, you can also select the *same* metric for both "x-axis" and "y-axis", but with different options. For instance, you could compare outputs in the top 1% percentile to outputs in the top 10% percentiles, or you could compare international collaboration to national collaboration.

5.2.2 Selecting a year range

You can view publication data from 1996 until the present. Use the time period selector at the top of the page to select the start and end year.

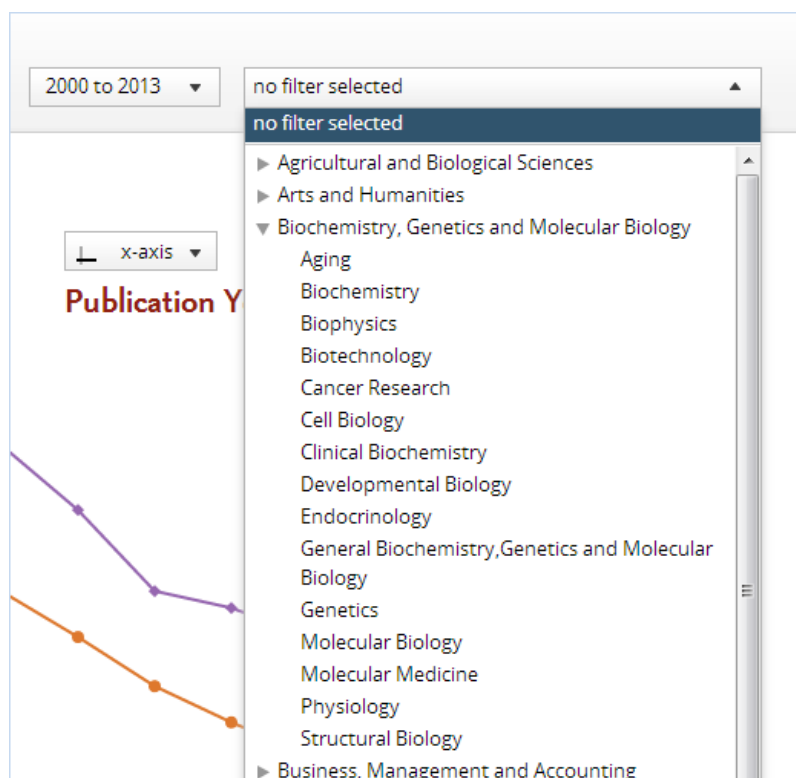
You may want to exclude the current year because, by the end of the current year, Scopus has only received and indexed a certain portion of the current year's journals from other publishers.



5.2.3 Filtering by journal category

Interested in evaluating or comparing your performance within a specific discipline? Choose from 27 categories and 334 subcategories in the Scopus journal classification. Or use a [different journal classification](#).

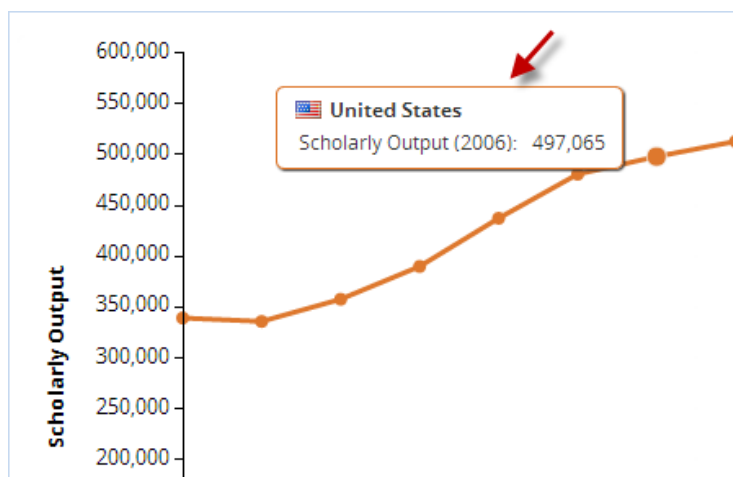
1. Use the filter dropdown at the top of the page to select a specific journal category.
2. The subcategories appear when you click on the arrow in a category.



5.2.4 Working with the chart

Chart legend. Each entity plotted on the chart has a different color and symbol. This is shown in the legend shown below to the chart. You can hide a particular entity from the chart by clicking on the "eye" icon next to that item in the legend. Below the legend, you can find the Metrics detail option which gives you further information on the metrics you selected.

Data pop-ups. Hover over a data point on the chart and a small pop-up will appear with the metrics you have selected and their values for that year.



Export the chart. You can export the chart to an image file by selecting “Export the chart as an image file” from the Export menu in the top right corner. This will export the chart in several different file formats at once (JPEG, PNG, SVG and PDF). You can also export the underlying data by choosing “Export the data to a spreadsheet file”.

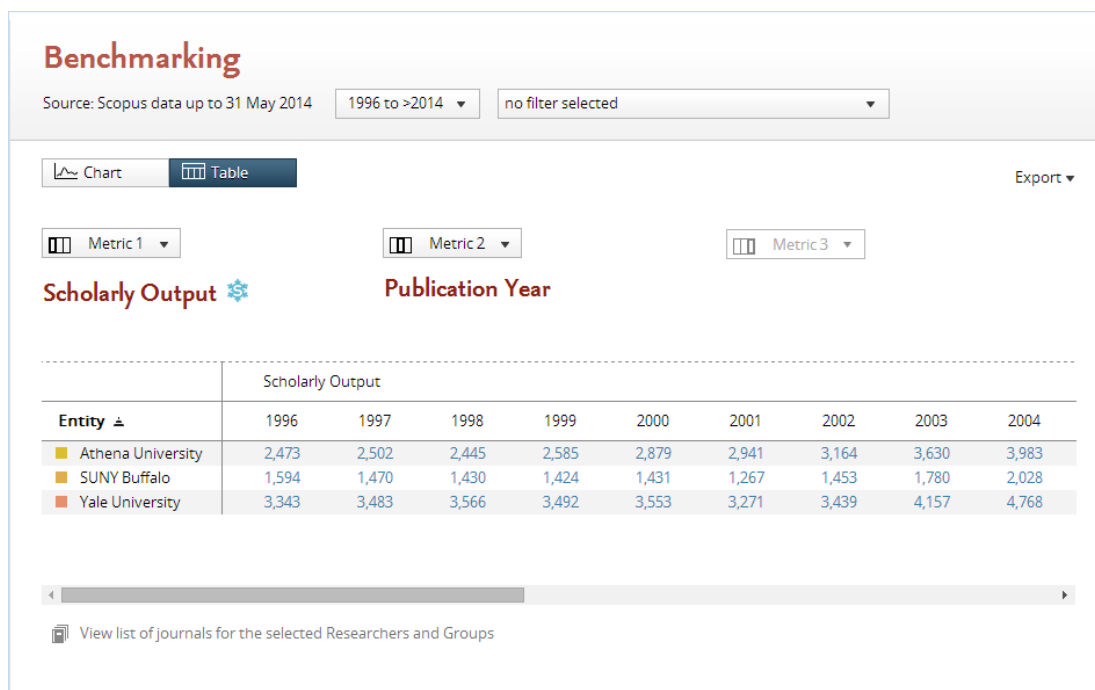
5.2.5 Working with the table

When viewing a metric by year, you can scroll the table horizontally to see the values for all years in the selected year range.

View the overall value. When viewing metrics over a year range, the rightmost column will show the overall value for that metric. This can be the total number of publications for the selected year range (for Scholarly Output for instance) or the overall value for the selected year range (for Field-Weighted Citation Impact for instance).

View the underlying publications. When numbers of publications are shown in the table, you can click on any number to view the actual list of publications. Numbers of publications are shown for Scholarly Output or Cited Publications, for example.

Export the data. To export the data in the table to a spreadsheet file, choose “Export the data to a spreadsheet file” from the Export menu in the top right corner. You can then view and manipulate the data in an external spreadsheet application such as Microsoft Excel.



5.2.6 View the list of journals

When you have selected one or more researchers or groups of researchers in Benchmarking, you can view the list of journals for those entities.

Click on "View list of journals for the selected Researchers and Groups" below the chart or table in Benchmarking to open the "List of journals" window.



This shows you a breakdown by academic journal of the selected researchers' and groups' publication output and impact:

List of journals ✕

Year range: 2000 to >2014

View the Scholarly Output of the selected entities, by journal: Export Shortcuts

Journal	SNIP	Neurology	Surgery
New England Journal of Medicine	14.971	5	0
JAMA - Journal of the American Medical Association	9.844	12	3
Nature	8.647	6	0
Science	8.064	8	0
The Lancet Neurology	7.726	8	0
Nature Genetics	7.211	7	0
The Lancet Oncology	6.796	1	1
Cell	6.579	6	0
Annals of Internal Medicine	6.502	0	2
The Lancet	6.197	3	1
Nature Medicine	5.206	4	2
Journal of Clinical Oncology	4.694	6	7
Journal of the American College of Cardiology	4.650	0	3
Archives of Internal Medicine	4.563	2	1
Circulation	4.273	3	3

As usual the publication output is limited to the selected year range and subject area (the selected journal category filter, if any). The journals are arranged by highest [SNIP](#) or [SJR](#) value.

View citation impact. By default, publication output is shown, but you can also view citation impact. Use the drop-down menu at the top to switch from Scholarly Output (number of publications) to either Citation Count or Field-Weighted Citation Impact.

Export the list of journals. Go to the Export menu and select "Export the list of journals to a spreadsheet file". This will export the SNIP and SJR values of each journal, as well as the Scholarly Output, Citation Count and Field-Weighted Citation Impact for each researcher or group's output in that journal.

Define a research area. You can quickly define a new research area based on this list of journals. Use the link in the Shortcuts menu to start the define process for a research area with the list of journals preselected. If desired, you can then add additional journals, remove journals or filter the research area by a specific institution or country for instance.

This enables to you to create a journal profile for a group of researchers and benchmark the group against that profile. You can use this to compare the journal profile of one group of researchers to the journal profile of another group. Or you can see how the citation impact of your researcher group compares to the impact of all researchers publishing in the same set of journals.

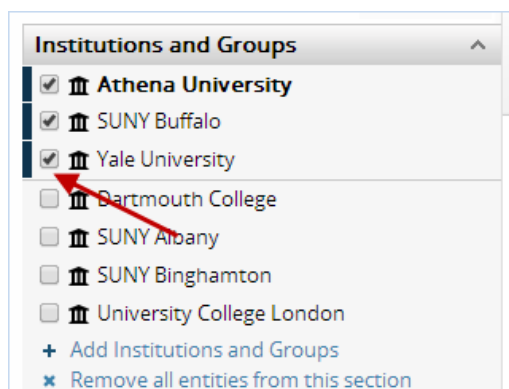
5.3 How can you use the Benchmarking module?

5.3.1 Compare your institution to others

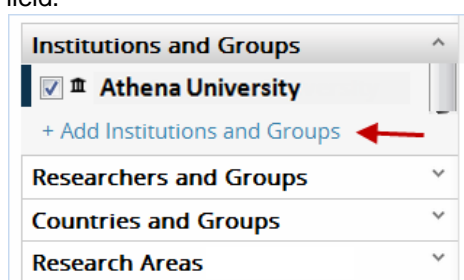
How does your institution compare to peer institutions?

Let's say that your institution, Athena University, wants to compare its research performance with SUNY Buffalo, Yale and Dartmouth.

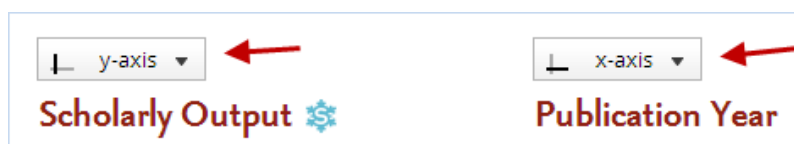
1. Start by setting up the list of institutions, using the entity selection panel on the left side of your screen. Make sure your institution and the peer institutions are all selected (checked off) in the entity selection panel.



2. If an institution is not listed, click “Add Institutions and Groups” and start typing the name of that institution. Then select the institution from the list of search results that appears below the text field.



3. By default, you will view Scholarly Output by publication year. This shows you the total research output of your selected institutions over a period of time.
4. Use the buttons along the top of the chart to select different metrics. Use the “y-axis” button to change from Scholarly Output to another metric. To compare two different metrics, select a second metric from the “x-axis” button.



5.3.2 Benchmark your institution against the national average

Field-Weighted Citation Impact is a good metric to use when you want to compare your institution's research performance to the national average. This is because Field-Weighted Citation Impact adjusts for differences in citing behavior across disciplines. A score of 1.00 means citations are as expected based on the global average. More than 1.00 means that citations are more than expected. Less than 1.00 means the citations are less than expected.

1. Select Field-Weighted Citation Impact from the “y-axis” button.
2. Make sure your institution and your country are selected in the entity selection panel on the left side.
3. If your country is not listed in the entity selection panel, click “Add Countries and Groups” and start typing the name of that country. Then select the country from the list of search results that appears below the text field.

Let's say that you want to compare your institution, Athena University, to the national average. The Field-Weighted Citation Impact for Athena was 1.83 in 2011. This means citations were 83% higher than expected based on the global average. When plotted against the United States and Yale, we can see that Athena's Field-Weighted Citation Impact is higher than the US national average, but it is slightly lower than Yale.

Other metrics that can be used to compare your institution to the national average include Outputs in Top Percentiles (by percentage), and Publications in Top Journal Percentiles (by percentage), and Collaboration (by percentage).



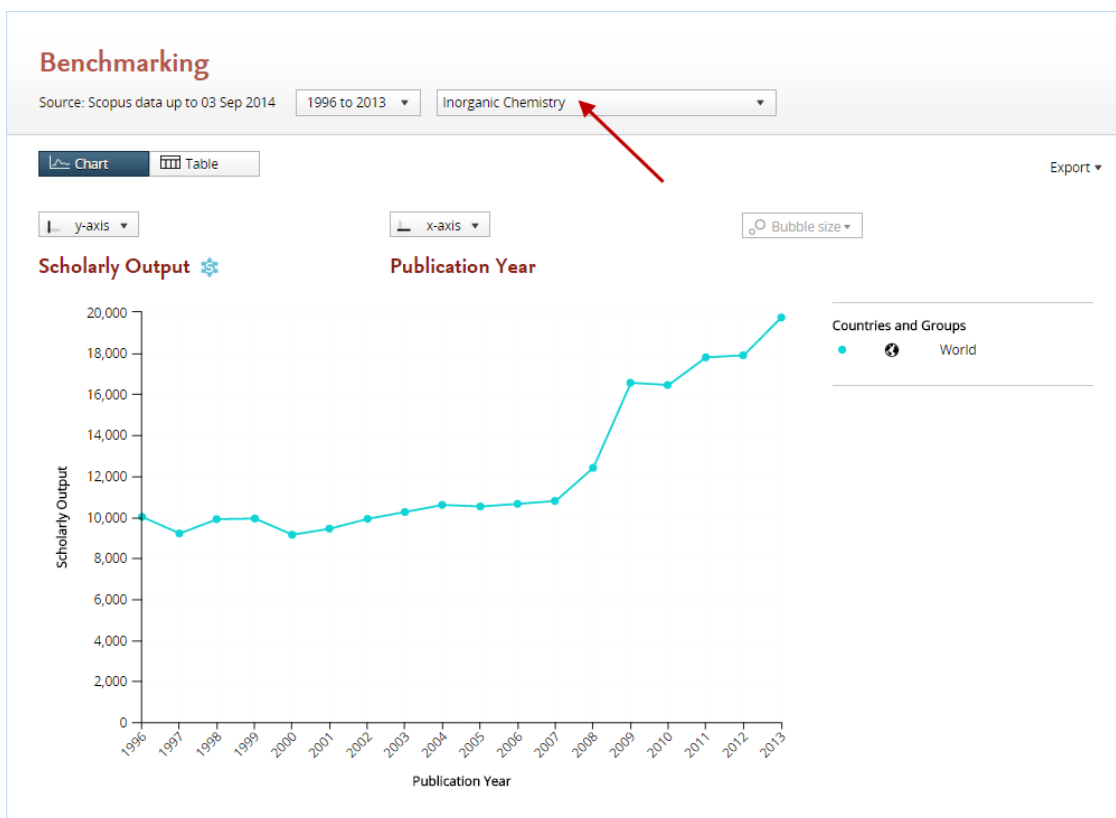
5.3.3 Analyze developments in a field over time

You can view metrics for a specific field of research over time. This lets you analyze developments in that field, such as whether the field is emerging, declining or levelling off.

You can use either journal categories or self-defined research areas. Journal categories are categories in the Scopus journal classification. They represent broad areas of science, such as chemistry or engineering. Self-defined research areas can be more granular or interdisciplinary.

To use a journal category:

1. Choose the journal category from the filter selector at the top of page.
2. Select the World from the entity selection panel.
3. In addition to the World, you can also select your country or your institution. This lets you compare your national or institutional performance to the international trend.
4. Select Scholarly Output from the “y-axis” button and “Publication Year” from the “x-axis” button. You can now see the year-by-year publications trend in this journal category.



5. Try some other metrics, like Field-Weighted Citation Impact, Collaboration or Outputs in Top Percentiles.

SciVal also allows you to define your own research areas and view these in the Benchmarking module.

1. Use the entity selection panel on the left-hand side to select a previously defined research area.
2. You can also define a new research area. In the entity selection panel, click on "Add Research Areas", then "Define a new Research Area".
3. Select the research area in Benchmarking to see the worldwide output in that field.
4. You can select multiple research areas to compare the output in one research area to the output in another area.

5.3.4 Identify suitable benchmark institutions

If you have access to the Overview module, you can make use of it to identify suitable benchmark institutions for your institution. These are institutions that you can use to compare your own institution against, in order to evaluate how well your institution has performed.

Say you are looking for benchmark institutions for Athena University within the United States in the field of chemistry.

1. In the Overview module, select the United States and filter by chemistry.
2. Go to the Institutions tab. This will now list the top U.S. institutions by number of publications in chemistry journals.

United States

Source: Scopus data up to 25 Oct 2013 2010 to 2013 Chemistry

Summary Publications Citations Competencies **Institutions**

Institutions in the United States

Below is a list of Institutions in the United States: Export ▼

Institution	Publications	Citations	Authors
1. Athena University	3,179 ▲	30,723	3,399 ▲
2. Massachusetts Institute of Technology	2,751 ▲	29,481	2,882 ▲
3. University of California at Berkeley	2,380 ▲	31,824	2,549 ▲
4. Harvard University	2,287 ▲	22,439	3,137 ▲
5. University of Texas at Austin	2,181 ▲	21,342	2,059 ▲
6. Stanford University	2,168 ▲	27,245	2,367 ▲
7. Texas A and M University	2,053 ▲	15,333	1,877 ▲
8. Georgia Institute of Technology	2,052 ▼	19,484	2,075 ▲
9. University of Michigan	1,977 ▲	18,353	2,408 ▲
10. Lawrence Berkeley National Laboratory	1,914 ▲	21,280	1,816 ▲

3. You can now select one or more institutions from this list that you would like to match or exceed in terms of research performance.

5.3.5 Compare your institution against collaborating institutions

You can use the Overview or Collaboration modules to find the top collaborating institutions of your institution. You can then compare these institutions in the Benchmarking module.

1. Go to the Overview module and select your institution.
2. Go to "Top collaborating institutions" under the Collaboration tab
3. Choose "Benchmark these institutions" from the Shortcuts menu.

Top collaborating Institutions Export ▼ Shortcuts ▲

by number of publications co-authored with Northwestern University

Institution	Co-authored publications	co-authored publications	Co-authors
1. Harvard University	1,286 ▲	18,266	1,782 ▲
2. Johns Hopkins University	1,038 ▲	19,210	1,072 ▲
3. University of California at Los Angeles	980 ▲	17,393	1,012 ▲
4. University of Chicago	977 ▲	12,218	1,203 ▲
5. University of Illinois at Chicago	977 ▲	10,478	990 ▲
6. University of Michigan	857 ▲	11,772	831 ▲
7. Argonne National Laboratory	788 ▲	9,694	611 ▼
8. University of Wisconsin	745 ▲	12,082	759 ▲
9. University of Washington	744 ▲	11,727	790 ▲
10. The Ohio State University	710 ▲	12,190	599 ▲

→ View Institutions collaborating with Northwestern University in more detail
→ Benchmark these Institutions

4. You will now jump to the Benchmarking module and your institution, plus the top collaborating institutions will be selected there.
5. Note that the selected year range in Overview will also be selected in Benchmarking.

6 The Collaboration module

6.1 What is the Collaboration module?

The Collaboration module is where you can evaluate the existing research collaborations of your institution. Start with a worldwide view of your collaboration landscape. Then zoom in to individual collaborating institutions and researchers anywhere in the world.

You can also use this module to identify new opportunities for collaboration in your own country or worldwide. See which institutions and researchers your institution isn't yet collaborating with.

All data can be filtered by a specific subject area. Say you are only interested in collaboration within the field of chemistry. Then you can view only institutions and researchers that have co-authored chemistry publications with your institution.

