Spring 2023

Topic Search

- Steps before searching
- Boolean search (Scopus, Web of Science, swisscovery, …)
- Refine & evaluate your results

Stephanie Hofmann & Bobby Neuhold

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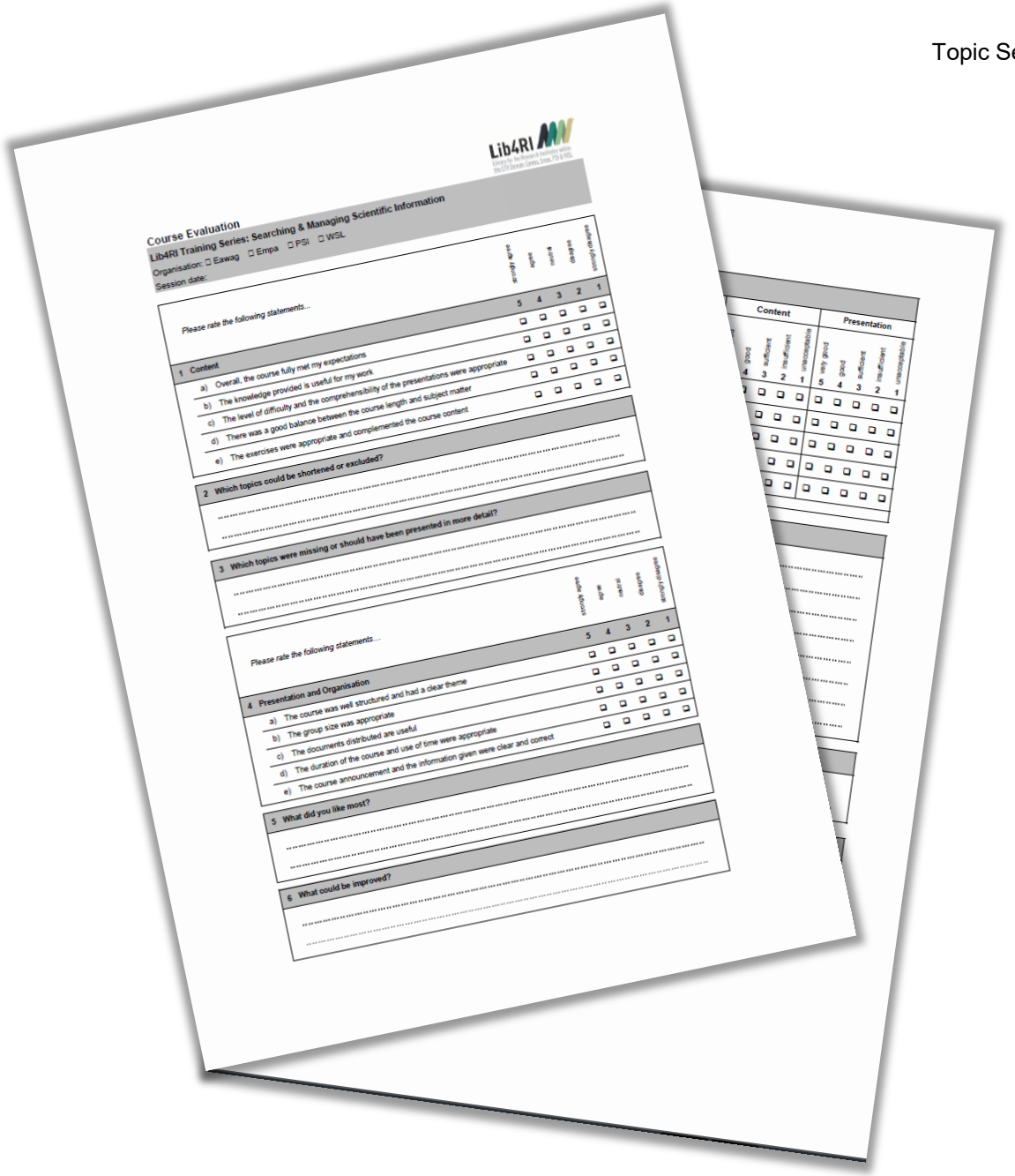
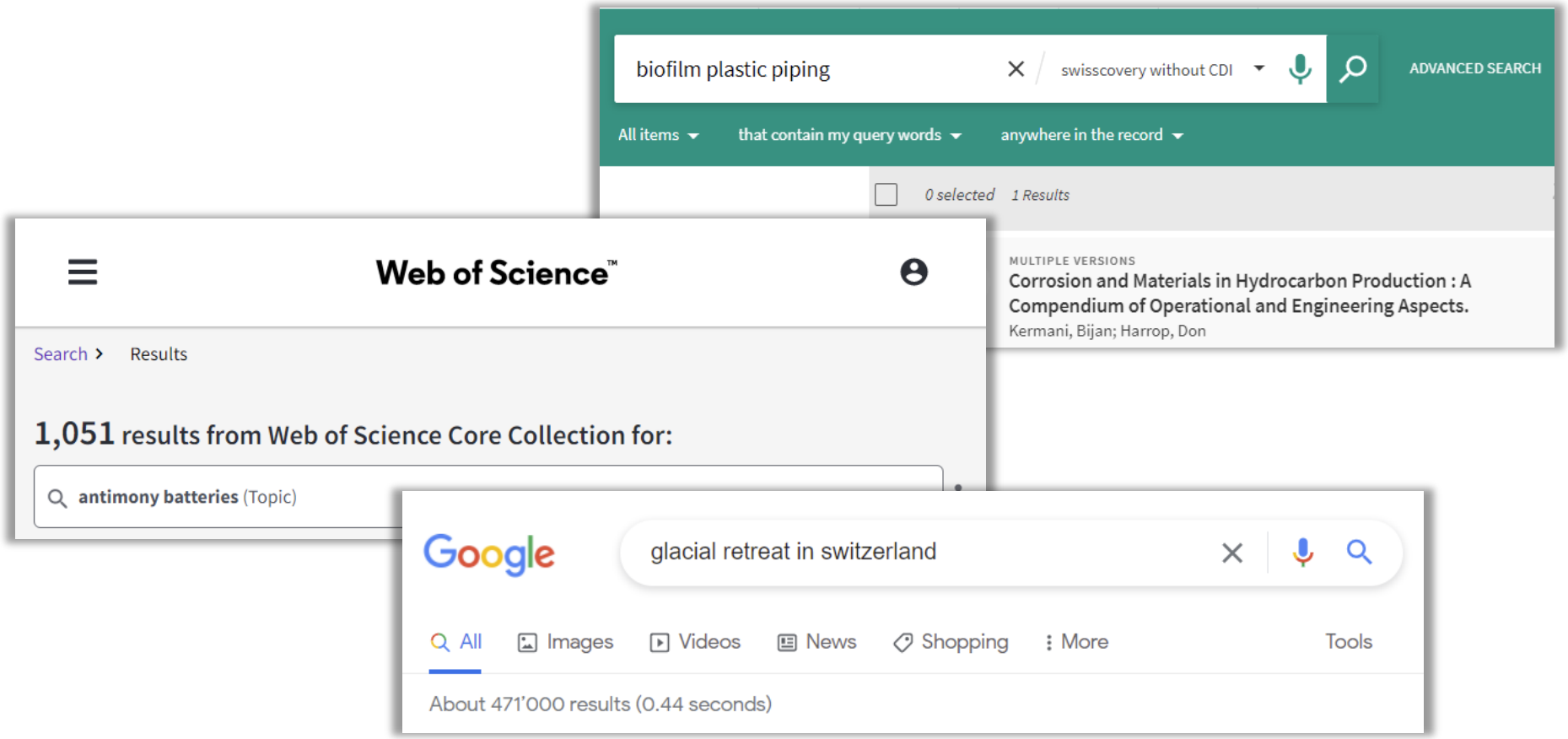


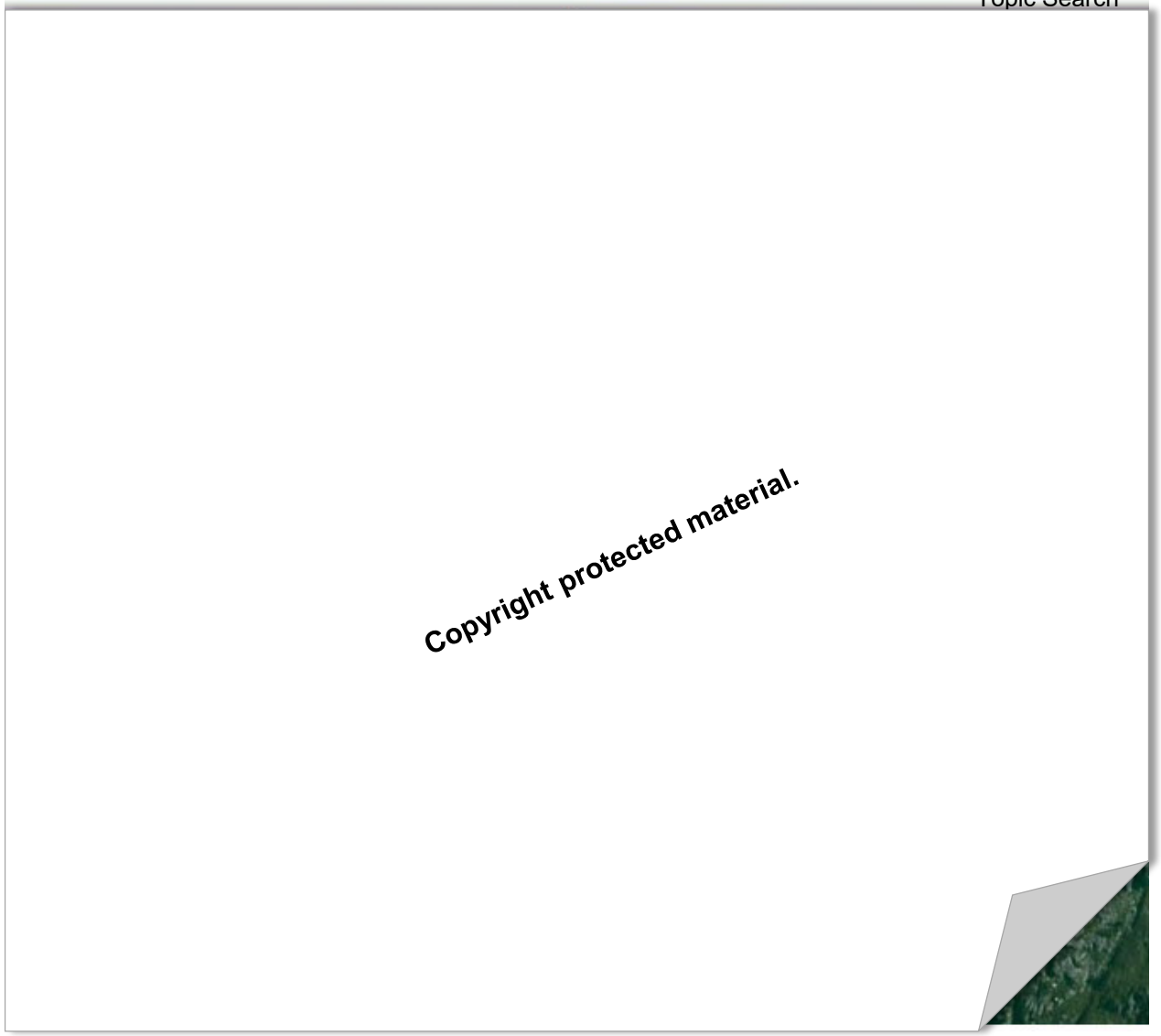
«Some search in order to find; and some find in order to end the effort of searching.» (Elazar Benyouëtz)



Retreat of Glaciers in Switzerland

Topic search

Thematic search



Rhône Glacier, Valais, 1850 and 2000
Foto: Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie (VAW) at ETH Zurich

Before searching – analyse your topic

- **How extensive should your search be?**
  Do you need everything about your topic or simply the documents providing an overview?
  Tip: combine your search terms with «overview», «introduction», «survey», «review», ... or use corresponding filters (if available)

- **Which material do you need?**
  Books, PhD theses, articles, ….
  → different document types often require diverse search tools.

- **Which time period should be covered?**
  Since when could there be publications on the topic?
  Which period is covered by the search tools?

Before searching – analyse your topic

- **Orientation / definition of the terms**
  - Reference works (encyclopaedias, dictionaries, etc.)
  - Manuals
  - Wikipedia
  - Some key papers/books you already have
- **Comprehensive searches with current issues**
  - Articles, conference proceedings, reports
  - Books
  - Standards, guidelines and patents (depending on the research topic; advanced level)
- **Historical searches**
  - Bibliographies
  - Card index
  - Archives

Before searching – analyse your topic

Analysis of the central terms of the topic

Define core concepts:

- Include synonyms, beware of homonyms
- Define super- and subordinate terms
- Check related terms
- Translate the search terms (if necessary)

Tip: Start from a few seminal papers and/or relevant reference works and follow an iterative search strategy

Note:

- Spelling BE and AE (covered by Scopus & WoS)
- Previous or other spellings
- Ambiguous and uncommon abbreviations
- Singular and plural forms (covered by Scopus & WoS)

→ Bring the concepts/search terms in a meaningful order, using a table.

Truncation, placeholders and wildcards

Electronic search tools generally seek character strings, not meanings.

→ Grammatical and spelling variations are often not taken into account

Truncation via placeholders and wildcards facilitate the search, e.g.:

$ Represents zero or one character (WoS)
→ Topic search: colo$r, finds color and colour

? Represents any one character (Scopus, WoS)
→ Author search: Ma?er, finds Maier and Mayer

* Represents zero or more trailing, leading or enclosed characters (Scopus, WoS and many more, but NOT Google)
→ econom* finds: economy, economist, economic, economically

Note: Too much truncation might lead to unwanted results.
Note: Check, what symbols you can use in which database.

Important: *WoS* and *Scopus* include lemmatisation, word stemming and spelling variations. These are automatically turned off when using truncations (often still better)

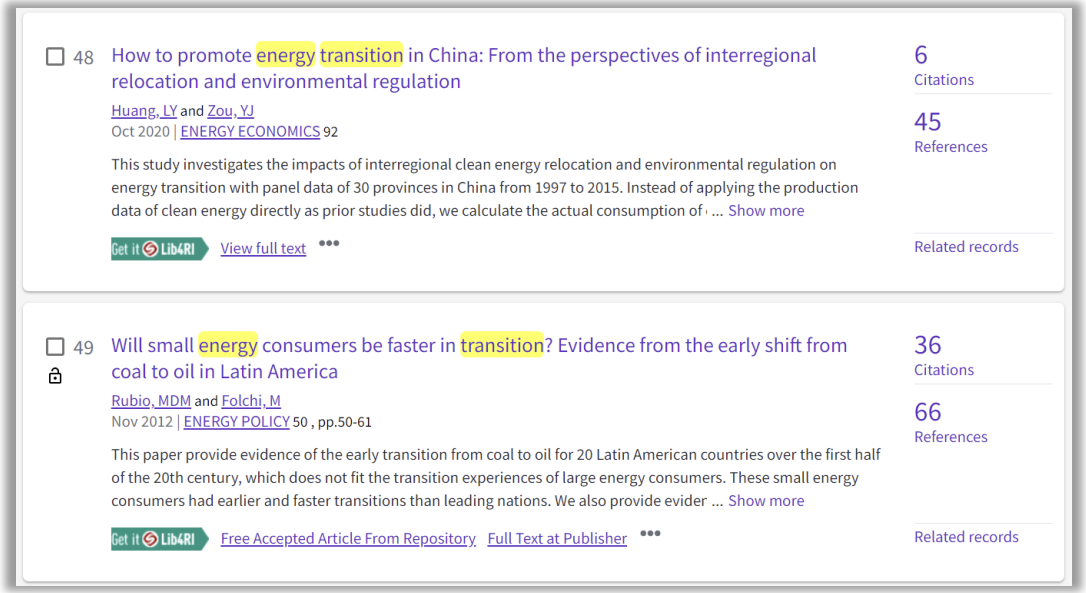
Phrase search

Search for documents with words in a sequence (phrase)

→ Phrase search: in “quotation marks”

Web of Science search for energy transition: 370,229 hits

Web of Science search for ”energy transition”: 7,396 hits



Without the quotes, the space in between energy transition is interpreted as a logical AND neglecting order and location of the search terms

Important: WoS turns off lemmatisation and word stemming for words in quotes; Scopus, however, does NOT (unless truncation is in place)

Tip: Also works with swisscovery, Google and many more

Classify your research topic into concepts

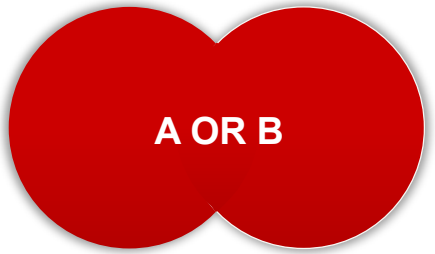
Retreat of **Glaciers** **Switzerland**

Concept 1	Concept 2	Concept 3
retreat	glaciers	Switzerland

Boolean operators (logical operators from set theory)

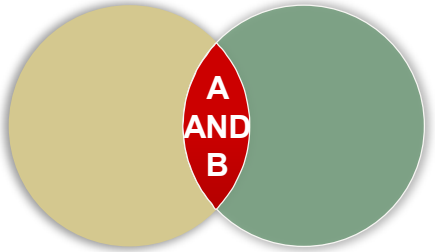
OR any one of the search terms must occur to be retrieved. Hits contain at least one of the terms.

