Compiling a Literature Review: Finding Information in the Atmospheric, Oceanic, and Climate Sciences

Autumn 2022

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Overview

- Searching
- Sources for finding information
- Examining the research problem
- Sample search
- Saving your research

Literature review: the essentials

- Formulate the research question
- Search the literature
- Gather, read, analyze and assess quality of results
- Refine your search
- Write and reference

Types of sources

- Scholarly publications or journals
- Books or monographs
- Dissertations
- Online sources
- Digital collections
- Government documents

Finding journal articles

- UW-Madison libraries have licensed over 500 databases for your use
- Not all articles and information are free and available from a Google search (most are proprietary)
- Most databases have links to full-text
- For a list of AOS subject databases, visit our website: https://library.ssec.wisc.edu/discover-materials/research-databases/

Deep Web: Proprietary

- Google indexes 16% of the surface Web and misses all of the Deep Web

- 54% of valuable information is in curated, specialized databases not accessible to crawlers for indexing. Much of the rest is proprietary, licensed, or behind a paywall.

- “Any given search turns up just 0.03 percent of the information that exists online (one in 3,000 pages). It’s like fishing in the top two feet of the ocean— you miss the virtual Mariana Trench below.” Popular Science, 2015

Search strategies

- Remember variant word endings, Boolean operators (and, or, not) and synonyms
- Limit search terms to specific fields (title, subject heading), year ranges
- Note controlled vocabularies

Search strategies

To narrow a search:

- Limit by theoretical approach
- Limit to one aspect of subject
- Limit by time, by geographic location, etc.

To broaden a search:

- Generalize your topic
- Check more databases
- Limit jargon
- Check web or newspaper databases if topic is too new

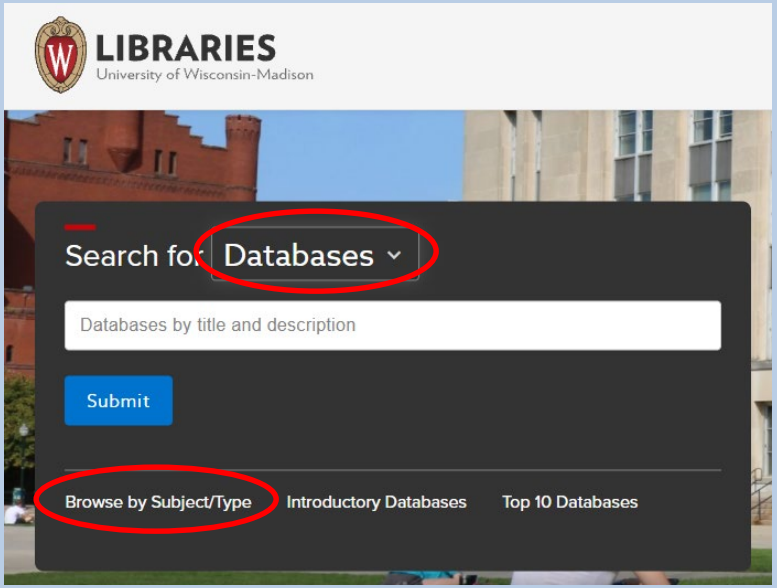
Subject databases

- Web of Science
- Meteorological and Geoastrophysical Abstracts (or Met Abstracts or MGA)
- Oceanic Abstracts
- NTIS (government documents from DOD, EPA, NOAA, NASA, DOE)

How to access databases

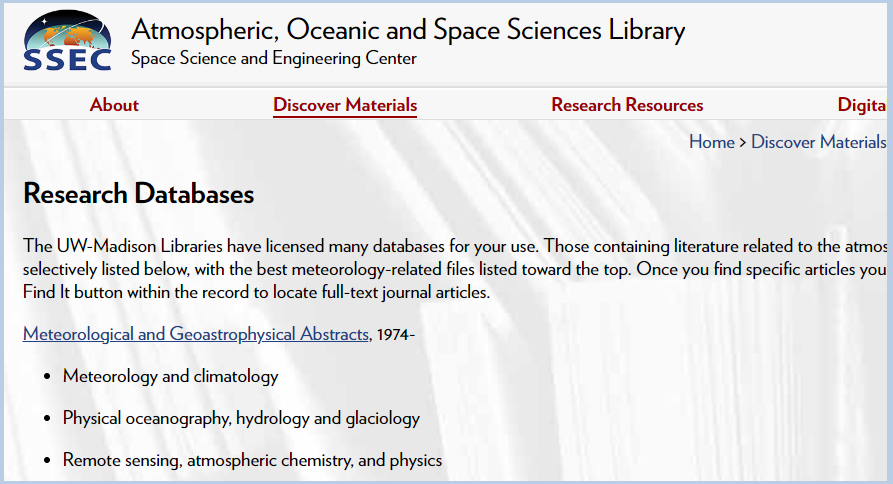
Campus libraries page

www.library.wisc.edu



AOSS Library page

www.library.ssec.wisc.edu



Characteristics of government documents

What are they?

Government reports, internal reports, reports on contracts, etc.

Why are they important?

Cited in literature and historically have provided a rapid means of scientific communication

Who publishes them?

Agencies, governmental bodies, professional societies, federal contractors, etc.

Where can I find them?

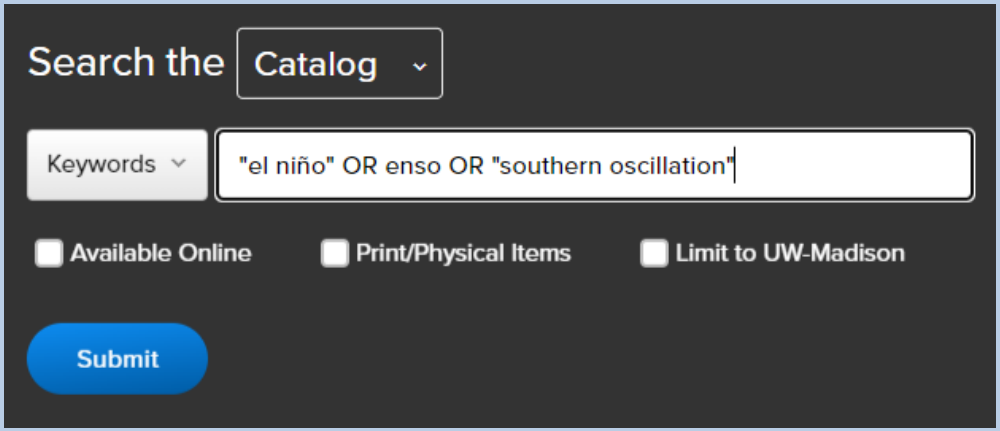
Libraries, government databases (NTIS, DTIS, NASA, STI), author, issuing agency