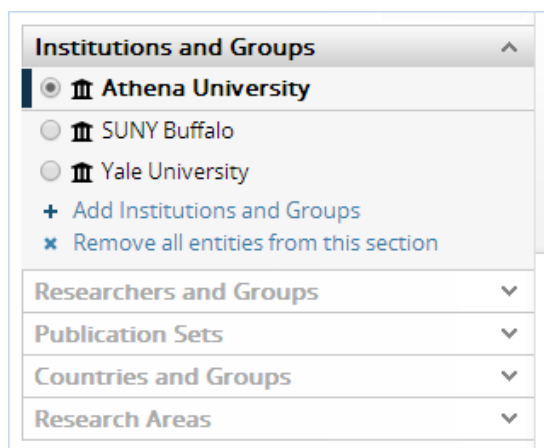
The data can be exported, and you can review the underlying list of publications behind every publication count.

6.2 Working with the Collaboration module

6.2.1 Selecting an institution

Use the entity selection panel on the left-hand side to select the institution you want to view.

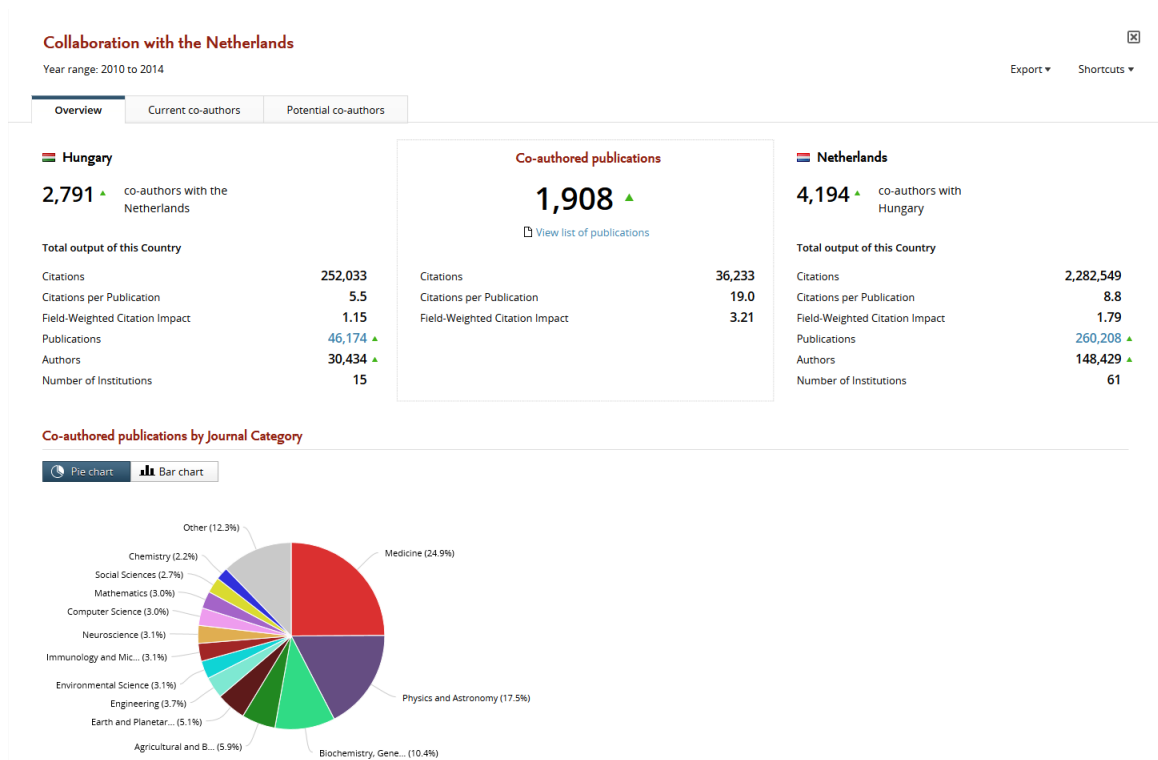
If the institution you want is not listed, click on the "Add" link and start typing the name, then click on the name when it appears in the search results.



6.2.2 Selecting a country

SciVal allows you to explore international collaboration on a country level. Find out who your country collaborates with, how many co-authored publications you have, what the impact of the co-authored publications is, and much more.

To use this feature go to the Collaboration module and select a desired country from the select panel. Select a country and use the map view to zoom in on the region you are interested in. Once you find a collaborating country you can see the partnership in detail.



Question you are able to find answers for:

1. How many co-authored publications do we have?
2. What is the citation impact of our co-authored publications?
3. Who are the current co-authors from the collaborating countries?
4. Who are the potential co-authors in the collaborating countries?

You can alternatively create a research area in SciVal and filter the collaborating countries by that research area or any other Scopus journal category to find out what your common impact is within a particular field of research.

6.2.3 Selecting a year range

You can view publication data for a period of either three or five years. Use the year range selector at the top of the page to select the desired year range.

Optionally, you can also include the current year and future years. However, you may want to exclude this because, by the end of the current year, Scopus has only received and indexed a certain portion of the current year's journals from other publishers.

United States | More details on this Institution

Source: Scopus data up to 16 Dec 2014

2010 to 2014 ▲

3 years 2012 to 2014

3 years + current year 2012 to 2015

3 years + current year + beyond current year 2012 to >2015

5 years 2010 to 2014

5 years + current year 2010 to 2015

5 years + current year + beyond current year 2010 to >2015

Worldwide ▼ All sectors ▼ ← Filter for more (regional) d

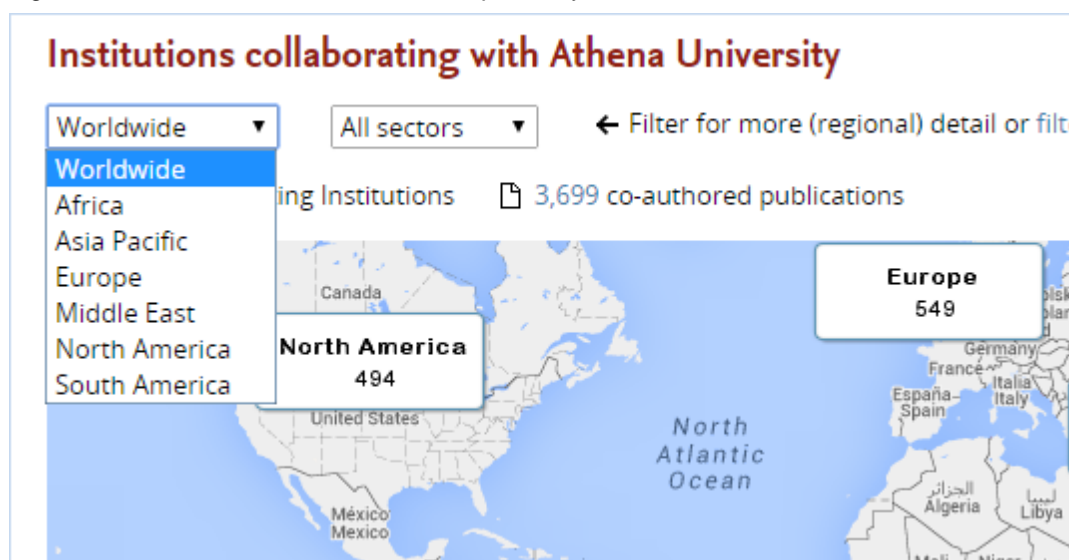
6.2.4 Selecting a region, country or sector

You can limit the list of institutions shown to a specific world region or country. This will apply to both the "Current collaboration" and "Potential collaboration" views, and to both the Map and Table views.

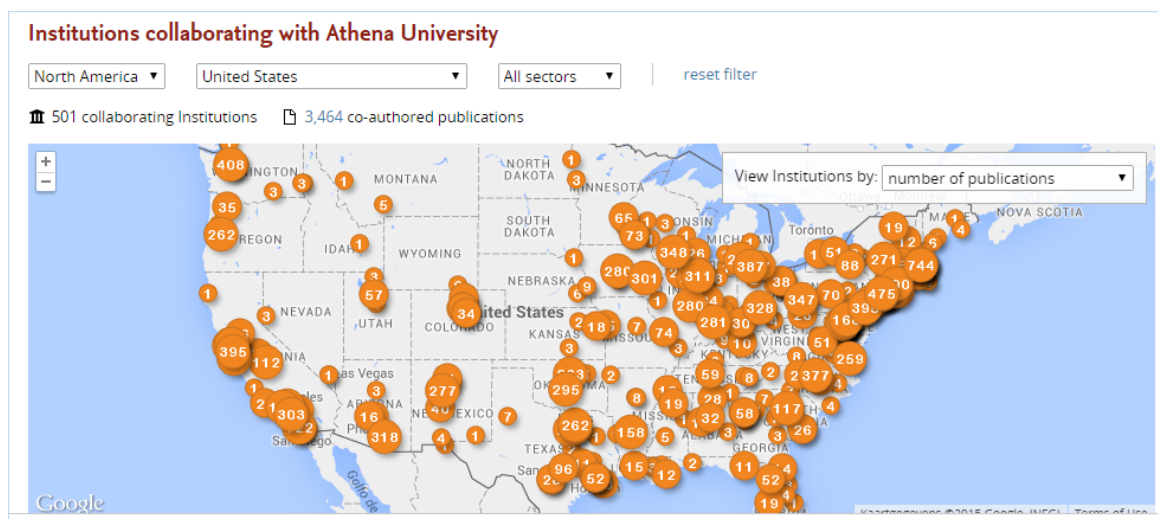
In addition, you can filter the list of institutions by sector. For instance, you can choose to view only institutions in the corporate sector, or only institutions in the medical sector.

You can also combine the geographical and sector selections. For example, you could choose to view only corporations in France, or only medical institutions in North America.

Select a region. From the drop-down menu marked "Worldwide", select the region you would like to view, for instance North America, Asia Pacific or Europe. In Map view, you can also click on one of region markers that are shown on the map when you are zoomed out to worldwide view.

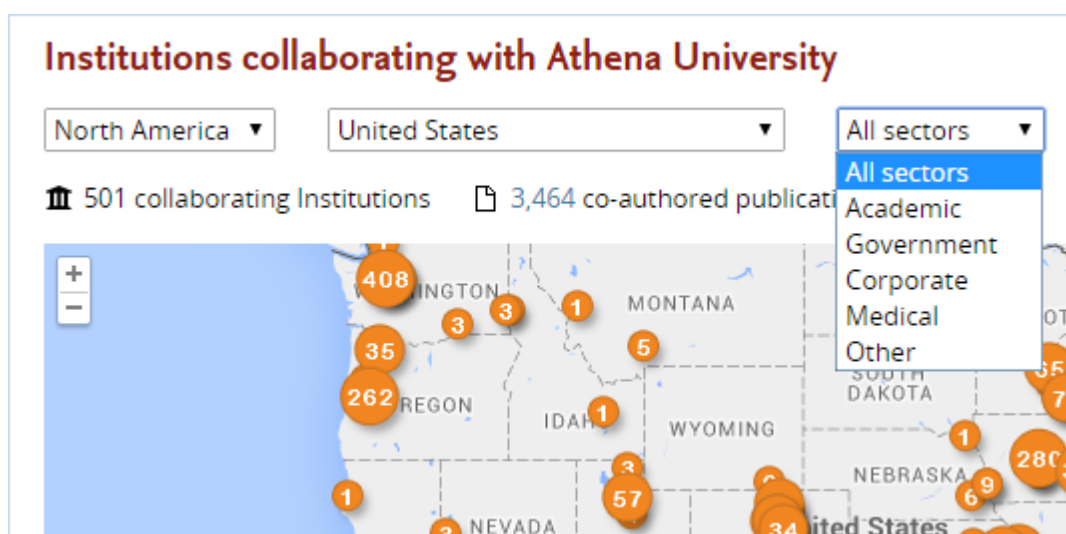


Select a country. Start by selecting the region of the country you want from the leftmost drop-down menu. A second drop-down menu now appears that lets you pick the country. For example, to select the United States, select "North America" from the first menu, then select "United States" from the second menu. In Map view, you can also click on one of blue-on-white country markers that are shown on the map after you have zoomed in to a particular region. To return to region level, select "All countries" from the country menu.



Select a sector. Use the rightmost drop-down menu to select a specific sector. SciVal uses 5 organization types: Academic, Corporate, Government, Medical, and Other. These are composed of the following Scopus organization types:

- Academic: university, college, medical school, and research institute
- Corporate: corporate and law firm
- Government: government and military organization
- Medical: hospital
- Other: non-governmental organization



6.2.5 Filtering by journal category or research area

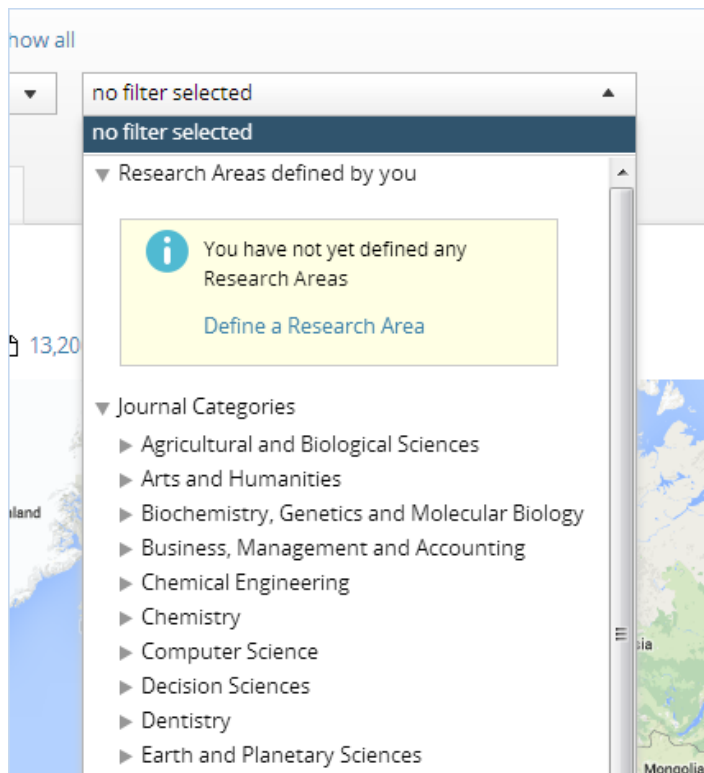
Interested in evaluating or comparing your performance within a specific discipline? You can choose from 27 categories and 334 subcategories in the Scopus journal classification. Or use a [different journal classification](#).

1. Use the filter dropdown menu at the top of the page to select a specific journal category.
2. The subcategories appear when you click on the arrow in a category.

Filter by research area. You can also filter by research areas that you have defined yourself. These can be as granular or interdisciplinary as you like.

1. Select your institution from the entity selection panel on the left-hand side.

2. Use the filter dropdown menu at the top of the page to select a specific research area.
3. If you have not yet defined the research area, click on “Define a Research Area” in the filter menu.

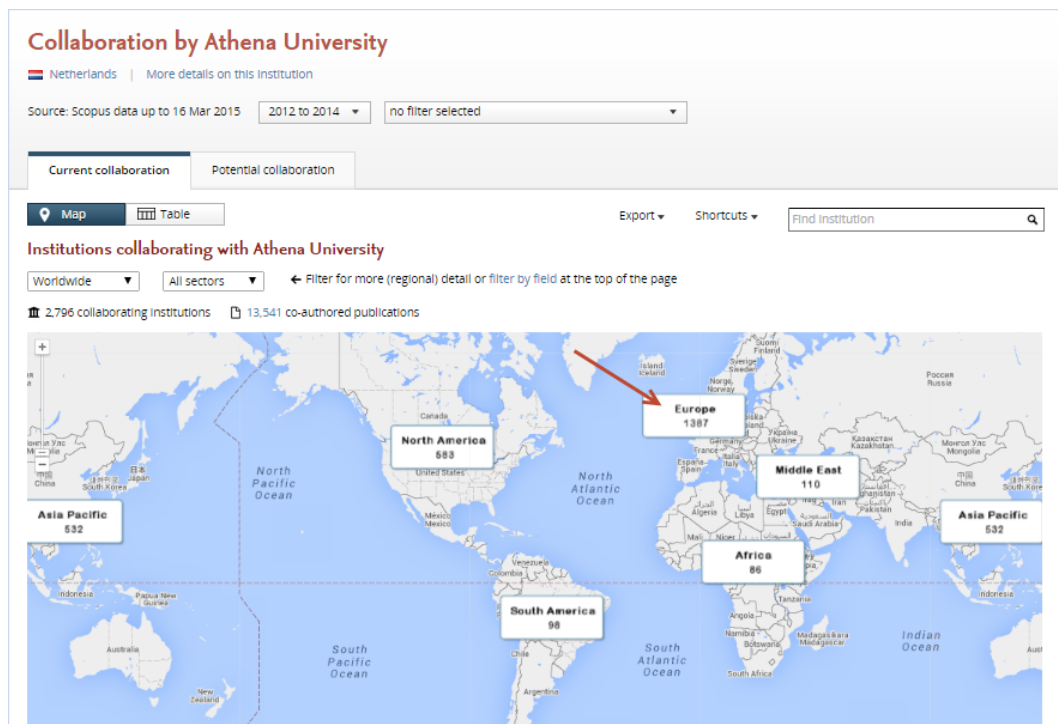


6.2.6 Working with the map

Zooming in and out. You can use the zoom control in the top left corner of the map to zoom in and out. You can also double-click on the map to zoom in further.

Zoom in on a region. At world level, the map gives you an overview of your global collaboration landscape.

- There are markers on the map for each of the world regions (Asia Pacific, North America, South America, Europe, Middle East, and Africa). These markers show you how many collaborating institutions there are in each region.
- Click on one of the region markers at world level to zoom in to that region.

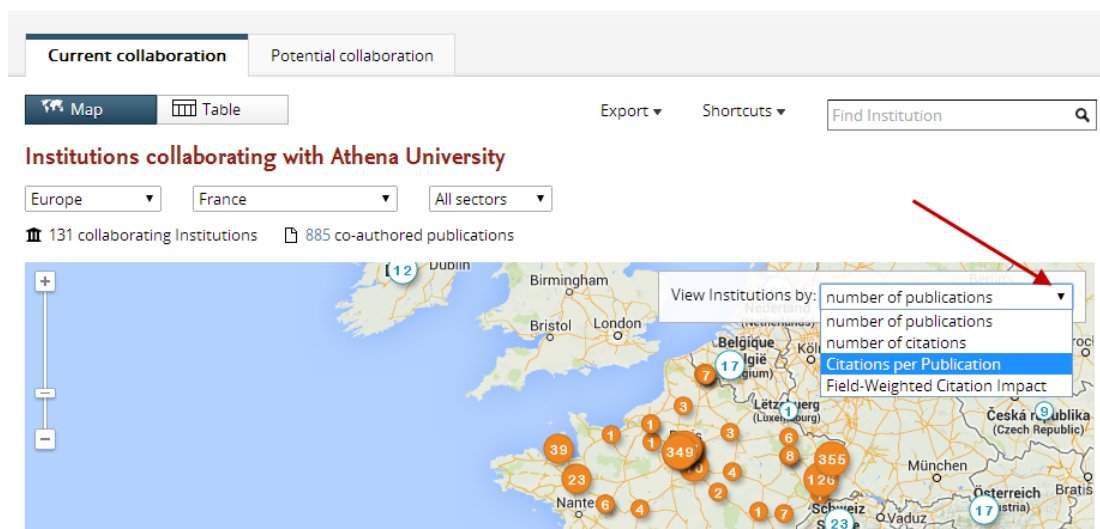


Zoom in on a country. After zooming in on a region, you see a number of round markers for each of the countries in that region.

- These country markers display the number of collaborating institutions in each country.
- Click on a country marker to zoom into that country.

Zoom in on an institution. You can now click on any of the institutions. A pop-up window opens with full details on the collaboration with that institution.

View citation impact. By default, the number of co-authored publications for each institution is shown, but you can also see the citation impact of those collaborations. Use the drop-down menu in the top-right corner of the map to switch to number of citations, Citations per Publication or Field-Weighted Citation.



6.2.7 Working with the table

Instead of the map view, you also see your institution's (potential) collaborating institutions in a tabular list view.

In "Current collaboration" this table view shows the top 100 collaboration institutions, by number of publications. You can use the dropdown menus at the top to view the top collaborating institutions in a specific region or country.

- You can change the sort order of the table by clicking on any of the column headings.
- You can use the drop-down menu to switch from citations to a different metric for citation impact.