→ Number of results increases



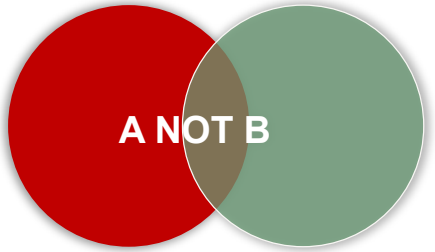
AND all search terms must occur to be retrieved. Hits contain both search terms.

→ Number of results decreases



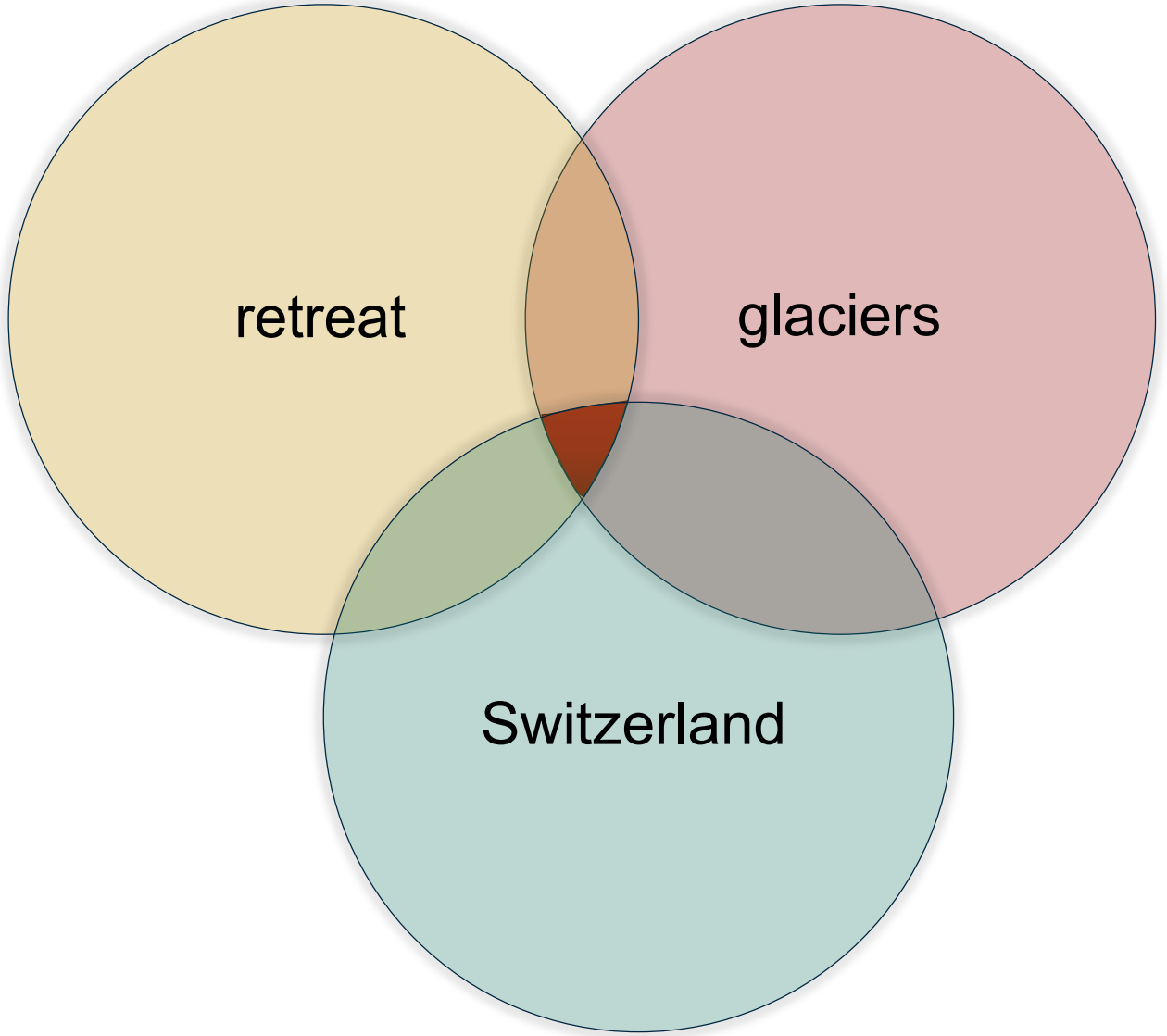
NOT excludes records that contain a given search term after the NOT-operator.

→ Number of results decreases



Combine concepts

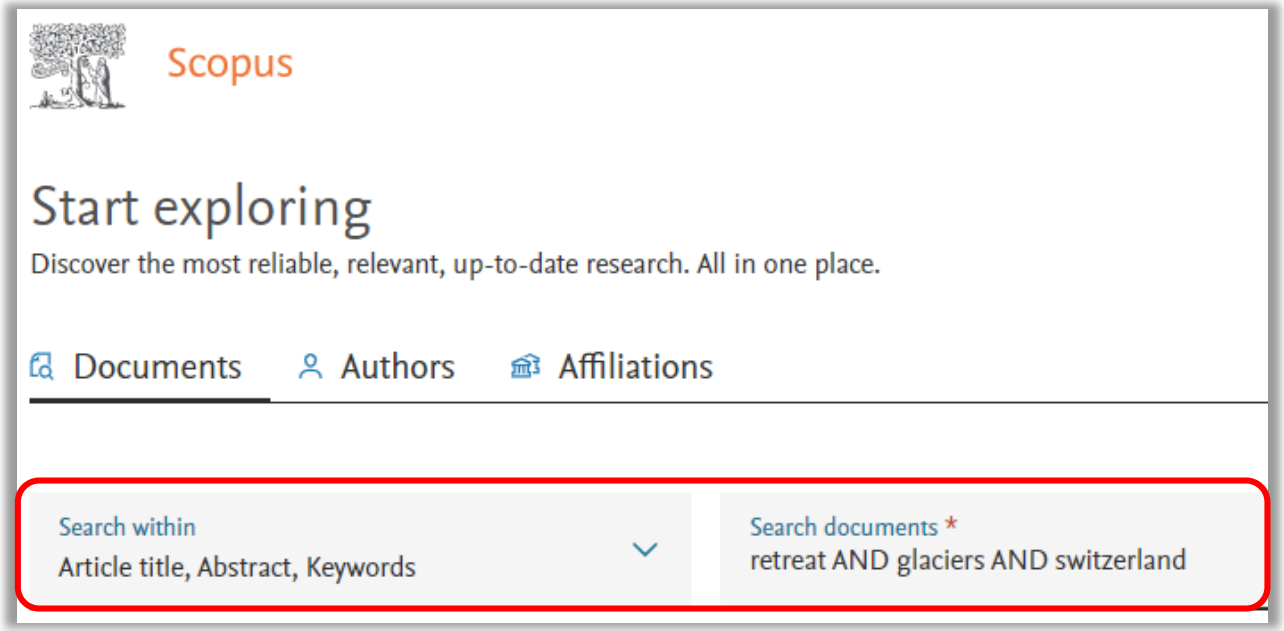
retreat
AND
glaciers
AND
Switzerland

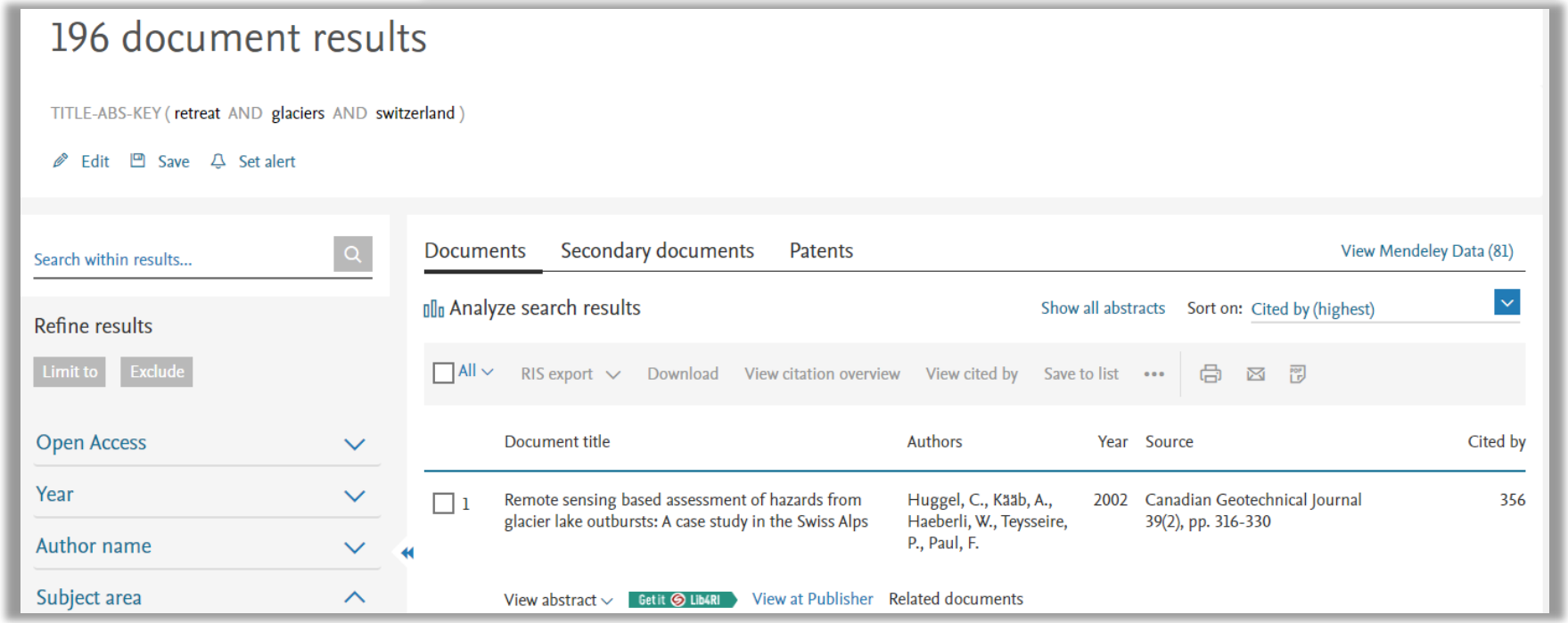


Search in Scopus

www.scopus.com

A rather quick and dirty first topic search





Find synonyms and related concepts

Retreat of Glaciers in Switzerland

Concept 1	Concept 2	Concept 3
retreat	glaciers	Switzerland

Find synonyms and related concepts

Retreat of Glaciers in Switzerland

Concept 1	Concept 2	Concept 3
retreat	glaciers	Switzerland
withdrawal	ice field	Swiss
shrinkage	icefield	
loss	ice cap	(European alps)
disappearance	icecap	(Europe)
ablation	ice mass	
deglaciation		
calving	(permafrost)	
melting		
sublimation		
precipitation		

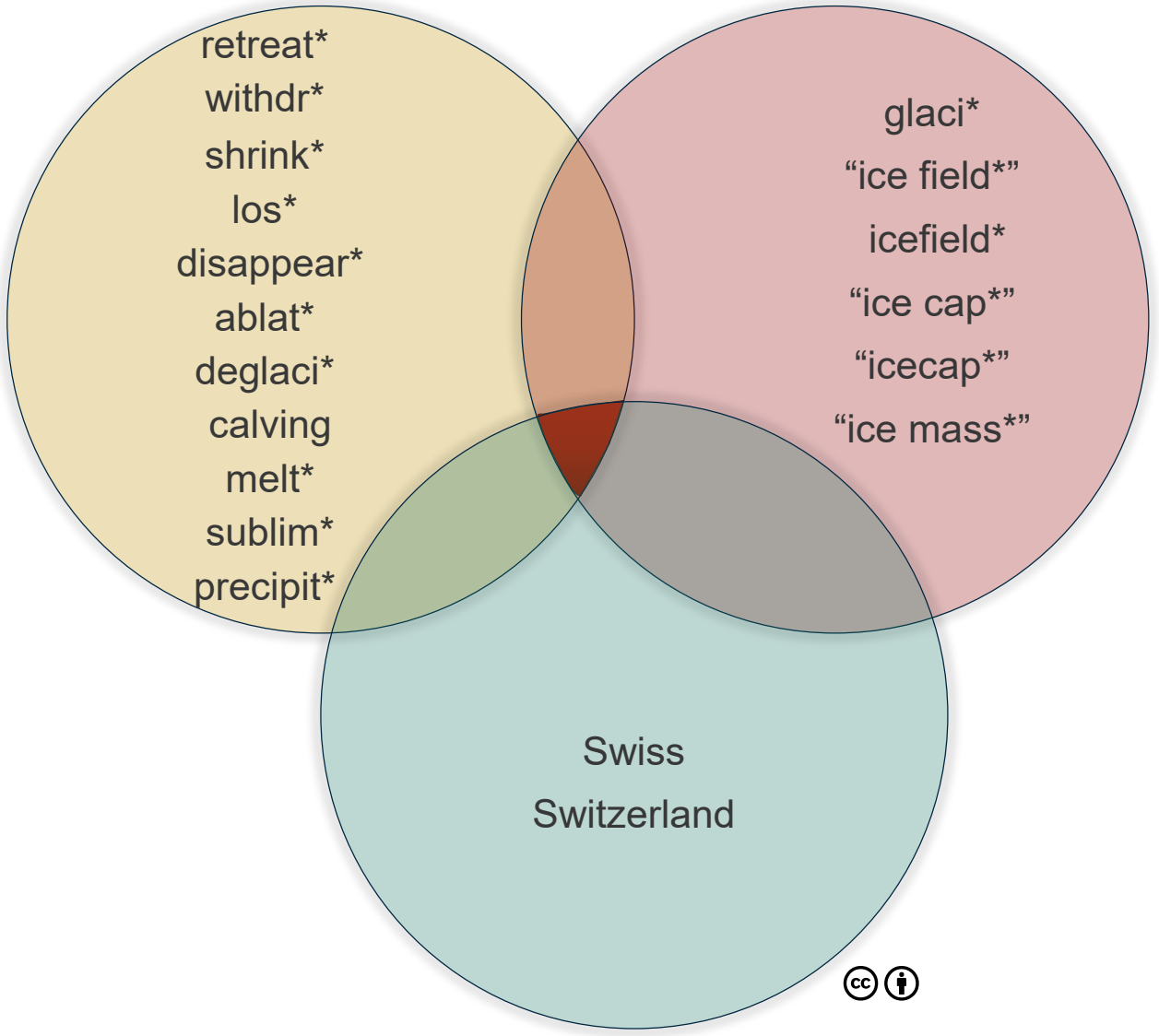
Truncated and phrased concept list

Retreat of Glaciers Switzerland

Concept 1	Concept 2	Concept 3
retreat*	glaci*	Switzerland
withdr*	“ice field*”	Swiss
shrink*	icefield*	
los*	“ice cap*”	
disappear*	“icecap*”	
ablat*	“ice mass*”	
deglaci*		
calving		
melt*		
sublim*		
precipit*		

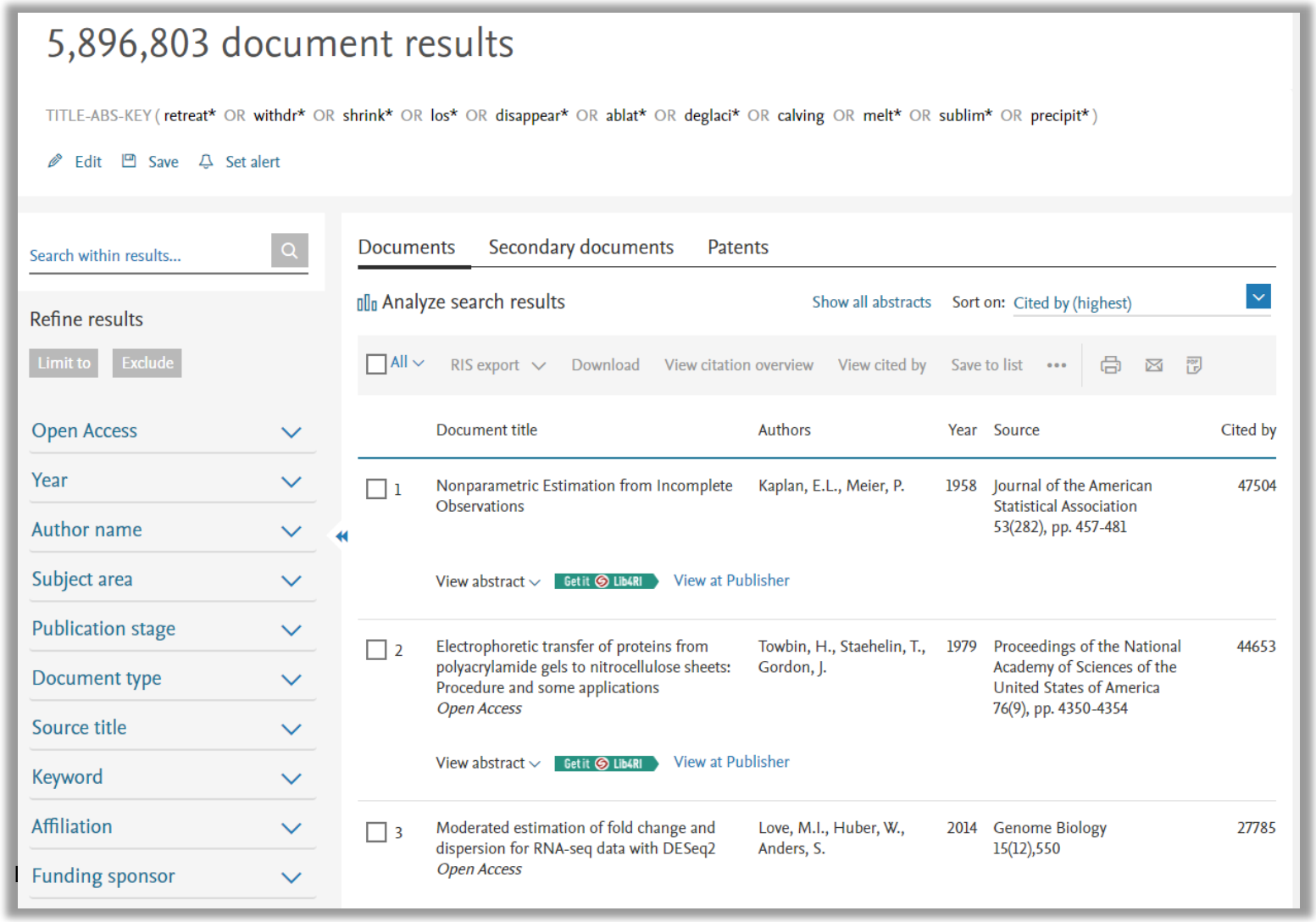
Combine concepts (and their synonyms)

(retreat* OR withdr* OR ...)
AND
(glaci* OR “ice field*” OR ...)
AND
(Switzerland OR ...)