Define research question

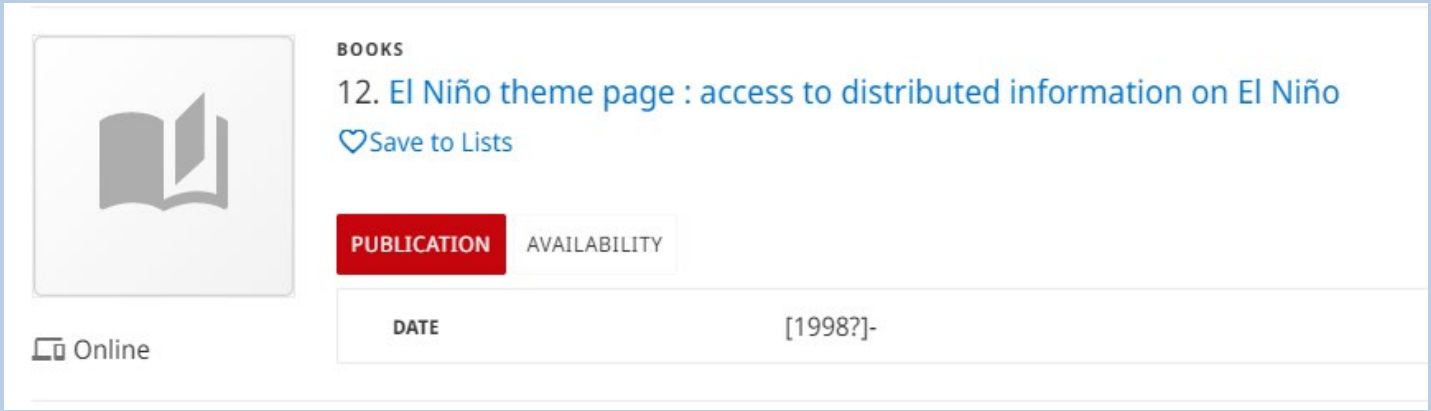
How can I trace the historical roots of ENSO (El Niño Southern Oscillation)?

- Who published the first critical papers?
- How has the theory developed over time?
- Search terms: ENSO, El Niño Southern Oscillation, history, bibliography, tropical ocean circulation, phenomena, theory

