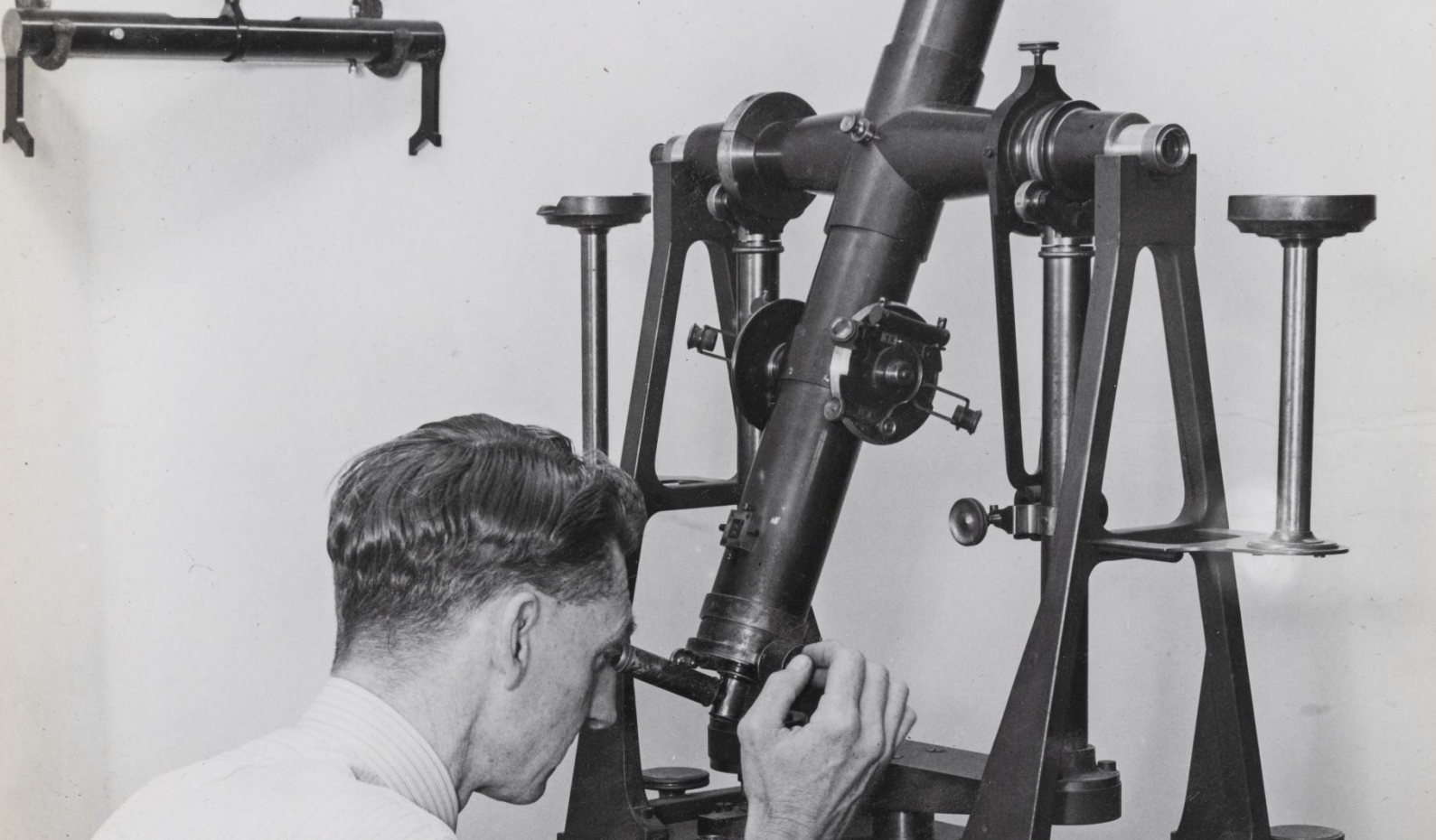




STATE LIBRARY⁷
QUEENSLAND

Year 10

Earth Sciences

Student research guide

Unit 1 – The Big Bang and the Evolution of the Universe

Unit 2 – Climate Change

Cover: [Observer using a transit instrument, used to maintain correct time by observing the sun and stars.](#), c1950, unidentified, 10117, [Photographic album belonging to the Queensland Department of Public Lands and Irrigation including Forestry](#), State Library of Queensland. Image number: 10117-0001-0116.