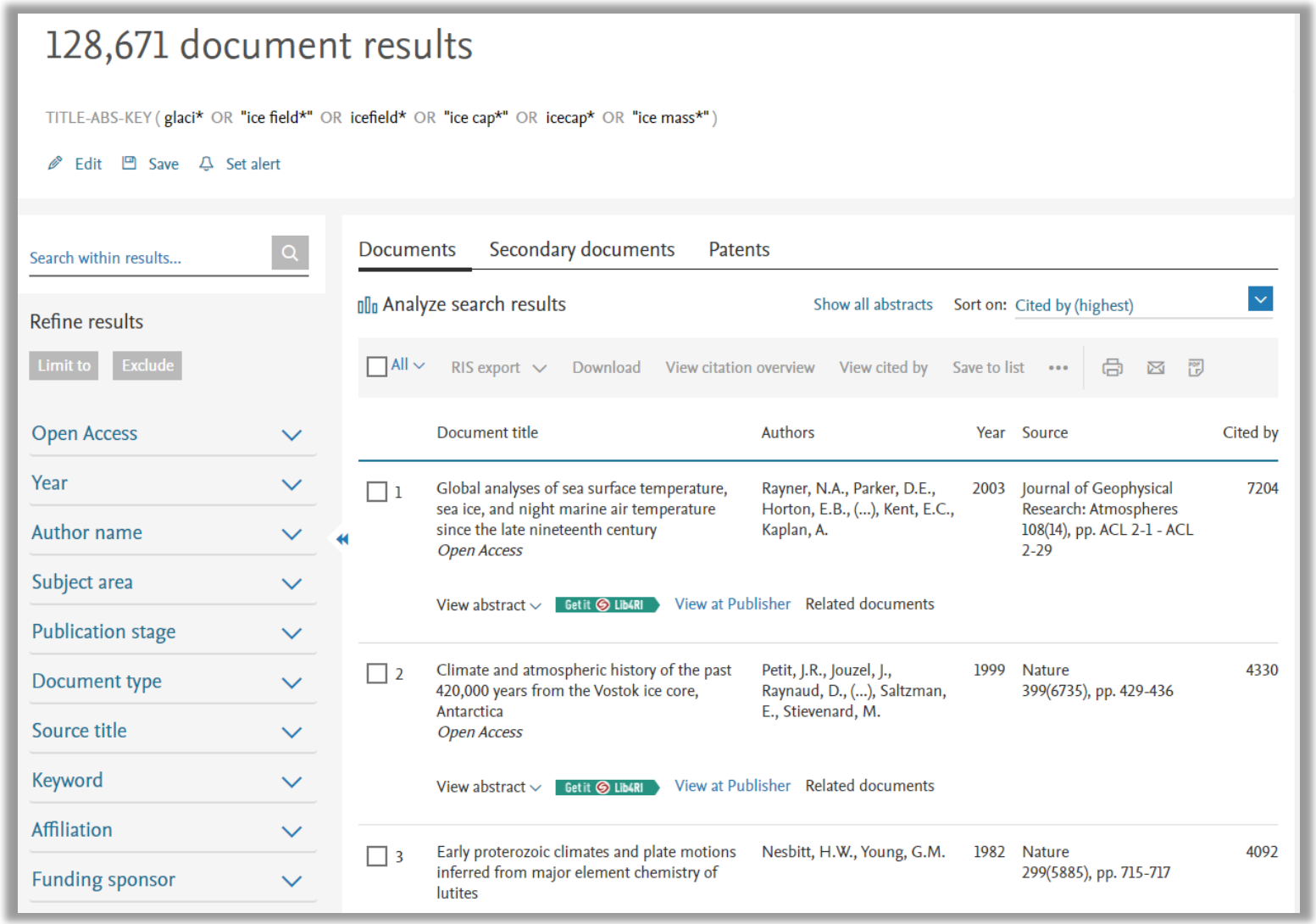
retreat*
withdr*
shrink*
los*
disappear*
ablat*
deglaci*
calving
melt*
sublim*
precipit*

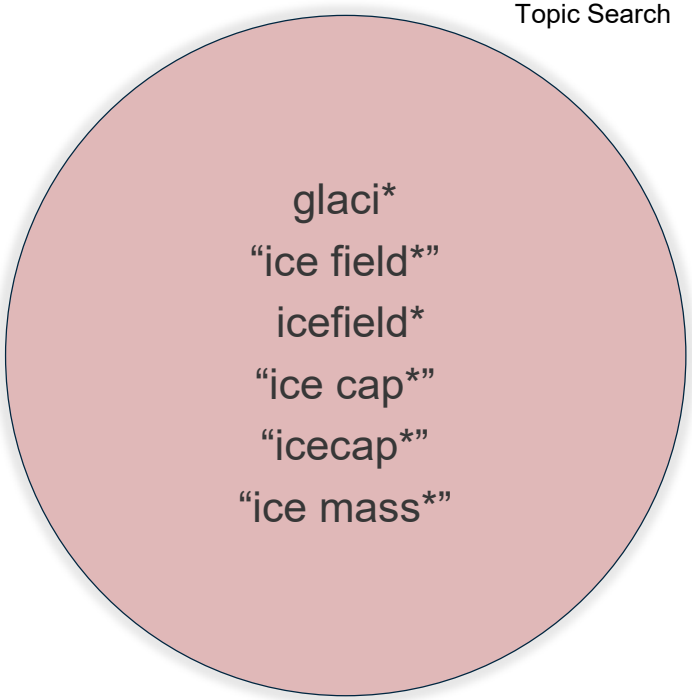
Search in Scopus: www.scopus.com



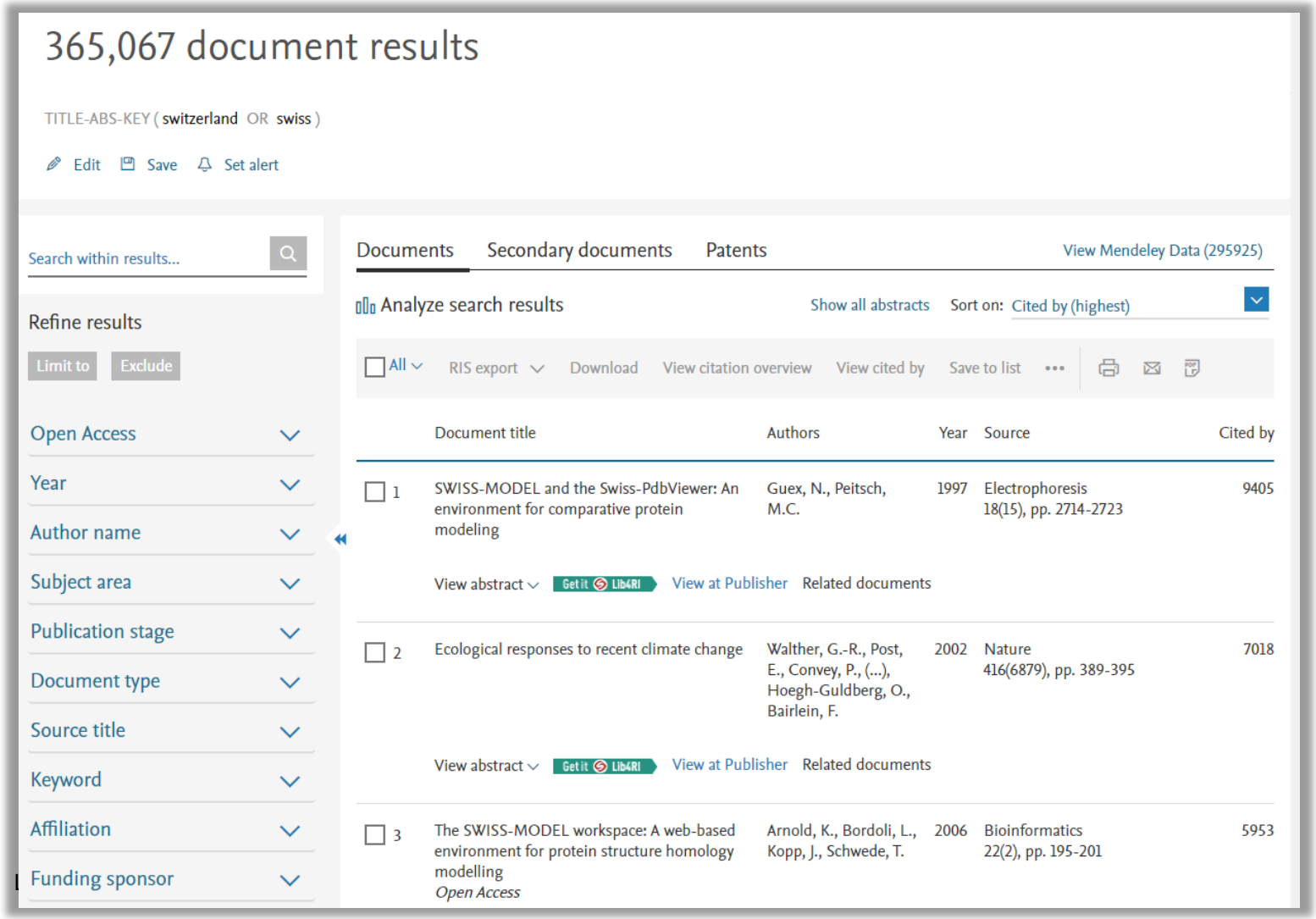
Let's do the search queries individually to get an idea on the bottleneck concept

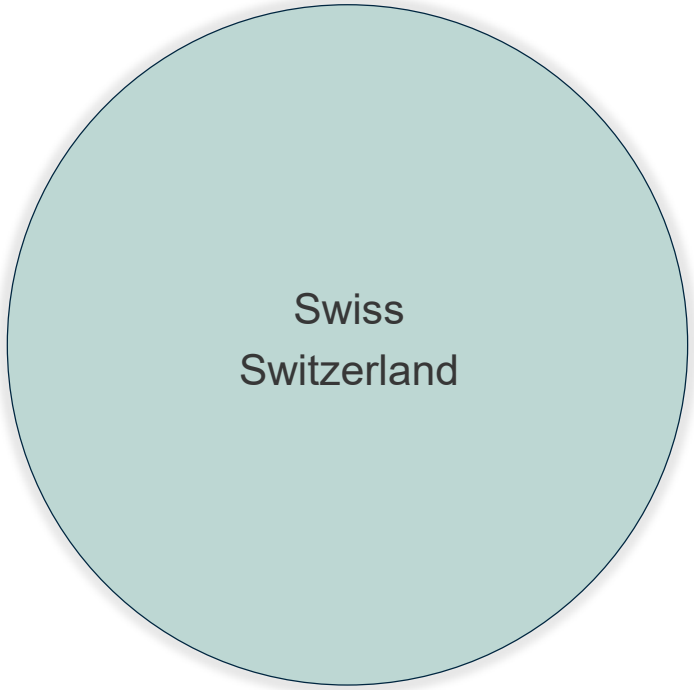
Search in Scopus: www.scopus.com





Search in Scopus: www.scopus.com





This seems to be a lot just on Switzerland. We'll see about this later.

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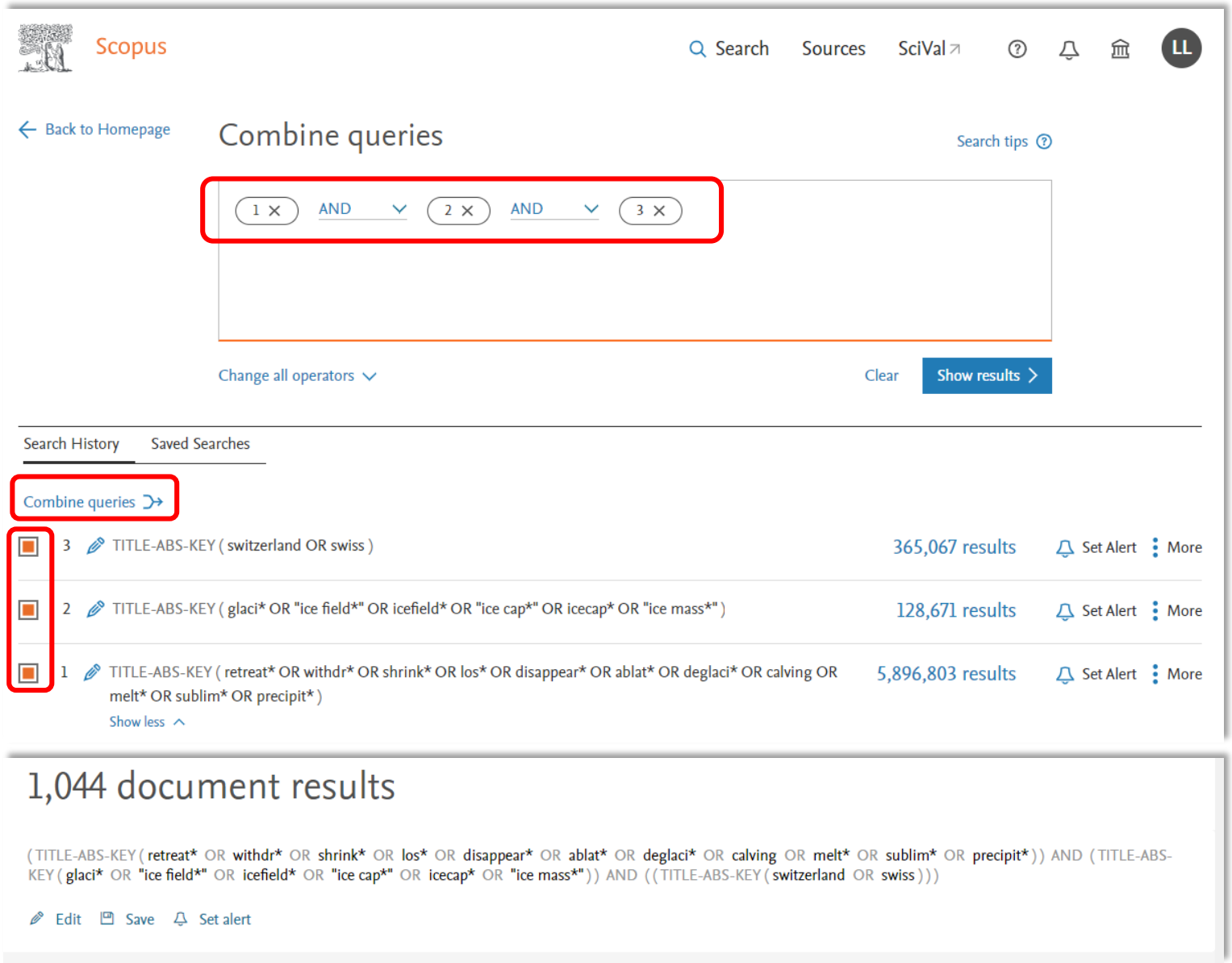
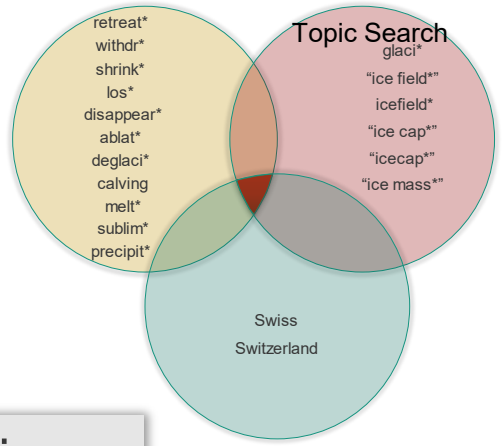
Search in Scopus: www.scopus.com