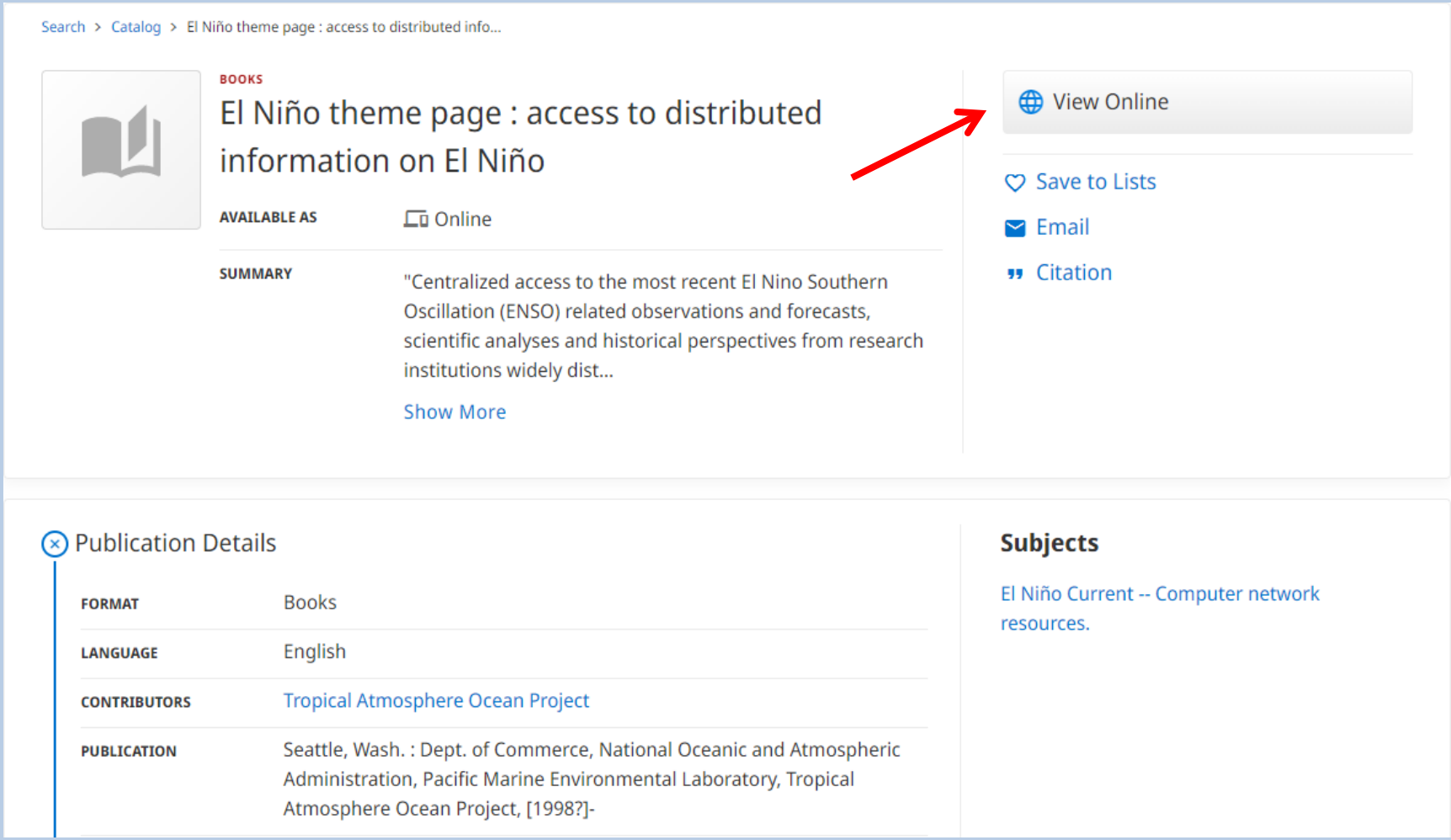
Search the catalog



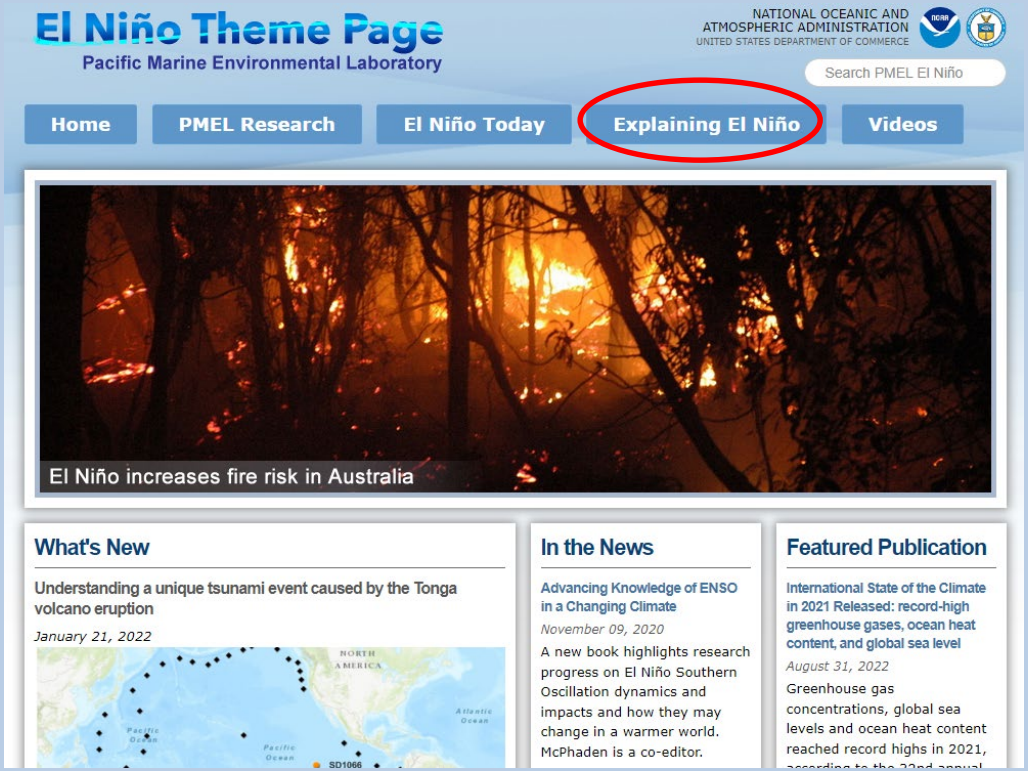
- Yields 44 results
- “El Niño theme page”



Record


Search > Catalog > El Niño theme page : access to distributed info...
BOOKS
El Niño theme page : access to distributed information on El Niño
AVAILABLE AS
Online
SUMMARY
"Centralized access to the most recent El Nino Southern Oscillation (ENSO) related observations and forecasts, scientific analyses and historical perspectives from research institutions widely dist...
Show More
View Online
Save to Lists
Email
Citation
Publication Details
FORMAT
Books
LANGUAGE
English
CONTRIBUTORS
Tropical Atmosphere Ocean Project
PUBLICATION
Seattle, Wash. : Dept. of Commerce, National Oceanic and Atmospheric Administration, Pacific Marine Environmental Laboratory, Tropical Atmosphere Ocean Project, [1998?]-
Subjects
El Niño Current -- Computer network resources.

El Niño theme page

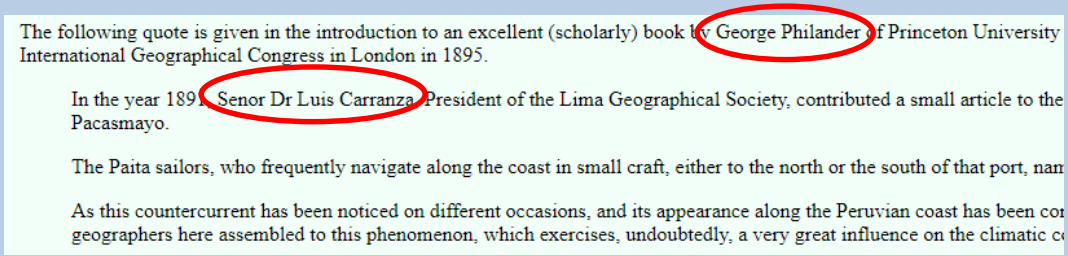


The Origins of the Name El Niño

El Niño was originally recognized by fisherman off the coast of South America as the appearance of unusually warm water in the Pacific Ocean, occurring near the beginning of the year. El Niño means *The Little Boy* or *Christ child* in Spanish. This name was used for the tendency of the phenomenon to arrive around Christmas.

There has been a confusing range of uses for the terms El Niño, La Niña, and ENSO by both the scientific community and the general public, which is clarified in this web page on definitions of the terms ENSO, Southern Oscillation Index, El Niño and La Niña. Also interesting is the Web page: Where did the name El Niño come from?

Under “Explaining El Niño” we find “Origins” and “Where did the name El Niño come from” to find further historical information.



The following quote is given in the introduction to an excellent (scholarly) book by George Philander of Princeton University
International Geographical Congress in London in 1895.

In the year 189[illegible] Senor Dr Luis Carranza, President of the Lima Geographical Society, contributed a small article to the
Pacasmayo.

The Paita sailors, who frequently navigate along the coast in small craft, either to the north or the south of that port, nam

As this countercurrent has been noticed on different occasions, and its appearance along the Peruvian coast has been cor
geographers here assembled to this phenomenon, which exercises, undoubtedly, a very great influence on the climatic c

El Niño, La Niña, & ENSO publications

Historical References

- Philander, S.G.H., 1990: El Niño, La Niña and the Southern Oscillation. Academic Press, San Diego, CA, 289 pp.
- Hayes, S.P., L.J. Mangum, J. Picaut, A. Sumi, and K. Takeuchi, 1991: TOGA-TAO: A moored array for real-time measurements in the tropical Pacific Ocean. Bull. Am. Meteorol. Soc., 72, 339-347. (abstract available)
- McPhaden, M.J., 1993: TOGA-TAO and the 1991-93 El Niño-Southern Oscillation Event. Oceanography, 6, 36-44.
- Lee, Martin E., and Chelton, Dudley, Oceanic Kelvin/Rossby Wave Influence on North American West Coast Precipitation, NOAA Technical Memorandum (NWS WR-253)

Also see a complete, up-to-date listing of El Niño journal articles.

…but these articles only go back to the late 1960s. Are there older references?