Collaboration by Athena University

United States | [More details on this Institution](#)

Source: Scopus data up to 31 May 2014 | 2011 to 2013 | no filter selected

Current collaboration | Potential collaboration

Map | **Table** | Export | Shortcuts | Find Institution

Institutions collaborating with Athena University

Worldwide | All sectors

2,455 collaborating Institutions | 14,326 co-authored publications

Institution	Co-authored publications	Co-authors at Northwestern University	Co-authors at the other institution	Citations
Harvard University	1,099 ▲	998 ▲		21,304
Johns Hopkins University	886 ▼	636 ▲		
University of Illinois at Chicago	825 ▼	897 ▼	912 ▲	10,385
University of California at Los Angeles	812 ▲	586 ▼	866 ▼	16,286
University of Chicago	749 ▼	921 ▲	989 ▲	11,901
University of Michigan	694 ▼	584 ▼	665 ▲	10,171
University of Washington	631 ▲	499 ▲	716 ▲	13,046
University of Wisconsin	622 ▼	450 ▲	685 ▲	13,452
The Ohio State University	612 ▼	454 ▼	554 ▼	13,536
Argonne National Laboratory	610 ▼	604 ▲	531 ▲	9,682
University of Rochester	583 ▼	294 ▲	379 ▲	10,406
University of Virginia	561 ▼	311 ▲	345	11,679

- Click on the name of an institution for full details of the collaboration with that institution
- Click on the number of co-authored publications to view the list of publications

Use the Export menu to export the full list of collaborating institutions to a spreadsheet file.

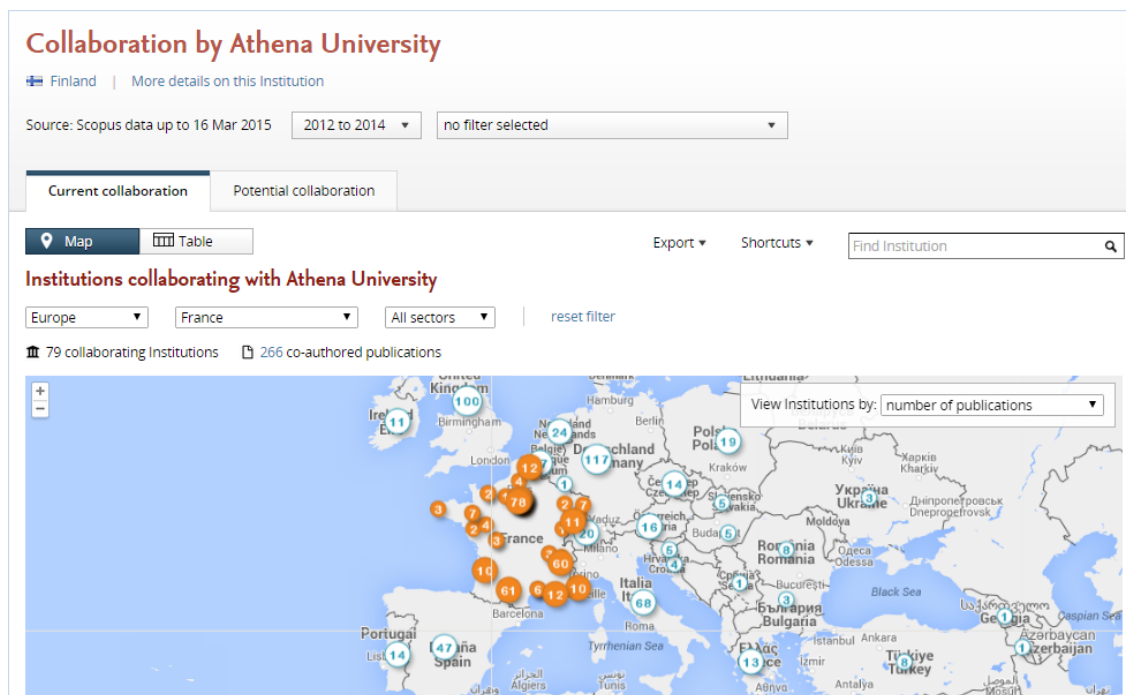
6.3 How can you use the Collaboration module?

6.3.1 Identify the collaboration partners of your institution

Get an overview of your collaboration landscape. The map view in Current collaboration gives you a global overview of the collaboration partners of your institution. You can then zoom in to a specific country. For example, to see your collaboration partners in France:

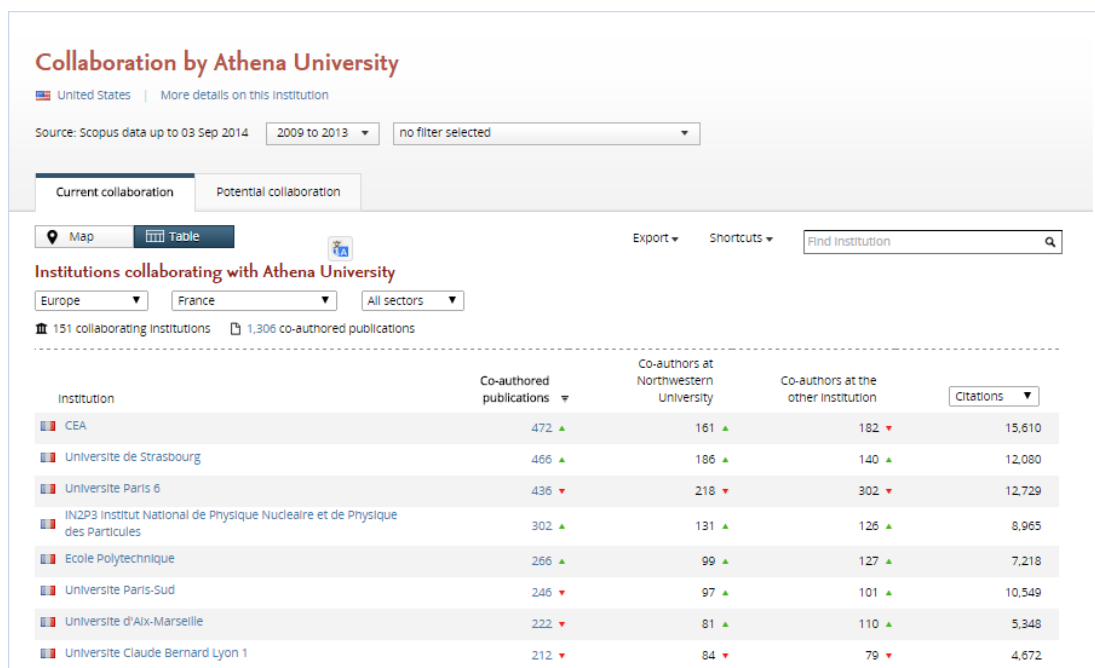
1. Select your institution from the entity selection panel on the left-hand side.
2. Go to "Current collaboration" and select the Map view

- Click on the Europe marker to zoom in and see all the European countries where collaboration with your institution has taken place.
- Click on the round marker shown in France to zoom in and see all collaborating institutions and researchers in France. By default, the number of co-authored publications for each institution is shown, but you can also see the citation impact of those collaborations. Use the drop-down menu in the top-right corner of the map to switch to number of citations, Citations per Publication or Field-Weighted Citation.



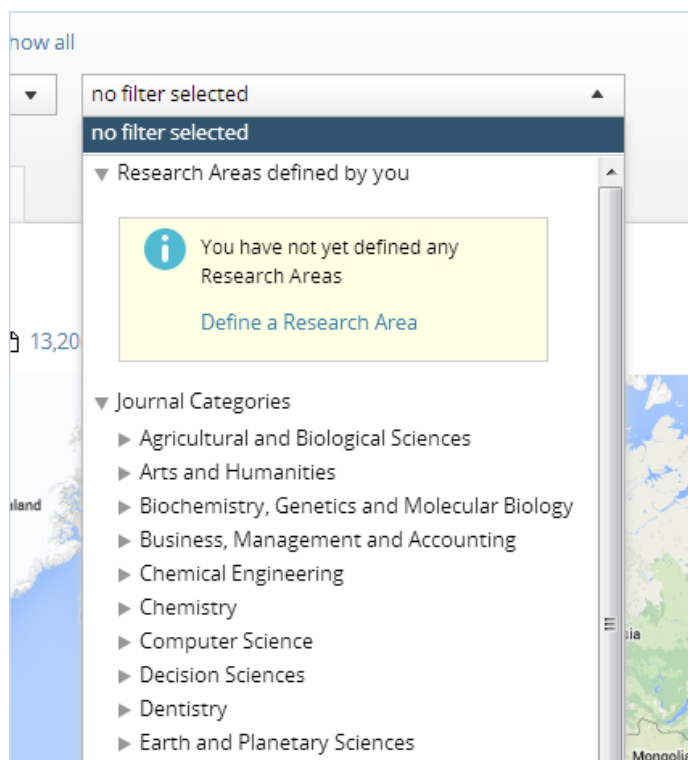
- Switch from map to table view to see the collaborating institutions in France in a tabular list view. Click on one of these institutions to explore the collaborating with that institution in more detail.
- Go to the Export menu to export the full list of collaborating institutions to a spreadsheet file.
- To view collaboration in France within a particular sector (such as corporate or medical), select the sector from the rightmost of the drop-down menus along the top of the map.

Measure the impact of your collaborations. The table view lets you compare institutions by the number of publications co-authored with each. You can also evaluate the impact of your collaborations using metrics such as number of citations or Field-Weighted Citation Impact.



View your collaborations within a specific field of research. Do you want to see the collaborations of your institution within a specific field of research? Then select a filter from the dropdown menu at the top of the page. For example, to see collaboration within chemistry only, choose Chemistry from the menu.

- You can choose from 27 categories and 334 subcategories in the Scopus journal classification. Or use a [different journal classification](#).
- You can also define your own research areas, which can be as granular or interdisciplinary as you like.



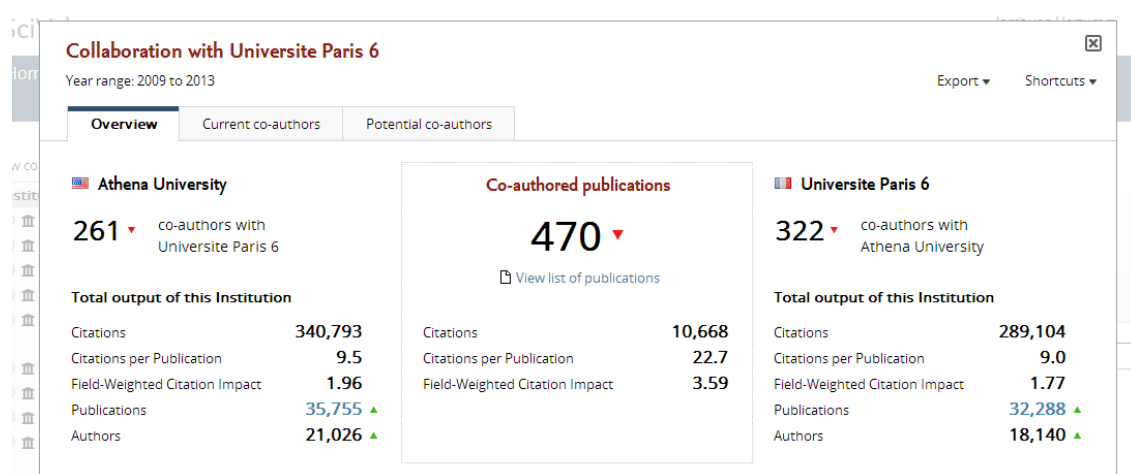
6.3.2 Evaluate a collaboration partner in detail

Click on any institution in either map or table view. You can now zoom into that institution and look at your collaboration with that institution in much greater detail.

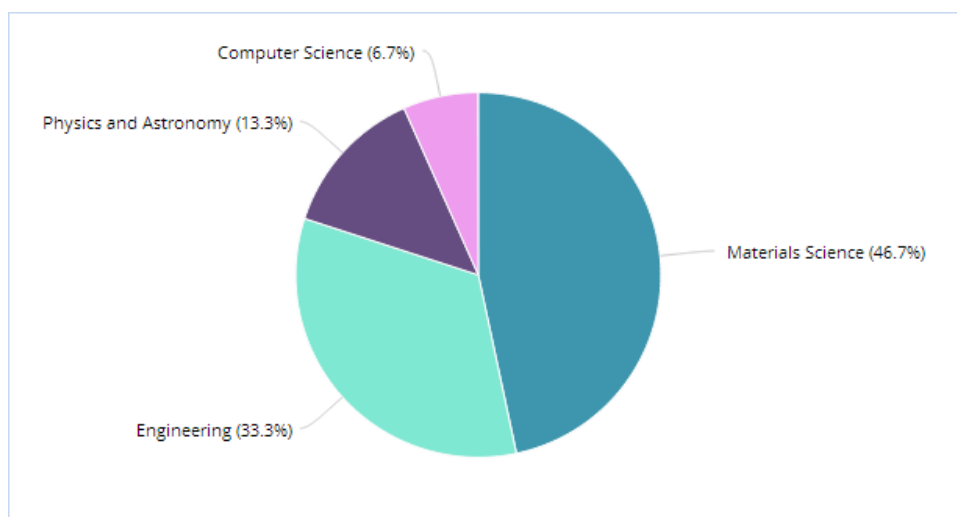
If you've filtered the data by a journal category or research area, you will see only the collaboration with that institution in the field of research you've selected.

Compare the co-authored publications to the overall output of the institutions. At the top of the pop-up window, you can compare the co-authored publications to the total output at each institution.

- Which is the most active and most cited of the two institutions?
- Do the co-authored publications have more citation impact than the individual institutions' overall publication output?



View the list of co-authored publications. The pie chart in the pop-up window gives you a breakdown of the co-authored publications by journal category. In which disciplines did most of the collaboration occur?



You can also view this as a bar chart, which lets you compare the co-authored publications by journal category to the total output of each institution by journal category.

Click "View list of publications" for the full list of co-authored publications.

- The filter options will show you a breakdown of the publications – by author, institution, publication

year, or keyword, for instance.

- Use the filter options to slice and dice the list in various ways.

Explore the list of co-authors. Go to the "Current co-authors" tab to drill down to the full list of co-authors, both at your institution and at the collaborating institution. This lets you see which researchers have co-authoring publications, and which of those collaborations had the most citation impact.

- Click on a researcher's name for more details on that researcher's publication career.
- Click on the arrow next to each name to see their co-authors at the other institution.

The screenshot displays the 'Collaboration with Universite Paris 6' interface. It features two main panels: 'Athena University' on the left and 'Universite Paris 6' on the right. Both panels show a list of co-authors with columns for 'Author', 'Co-authored publications', and 'Citations'. A red arrow points from the 'Lellouch, J.' entry in the Paris 6 list to a pop-up window titled '26 co-authors at Athena University (top 10 shown)'. This pop-up lists the top 10 co-authors at Athena University, including Schellman, H., Yacoob, S., Kirby, M., Welty-Rieger, L., Buchholz, D., Anzelc, M.S., Andeen, T., Strom, D., Youn, S.W., and Schellman, H.

Author	Co-authored publications	Citations
Schellman, H.	171	3,038
Anastassov, A.	136	2,189
Stentz, D.	135	2,186
Schmitt, M.	133	2,150
Yacoob, S.	117	2,467
Kirby, M.	111	2,396
Welty-Rieger, L.	105	1,417
Buchholz, D.	77	1,718
Anzelc, M.S.	45	863
Andeen, T.	41	723
Strom, D.	37	681
Youn, S.W.	37	681
Sun, W.	33	245
Lannon, K.	18	248

Author	Co-authored publications	Citations
Bernardi, G.	179	5,813
Lellouch, J.	176	3,051

Rank	Author	Co-authored publications	Citations
1.	Schellman, H.	168	3,028
2.	Yacoob, S.	115	2,460
3.	Kirby, M.	110	2,390
4.	Welty-Rieger, L.	105	1,417
5.	Buchholz, D.	74	1,689
6.	Anzelc, M.S.	42	834
7.	Andeen, T.	38	694
8.	Strom, D.	35	674
9.	Youn, S.W.	35	674
10.	Schellman, H.	5	0

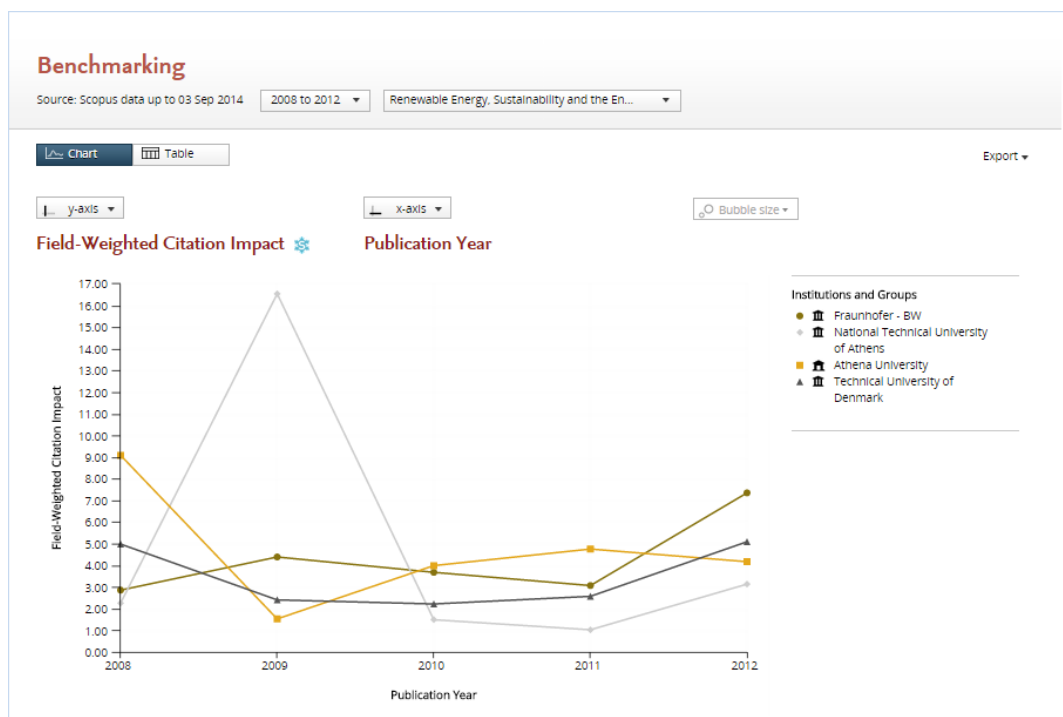
- Use the Export menu to export the complete list of co-authors to a spreadsheet file.

Identify potential new co-authors. Go to the "Potential co-authors" tab to see which researchers at each institution are *not* yet collaborating with the other institution. Here, you can identify potential matches between researchers at your institution and researchers at the other institution.

- The "Potential co-authors" tab lists the top 100 authors at each institution, by number of publications, who are not yet collaborating with the other institution.
- The list is available both for your institution's current collaboration partners (institutions where at least one researcher is collaborating institution), and for institutions where no one is collaborating with your institution yet.
- This view is particularly useful when filtering by a specific research area or journal category

Other ways to evaluate a collaboration partner. Use the Shortcuts menu in the institution details pop-up to examine a collaboration partner in even more detail. You can:

- get a high-level overview of the institution in the Overview module
- view and compare metrics for that institution in Benchmarking



- see the collaboration partners of that institution in the Collaboration module

6.3.3 Identify potential new collaboration partners of your institution

The “Potential collaboration” tab can be used to identify potential new opportunities for collaboration. This view is similar in many ways to the “Current collaboration” view:

- You can see these institutions in either map or table view, and zoom in from the world to a particular region or country.
- You can also use the Export menu to export the list of institutions to a spreadsheet file.

This view shows you institutions not yet collaborating with your institution. These institutions did not co-author any publications with your institution within the selected year range and subject area (journal category or research area).

The potential new collaboration partners are arranged by their total publication output, but you can also see their citation impact. This allows you to quickly spot the most suitable potential new collaboration partners.

View potential collaboration partners within a specific field of research. The “Potential collaboration” view is most useful when you filter the data by a particular field of research.

Say you are only interested in collaboration within the field of chemistry. Then you can view only institutions that have are active within chemistry, but have not yet co-authored any chemistry publications with your institution.