Let's combine them via the search history

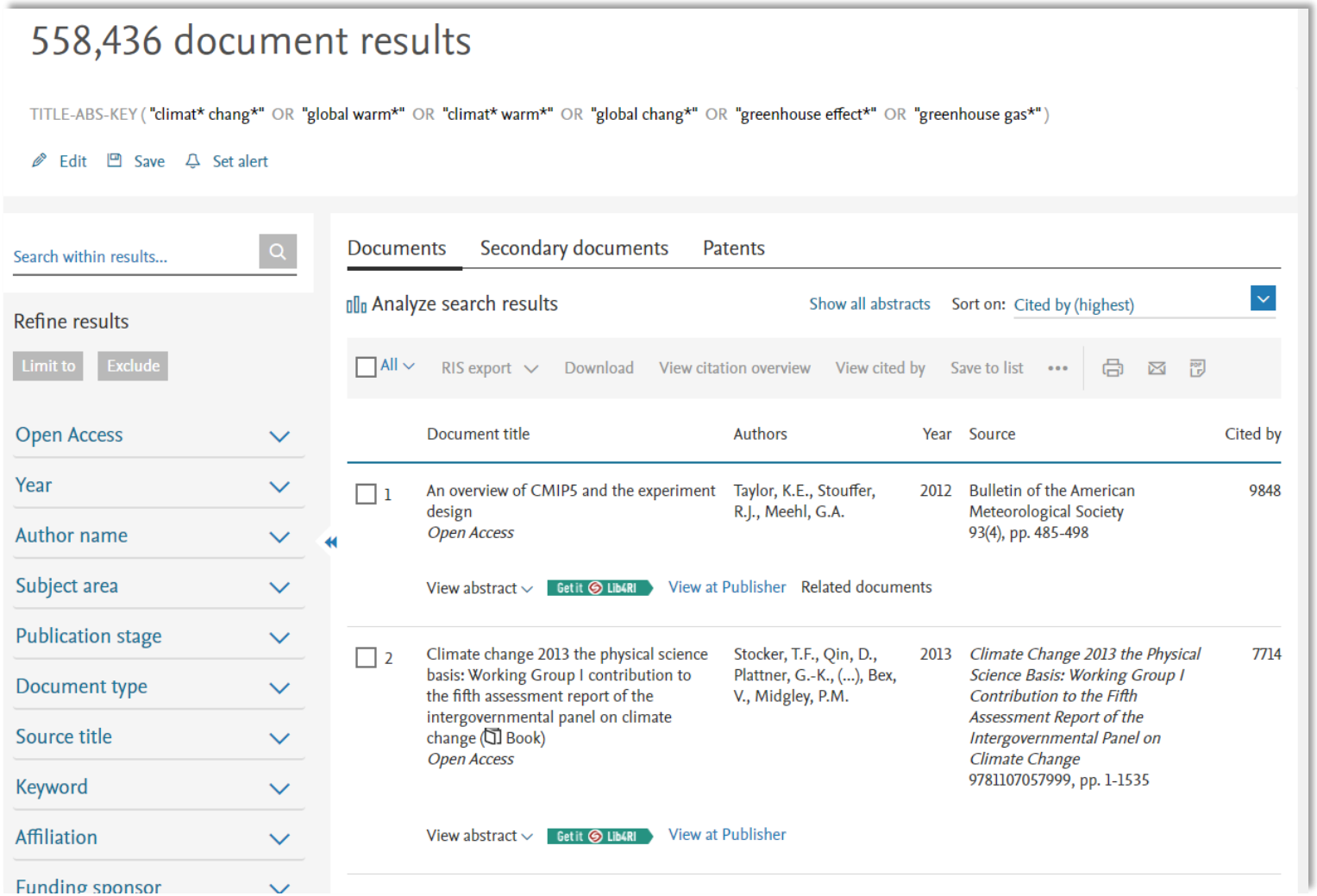
Quite a few hits

Maybe relate them to climate change?

Are they all relevant?

Search in Scopus: www.scopus.com

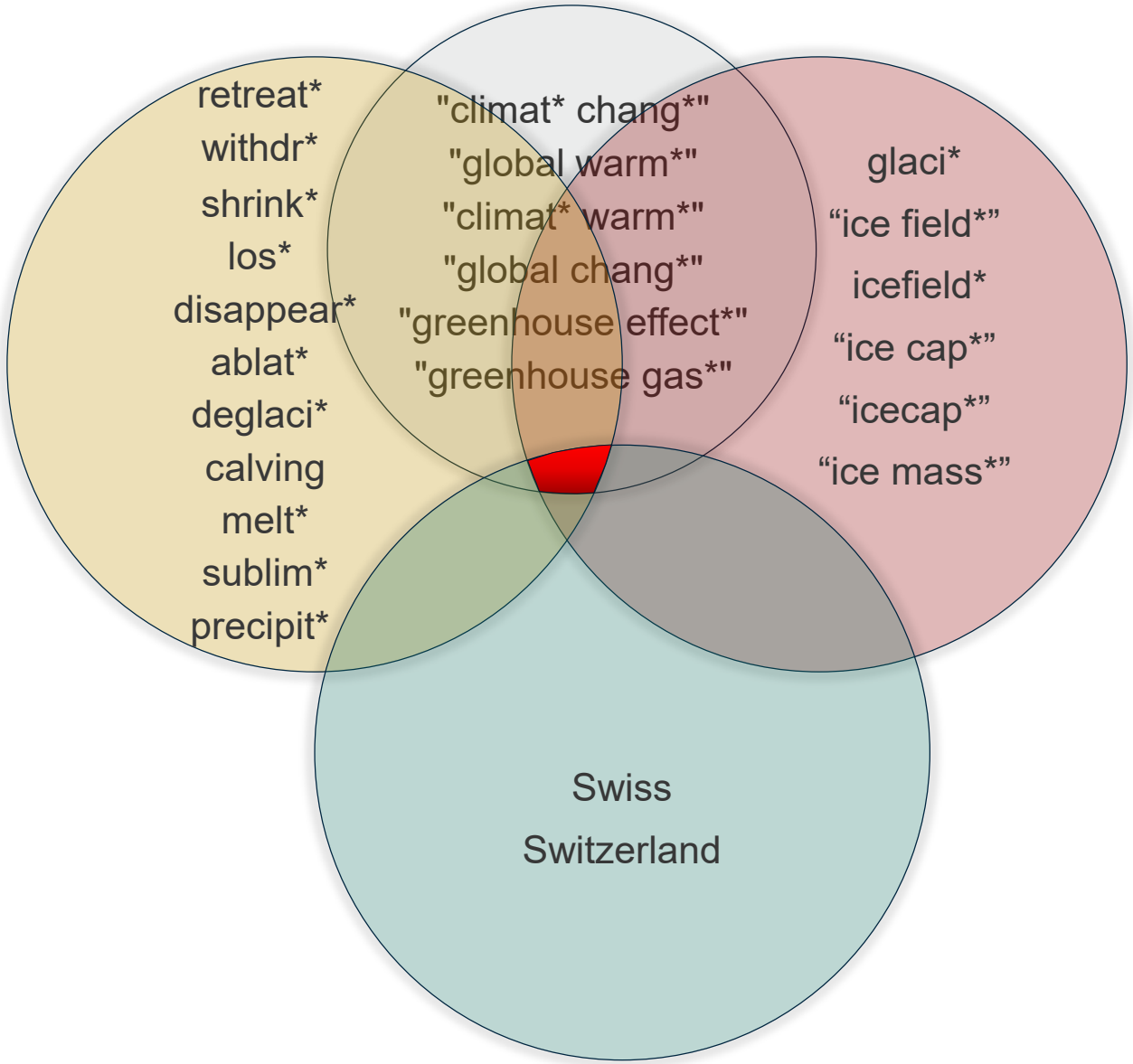
"climat* chang*"
"global warm*"
"climat* warm*"
"global chang*"
"greenhouse effect*"
"greenhouse gas*"



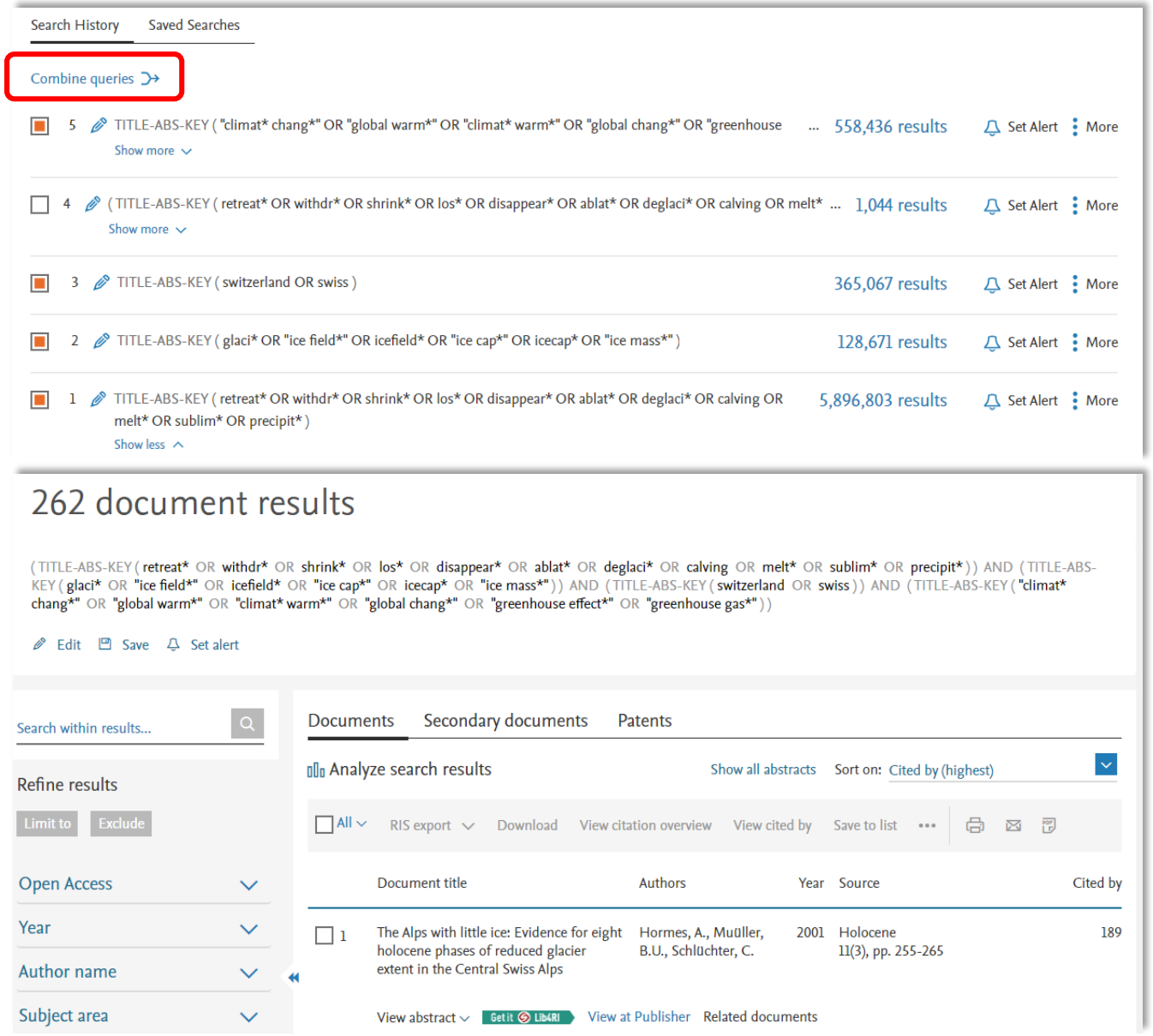
Ok.

Search in Scopus:
www.scopus.com

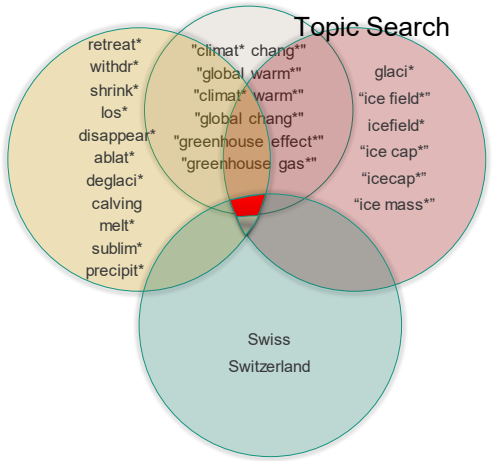
(retreat* OR withdr* OR ...)
AND
(glaci* OR “ice field*” OR ...)
AND
(Switzerland OR ...)
AND
(“climat* chang*” OR ...)



Search in Scopus: www.scopus.com

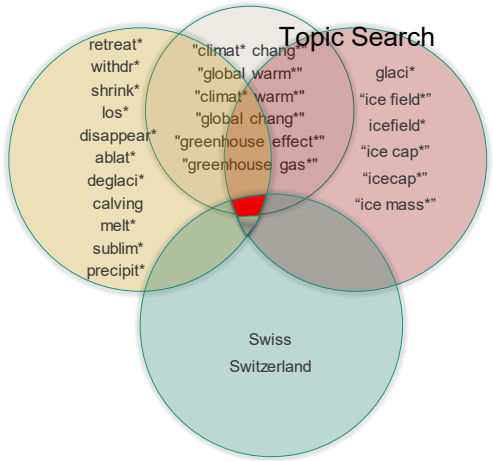


Let's combine them all via the search history



Ok. This is something to work on.

Search in Scopus: www.scopus.com



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Perspectives on the future of ice nucleation research: Research needs and Unanswered questions identified from two international workshops

Coluzza, Ivan[a] ; Creamean, Jessie[b, c] ; Rossi, Michel J.[d] ;
Wex, Heike[e] ; Alpert, Peter Aaron[f, g] ; Bianco, Valentino[a] ;
Boose, Yvonne[h] ; Dellago, Christoph[a] ; Felgitsch, Laura[i] ;
Fröhlich-Nowoisky, Janine[j] ; Herrmann, Hartmut[e] ;
Jungblut, Swetlana[a]

Abstract
Author keywords
Indexed keywords
Sustainable Development Goals 2021
SciVal Topics
Metrics
Funding details

Abstract

There has been increasing interest in ice nucleation research in the last decade. To identify important gaps in our knowledge of ice nucleation processes and their impacts, two international workshops on ice nucleation were held in Vienna, Austria in 2015 and 2016. Experts from these workshops identified the following research needs: (1) uncovering the molecular identity of active sites for ice nucleation; (2) the importance of modeling for the understanding of heterogeneous ice nucleation; (3) identifying and quantifying contributions of biological ice nuclei from natural and managed environments; (4) examining the role of aging in ice nuclei; (5) conducting targeted sampling campaigns in clouds; and (6) designing lab and field experiments to increase our understanding of the role of ice-nucleating particles in the atmosphere. Interdisciplinary teams of scientists should work together to establish and maintain a common, unified language for ice nucleation research. A number of commercial applications benefit from ice nucleation research, including the production of artificial snow, the freezing and preservation of water-containing food products, and the potential modulation of weather. Additional work is needed to increase our understanding of ice nucleation processes and potential impacts on precipitation, water availability, climate change, crop health, and feedback cycles. 2017 by the author. Licensee MDPI, Basel, Switzerland .

Author keywords

Aging; Cloud glaciation; Crystal; Ice nucleation; IN; INM; INP; Nucleation sites; Precipitation; Water

Let's see about relevance

Oops. This one is not about Swiss glaciers.