Publications

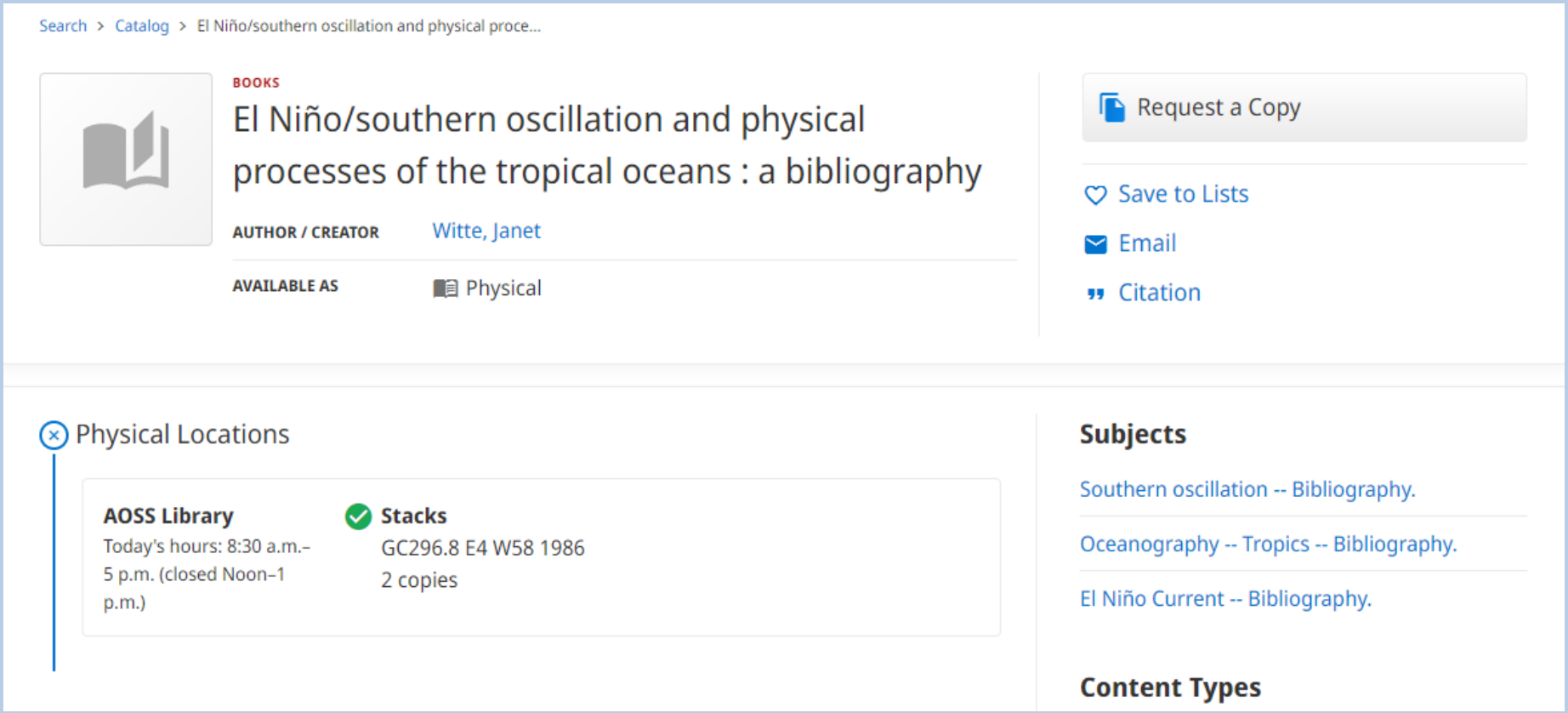
PMEL El Niño, La Niña & ENSO publications

- El Niño (1997-Present)
- El Niño (Pre-1997)
- La Niña

Search Results:

Between Calendar Years 1968 and 1996
Sorted by year: Descending
Abstract contains all words: EL NINO

Going back to the catalog search…



Request a copy and review references for early publications.

Collecting historical references

From the El Niño theme page:

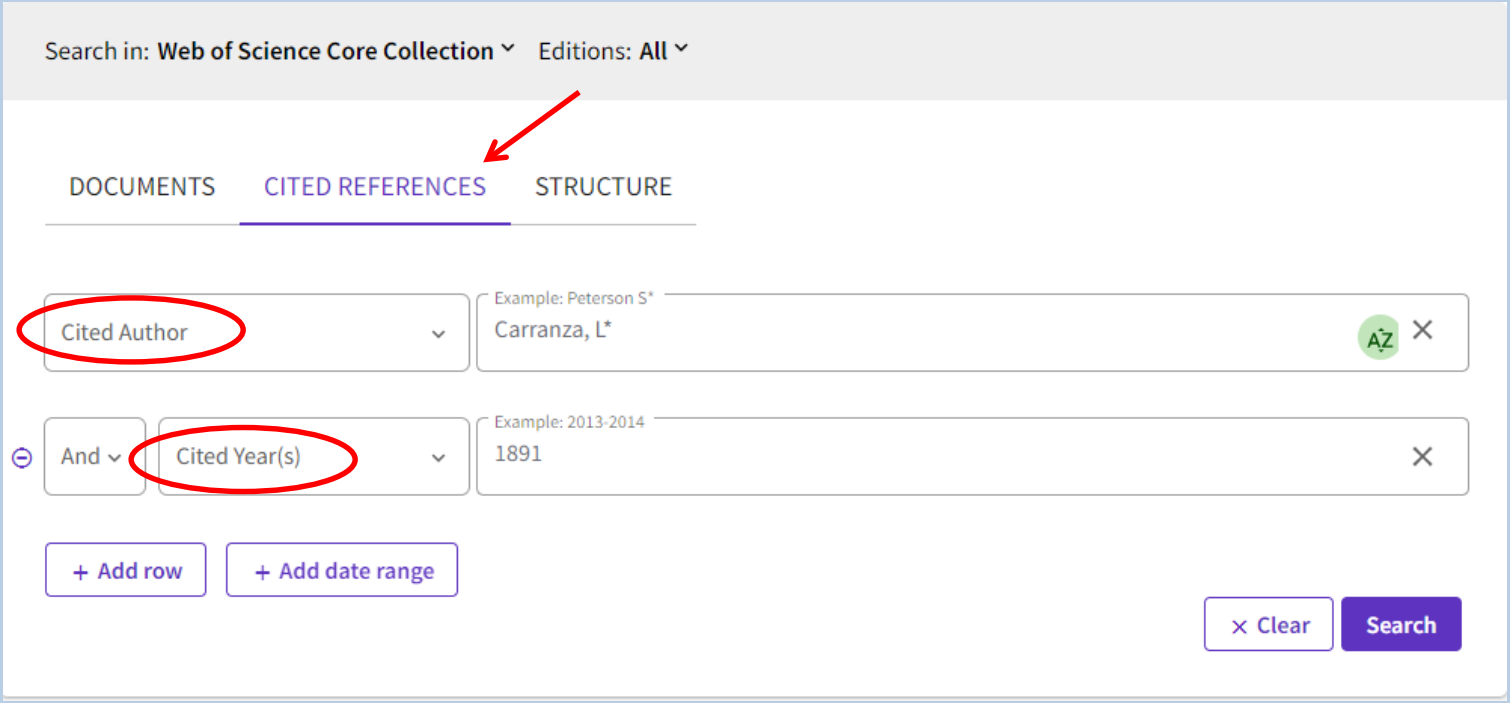
- **1891: Dr. Luis Carranza**, Lima Geographical Society, contributed a small article to its Bulletin, noting a countercurrent flowing from north to south along points on the coast of Peru – first recorded observations. Named El Niño

From the El Niño bibliography:

- **1923: Sir Gilbert Walker** names the Southern Oscillation by recognizing that changes across the tropical Pacific were not isolated phenomena but connected as part of a larger oscillation
- **1969: Jacob Bjerknes**, UCLA, first real description of El Niño/Southern Oscillation in terms of physical mechanisms
- **1970s-1980s: S.G.H Philander and K. Wyrtki** continue to expand the concept

Using Web of Science for citations

With a cited reference search, you can discover how a known idea or innovation has been confirmed, applied, improved, etc.