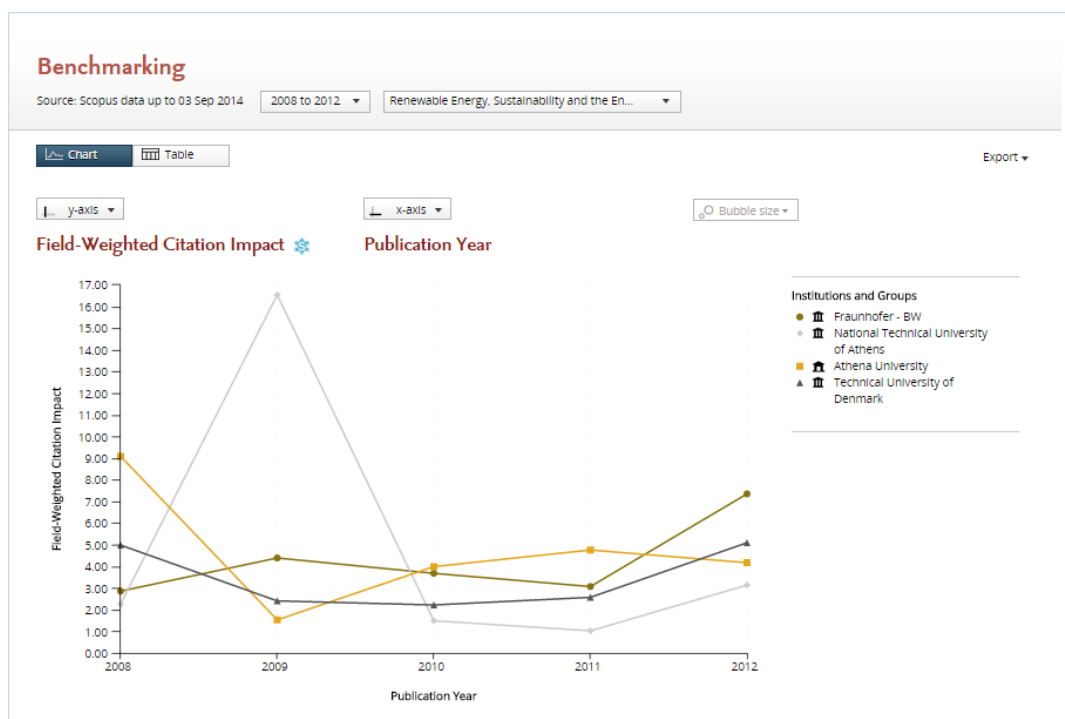
- You can choose from 27 categories and 334 subcategories in the Scopus journal classification. Or use a [different journal classification](#).
- You can also define your own research areas, which can be as granular or interdisciplinary as you like.

Evaluate a potential collaboration partner. Click on any institution in either map or table view. You can now zoom into that institution and evaluate that institution as a potential new collaboration partner in much greater detail.

- At the top of the pop-up window, you can compare the total output at each institution.
- The pie chart and bar chart below that let you compare the total output of each institution by journal category. Where do the institutions overlap and where is their research unique?
- Go to the "Potential co-authors" tab to see the top researchers at each institution. Here, you can identify potential matches between researchers at your institution and researchers at the other institution. Export this list of potential co-authors to a spreadsheet file for further analysis.

Use the Shortcuts menu in the institution details pop-up to examine a potential collaboration partner in even more detail. You can:

- get a high-level overview of the institution in the Overview module
- view and compare metrics for that institution in Benchmarking



- see the collaboration partners of that institution in the Collaboration module

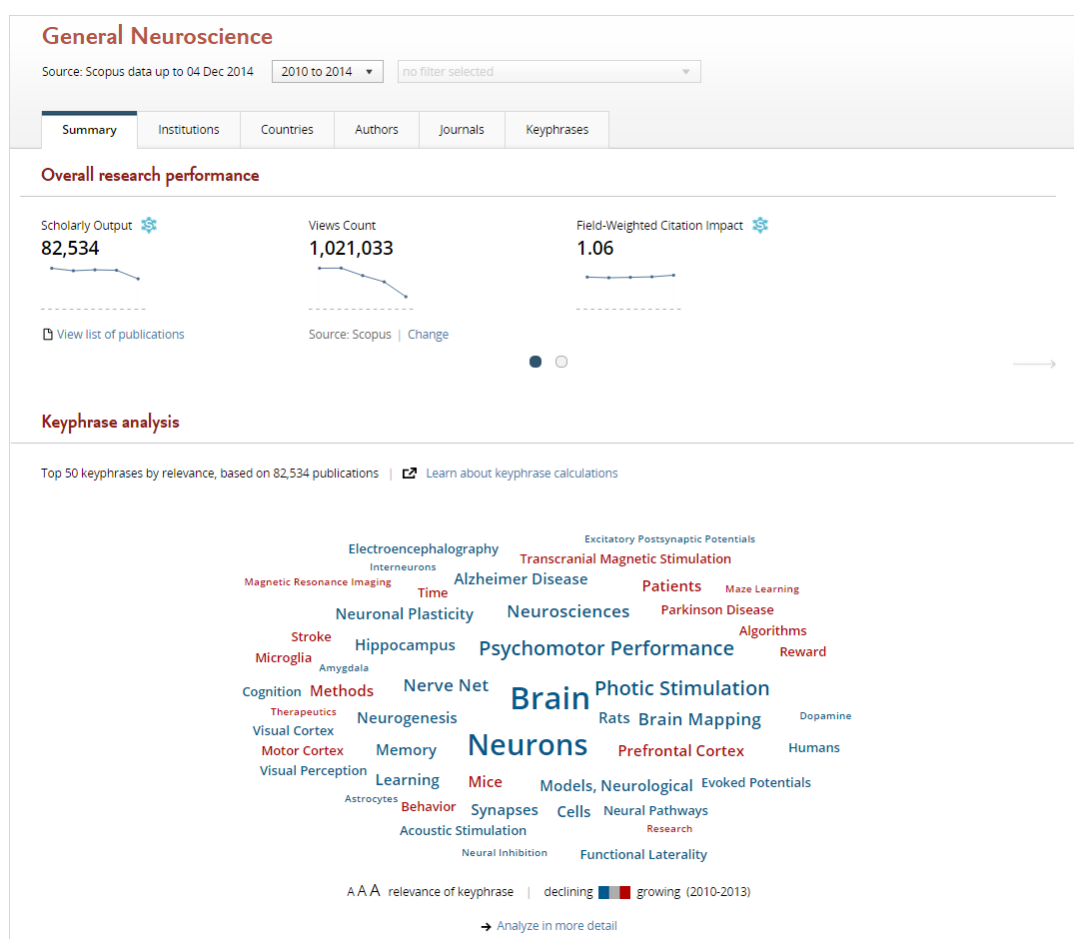
7 The Trends module

7.1 What is the Trends module?

The Trends module is where you can evaluate all aspects of Research Areas. Start with a Research Area you define yourself based on a topic or area of interest, or pick a pre-defined one provided with SciVal. Analyze the developments of the Research Area such as the contributing institutions, authors, countries and journals. The Trends module also allows you to analyze their contribution to the subtopics within the Research Area through a keyphrase analysis.

In addition to citation and publication data the Trends module includes usage data from Scopus and ScienceDirect to complement the analysis.

You can review the underlying list of publications behind every publication count and you can export tables and graph by using the export feature.



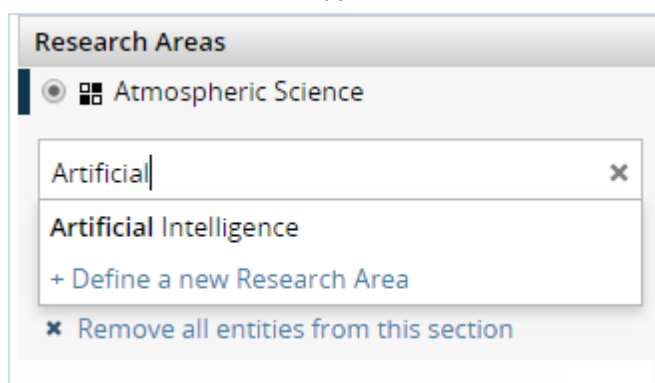
7.2 Working with the Trends module

7.2.1 Selecting a Research Area

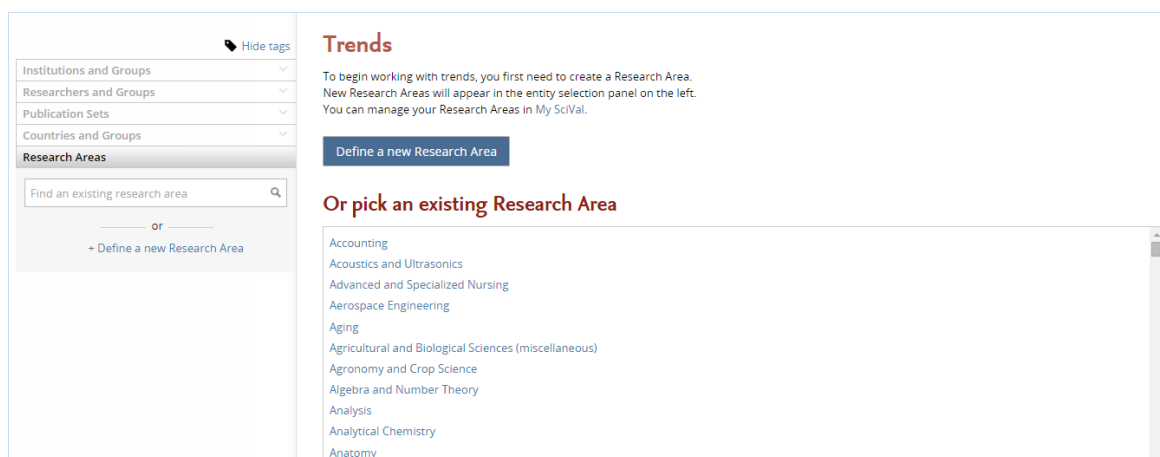
Use the entity selection panel on the left-hand side to select an existing Research Area.

If the Research Area you want is not listed, click on the "Add" link and start typing the name, then

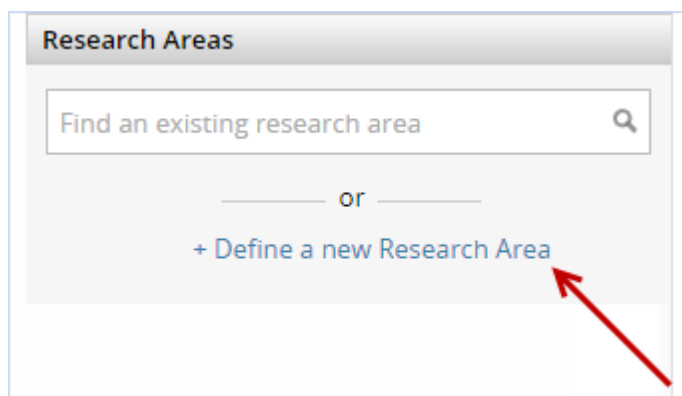
click on the name when it appears in the search results.



If the Research Area section is empty you can select one of the Research Areas provided by SciVal from the list or look them up and add them to the entity selection panel. SciVal provides all the Scopus Journal Categories as Research Areas to help kickstart your analysis.



If you want to [define your own Research Area](#) to use in SciVal, select the option “Define a new Research Area” from the Entity Selection Panel.

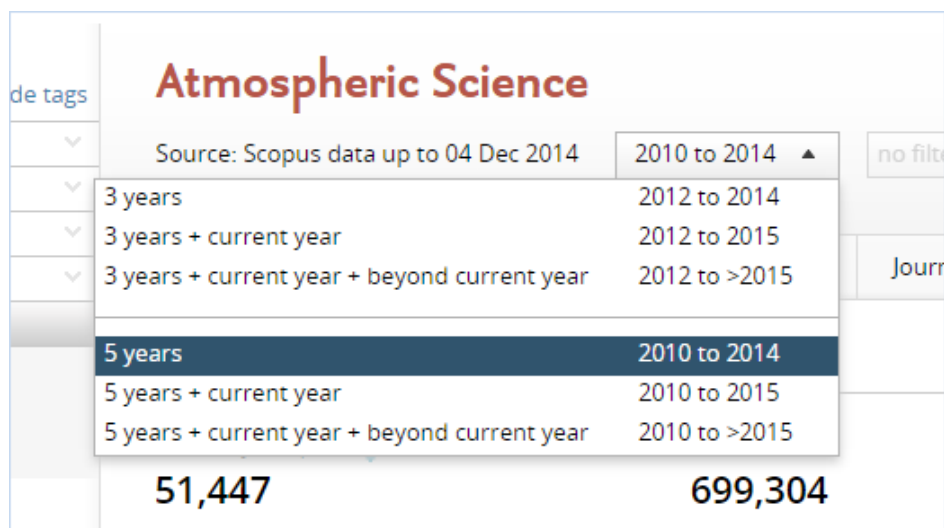


7.2.2 Selecting a Year range

You can view publication and usage data for a period of either three or five years. Use the year range selector at the top of the page to select the desired year range.

Optionally, you can also include the current year and future publications. However, data from the current year may not be complete as Scopus may not have received all of the publisher's journal

content.



7.2.3 Working with the map

The map view is available for countries and institutions. It shows the location and contribution of the institution or country. Up to two variables can be plotted against one another at a time using both shape and color.

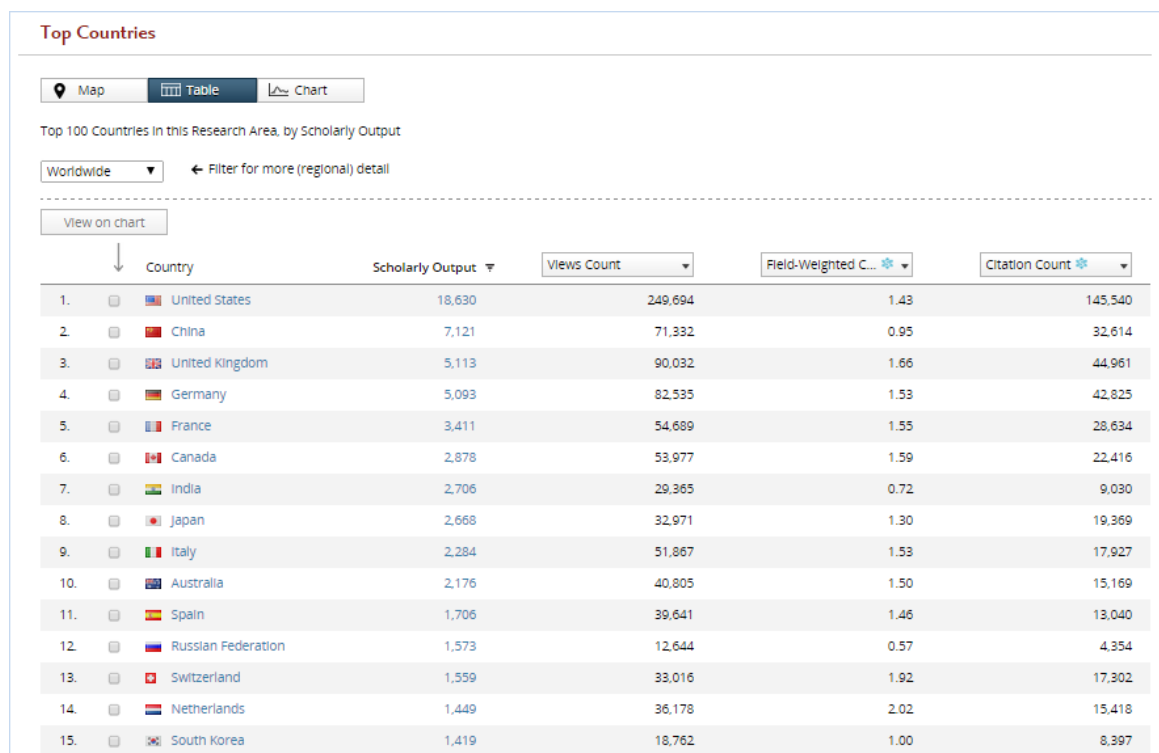
Zooming in and out. You can use the zoom control in the top left corner of the map to zoom in and out. You can also zoom in by double-clicking on the map.

7.2.4 Working with the table

To complement the map view, you also see the contributing institutions, countries, authors and journals in a tabular list view.

For "Institutions", "Countries", "Authors" and "Journals" the table view shows the top 100 contributors by scholarly output. To refine further, use the drop-down menus at the top to view the top 100 contributors in a specific region or country.

- You can change the sort order of the table by clicking on any of the column headings.
- You can use the drop-down menus to switch to view and sort by different metrics.



- Click on the name of an institution, country, author or journal for full details of their contribution to the field.
- Click on the number of publications to view the list of publications

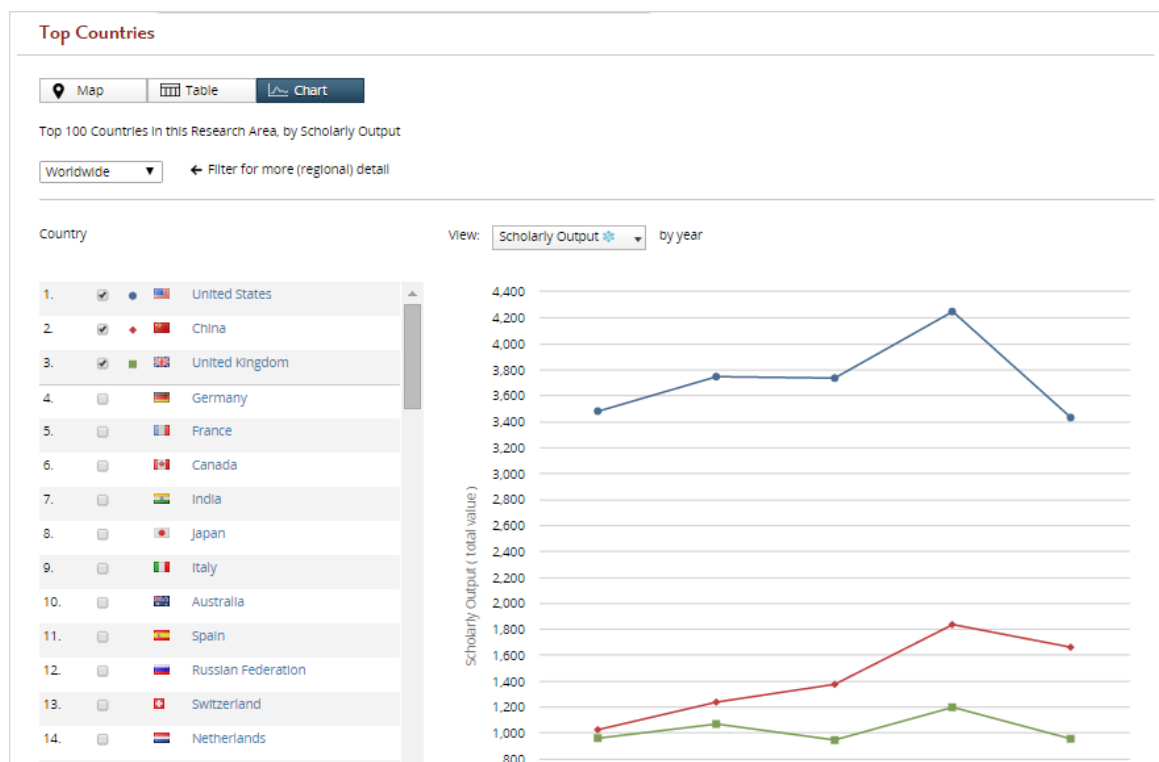
7.2.5 Working with the chart

To complement the map and table view, you also view the contributing institutions, countries, authors and journals plotted over time in the chart view.

For “Institutions”, “Countries”, “Authors” and “Journals” the table view shows the top 100 contributors by scholarly output. You can use the drop-down menus at the top to view the top 100 contributing institutions in a specific region or country.

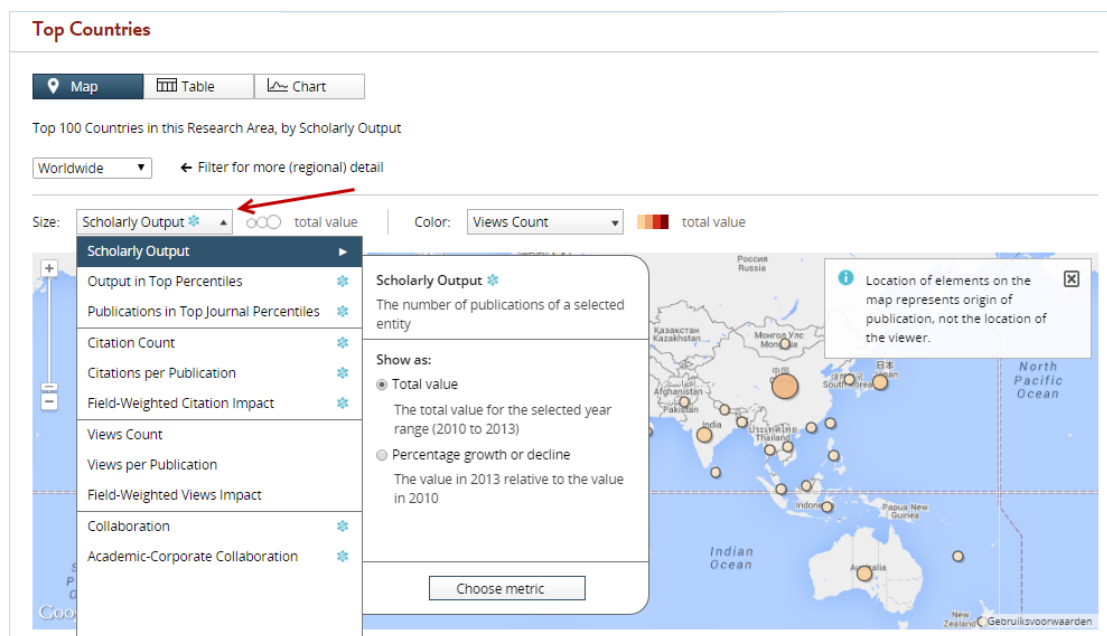
Click the check-boxes next to the contributors in the list to add them to the chart.

You can change the metric on the y-axis by clicking the view drop-down and by using the Metrics details option you can get more information on the metrics you selected.