The publisher's copyright info in the abstract includes Switzerland

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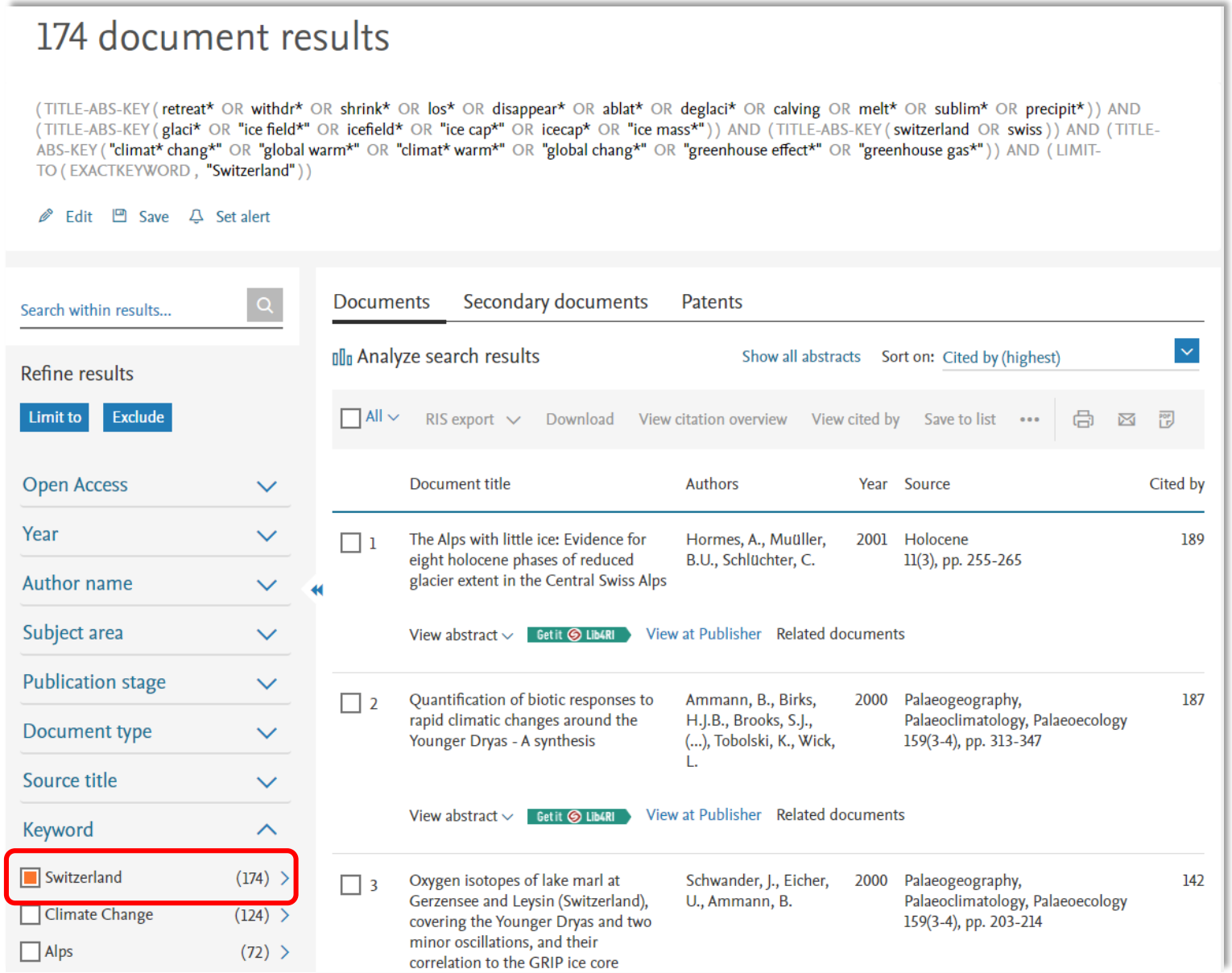

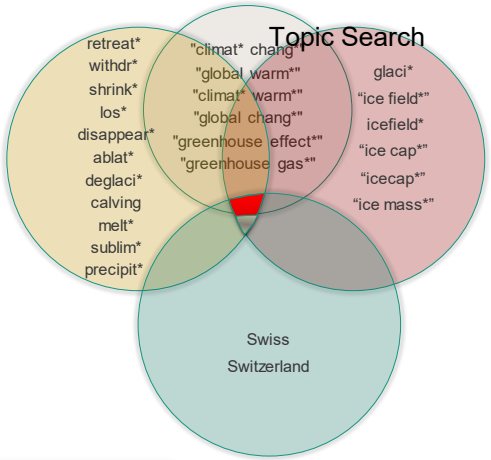

So, we could limit the search to the keyword Switzerland

... but this would likely miss quite a few

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Search in Scopus: www.scopus.com

< Basic Search Advanced

Search tips

Enter query string

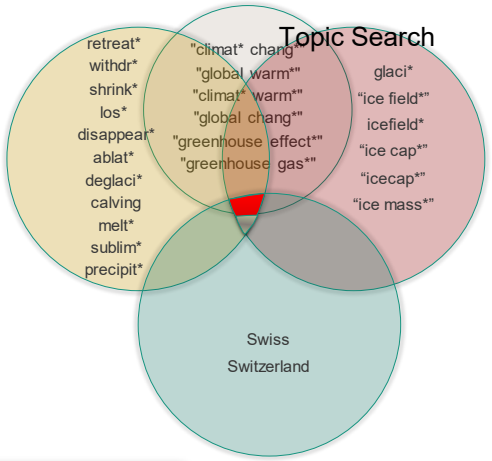
(TITLE-ABS-KEY(retreat* OR withdr* OR shrink* OR los* OR disappear* OR ablat* OR deglaci* OR calving OR melt* OR sublim* OR precipit*)) AND (TITLE-ABS-KEY(glaci* OR "ice field*" OR icefield* OR "ice cap*" OR icecap* OR "ice mass*")) AND (TITLE-ABS-KEY(switzerland OR swiss)) AND (TITLE-ABS-KEY("climat* chang*" OR "global warm*" OR "climat* warm*" OR "global chang*" OR "greenhouse effect*" OR "greenhouse gas*"))

< Basic Search Advanced

Search tips

Enter query string

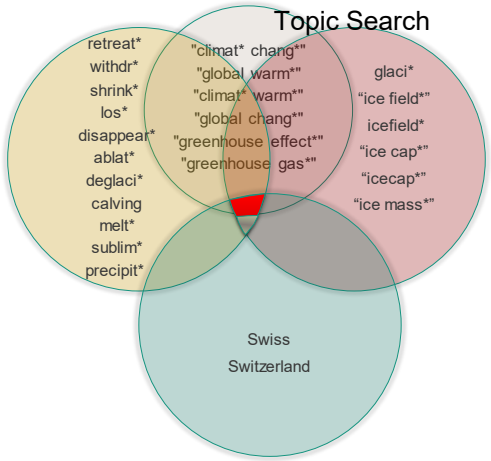
(TITLE-ABS-KEY(retreat* OR withdr* OR shrink* OR los* OR disappear* OR ablat* OR deglaci* OR calving OR melt* OR sublim* OR precipit*)) AND (TITLE-ABS-KEY(glaci* OR "ice field*" OR icefield* OR "ice cap*" OR icecap* OR "ice mass*")) AND (TITLE(switzerland OR swiss) OR KEY(switzerland OR swiss) OR ABS(swiss)) AND (TITLE-ABS-KEY("climat* chang*" OR "global warm*" OR "climat* warm*" OR "global chang*" OR "greenhouse effect*" OR "greenhouse gas*"))



Or, we could defer from searching for Switzerland just in the abstract

... and search individually the TITLE, KEY and ABS fields but leave out Switzerland for the ABS search

Search in Scopus: www.scopus.com



236 document results

TITLE-ABS-KEY (retreat* OR withdr* OR shrink* OR los* OR disappear* OR ablat* OR deglaci* OR calving OR melt* OR sublim* OR precipit*) AND TITLE-ABS-KEY (glaci* OR "ice field*" OR icefield* OR "ice cap*" OR icecap* OR "ice mass*") AND (TITLE (switzerland OR swiss) OR KEY (switzerland OR swiss) OR ABS (swiss)) AND TITLE-ABS-KEY ("climat* chang*" OR "global warm*" OR "climat* warm*" OR "global chang*" OR "greenhouse effect*" OR "greenhouse gas*")

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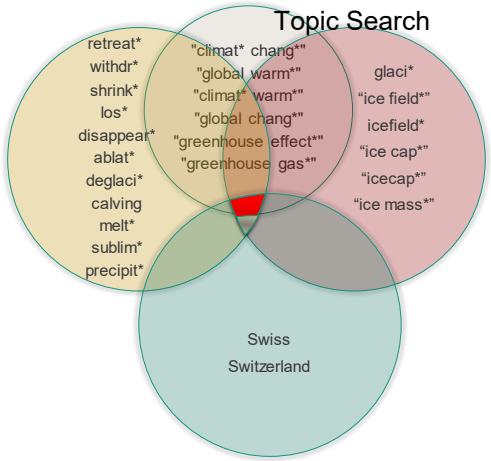
... there are of course some missing that genuinely have Switzerland in the abstract

... not so much difference…, so you might consider screening the total 262 hits manually for relevance

Search in Scopus: www.scopus.com



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2	Quantification of biotic responses to rapid climatic changes around the Younger Dryas - A synthesis	Ammann, B., Birks, H.J.B., Brooks, S.J., (...), Tobolski, K., Wick, L.	2000	Palaeogeography, Palaeoclimatology, Palaeoecology 159(3-4), pp. 313-347	187
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4	Modeling glacier thickness distribution and bed topography over entire mountain ranges with...	Linsbauer, A., Paul, F., Haeberli, W.	2012	Journal of Geophysical Research: Earth Surface 117(2), F02007	171

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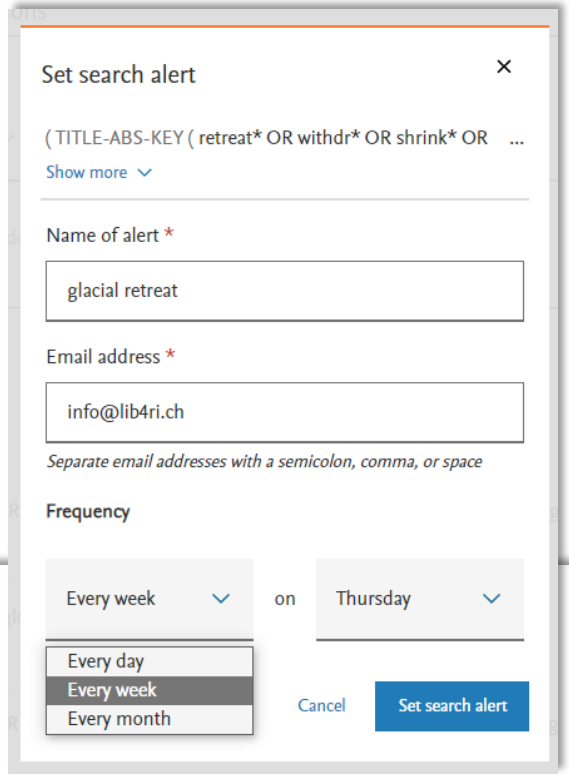
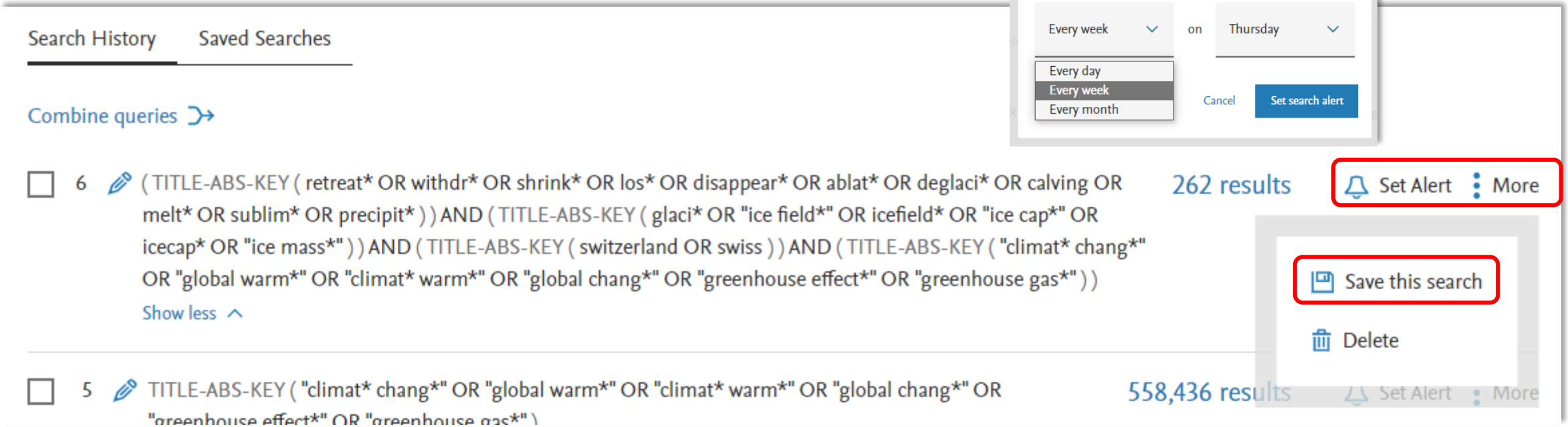
www.scopus.com

... provided you have a (free) account with Scopus you can save your search or create an alert