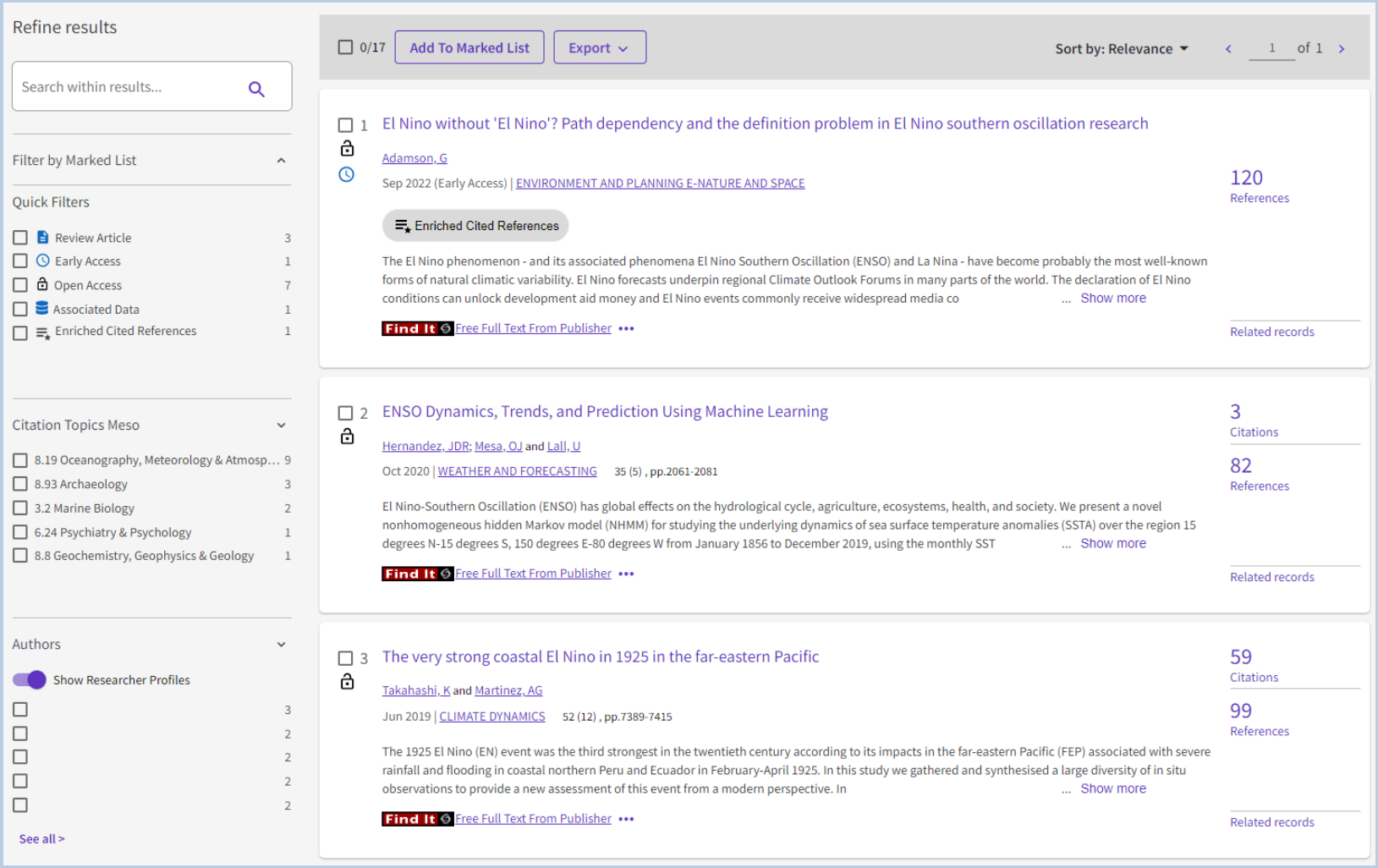


Hint: Use the author's last name and first initial with an asterisk to retrieve the most inclusive results.

Cited author searching

The cited author search will populate all possible authors given your search criteria.

Cited author search results



Citing articles

Find It | Free Full Text From Publisher | Full Text Links | Export | Add To Marked List | 3 of 17

The very strong coastal El Nino in 1925 in the far-eastern Pacific

By: Takahashi, K (Takahashi, Ken) [1] ; Martinez, AG (Martinez, Alejandra G.) [1]

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

CLIMATE DYNAMICS

Volume: 52 **Issue:** 12 **Page:** 7389-7415 **Special Issue:** SI
DOI: 10.1007/s00382-017-3702-1
Published: JUN 2019
Indexed: 2019-06-14
Document Type: Article

Abstract

The 1925 El Nino (EN) event was the third strongest in the twentieth century according to its impacts in the far-eastern Pacific (FEP) associated with severe rainfall and flooding in coastal northern Peru and Ecuador in February-April 1925. In this study we gathered and synthesised a large diversity of in situ observations to provide a new assessment of this event from a modern perspective. In contrast to the extreme 1982-1983 and 1997-1998 events, this very strong coastal El Nino in early 1925 was characterised by warm conditions in the FEP, but cool conditions elsewhere in the central Pacific. Hydrographic and tide-gauge data indicate that downwelling equatorial Kelvin waves had little role in its initiation. Instead, ship data indicate anabrupt onset of strong northerly winds across the equator and the strengthening/weakening of the intertropical convergence zones (ITCZ) south/north of the equator. Observations indicate lack of external atmospheric forcing by the Panama gap jet and the south Pacific anticyclone and suggest that the coupled ocean-atmosphere feedback dynamics associated with the ITCZs, northerly winds, and the north-south SST asymmetry in the FEP lead to the enhancement of the seasonal cycle that produced this EN event. We propose that the cold conditions in the western-central equatorial Pacific, through its teleconnection effects on the FEP, helped destabilize the ITCZ and enhanced the meridional ocean-atmosphere feedback, as well as helping produce the very strong coastal rainfall. This is indicated by the nonlinear relation between the Piura river record at 5 degrees S and the SST difference between the FEP and the western-central equatorial Pacific, a stability proxy. In summary, there are two types of EN events with very strong impacts in the FEP, both apparently associated with nonlinear convective feedbacks but with very different dynamics: the very strong warm ENSO events like 1982-1983 and 1997-1998, and the very strong coastal EN events like 1925.