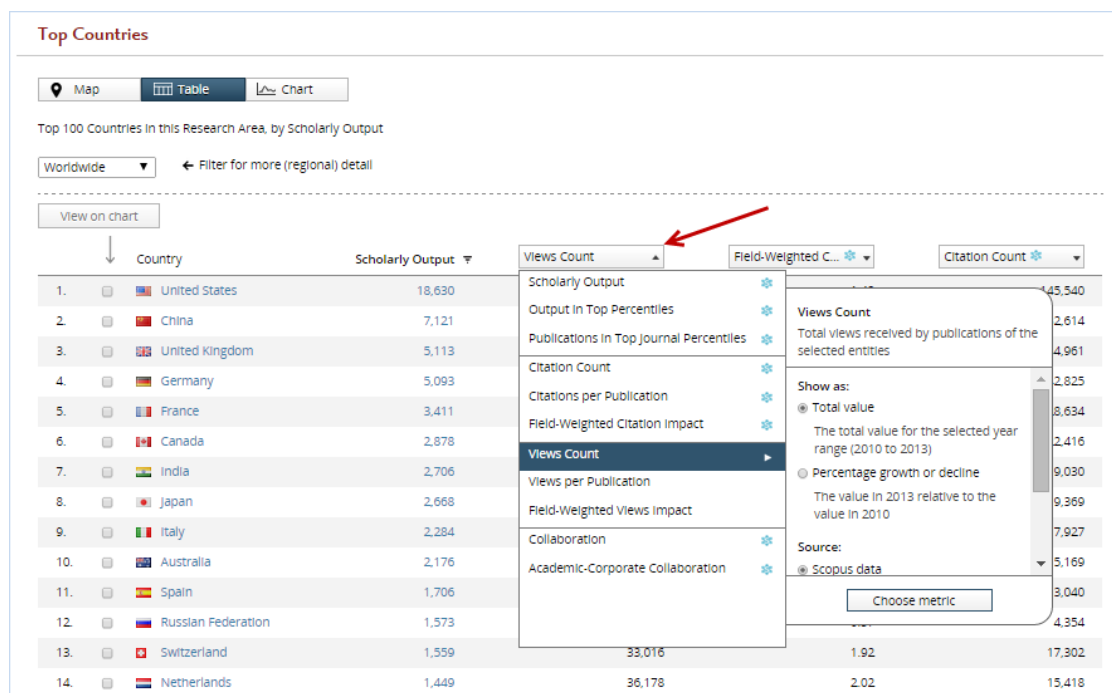


7.2.6 Selecting metrics

Metrics in the Map view. The [Map view](#) allows you to select two metrics and plot them against one another. By default, the metric Scholarly Output (number of publications) is shown as the bubble size and Views Count is shown as the color.



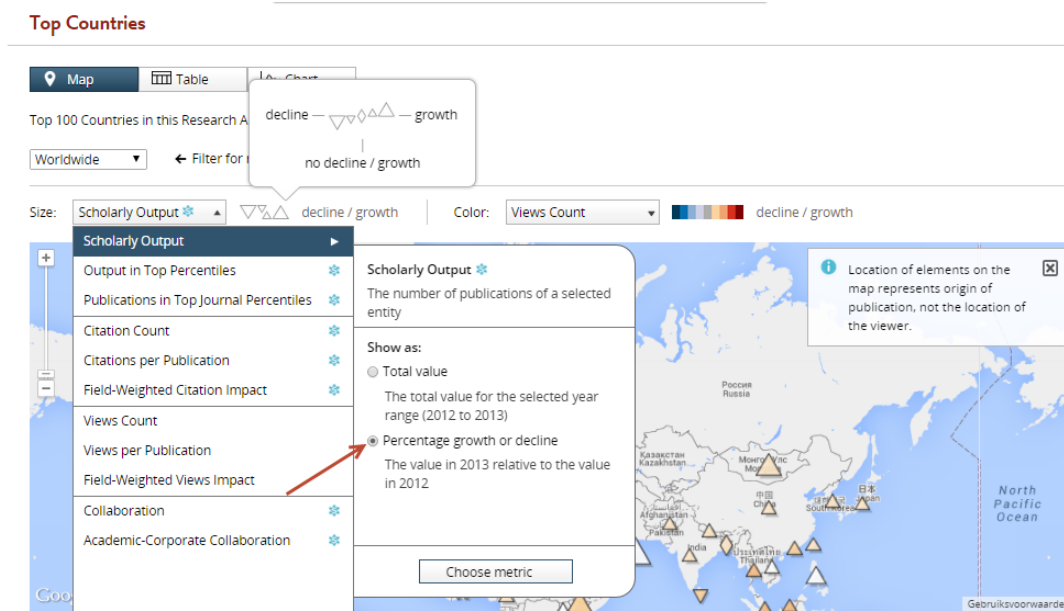
Metrics in the table view. The [Table view](#) allows you to view more metrics depending on the screen size. By default the list is sorted by Scholarly Output with additional columns for Views Count, Field-Weighted Citation Impact and Citation Count.



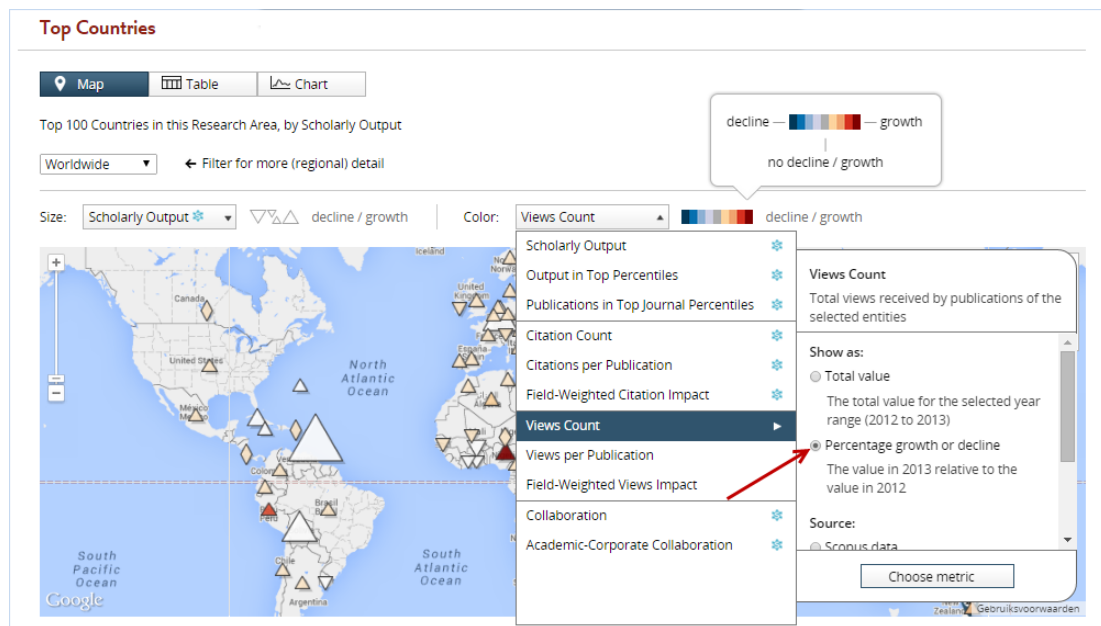
Changing metrics. To view a different metric, click on the button with the metric name you wish to change along the top of the map or in the column headers in the Table view. Select which metric you want to view from the list. Then click on the “Choose metric” button.

Which metrics are available to use in SciVal?

Choose total value or percentage growth or decline. Each metric has different options, for instance, you can choose to show total values or percentage growth or decline during the selected time period. If percentage growth or decline is selected as the first metric in the map view, it is displayed as upward triangles for growth and downward triangles for decline. The size of the triangle is the relative magnitude.



If it is selected as the second metric, negative values are displayed as blue tones and positive values as red tones.



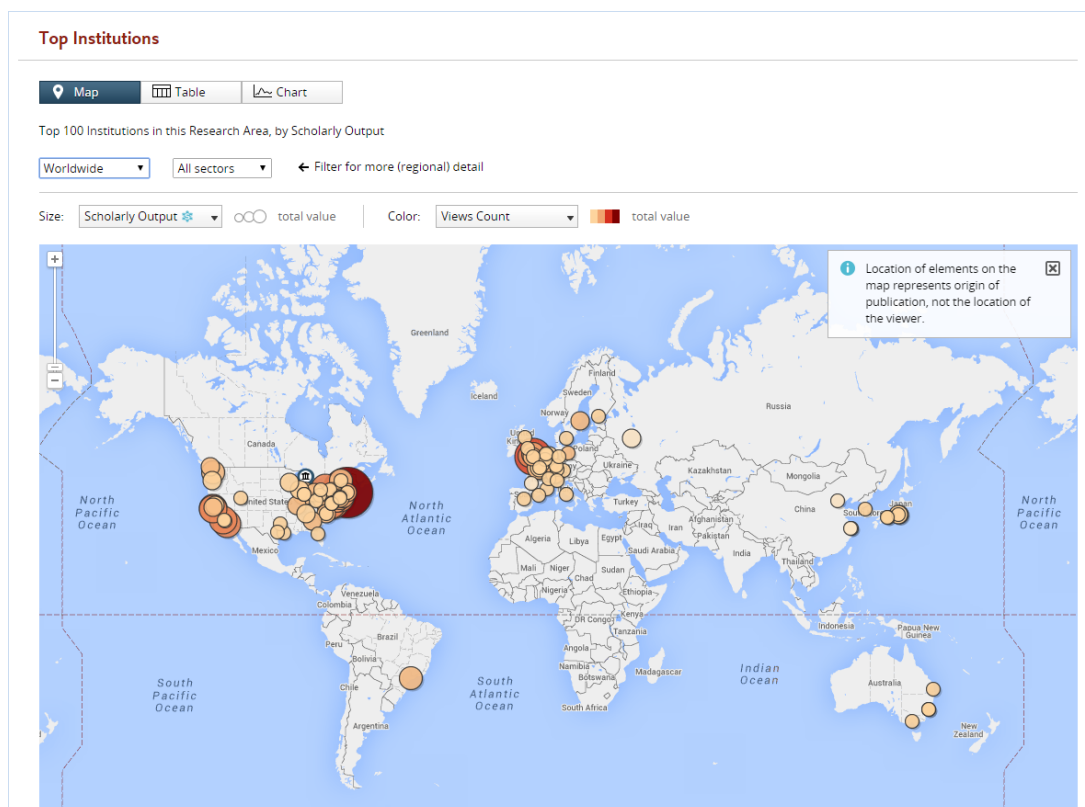
7.4 Identify top performers

Identify the top performers within the Research Area. In the Institutions map view you can get a global overview of the top performing institutions within the Research Area. You can zoom in to a specific region or country, for instance, to see the top performing institutions in Europe in General Neuroscience:

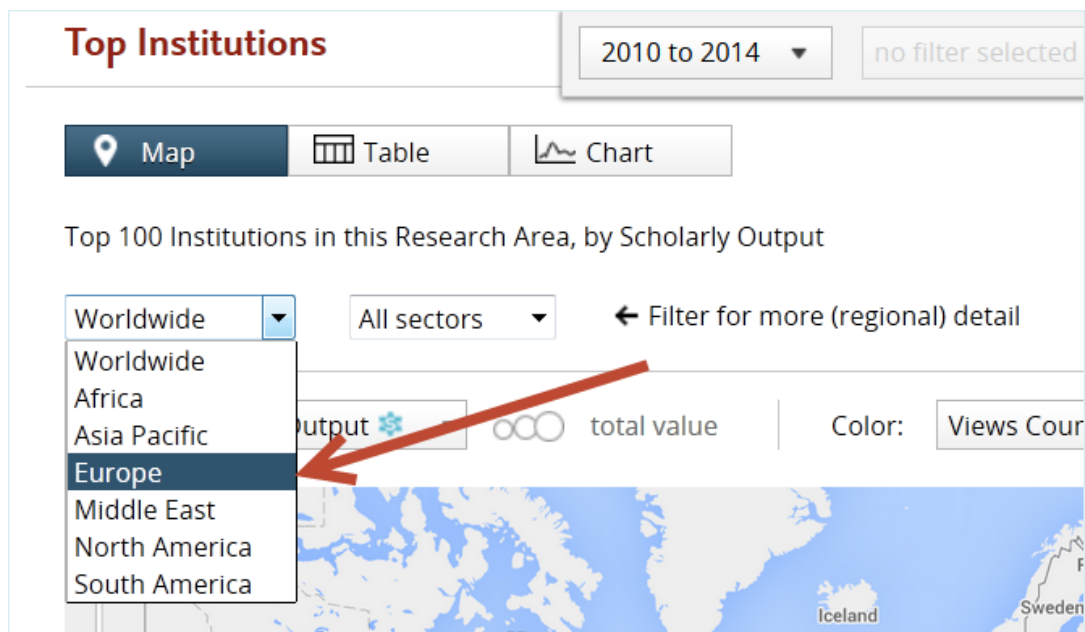
1. Add General Neuroscience by clicking + Add Research Areas at the bottom of the Research Area section in the entity selection panel on the left-hand side and start typing it in until it can be selected from the drop down menu.

The screenshot shows the 'Research Areas' panel. It has a search bar with the text 'general neu'. Below the search bar, a dropdown menu shows 'General Neuroscience' and '+ Define a new Research Area'. Below this, there is a section with 'or' and another '+ Define a new Research Area' button.

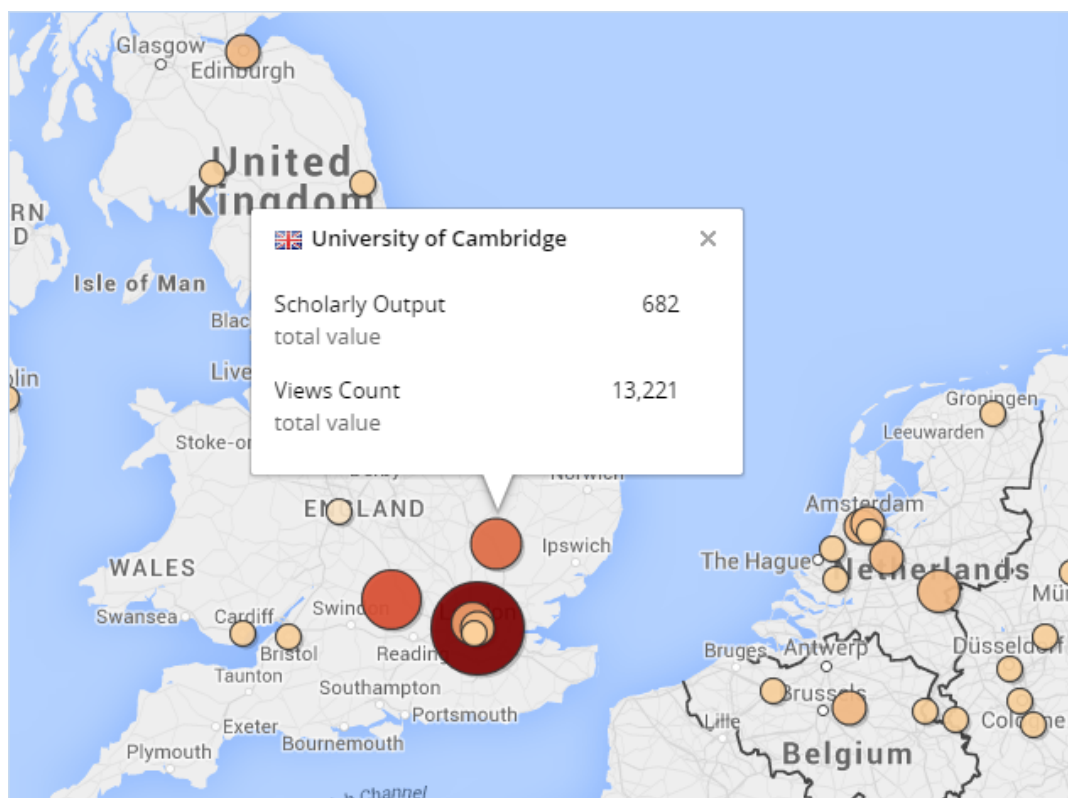
2. Go to "Institutions" and select the Map view.



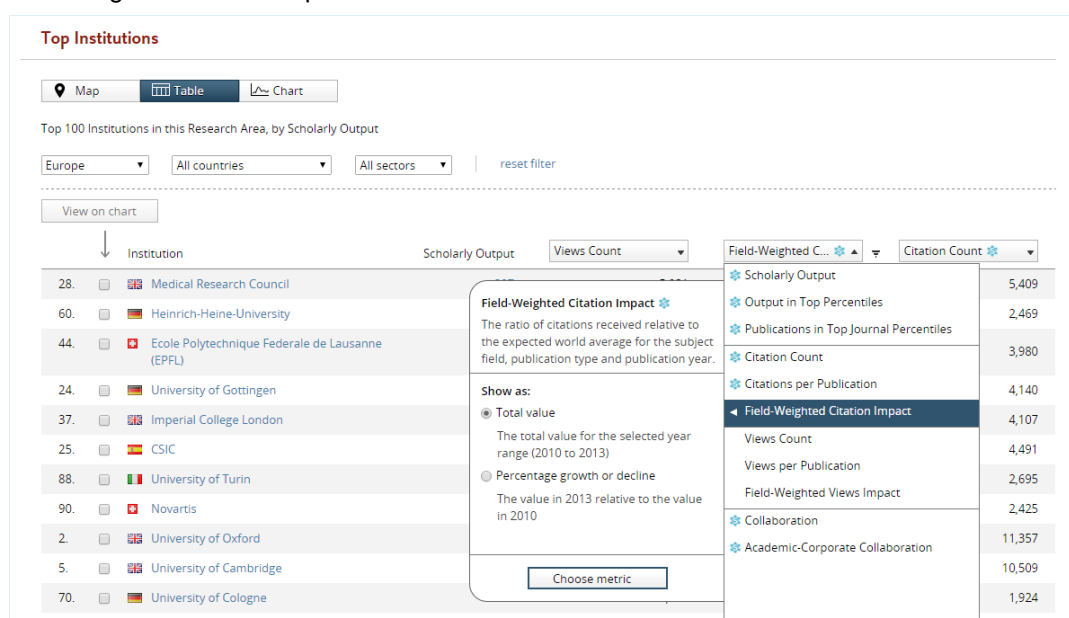
3. Choose Europe from the region selection drop down to see the contributing institutions in Europe. By default Scholarly Output is visualized as the size of the circle and Views Count is visualized by color. In this view it is easy to spot clusters of activity in a geographic region.



4. Zoom in further using the plus button or the slider to the left on the map. By hovering over the institutions of interest we get more information about their contribution to the field. You can also click on the marker to see a more detailed view about the institution.



5. To get a more detailed view change to the Table view. Here you can see different metrics in tabular format and sort by them. By default, the the table is sorted by Scholarly Output, but you can also see the citation impact instead. Click on one of the metric names and use the drop-down menu to switch to a metric of your choosing, such as number of citations, Citations per Publication or Field-Weighted Citation Impact.



8 Working with entities in SciVal

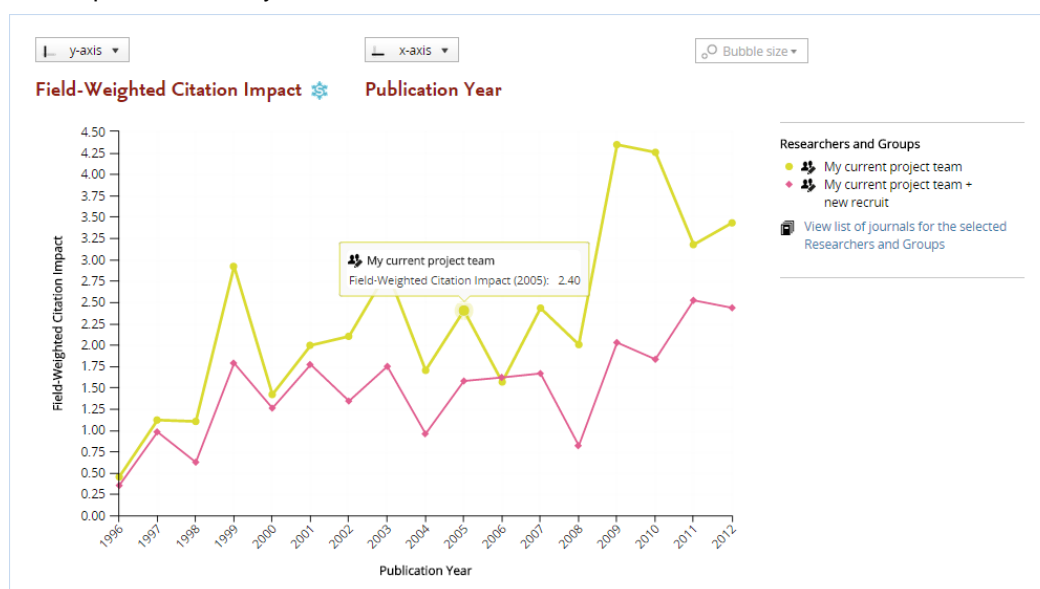
8.1 Types of entities

An entity is anything that can be viewed in SciVal in terms of academic performance. An entity can be an institution, country, researcher, publication set, or research area. It can also be groupings of these, such as a group of researchers.