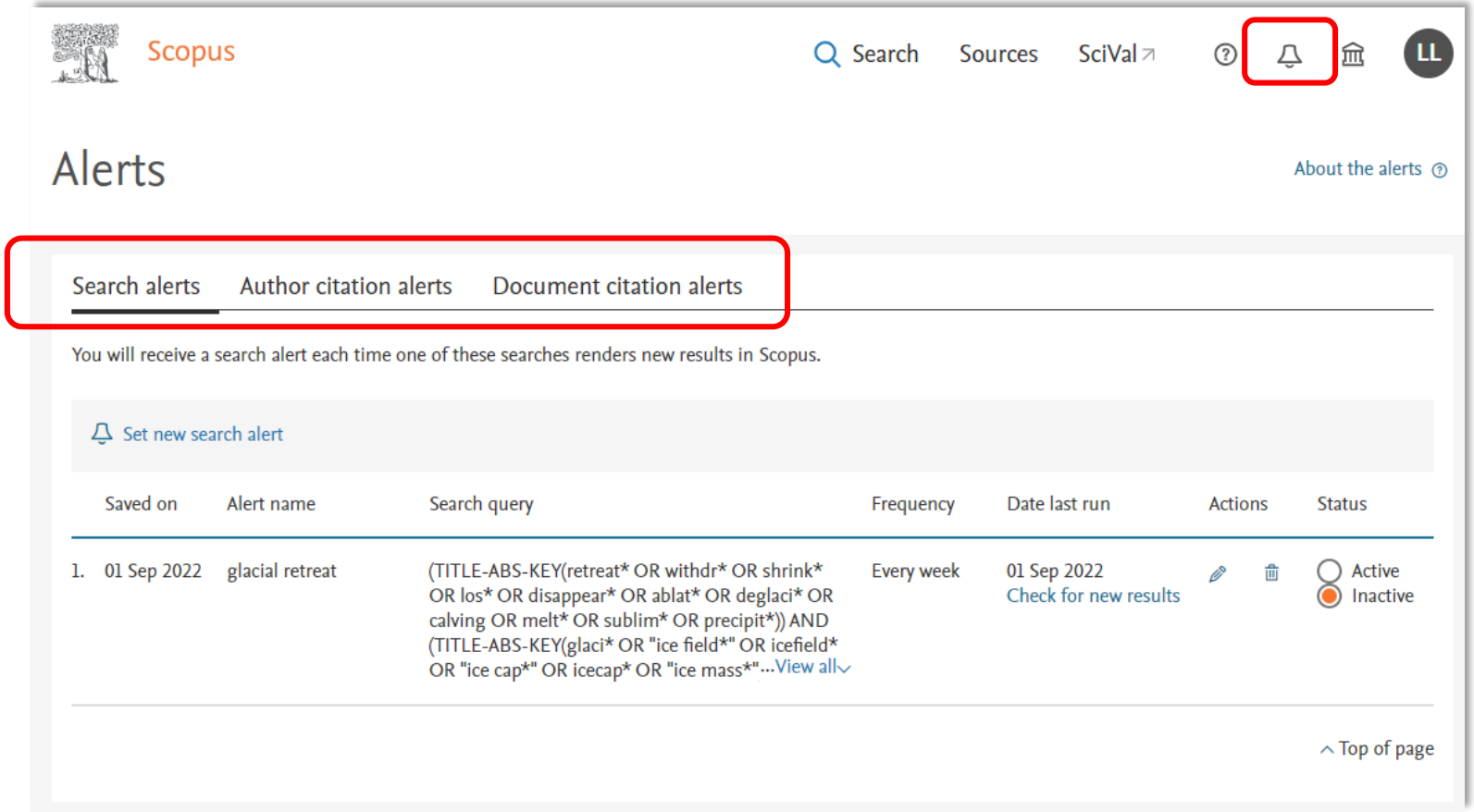


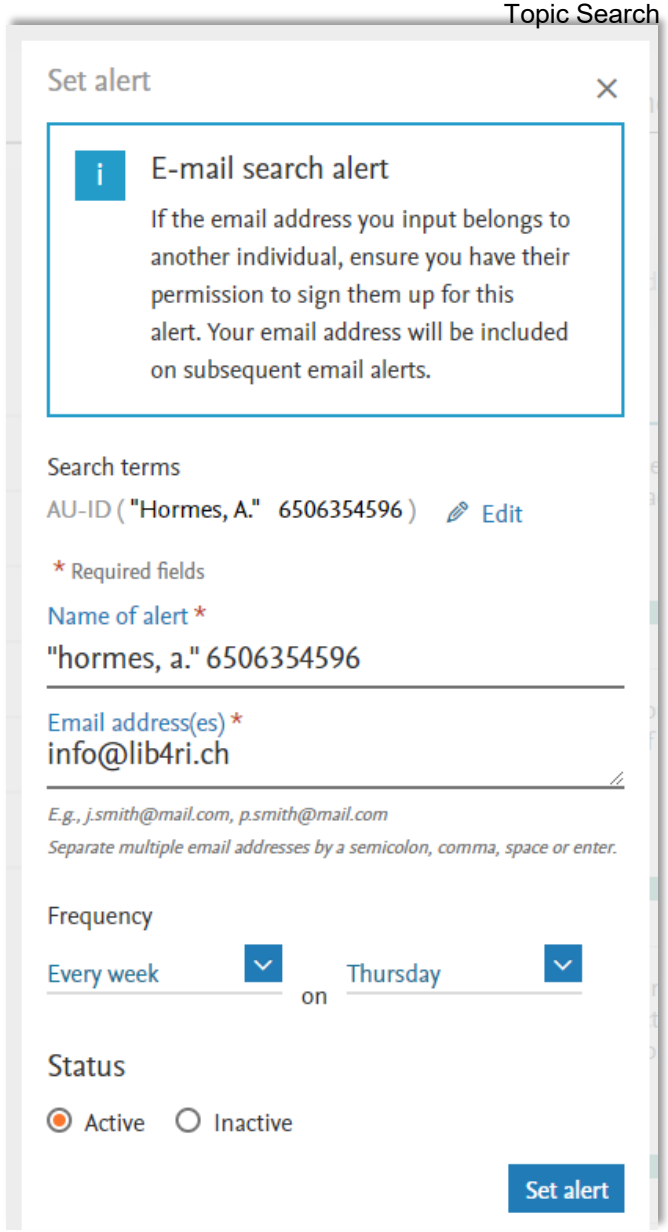


Search in Scopus

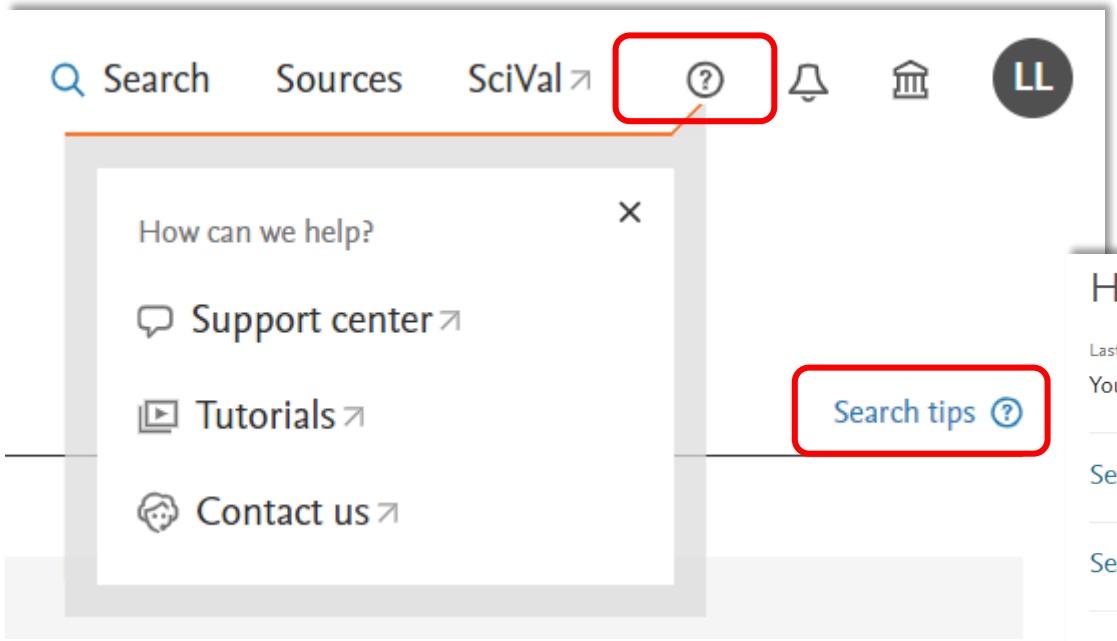
www.scopus.com

...this could also be a citation alert for an author or a paper

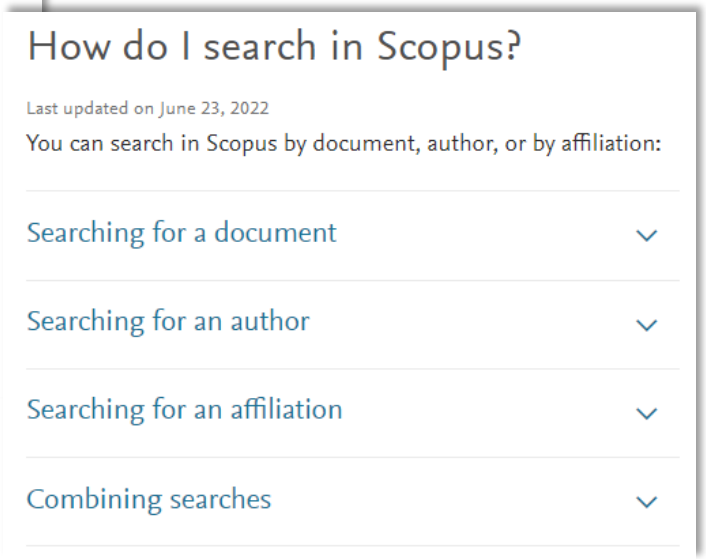




Search in Scopus: www.scopus.com



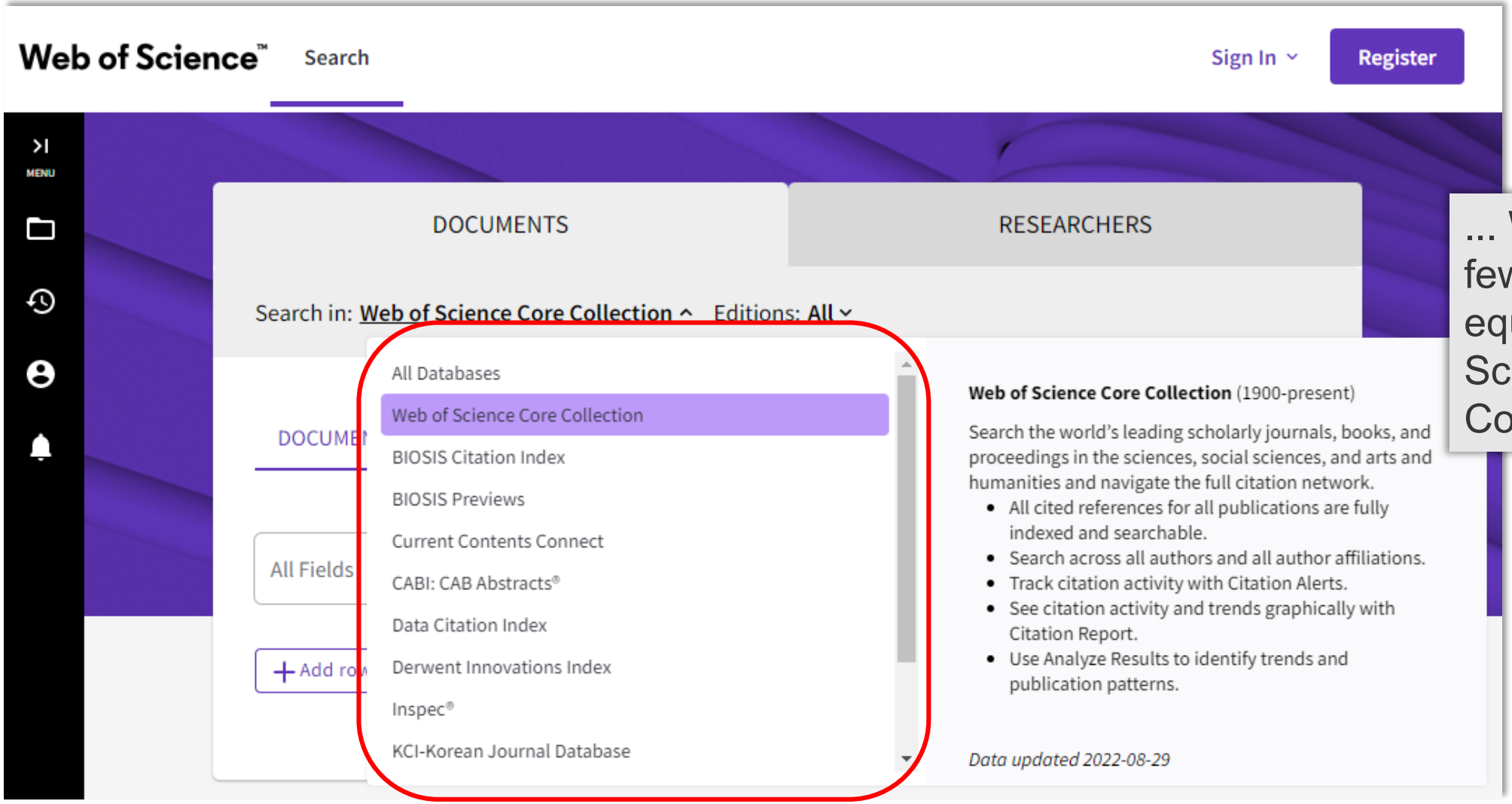
...online help via the menu ? or the search tips ?



Also see “Scopus Blog – Tips & Tricks”: https://blog.scopus.com/tips-and-tricks

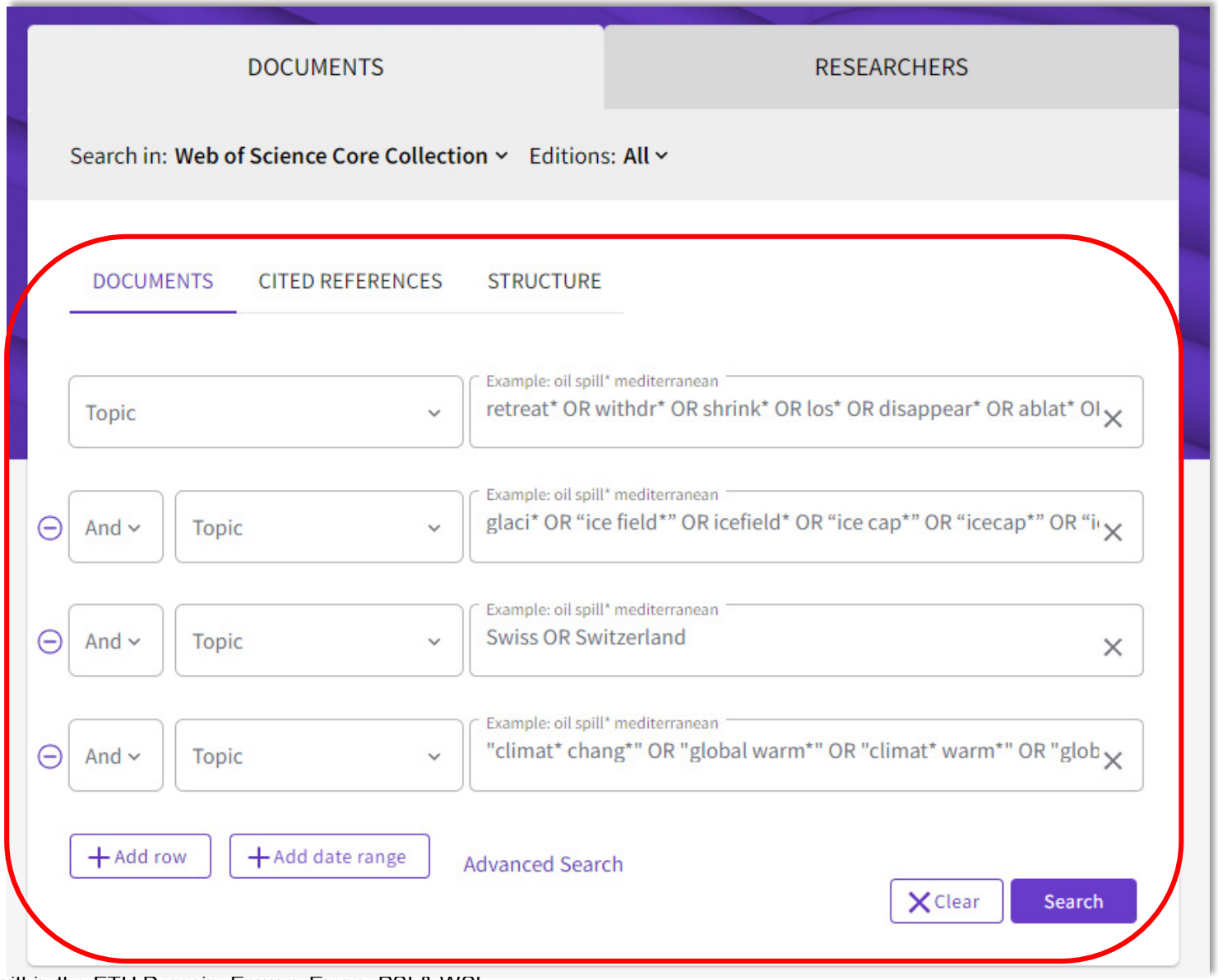
Search in Web of Science (Core Collection)

www.webofscience.com



... WoS comprises a few databases; the equivalent to Scopus is the "WoS Core Collection"

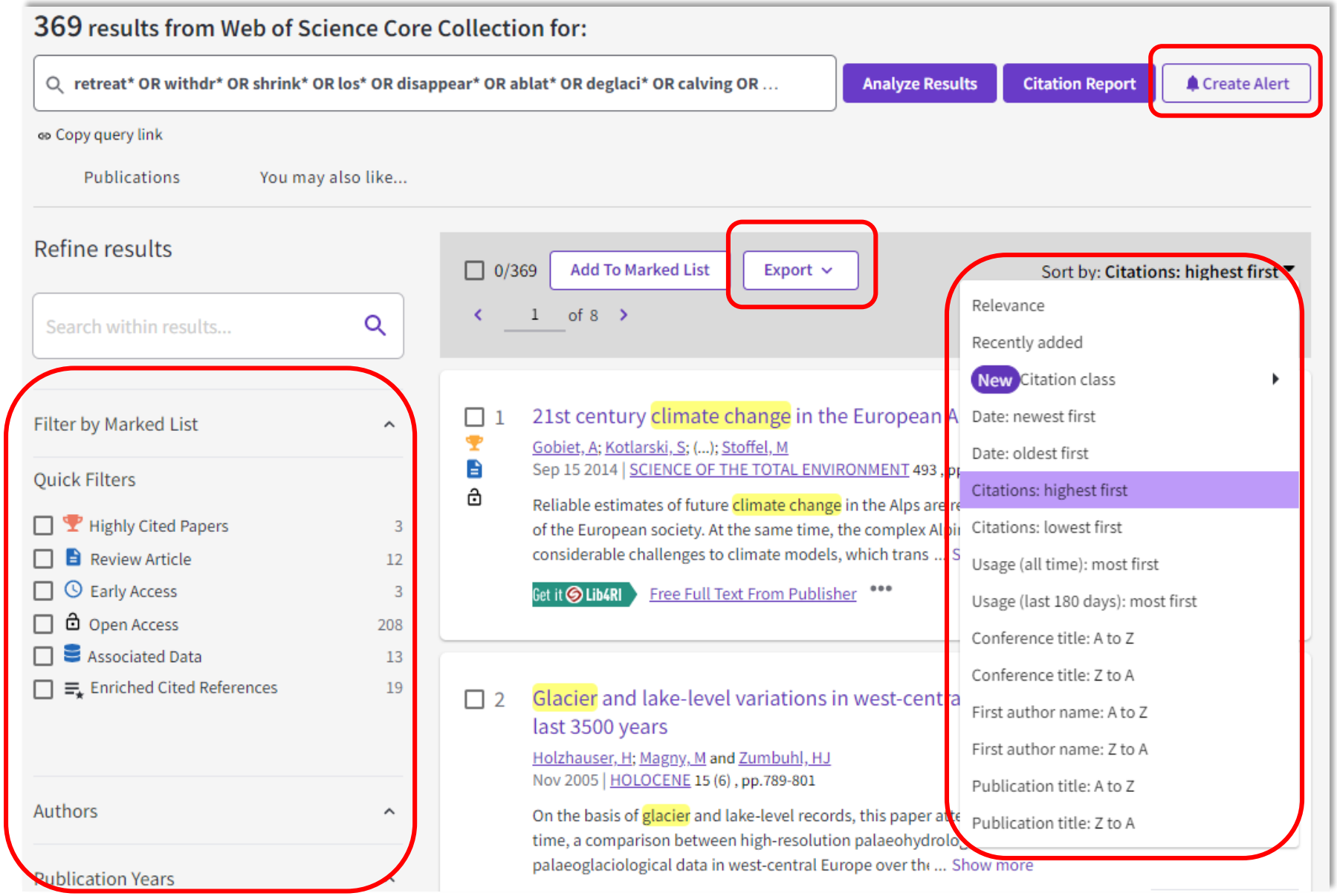
Search in Web of Science (Core Collection): www.webofscience.com