Keywords

Author Keywords: Coastal El Nino; ENSO; Eastern Pacific; Wind-evaporation-SST feedback; Peru; Ecuador
Keywords Plus: SEA-SURFACE TEMPERATURE; EXTREME RAINFALL EVENTS; SOUTHERN-OSCILLATION; CLIMATE VARIABILITY; TROPICAL PACIFIC; PERU; ENSO; ECUADOR; MODELS; WINDS

Citation Network

In Web of Science Core Collection

59
Citations

Create citation alert

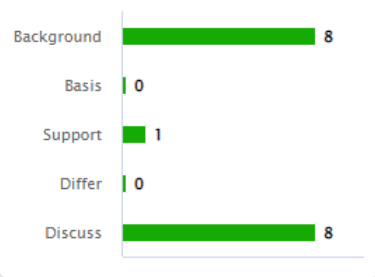
60
Times Cited in All Databases

99
Cited References
View Related Records

+ See more times cited

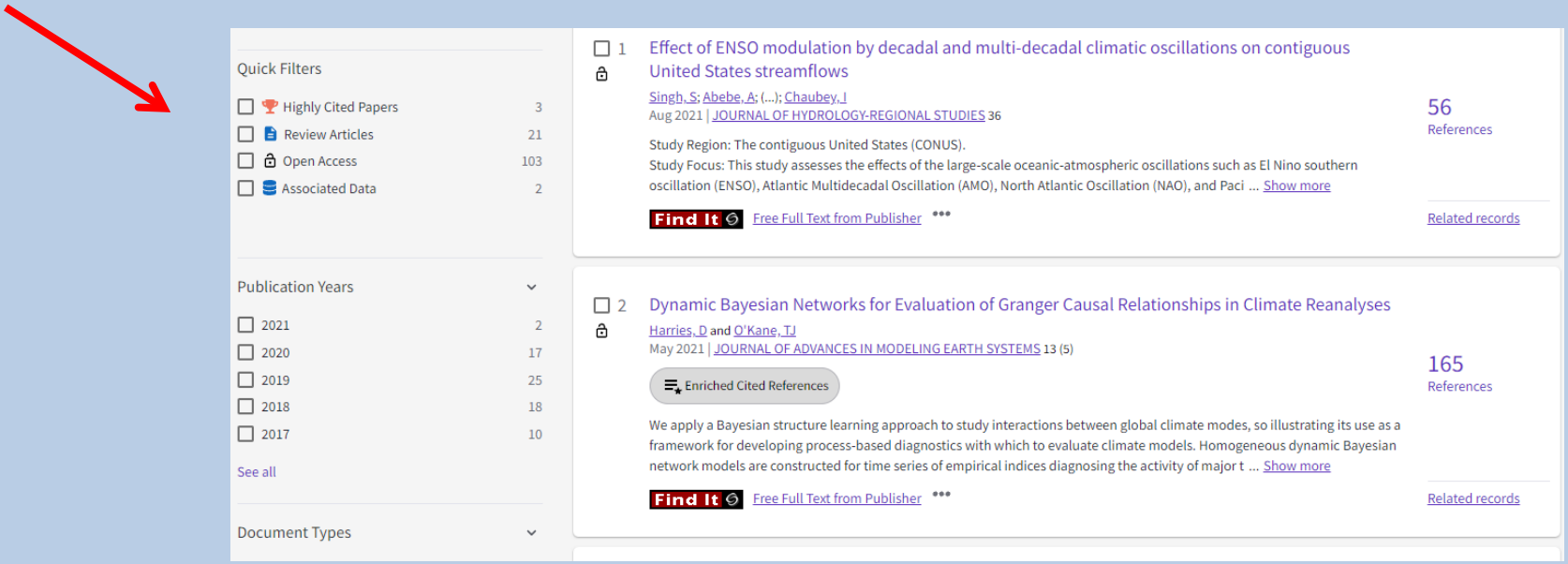
Citing items by classification

Breakdown of how this article has been mentioned, based on available citation context data and snippets from 11 citing item(s).



Cited author searching, again

☑	WALKER, G. T.	MEM INDIA METEOROL D	Correlation in seasonal variations of weather, VIII. A preliminary study of world weather	1923	4	53-84	2
☑	Walker, G.T.	MEMOIRS INDIA METEOR	Correlation in seasonal variation of weather. VIII: A preliminary study of world weather	1923	24	75-131	349
☑	Walker, G. T.	MEMOIRS INDIAN METEO	Correlation in Seasonal Variation of Weather, VIII: A preliminary study of world weather	1923	XXIV	109	1
☑	Walker, G. T.	8 IND MET DEP MEM	Correlations in seasonal variations of weather	1923	24	75-131	4
☑	Walker, G. T.	WEATHER MEM INDIAN M	Correlation in seasonal variations of weather, VIII: A Preliminary Study of World	1923	24	75-131	1
☑	Walker, G. T	MEM INDIAN METEOROL	Correlation in seasonal variations of weather, VIII: A preliminary study of world weather	1923	24		3



Metrics: Times cited

Web of Science is the gold standard for citation metrics. The numbers are reproducible and generally more reliable than Google Scholar citations.

Review bibliographies

Find It | Free Full Text From Publisher | Export | Add To Marked List | 1 of 2

ATMOSPHERIC TELECONNECTIONS FROM EQUATORIAL PACIFIC

By: BJERKNES, J (BJERKNES, J)

MONTHLY WEATHER REVIEW

Volume: 97 **Issue:** 3 **Page:** 163-&

DOI: 10.1175/1520-0493(1969)097<0163:ATFTEP>2.3.CO;2

Published: 1969

Indexed: 1969-01-01

Document Type: Article

Categories/Classification

Research Areas: Meteorology & Atmospheric Sciences

Citation Topics: 8 Earth Sciences > 8.19 Oceanography, Meteorology & Atmospheric Sciences > 8.19.38 ENSO

Citation Network

In Web of Science Core Collection

2,544
Citations

Create citation alert

2,724
Times Cited in All Databases

16
Cited References

View Related Records

Who is Bjerknes citing?

Walker, G. T., "Correlation in Seasonal Variations of Weather, VIII: A Preliminary Study of World Weather," *Memoirs of the Indian Meteorological Department*, Vol. 24, Part 4, Calcutta, **1923**, pp. 75–131.

Walker, G. T., "Correlation in Seasonal Variations of Weather, IX: A Further Study of World Weather," *Memoirs of the India Meteorological Department*, Vol. 24, Part 9, Calcutta, **1924**, pp. 275–332.

Walker, G. T., "World Weather III," *Memoirs of the Royal Meteorological Society*, Vol. II, No. 17, Edward Stanford, LTD., London, Apr. **1928**, pp. 97–106.

Walker, G. T., "World Weather VI," *Memoirs of the Royal Meteorological Society*, Vol. IV, No. 39, London, Jan. **1937**, pp. 119–139.

Walker, G. T., and Bliss, E. W., "World Weather IV," *Some Applications to Seasonal Forecasting, Memoirs of the Royal Meteorological Society*, Vol. 3, No. 24, London, Feb. **1930**, pp. 81–95.

Walker, G. T., and Bliss, E. W., "World Weather V," *Memoirs of the Royal Meteorological Society*, Vol. 4, No. 36, London, Oct. **1932**, pp. 53–84.