Researchers and groups of researchers. You can define researchers and groups of researchers in SciVal. A researcher is defined as someone who has authored one or more publications.

Researchers are updated weekly with any new publications, but a publication set is fixed and never automatically updated with new publications. You can, however, manually add new publications to a publication set. Citation counts will always be updated.

You can use groups of researchers to model your institution's department structure. You can also model different “what-if” scenarios. For example, you can determine what happens to a research team's performance if you add researchers X and Y.



Publication sets. A publication set is a fixed set of publications. You can for example use these to create a selection of a researcher's most cited publications or a set of publications on a particular topic.

You can define a publication set from the list of publications from one or more researchers defined in SciVal. You can also import a publication set from a text file containing a list of up to 20,000 publication IDs. These can be DOIs, PubMed IDs, or Scopus IDs (EIDs). You can import up to 20,000 publications in a single publication set. To learn more, see [Defining and importing new entities](#)

Institutions and groups of institutions. An institution is any organization engaged in research activity. It can be an academic, corporate or governmental institution, for example.

An Institution is a type of entity in SciVal. Technically, an institution is defined in SciVal as a collection of one or more Scopus affiliations. Often an institution has multiple affiliations because some of its parts, like hospitals or research institutes, can be assigned their own affiliation in Scopus.

Multiple institutions can be combined into another type of selectable SciVal entity: a group of institutions. A number of predefined groups of institutions are available in SciVal, including:

- institutional alliances such as LERU and Universitas 21

- constituent states and provinces of various countries. These include the U.S. states, each of which is made up of all institutions in that state.

Countries and groups of countries. A country is a type of entity in SciVal representing a nation state or semi-autonomous part of a state. Publications are assigned to countries by picking up the country mentioned in the publication. If not present, we take the country from the Scopus affiliation mentioned in the publication.

A special type of country is the World. This entity represents the total publication output worldwide, in other words: all publications from Scopus between 1996 and now. It is particularly useful as a benchmark.

Multiple countries can be combined a new entity: a group of countries. A number of predefined groups of countries are available in SciVal. These include;

- world regions such as North America, Europe and Asia Pacific
- international organizations such as the European Union, ASEAN and the G20
- various groupings of emerging economies such as Developing-8, CIVETS and BRICS

Research areas. You can define your own research areas in SciVal, which can be as granular or interdisciplinary as you like.

Research areas are not fixed, but represent a dynamic definition of a field of science. Whenever the publication data in Scopus is updated, new publications matching the definition are added to the research area.

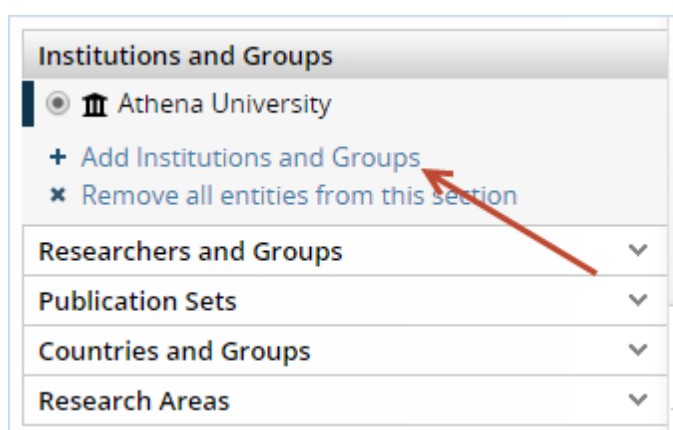
To learn more, see [About research areas in SciVal](#) in the section "Defining your own research areas"

8.2 Selecting entities

Use the entity selection panel to select the entities that you want to analyze. It is on the left side of the screen in each of the three modules. Think of the entity selection panel as a workspace. All your entities of interest are in one clear and organized place.

Choose from the thousands of pre-defined entities in the SciVal database: institutions or countries. Or define your own entities. Your self-defined entities can be researchers, research teams, publication sets or even research areas.

Add entities to the selection panel. To add additional items to the entity selection panel, click the "Add" link at the bottom of the currently opened section:



Start typing the name of the entity you will like to add. Then click on the name when it appears in the search results. You can also click on the "Define" links to define an entirely new entity.

In My SciVal, you can add an entity into the selection panel by clicking the "Add" icon for that entity. The entity is now marked with "Added" to indicate that it has been added to the panel. The "Add"

icon for that entity flips to a "Remove" icon which you can click to take it back out of the panel.

Remove entities from the selection panel. Remove an entity from the panel by clicking on the "remove" (x) icon that appears when you hover over the entity in the panel. You can also use the "Remove all entities from this section" to, for example, remove all researchers and groups of researchers from the "Researchers and Groups" section.

You can safely remove entities from the panel. They will not be permanently deleted. You can add them back at any time.

Add sets of entities to the panel. In My SciVal, you can move an entire set of entities into the selection panel. Select the entities in My SciVal (using the checkboxes) and then click on the "Add to entity selection panel" button. This opens a modal window where you can either add the entities to the current set of entities in the panel.

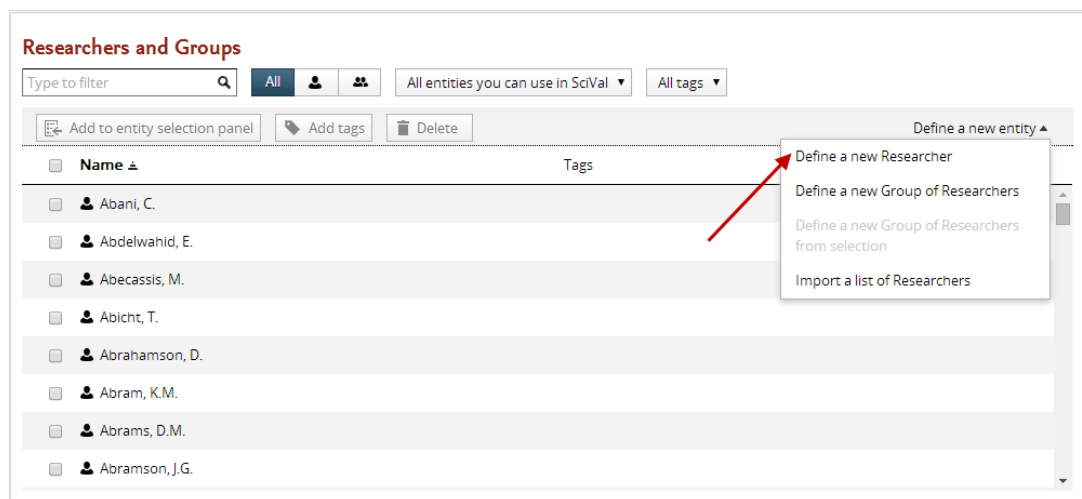
You can also choose to replace the current set of entities in the panel with the new set. This allows you to easily move sets of entities in and out of the panel.

8.3 Defining and importing new entities

In addition to the entities provided by SciVal, you can also define your own entities:

- researchers
- groups of researchers
- publication sets
- research areas
- groups of institutions
- groups of countries

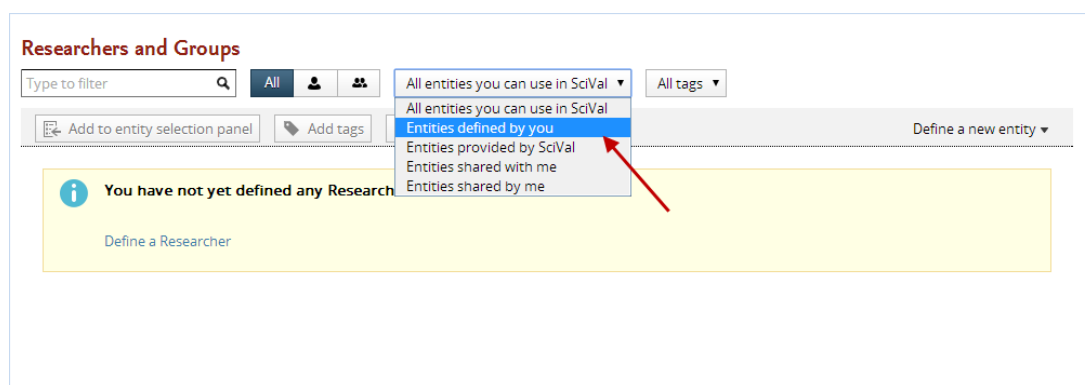
Define a new entity. Click on "My SciVal" in the top right corner of your screen. In My SciVal, choose a category (for example "Researcher and groups") and open the "Define a new entity". Now click on one of the links in the menu to define a new entity.



This will take you through a step-by-step process to define, name and save the new entity.

Note that some entities with large number of publications are not available immediately but take up to 48 hours to compute. You will receive an email as soon as the entity is ready to use.

View the list of entities defined by you. To see an overview of all the entities defined by you, choose a category (for example "Researchers and groups") and then select "Entities defined by you" from the drop-down menu.



Import a list of researchers. You can import a list of researchers into SciVal from a text file containing a list of Scopus author IDs.

- The file containing the list of Scopus authors IDs should be a text file (with a .txt extension in Windows). The text file should also be ANSI format, not Unicode/UTF.
- The Scopus authors IDs should be listed one per line (max. 300 IDs per file).
- During the import process, you can choose to create a new group of researchers containing the researchers you're importing. So you can for example import a research team and immediately create a group of researchers entity for that team.
- Tip: when you export a list of researchers from SciVal, the export will include the Scopus author ID of each person. You can paste this list of IDs into a text file and reimport the list of researchers back into SciVal.

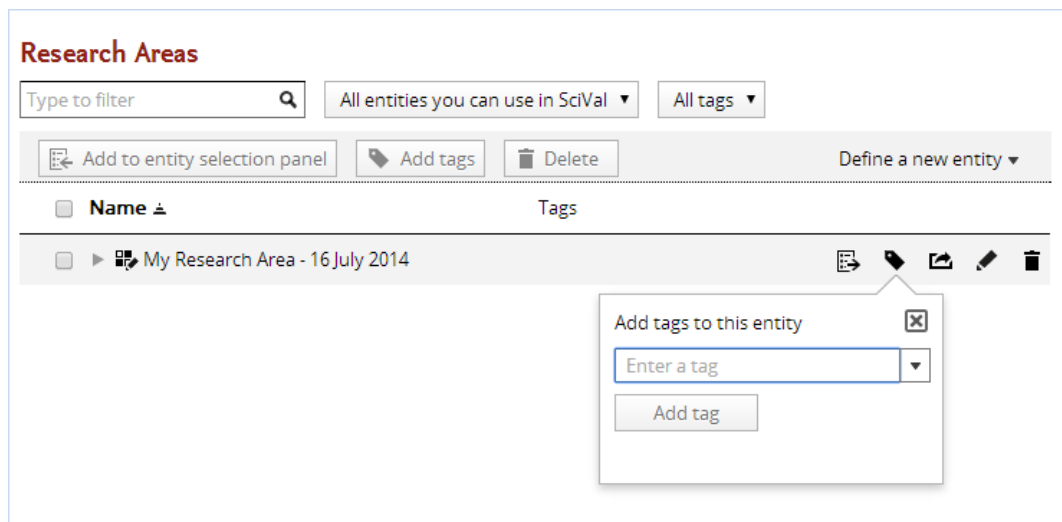
Import a publication set. You can import a publication set from a text file containing a list of publication IDs. These can be DOIs, PubMed IDs, or Scopus IDs (EIDs). You can import up to 20,000 publications in a single publication set.

- The file containing the list of publication IDs should be a text file (with a .txt extension in Windows). The text file should also be ANSI format, not Unicode/UTF.
- The Scopus authors IDs should be listed one per line (max. 20,000 IDs per file). The publication IDs should be listed one per line.
- You will be notified if any IDs in the file are not known to SciVal. This may be because the publications were before 1996 (the cutoff point for the Scopus data used by SciVal), or because the publications are very recent and therefore not yet included in the Scopus data cut used by SciVal.
- When you export a list of publications from SciVal, the export will include the DOI of each publication. You can paste this list of DOIs into a text file and reimport the list of publications back into SciVal.
- Tip: It is possible to merge multiple Publication sets up to 100,000 documents.

8.4 Tagging entities

In My SciVal, you can add tags to entities or sets of entities. For instance, you can attach keywords to entities or use tags to distinguish two researchers with the same name.

Tag an entity. In My SciVal, click on the "tag" icon for an entity to add tags. You can add as many tags to a single entity as you like.

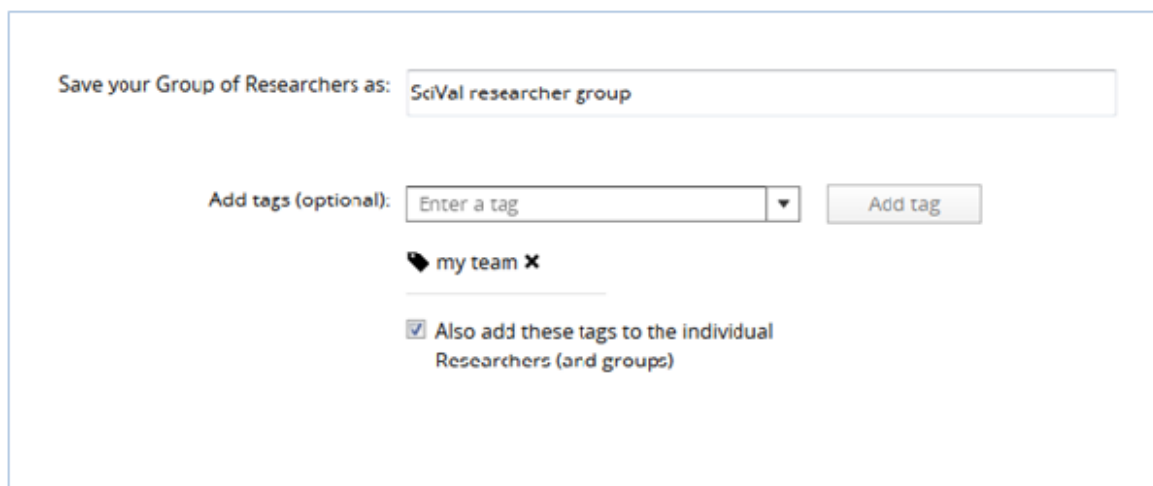


To tag multiple entities in one go, select them in My SciVal (using the checkboxes) and click the "Add tags" button along the top.

You can also tag entities during the entity creation process. For example, when defining a new research area, you can assign tags to the new entity during the final (name and save) step of the process.

Cascading tags. When you create a researcher group in SciVal, it is possible to not only tag the group itself but the individual researchers within the group as well. The feature allows you to use a group level tag and cascade it to all researchers who belong to the group. This option can be useful during an analysis for which identification of individual researchers who belong to the same group is important.

The option only appears in SciVal when a tag is added to a researcher group.



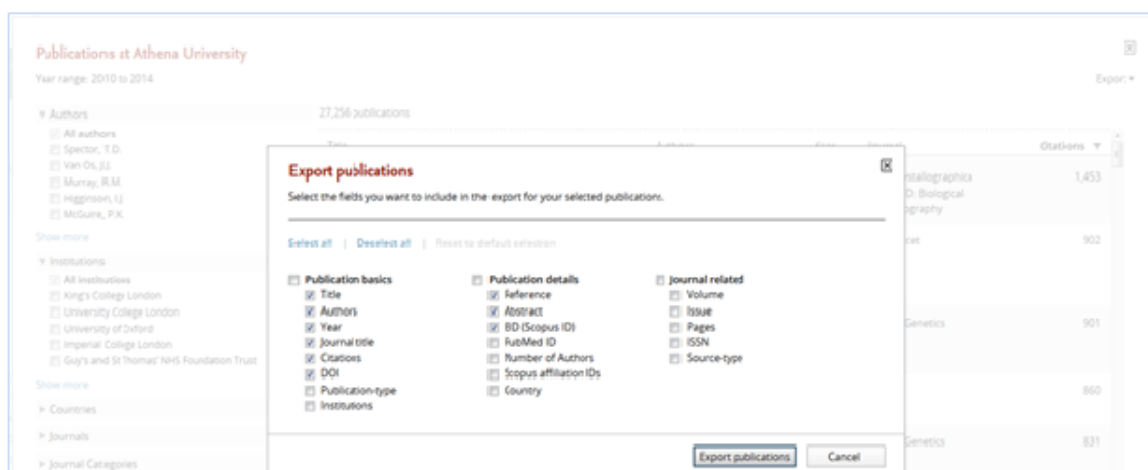
How you can use tagging. You can use tagging to create various grouping or categories of entities. Use the rightmost drop-down menu (marked "All tags") to view entities by tag. You can use this to select all entities with a particular tag, then move these into the entity selection panel by selecting them and clicking on "Add to entity selection panel".

Example: Say you have tagged five researchers with "possible hires". You can then filter the list of researchers by this tag, select all five researchers and move them into the entity selection panel. Now the five researchers are ready for you to compare them in the Benchmarking module.

Filtering by tags. Tag filters are included in the define flows of Groups of researcher, institution and countries. By using filtering by tag you can quickly and easily find researchers, institutions and countries with the tags you've defined when creating entity groups.

8.5 Export customization

SciVal offers greater flexibility for further analysis through an increased number of export fields for lists of publications. To access this feature, open a list of publications in SciVal and click on "Export a list of publications to a spreadsheet file."



SciVal provides you with the default fields to be exported, but this can be further refined and changed in the Export publications window.

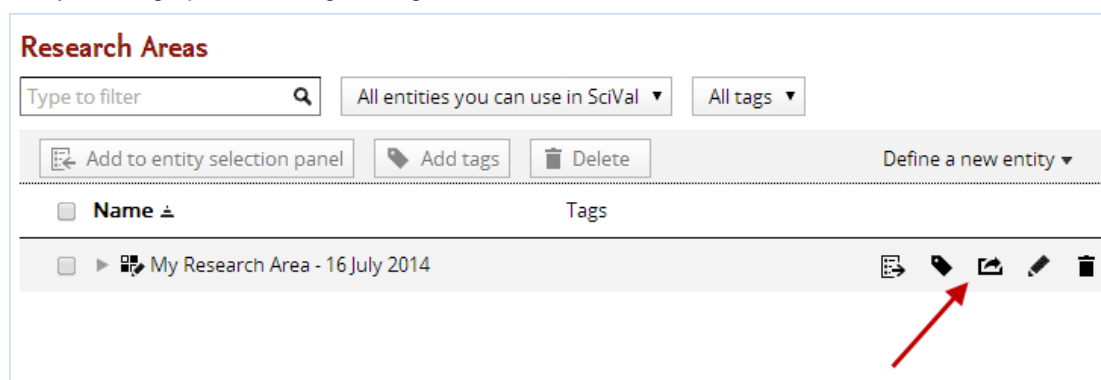
8.6 Sharing entities with others

You can share entities you've defined in SciVal (such as researchers, groups of researchers and research areas) with other SciVal users at your institution. For example, you could set up part of your institution's department structure as groups of researchers in SciVal, and then share that with others at your institution. Or you could define a research area in SciVal and share that with the other members of your research team. Sharing is possible with any groups or individuals within your institution.

By default when you share an entity, you remain the owner. Other users can only view the entity. You are the only user who can make changes to that entity, and the only user who can delete it from SciVal. However, you have the option to [transfer](#) the ownership of a shared entity.

A shared entity is the same for all users. When it is changed or updated with new publications, these changes are immediately visible to all users.

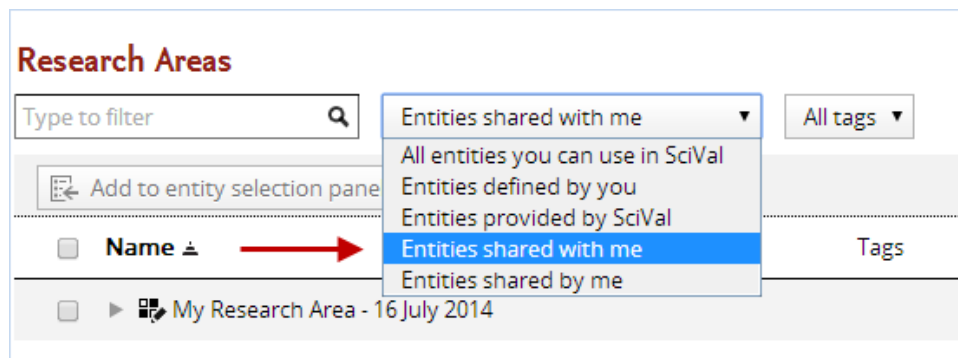
How to share an entity. To share an entity, go to My SciVal and click on the "Share" icon for that entity to bring up the sharing settings.