... Topic searches can be performed in a analogous way. "Topic" includes the same fields "Title", "Abstract" and "Keywords"

Search in Web of Science (Core Collection)

www.webofscience.com



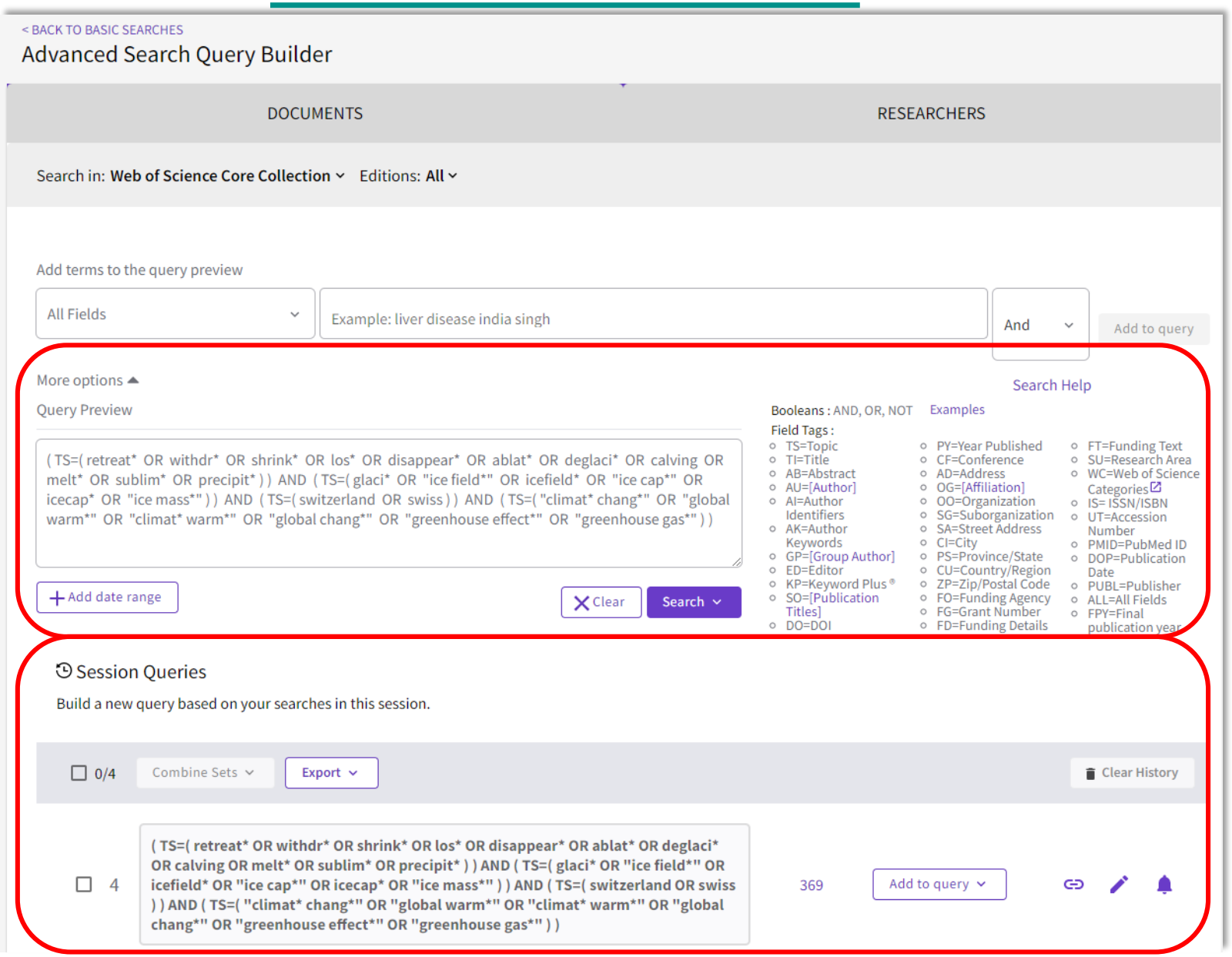
... Most refine/filter and sort options are also available

... Export to reference management software as well

... Saves and alerts can be set, too

Search in Web of Science (Core Collection)

www.webofscience.com



... WoS also has an advanced search builder

... and a search history

Search in Web of Science (Core Collection)

www.webofscience.com

Halving of Swiss glacier volume since 1931 observed from terrestrial image photogrammetry

By: Mannerfelt, ES (Mannerfelt, Erik Schytt) [1], [2]; Dehecq, A (Dehecq, Amaury) [1], [2], [3]; Hugonnet, R (Hugonnet, Romain) [1], [2], [4]; Hodel, E (Hodel, Elias) [1], [2]; Huss, M (Huss, Matthias) [1], [2], [5]; Bauder, A (Bauder, Andreas) [1], [2]; Farinotti, D (Farinotti, Daniel) [1], [2]

View Web of Science ResearcherID and ORCID (provided by Clarivate)

CRYOSPHERE

Volume: 16 **Issue:** 8 **Page:** 3249-3268

DOI: 10.5194/tc-16-3249-2022

Published: AUG 22 2022

Indexed: 2022-08-29

Document Type: Article

Abstract

The monitoring of glaciers in Switzerland has a long tradition, yet glacier changes during the 20th century are only known through sparse observations. Here, we estimate a halving of Swiss glacier volumes between 1931 and 2016 by mapping historical glacier elevation changes at high resolution. Our analysis relies on a terrestrial image archive known as TerrA, which covers about 86 % of the Swiss glacierised area with 21 703 images acquired during the period 1916-1947 (with a median date of 1931). We developed a semi-automated workflow to generate digital elevation models (DEMs) from these images, resulting in a 45 % total glacier coverage. Using the geodetic method, we estimate a Swisswide glacier mass balance of -0.52 +/- 0.09 m w.e. a(-1) between 1931 and 2016. This equates to a 51.5 +/- 8.0 % loss in glacier volume. We find that low-elevation, high-debriscover, and gently sloping glacier termini are conducive to particularly high mass losses. In addition to these glacier-specific, quasi-centennial elevation changes, we present a new inventory of glacier outlines with known timestamps and complete attributes from around 1931. The fragmented spatial coverage and temporal heterogeneity of the TerrA archive are the largest sources of uncertainty in our glacier-specific estimates, reaching up to 0.50 m w.e. a(-1). We suggest that the high-resolution mapping of historical surface elevations could also unlock great potential for research fields other than glaciology.

Keywords

Keywords Plus: SEA-LEVEL RISE; MULTITEMPORAL AERIAL IMAGES; MASS-BALANCE; SWEDEN 1959-99; ALPS; STORGLACIAREN; SENSITIVITY; REANALYSIS; ELEVATION; AREA

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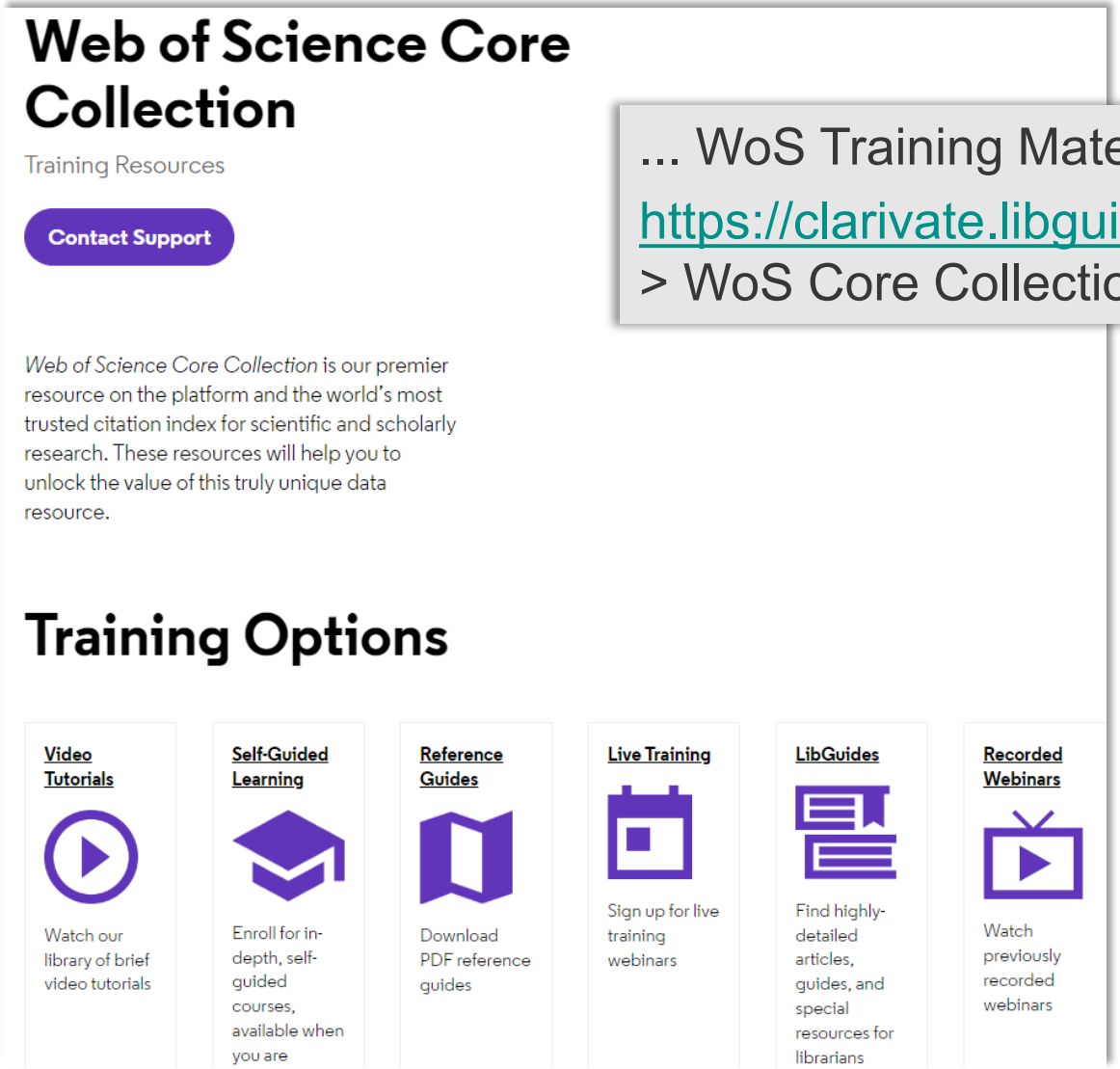
... unfortunately, due to the introduction of the 4th concept ("climate change") a very recent relevant publication "got lost" as none of the synonyms has been mentioned in the topic fields (just in the full text).

... so, "working" towards one's personal threshold using additional constraints (e.g. 300 vs 1000 hits) can come at a cost.

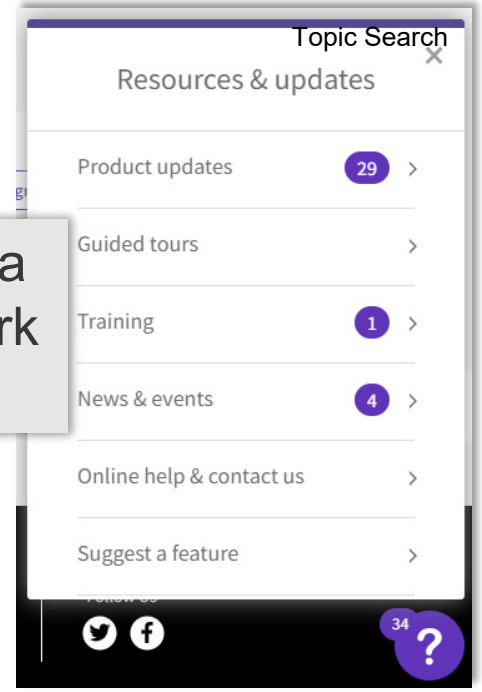
Search in Web of Science (Core Collection)

www.webofscience.com

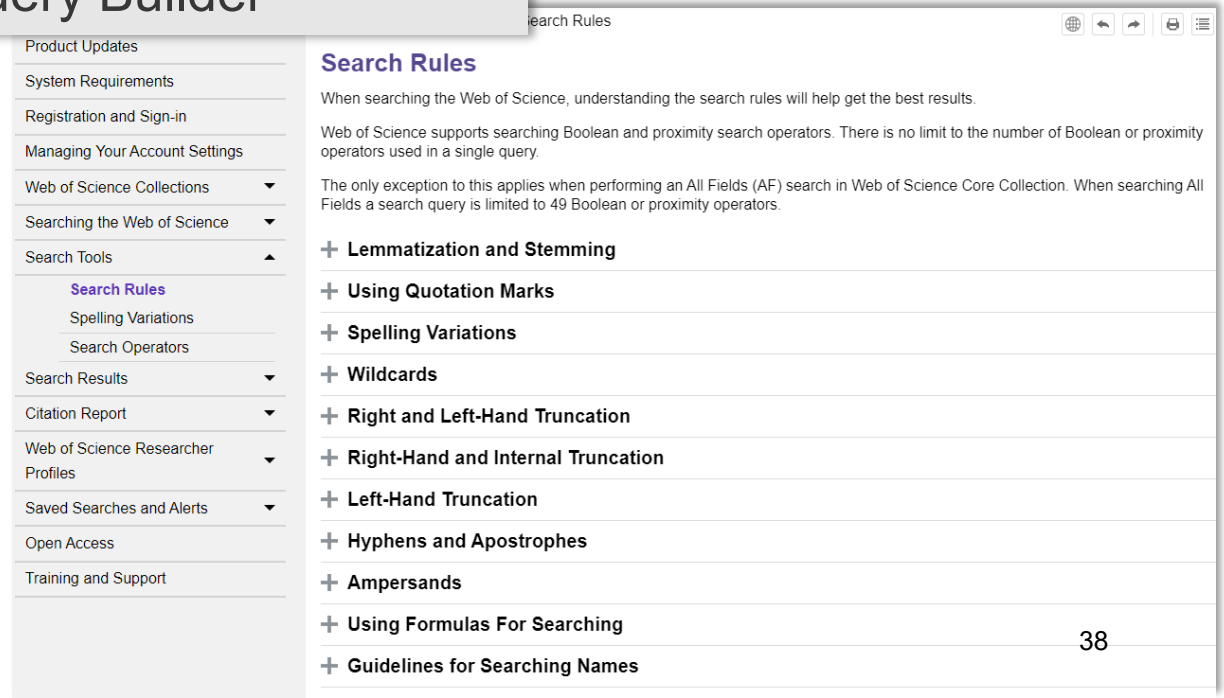


... WoS Training Material
https://clarivate.libguides.com
> WoS Core Collection

... Online help via the question mark in WoS



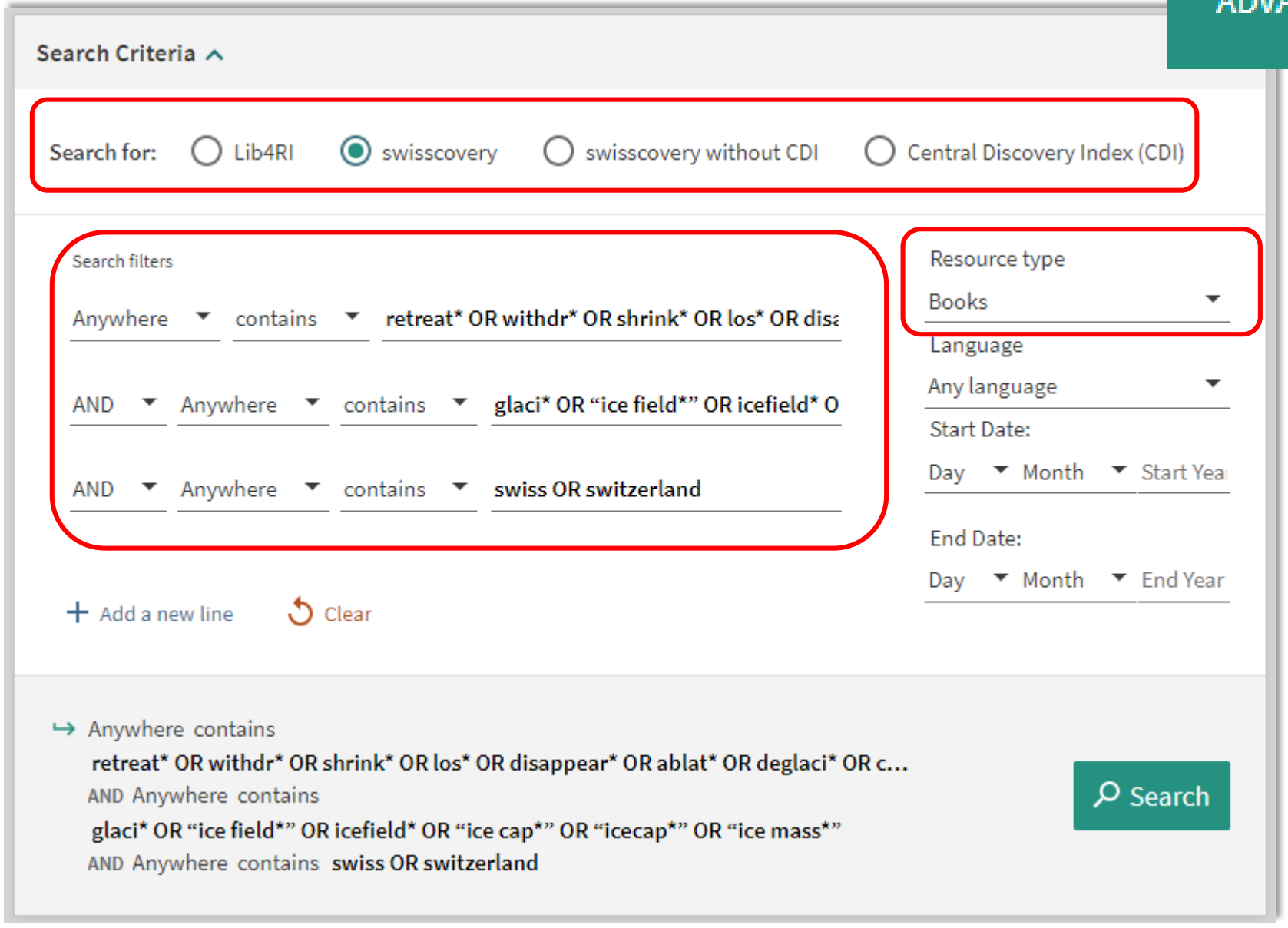
... Or via "Search Help" in the Advanced Search Query Builder