Repeat for Philander, Wyrtki

- Review references from other papers and from the bibliographies in hand

- Check Web of Science and Met Abstracts for other papers and cited references

Review

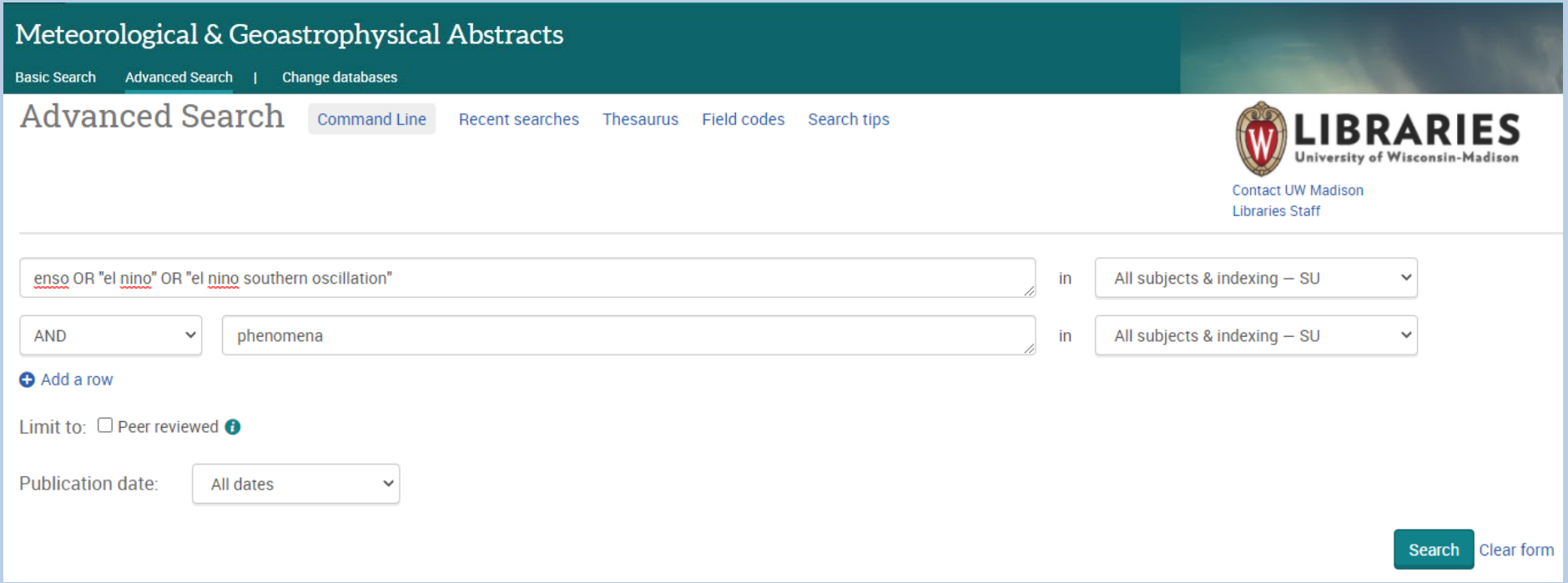
Are all of your sources pointing to the same articles, giving the same view of the history of El Niño?

Current literature

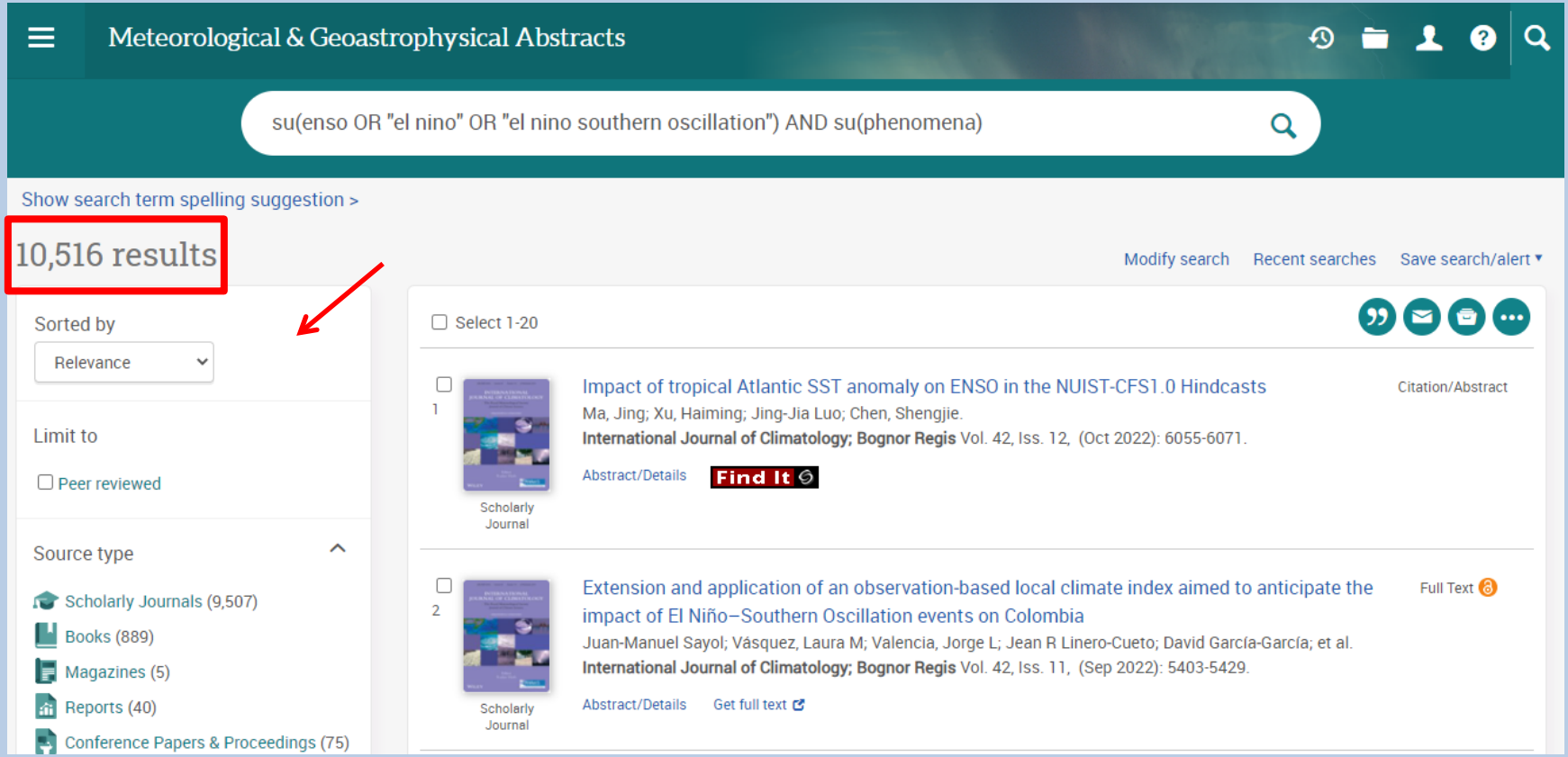
Who is publishing on ENSO?