You can invite SciVal users at your institution by entering their email addresses, separated by

comma. You can create and manage your invitation list from the sharing panel. Invited users receive an email - which can be personalized- with a link that gives them access to the entity

Use the drop-down menu to the right of the filter box in My SciVal to display only entities that have been shared with you ("Entities shared with me"). You can also choose to view only entities that you have shared with others ("Entities shared by me").



Share multiple entities with your peers. It is possible to effortlessly share multiple research entities with groups of peers in SciVal.

Steps to share multiple entities:

- 1. Go to MySciVal
- 2. Select multiple entities
- 3. Click on the share icon

8.6.1 Transferring ownership

You can now transfer the ownership of your research entities in SciVal. If you change positions, leave the organization or you just want to transfer the administration of a shared entity to another person within your organization, the transfer ownership function allows you to do this in SciVal.

You can transfer the ownership to all people with whom you have already shared the entity. After transferring the ownership the previous owner will have viewing rights to the shared entity, the new owner will have full editing rights to the entity.

To transfer ownership of a shared entity in SciVal:

- Go to My SciVal and click on the share icon for the shared entity
- Click on the tab currently invited/shared with
- Next to the entity name click on change
- Set the new owner of the research entity

8.7 Integration with Scopus

Create a Publication Set in Scopus – If you have access to both Scopus and SciVal it is now possible to create a Publication Set from a Scopus search query with just a few clicks and perform further in-depth analysis in the SciVal Overview and Benchmarking modules.

- Enter your search in Scopus
- From your search results, select the desired publications up to a maximum of 2,000 and add them to your Scopus list using the 'Add to My list' option
- From 'My list', you can now click on the option to 'Export your list to SciVal'
- 'Click on 'Continue to SciVal' to redirect to SciVal, where you can name your Publication Set, add

a tag to it and analyze it further in detail

9 Working with research areas

9.1 About research areas in SciVal

SciVal gives you the flexibility to model, evaluate and benchmark any field of research. This can be a strategic priority, an emerging area of science or any other topic of interest.

Once you have defined a research area, you can:

- Evaluate your institution's output in that field
- See which other institutions and researchers are active in this field
- See who the top performing and fastest growing countries, authors and institutions are in the field
- Compare your output in that field against that of other institutions
- See which journals contain the most publications from the Research Area
- See what the most important topics are within the field
- Identify existing and potential new collaboration partners

User-defined research areas offer an alternative to subject area classifications like the Scopus journal classification. They can be as granular or interdisciplinary as you like.

Research areas are not fixed, but represent a dynamic definition of a field of science. Whenever the publication data in Scopus is updated, new publications matching the definition are added to the research area.

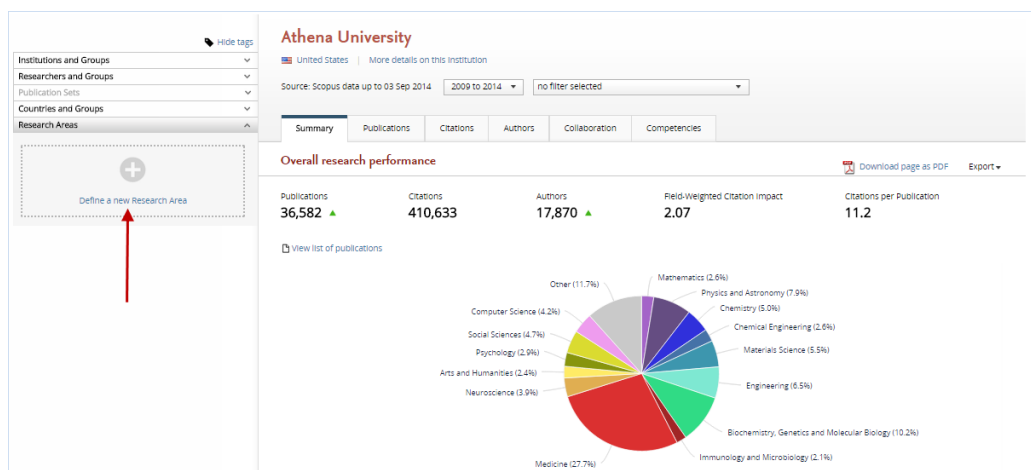
9.2 Defining a research area

The definition of a research area can either be keywords or entities. If this definition is too broad, you can apply filters to narrow it down further.

Let's say that your institution has made research on graphene a strategic focus. You are specifically interested in research on the thermal conductivity of graphene, and want to see how well your institution performs in this area.

You can define a Research Area from the entity selection panel in Overview, Benchmarking and Trends modules or from My SciVal

1. Go to the Overview, Benchmarking or Trends module
2. Open the "Research Areas" section of the entity selection panel on the left-hand side of the screen.
3. Click on "Add Research Areas", then "Define a new Research Area".



A pop-up window will now open. Here you can define your research area using a 3-step process.

Step 1. Start by defining your research area:

1. Go to the tab “Use search terms”
2. Enter “thermal conduction graphene” in the input field.
3. Press the Search button.

Define a new Research Area | View quick guide

STEP 1: Create definition | STEP 2: Refine definition | STEP 3: Save definition

Use search terms | Use entities | Use competencies

Define a new Research Area based on one or more search terms:

→ thermal conduction graphene + Add another field

Type important terms (e.g. solar flare) or an exact word or phrase (e.g. "solar flare")

💡 View more tips

Search

Step 2. You will now proceed to step 2. Here you can see how many publications worldwide (since 1996) match the definition “thermal conduction graphene”.

Apply filters (if needed) to narrow down the definition of your research area. Let’s say that you are interested only in academic publications. To filter out other organization types:

1. Click on the tab “Organization types”
2. Check off “Academic”
3. Click on “Limit to”

The filter you have just applied will now be shown on the right side of the screen.

Define a new Research Area [View quick guide](#)

STEP 1: Create definition **STEP 2: Refine definition** STEP 3: Save definition

Definition of your Research Area: **thermal conduction graphene**
 Publications matching the current definition: **1,251** (1996-present)

You can refine this definition by applying one or more filters:

Journal Categories	Total matching publications	
Journals	<input type="checkbox"/> Why are you seeing multiple organization types?	
Institutions	<input type="checkbox"/> Academic	1,251
Countries	<input type="checkbox"/> Government	115
Organization types	<input type="checkbox"/> Other	35
	<input type="checkbox"/> Corporate	34
	<input type="checkbox"/> Medical	1

Currently applied filters: Academic x

Limit to Exclude

Step 3. Click "Next Step" in the bottom right corner to proceed to step 3.

1. Name your research area "Thermal Conductivity Graphene (Academic)"

Define a new Research Area [View quick guide](#)

STEP 1: Create definition STEP 2: Refine definition **STEP 3: Save definition**

Save your Research Area as:

Add tags (optional):

New publications matching the definition of this Research Area will be added on a weekly basis

[View Research Area summary](#)

2 Click "Save and finish".

Your research area is now computed, and you are returned to your previous place in SciVal.

See [Search tips](#) for more help with using search terms to define a research area.

9.3 Predefined Research Areas

SciVal offers for instant analysis predefined Research Areas based on all Scopus 334 classifications in Overview, Benchmarking and Trends. For more information about the Scopus journal classification visit the [Journal Title List](#).

9.4 Search tips

Search technology in SciVal. When you use search terms to define your research area, SciVal will search the Scopus database for publications matching your search terms. We search through the publication titles, as well as the abstracts and the keywords that Scopus assigns to each publication.

SciVal uses a search engine called Apache Solr, while Scopus uses FAST ESP. So the results returned from search queries might differ in SciVal and Scopus, even though they use the same data source. Compare Bing and Google Search for example - both search the Web, but return different results.

Key search tips for creating a Research Area

- Choose search terms that are specific and closely related to your research area
- Avoid very general terms like 'cell'

Your syntax will make a difference in how SciVal interprets your search

- 'Solar flare' is interpreted as 'solar AND flare', which may be located next to each other or in separate sentences
- 'Solar-flare' is also interpreted as 'solar AND flare'
- Enclose the search terms in double quotes (for example "solar flare") to bring back exact matches only. This search will find publications containing 'solar flare' but not 'solar-flare'.
- Stop words are always ignored. Stop words include personal pronouns (such as 'he', 'she', 'we', 'they'); most articles (such as 'the', 'an'); most forms of the verb to be (such as 'be', 'is', 'was'); and some conjunctions (such as 'as', 'because', 'if', 'when')

SciVal ignores accents and upper/lower case

- The search is not case-sensitive. It will match both upper-case and lower-case text
- Terms containing accented characters will be found if you type in the unaccented version, for example u to represent ü or ú

SciVal uses a stemming algorithm that reduces words to their root form

- If you enter 'fishing', 'fished', 'fish', or 'fisher', they will all be stemmed automatically so that the search is conducted on the root word, 'fish'
- If you use the singular form of a word, your search will retrieve the singular, plural, and possessive forms of most words
- Search strings containing wild-cards are not reduced to their root form

You can find variants using wild-card searching

- ? replaces a single character. For example, 'organi?ation' will return both 'organisation' and 'organization'
- * replaces one or more characters. For example, 'cat*' will return 'catastrophe', 'catheter', 'catnip', and so on

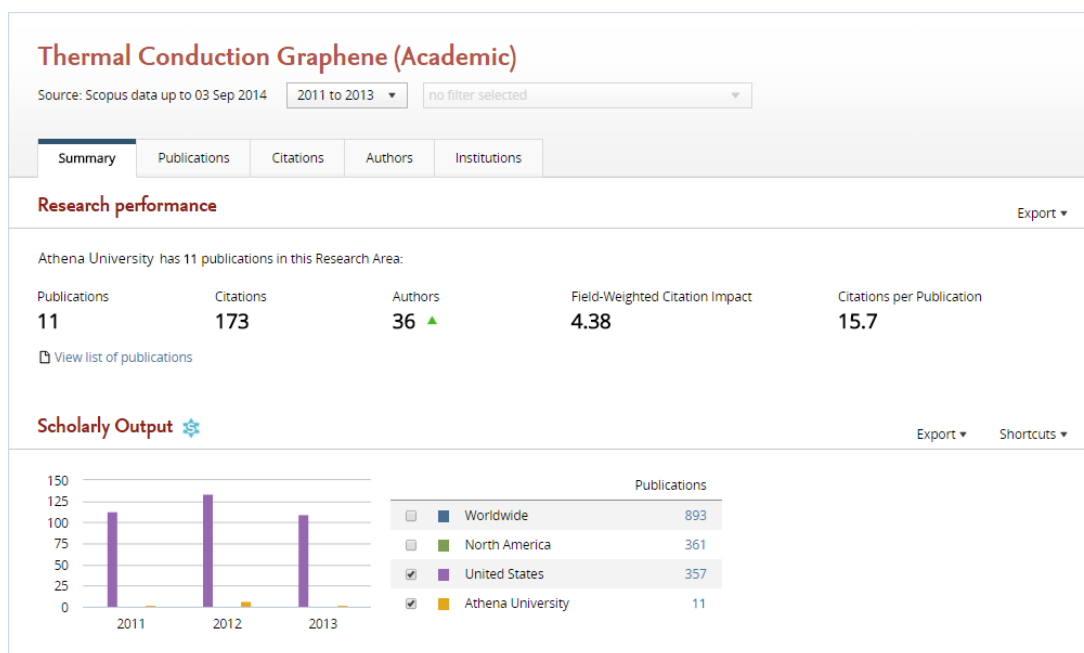
SciVal uses the Boolean operators AND, OR, NOT

- Entering 'blood cell' will search for 'blood AND cell'
- Entering 'cat AND dog OR mouse' we will search for '(cat AND dog) OR mouse'
- If you specify parentheses, they will be followed and not overridden. If you enter 'cat AND (dog OR mouse)' we will search for 'cat AND (dog OR mouse)'
- If you don't use parentheses, we will add them to simulate operative precedence - AND takes precedence over OR. If you enter 'cat OR dog AND mouse' we will search for 'cat OR (dog AND mouse)'

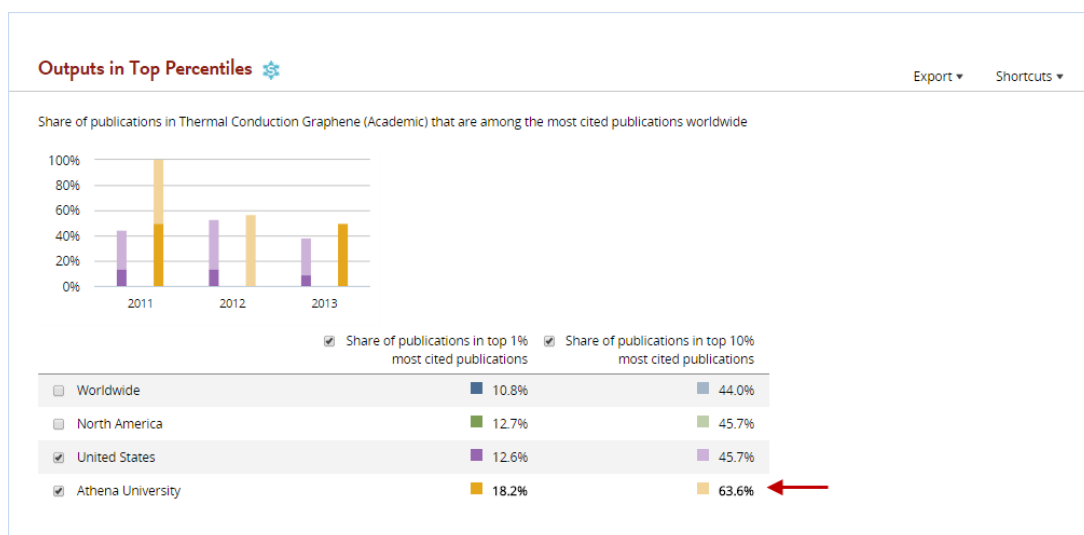
9.5 Analyzing a research area

9.5.1 Research areas in the Overview module

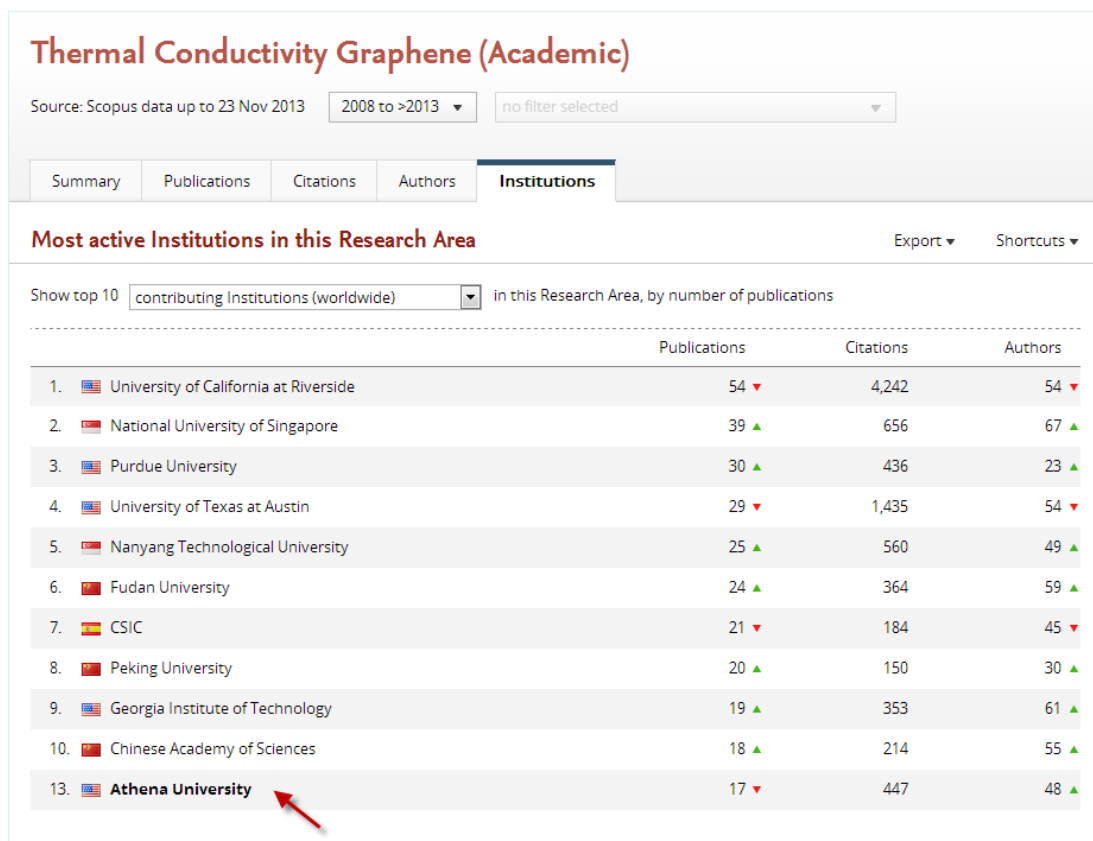
See your institution's output within a research area. In the Overview module, you can view your institution's contribution to a particular research area by number of publications and citations. How does your institution's output in this area compare to the national or worldwide output?



For more in-depth information, browse the Publications and Citations tabs. For example, to see how much of your institution's output was in the top 1% and 10% most cited publications worldwide, click on the Publications tab and scroll down to the Outputs in Top Percentiles section.



See which institutions are active within a research area. The Institutions tab gives you an overview of the top contributing institutions in the research area within your own region or country or worldwide. You can also see which institutions are collaborating with your institution within the research area.



9.5.2 Research areas in the Benchmarking module

Use the Benchmarking module to explore the worldwide output in a particular research area from 1996 until the present.

- Go to the Benchmarking module
- Select the research area from the entity selection panel on the left-hand side

You can spot possible trends using a variety of different metrics, such as:

- Scholarly Output (number of publications)
- Field-Weighted Citation Impact (normalized citation count)
- Outputs in Top Percentiles (an indicator of research excellence)
- Journal Category Count (an indicator of multidisciplinaryity)
- Collaboration (for instance international collaboration)



9.5.3 Research areas in the Collaboration module

See your institution's collaboration partners in a research area. You can use the Collaboration module for an in-depth view of your institution's collaboration partners in a particular research area. Or identify potential new collaboration partners in that research area.

1. Go to the Collaboration module
2. Select your home institution from the entity selection panel on the left-hand side
3. Select the research area from the filter menu at the top of the page.

Switch from Map to Table view to view the full list of collaborating institutions. Which collaboration had the greatest citation impact?