Web of Science vs Scopus

	Web of Science	Scopus
Subject areas	multidisciplinary	multidisciplinary
Contents – Journals	>21,900 journals (>5,000 gold OA, via WoS Core Collection)	>25,800 journals (>5,300 gold OA)
Contents – Books	>126,000 books (via WoS Core Collection)	>249,000 non-serial books, >63,300 book series titles
Contents – Conferences	>226,000 conferences (via WoS Core Collection) >70.1 M cited conference papers	>140,000 conferences, >10.9 M conference papers
Contents – Patents	>99 M patents (via Derwent Innovation Index)	>47.4 M patent links
Volume of data	>82 M records (WoS Core Collection)	>84 M records
Cited References	> 1.8 B (from 1900)	>1.8 B (from 1970)
Updates	weekly	daily
Period covered	from 1900	from 1788
Coverage	global	global
Identification of authors and institutions	ResearcherID (authors must register) > 3 M profiles (Publon)	author ID (assigned automatically), affiliation identifier, >17.6 M profiles
Functions	alert service related records (based on shared references)	alert service related records (based on either shared references, authors or keywords)
Literature management	EndNote, BibTeX, others	Mendeley, BibTeX, RIS (Endnote)
Special features	Optional (licensed) access to: Research evaluation tools "Journal Citation Reports“ & “Essential Science Indicators” and databases such as BIOSIS, Inspec, MEDLINE.	"Articles-in-Press" from more than 5,000 journals Medline data included. UTF-8 encoding, to display umlauts and special characters.

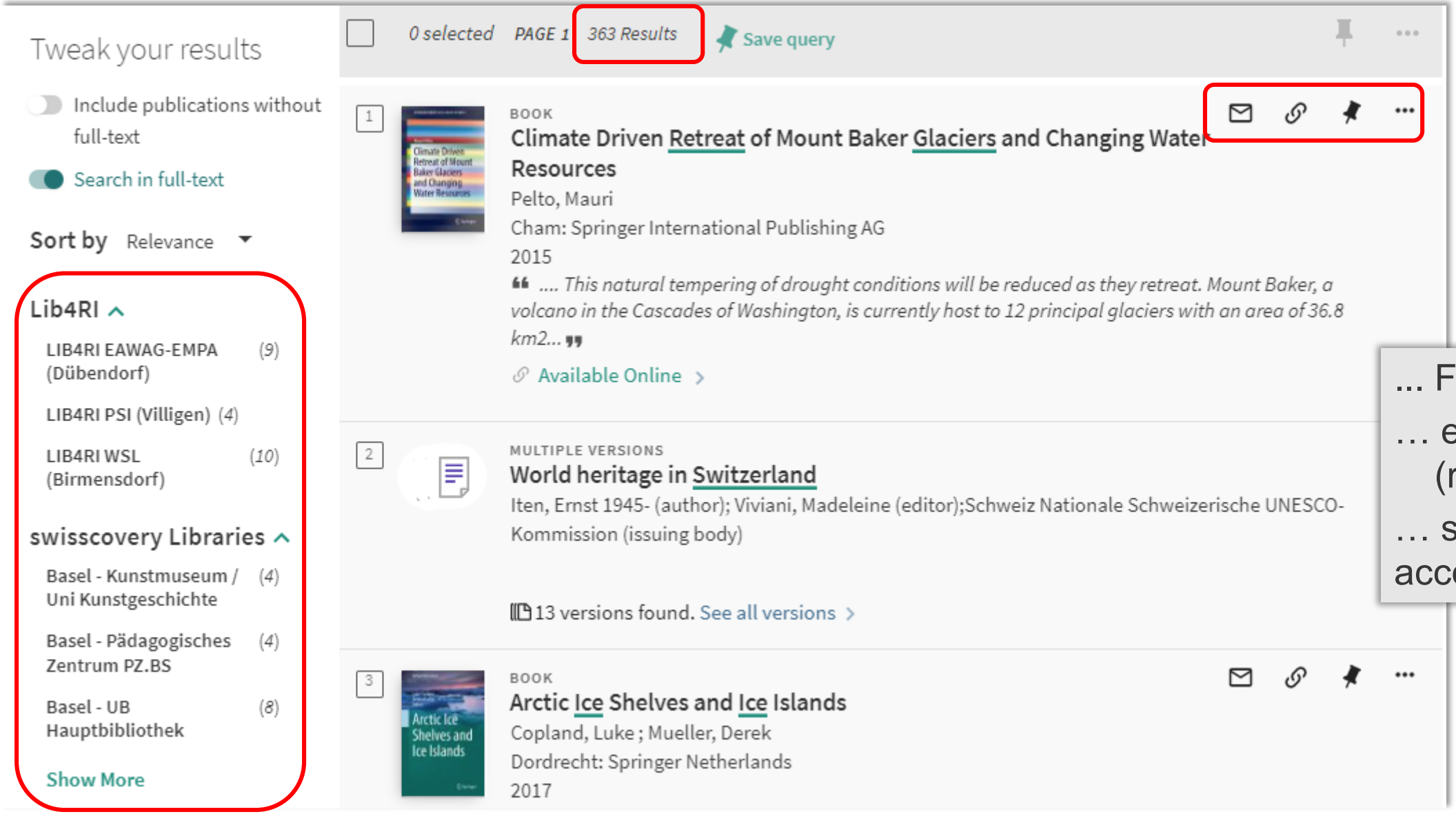
Search in swisscovery: lib4ri.swisscovery.slsp.ch



... Search profile: swisscovery

…Resource type: Books

Search in swisscovery: lib4ri.swisscovery.slsp.ch



… Filters

… export (rather limited)

… swisscovery account recomm.

Evaluation of the results

Too few results

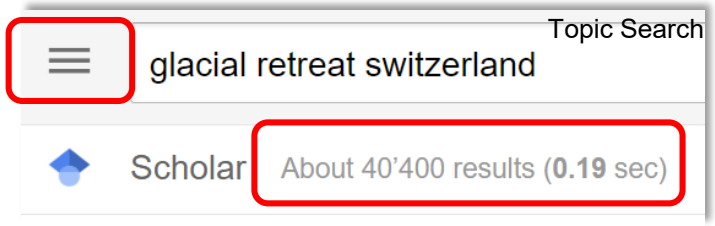
- Search for possible sources of error (Typing errors, wildcards, quotes…)
- View the relevant hits → restart the search with other synonyms
- Widen the subject, lessen the number of concepts
- Verify the search instruments

Too many results

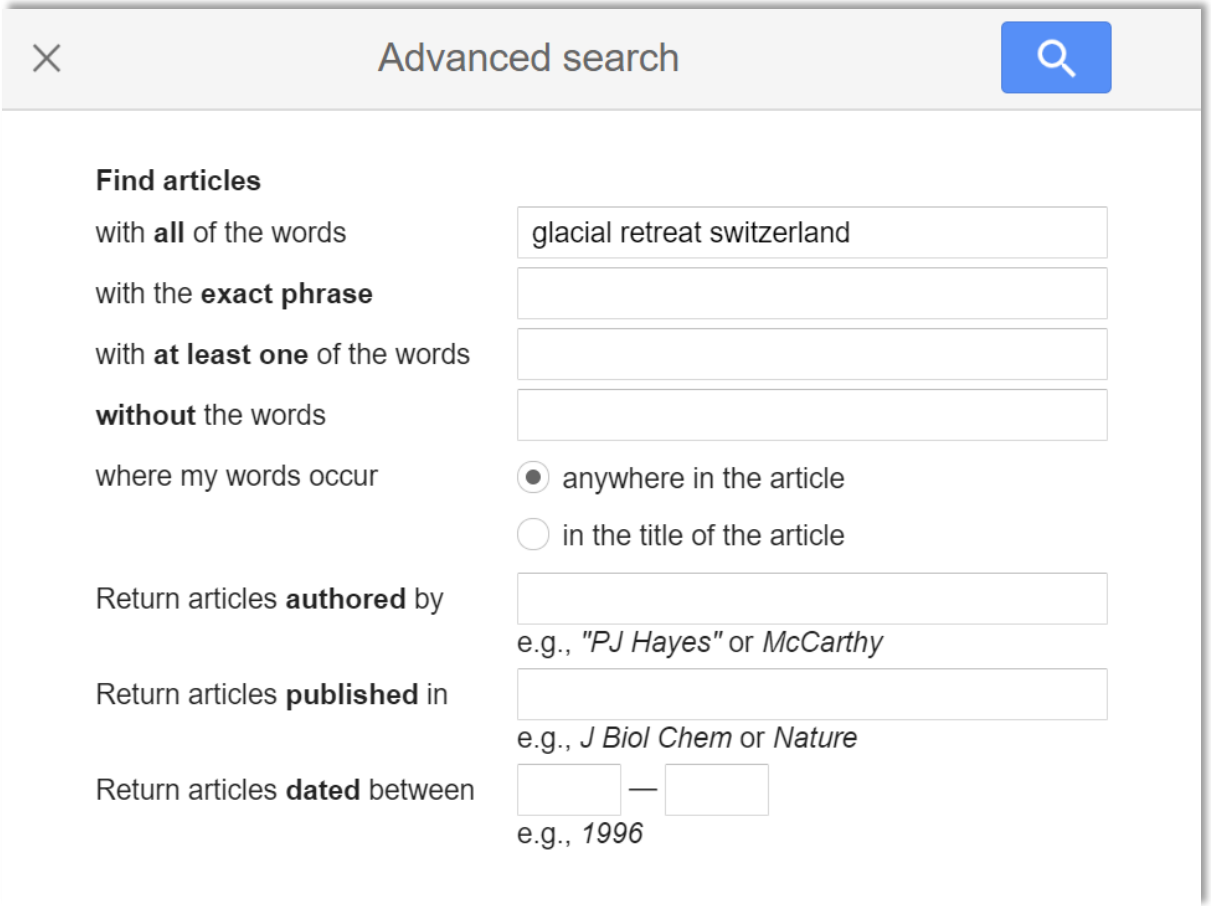
- Narrow the search by: number of citations, publication year, reviews
- Narrow the subject, increase the number of concepts (cautiously)
- Exclude non relevant hits (NOT, Filter)
- Verify the search instruments

Other bibliometric Databases

- Web of Science (some special, some multidisciplinary)
- Central Discovery Index (multidisciplinary)
- Cabi (Biology, Medicine, Food Science)
- Pubmed (Biology, Medicine)
- Scifinder-n (Chemistry)
- Google Scholar



A few words to Google Scholar



Operators (list not comprehensive)

+, AND: AND operator (space works as well)
" " : phrase search ("climate change")
|, OR : OR operator
-
intext: text search (intext:glaciers)
intitle: title search (intitle:glaciers)
allintitle: title search (allintitle:glaciers retreat swiss)
author: author search (glaciers author:Hormes)
source: Quelle ("glacial retreat" source:education)

***** replaces a whole word ("swiss * retreat")
AROUND(#) : proximity (swiss AROUND(5) glaciers)
( ) : brackets don't exist; i.e. Boolean combinations are rather limited

CC BY

A few words to Google Scholar

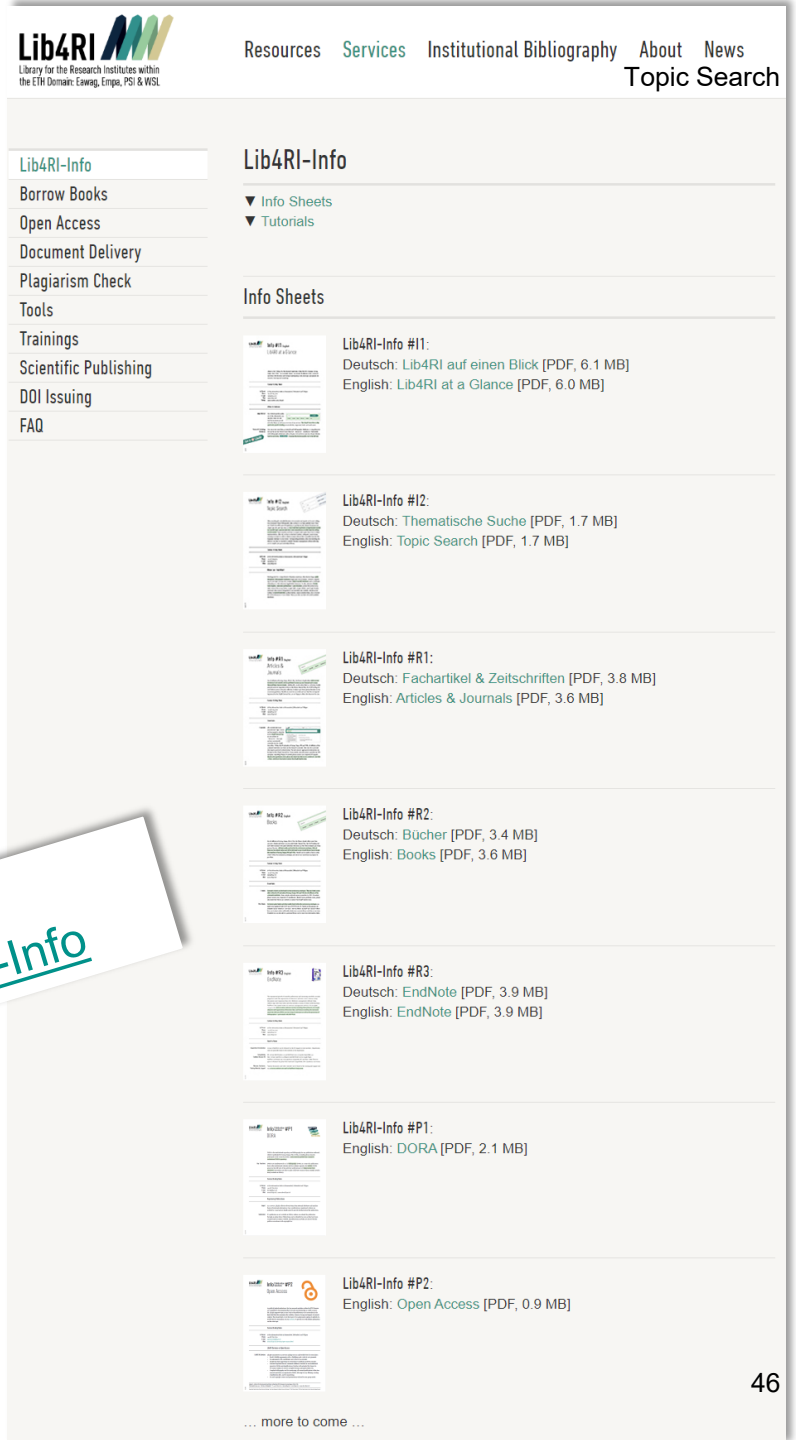
Pros

- Easy, quick and free
- Automatic word-stemming, lemmatisation, synonyms
- Finds articles, theses, books, abstracts from academic publishers, professional societies, online repositories, universities and other web sites
- Source for “grey” literature, e.g. governmental and institutional reports

Cons

- Typically many hits (even from within full texts)
- Few filters, poor export facilities (even when logged into Google)
- Reproducible systematic topic searches are virtually impossible due to
  - Synonyms, word-stemming, lemmatisation are a black box
  - restricted use of Booleans (no brackets)
  - bubble Effect (search results may depend on user/IP address)

Introduction to Lib4RI Resources and Services



Thank you!

Stephanie Hofmann, Bobby Neuhold
Lib4RI - Library for the Research Institutes within the ETH Domain:
Eawag, Empa, PSI & WSL

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Forschungsstrasse 111 • 5232 Villigen
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