- Search the web for trending news articles
- Search news outlets/databases
- Search Oceanic Abstracts, Met Abstracts, Web of Science

Met Abstracts, keyword/subject search

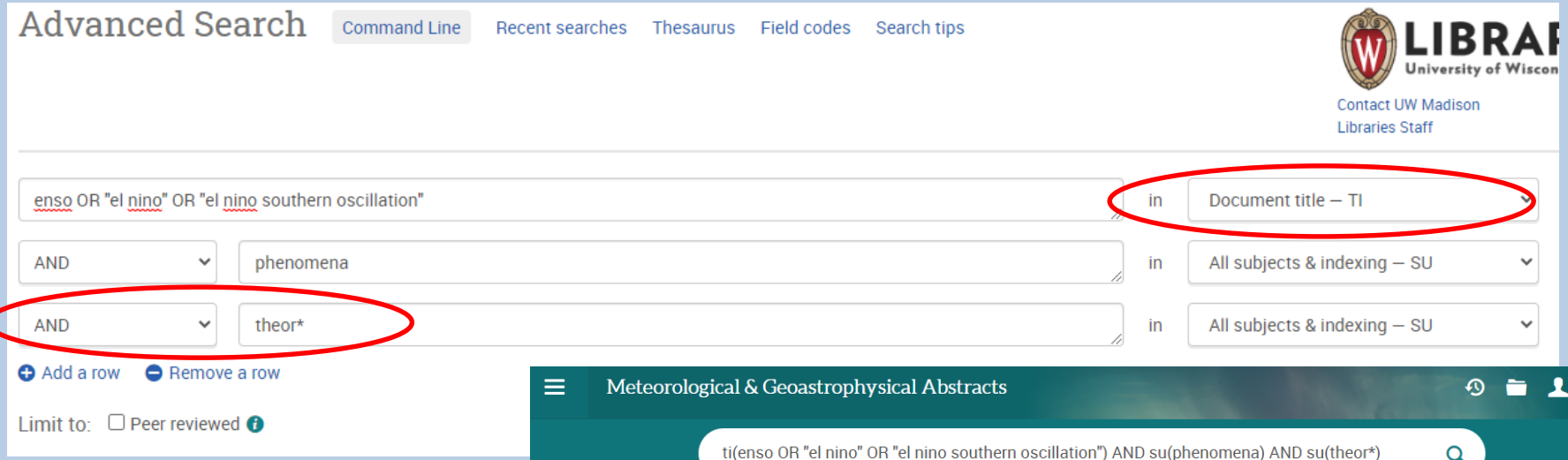


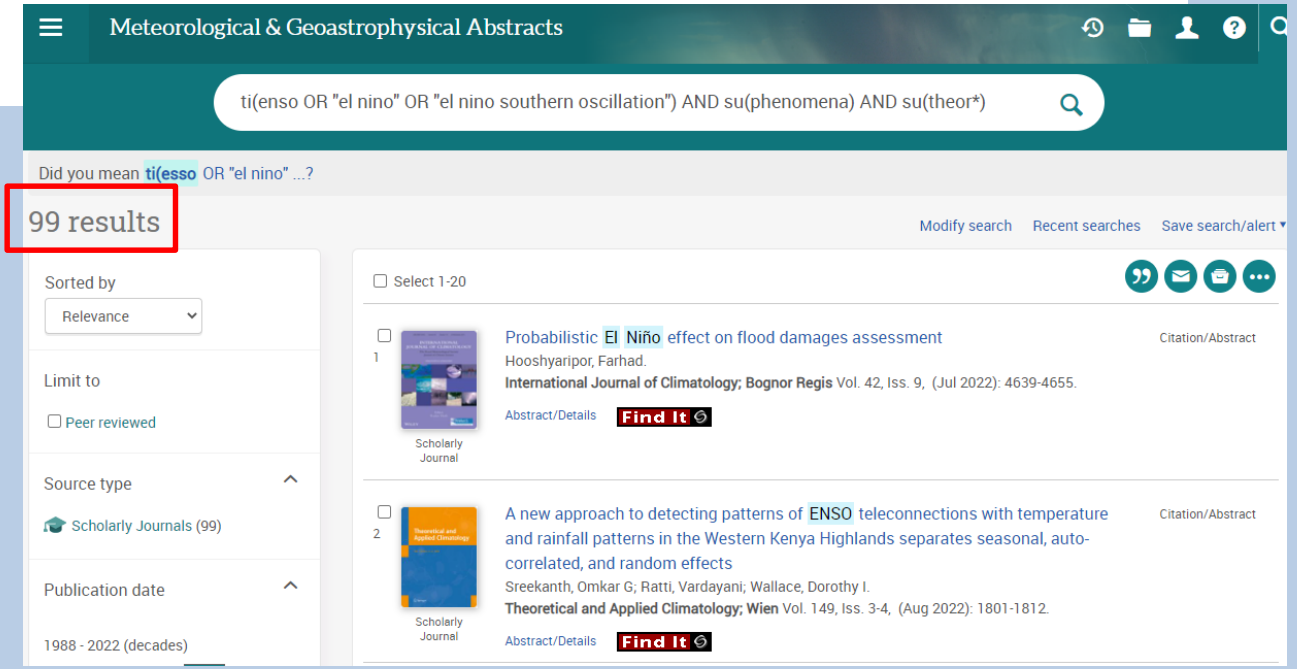
Refining your results



Sort by publication, limit by source type, subject, or you can add additional keywords

Refining your search





Saving your research

- Create an account with the database (Met Abstracts, WoS) to save searches or create alerts
- Copy DOIs, not URLs
- Export records to a citation manager
- Make sure you have complete references
- Document your search: take notes, helps to avoid duplication and allows replication

Citation managers

The libraries provide documentation and classes on citation managers:

https://www.library.wisc.edu/research-support/collecting-organizing-analyzing-information/citation-managers/

Review research so far

- Reviewed and compiled results
- Modified searches
- Found articles

Now consider…

- Have you gone back as far as you can go?
- Have you covered the current literature?

Examine other avenues of inquiry

- Government documents
- Newspapers, current and historical: https://researchguides.library.wisc.edu/newspapers
- History of Science Databases
- WorldCat for holdings of other major science libraries
- Is there a cross-over between your topic and other subject areas?

Finding dissertations

- A guide to finding dissertations and theses: https://www.library.wisc.edu/find/dissertations/
- Visit ProQuest Dissertations & Theses Global database

Citation guides

- Citation Guides (UW-Madison): Chicago/Turabian, MLA, APA, etc.
- American Meteorological Society
- American Geophysical Union

Overview

- Determine search criteria remember to take notes as you search
- Check different sources: scholarly journals, gov. docs, dissertations, books, etc.
- Use library catalog and subject databases (not just the web)
- Remember search strategies to improve/refine results
- Atmospheric/Oceanic/Climate Sciences Research Guide: https://researchguides.library.wisc.edu/atmosphericoceanicclimate

For more information…

The AOSS Library has created a series of tutorials on compiling a literature review:

https://researchguides.library.wisc.edu/atmosphericoceanicclimate

Ask a librarian

If you have any questions about anything covered here or need any research assistance, please contact me at library@ssec.wisc.edu or stop by the library.