Collaboration by Athena University

United States | [More details on this Institution](#)

Source: Scopus data up to 24 Feb 2014 | 2009 to 2013 | Thermal Conductivity Graphene (Academic)

Current collaboration | Potential collaboration

Map | Table | Export | Shortcuts |

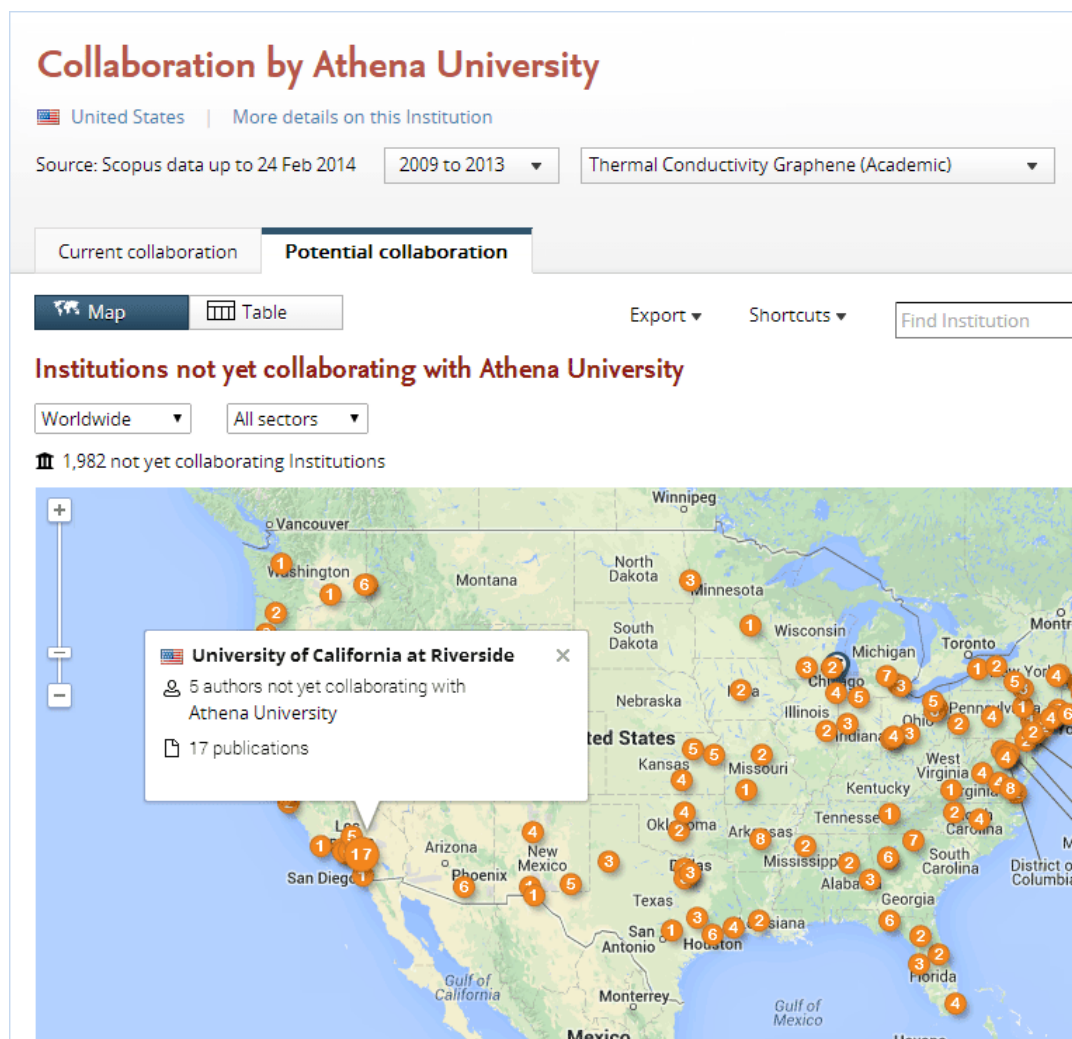
Institutions collaborating with Athena University

Worldwide | All sectors

13 collaborating Institutions | 135 co-authored publications

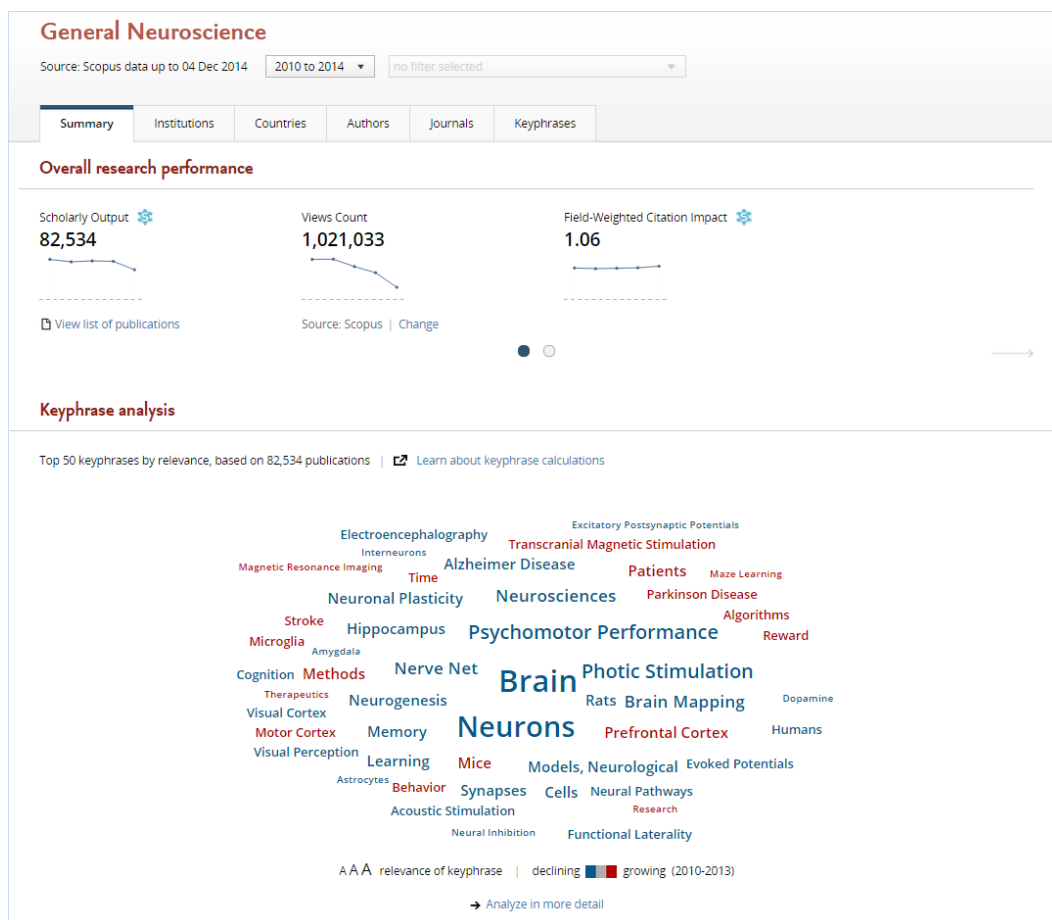
Institution	Co-authored publications	Co-authors at Athena University	Co-authors at the other institution	Citations
Dong-A University	2	3	1	0
Argonne National Laboratory	2 ▲	11 ▲	7 ▲	61
Los Alamos National Laboratory	2 ▲	1 ▲	1 ▲	8
University of Texas at Austin	2 ▼	1 ▼	5 ▼	333
Shanghai University	1 ▲	2 ▲	1 ▲	5
Banaras Hindu University	1	1	1	10
Indian Institute of Technology, Madras	1	2	2	0
Nanyang Technological University	1 ▲	5 ▲	1 ▲	2
Rice University	1	1	1	10
University of Minnesota	1 ▼	1 ▼	1 ▼	80

Find new collaboration partners in a research area. Switch to the “Potential collaboration” tab to view potential new collaboration partners in this research area. These institutions are active in this research area, but are not yet collaborating with your institution in that area.



9.5.4 Research areas in the Trends module

The Trends module is built for you to analyze Research Areas in depth. See who the top performers and rising stars are based on both output and usage data. Which subtopics are viewed the most and who is contributing to them?



See [The Trends module](#) for more information about how to analyze Research Areas.

10 Data and metrics

10.1 What is the source of the data in SciVal?

SciVal is based on output and usage data from Scopus, the world's largest abstract and citation database for peer-reviewed publications.

The Scopus database covers over 30 million publications from 1996 until the present:

- 21,000 serials from 5,000 publishers. These include:
 - 20,000 peer-reviewed journals
 - 390 trade publications
 - 370 book series
- 5.5 million conference papers

Additionally SciVal uses usage data from ScienceDirect the world's largest scientific full text database with more than 2,500 journals and 26,000 books.

For detailed information on the data used in SciVal, see the SciVal Metrics Guidebook.

[Download the SciVal Metrics Guidebook](#) (PDF format)

10.2 How current is the data?

SciVal regularly checks whether the researchers you've defined have any new publications in Scopus. The researchers are then automatically updated with any new publications.

Publications, author and affiliation profiles in SciVal are updated approximately every two weeks. So our data is close to being in total sync with Scopus.

Usage data from Scopus and ScienceDirect are updated monthly.

10.3 What publication types can you use?

SciVal includes all types of publications that are classified by Scopus:

- articles
- reviews
- conference papers
- editorials
- short surveys
- books

For each selected metric in the Benchmarking module, you can choose which types of publications to include in the analysis.

10.4 Which metrics are available to use in SciVal?

SciVal uses a broad range of metrics, including the Snowball Metrics. The metrics can be divided into five categories:







- Productivity metrics
These measure research productivity
- Citation impact metrics
These measure the impact of citations
- Collaboration metrics
These measure the benefits of collaboration
- Disciplinary metrics
These measure multidisciplinaryity
- Usage metrics
These measure viewing activity








The Metrics Guidebook and the Usage guidebook discusses each SciVal metric in detail. The guidebooks offer suggestions on how and when to apply each metric.

[Download the SciVal Metrics Guidebook](#) (PDF format)

[Download the Usage Guidebook](#) (PDF format)

The available metrics are:

Scholarly Output	The number of publications of a selected entity	 Snowball Metric
Outputs in Top Percentiles	Publications of a selected entity that have reached a particular threshold of citations received	 Snowball Metric
Publications in Top Journal Percentiles	The set of an entity's publications that have been published in the world's top journals	 Snowball Metric
Field-weighted outputs in Top percentiles	Share of publications that are the most cited publications worldwide	 Snowball Metric
Citations Count	Total citations received by publications of the selected entities	 Snowball Metric
Citations per Publication	The average number of citations received per publication	 Snowball Metric
Cited Publications	Publications that have received at least one citation	
Number of Citing Countries	The number of distinct countries	

	represented by the publications citing a selected entity	
Field-Weighted Citation Impact	The ratio of citations received relative to the expected world average for the subject field, publication type and publication year	 Snowball Metric
Views Count*	Total views received by publications of the selected entities	
Views per Publication*	The average number of views per publication	
Field-Weighted Views Impact*	The ratio of views relative to the expected world average for the subject field, publication type and publication year	
Collaboration	The extent of international, national and institutional co-authorship	 Snowball Metric
Field-weighted collaboration	The amount of international, national and institutional co-authorship	 Snowball Metric
Collaboration Impact	The average number of citations received by publications that have international, national or institutional co-authorship	 Snowball Metric
Academic-Corporate Collaboration	Publications whose affiliation information contains both academic and corporate organization types	 Snowball Metric
Academic-Corporate Collaboration Impact	The average number of citations received by publications that have academic-corporate collaboration	 Snowball Metric
<i>h</i> -index	A measure of both the productivity and publication impact of an entity, which depends on both the number of publications and the number of citations they have received	 Snowball Metric
Journal count	The number of journals in which an entity's	

	publications have appeared	
Category count	The number of journal categories in which a selected entity's publications have appeared	

* These metrics are currently only available in the SciVal Trends module.

10.5 What are Snowball Metrics?

The Snowball Metrics were initiated by eight highly successful research universities as a manageable set of metrics that capture the strategic aspects of research performance. The ambition is for the Snowball Metrics to become the global standard for the higher education sector. The agreed and tested definitions are shared free of charge with the research community.

Elsevier supports Snowball Metrics as a recognized industry standard and has implemented many of the metrics in SciVal. You can recognize these metrics by the following icon:



More information about Snowball Metrics is available on snowballmetrics.com:

- [More info about Snowball Metrics](#)
- [Download the Snowball Metrics Recipe Book](#) (PDF format)

10.6 What are SNIP and SJR?

Source Normalized Impact per Paper (SNIP) and SCImago Journal Rank (SJR) are journal metrics. They are used to measure the citation impact of a journal.

- SNIP (Source-Normalized Impact per Paper) - This measures the citation impact of a journal. SNIP is normalized for the journal's subject field, weighting citations based on the number of expected citations in that field.
- SJR (SCImago Journal Rank) - This measures the prestige of citations received by a journal. The subject field, quality and reputation of the citing journal have a direct effect on the value of a citation.

See www.journalmetrics.com for more details on SNIP and SJR.

Publications in Top Journal Percentiles. In the Benchmarking and Overview modules, you can view the metric Publications in Top Journal Percentiles by either SNIP or SJR. So you can see how many of your institution's publications are in the top 1% and 10% journals worldwide, as measured by either SNIP or SJR. In the Benchmarking modules, you can also see the output in the top 5% and 25% of journals by SNIP or SJR.

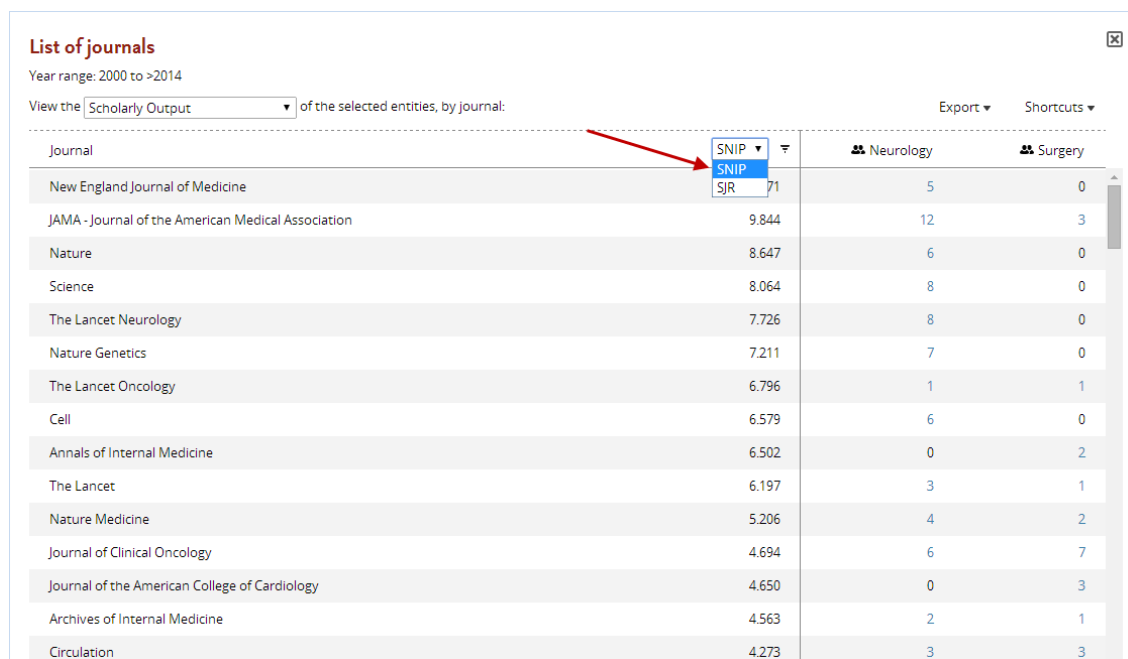
Publications by journal. In the Overview module, you can view the top 10 journals where your institution's publications have been published. You can see both the SNIP and SJR value for each journal. To see this breakdown by journal, click on the Publications tab, then select "by journal".

Use the export function to view the full list of journals for the selected entity's publications, including

the SNIP and SJR values for each. Export the list of publications for the World to see the full list of journals to a spreadsheet file. You can then sort this by SNIP or SJR.

List of journals for selected researchers. In the Benchmarking module, you can view the list of journals for the researchers and/or groups of researchers that you have currently selected. Here you can also see journal metrics (SNIP and SJR) for each of the journals.

You can export the list of journals to a spreadsheet file, including the SNIP and SJR values for each journal.



List of journals ✕

Year range: 2000 to >2014

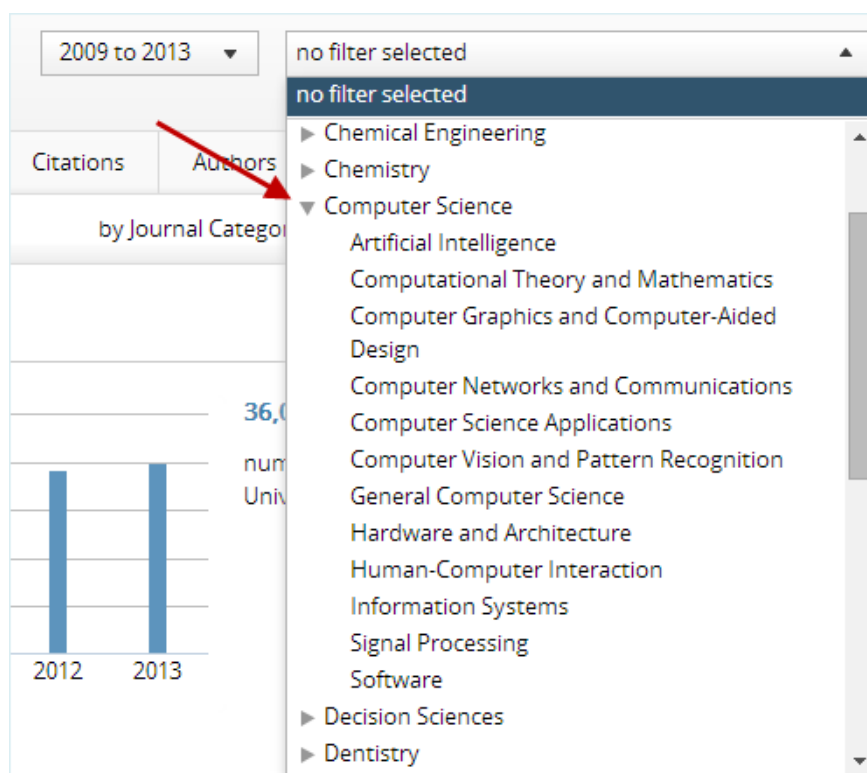
View the Scholarly Output of the selected entities, by journal: Export Shortcuts

Journal	SNIP	Neurology	Surgery
New England Journal of Medicine	9.844	5	0
JAMA - Journal of the American Medical Association	9.844	12	3
Nature	8.647	6	0
Science	8.064	8	0
The Lancet Neurology	7.726	8	0
Nature Genetics	7.211	7	0
The Lancet Oncology	6.796	1	1
Cell	6.579	6	0
Annals of Internal Medicine	6.502	0	2
The Lancet	6.197	3	1
Nature Medicine	5.206	4	2
Journal of Clinical Oncology	4.694	6	7
Journal of the American College of Cardiology	4.650	0	3
Archives of Internal Medicine	4.563	2	1
Circulation	4.273	3	3

10.7 Which journal classifications are available in SciVal?

Journal classifications are used in SciVal to categorize journals and the publications in those journals. Each journal can be assigned to one or more categories in the selected journal classification. This lets you, for example, see the breakdown of an institution's publications by journal category - say, 50% in medicine, 30% in chemistry and 20% in physics.

You can also use the journal categories to filter all data shown in SciVal by a particular subject area. For instance, you can filter by Engineering to see the research performance of your selected entities within that field only. See also [Filtering by subject area](#)



When you have *not* selected a particular journal category filter ("no filter selected"), the same data is shown in SciVal regardless of which journal classification you are currently using. For example, if an institution has 100 publications when you have the ASJC classification selected, it will also have 100 publications when you have selected REF 2014. The selected journal classification *only* affects the data shown when you are filtering by a particular journal category.

Available journal classifications. In SciVal, you can choose between four different journal classifications:

- ASJC - All Science Journal Classification
Used in Scopus. This is the default scheme in SciVal.
- FoR - Fields of Research (FoR) List
Part of the Australian and New Zealand Standard Research Classification.
- FOS - Field of Science and Technology (FOS) Classification
Used in the *Frascati Manual* of the Organisation for Economic Co-operation and Development (OECD).
- REF 2014 - Units of Assessment (UoAs)
Used in the REF 2014 exercise administered by the Higher Education Funding Council for England (HEFCE).

How to select a journal classification. Open the Preferences screen to select another classification. Here you can also see which journal classification is currently selected.

1. Click on your name at the top right of the window to open your user account menu
2. Choose "Preferences" from the menu

Preferences

Select journal classification

i This will be used to categorize journals (and the publications in those journals) into scientific disciplines.

☒ **ASJC - All Science Journal Classification**
Used in Scopus. This is the default scheme in SciVal.
[View more details](#)

☐ **FoR - Fields of Research (FoR) List**
Used by Australian Research Council.
[View more details](#)

☐ **FOS - Field of Science and Technology (FOS) Classification**
Used in the *Frascati Manual* of the Organisation for Economic Co-operation and Development (OECD).
[View more details](#)

☐ **REF 2014 - Units of assessment (UOAs)**
Used in the REF 2014 exercise administered by the Higher Education Funding Council for England (HEFCE).
[View more details](#)

3. In the Preferences screen, select your preferred journal classification. Use the "View more details" links for more info about a particular journal classification
4. Click on "Save Preferences" at the bottom of the Preferences screen
5. Your selected journal classification will now be used throughout SciVal

How were the journal classifications mapped to ASJC? The categories in the Scopus ASJC classification were mapped to equivalent categories in the FoR, FOS and REF 2014 classifications .

- The classifications were mapped at category level (ASJC category to target category)
- The ASJC categories were manually mapped to categories in the three other classifications
- Many categories could be mapped to a single ASJC category. In some cases, multiple ASJC categories were mapped to a single target category, and vice versa
- 99.2% of publications were mapped from ASJC to the FoR, FOS and REF 2014 classifications. Only the ASJC category "Multidisciplinary" was not mapped to a category in the other classifications because there was no equivalent.

[View the ASJC to FoR/FOS/REF 2014 mappings](#) (PDF format)

10.8 How are keyphrases calculated?

SciVal uses the Elsevier Fingerprint Engine to extract distinctive keyphrases within the Research Area.

The text mining is done through applying a variety of Natural Language Processing techniques to the titles and abstracts of the documents in the Research Area in order to identify important concepts.

Concepts are matched against a set of thesauri spanning all major disciplines. For each document the distinctive keyphrases are selected based on Inverse Document Frequency (IDF), by incorporating a factor that diminishes the weight of words that occur frequently in the document set, and increases the importance of words that occur rarely.

Each keyphrase is given a relevance between 0 and 1 with 1 given to the most frequently occurring keyphrase. Remaining keyphrases are given a value based on their relative frequency.

[Read more about Elsevier Fingerprint Engine](#)

10.9 Author merge requests in SciVal

To enhance quality of data and increase synchronicity of author profiles between SciVal and Scopus, the Scopus Author Feedback Wizard is integrated within SciVal. If more than one author profile is being selected during creation of researcher profile, a merge request is sent to the Author Feedback team who manually checks the validity of the request.

The Author Feedback team checks the used name variant, the subject area, the affiliation of the author and other meta data to validate the request. If validation is successful a merge request is approved and the profile is made available both on Scopus and SciVal.

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