© 2026. This work is licensed under the Attribution-NonCommercial-ShareAlike 4.0 International Creative Commons ([CC BY-NC-SA 4.0 license](https://creativecommons.org/licenses/by-nc-sa/4.0/)) by State Library of Queensland. You are free to share and adapt the work under the following terms: you must give appropriate credit, it is for a non-commercial purpose and, if you remix, transform, or build upon the materials, you must distribute your contributions under the same license as the original.



Date prepared: 24 November 2023

Date revised: 07 April 2026

Copyright information for teachers

This research guide is designed for individual use by students.

Please note, due to licensing arrangements, State Library of Queensland's subscription databases and ebooks are for private research and study purposes only. They may not be used as teaching resources in classroom environments in schools or other educational institutions and students must not be required to access specific databases or ebooks as part of the curriculum.

Teachers can advise students on State Library's resources and encourage their use to help with their studies and research. Students are encouraged to access State Library's resources at school, but not during class time.

Teachers are most welcome to advise students what is available via State Library, and to encourage students to make use of ebooks and databases to help with their studies. It is permissible for a teacher to demonstrate the use of State Library's catalogue, and to point out how various online material can be accessed.

It is also permissible for students to access State Library's online resources at school – but this must not be during class time. An example of permitted use might be where students have a spare period when they work on assignments or homework, and they are accessing databases as private members of State Library. Information about joining State Library is [here](#).

Please also note that State Library has digitised a range of material such as diaries, and out of copyright publications held in our collections. There are no restrictions on the use of this material as part of a teaching program – and no requirement to be a member of the library to use this material. This type of material can easily be found, [searching State Library's One Search catalogue](#) using the "SLQ digitised collections" option in the dropdown menu.

For more information about the use of copyright materials visit [Understanding copyright](#).

Overview

As Queensland's leading research library, State Library is a great place to find information to complete your research-based assessments.

State Library's One Search catalogue is the gateway to an extensive suite of national and international journals, databases, ebooks, encyclopedias, newspaper archives, and collections of thousands of historical images, letters, artworks, diaries, and artefacts to interrogate as sources.

Before you get started

- [Become a member](#) of State Library of Queensland (it's free!).
- Once you have joined State Library, log in to your account in [One Search](#) so you can use the links in this research guide to access the featured collection items.
- Complete the [Student research with State Library](#) module for a guide to navigating State Library's resources. Or visit the [One Search help page](#) for tips & tricks for searching One Search.
- You can search our [OneSearch catalogue](#) or begin exploring by clicking on some of the featured items contained in this research guide.

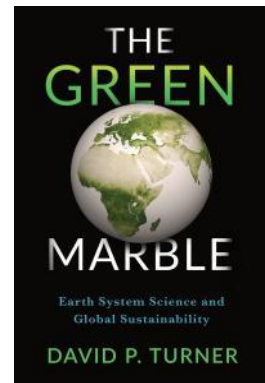
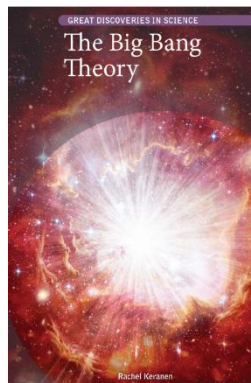
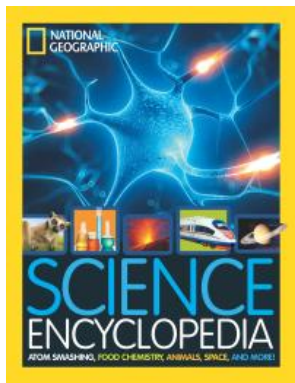
Student research with State Library

Feel more confident navigating State Library's resources to find high quality information sources for your assessments.

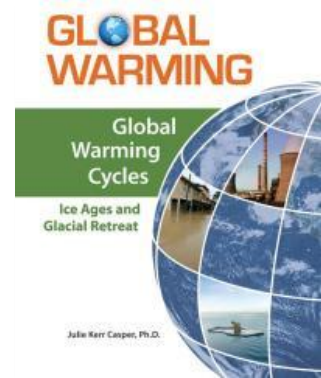
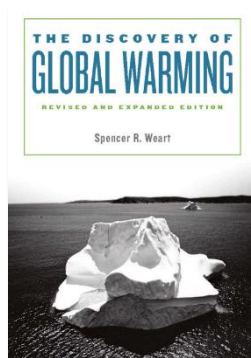
[Start module](#) 



Featured ebooks

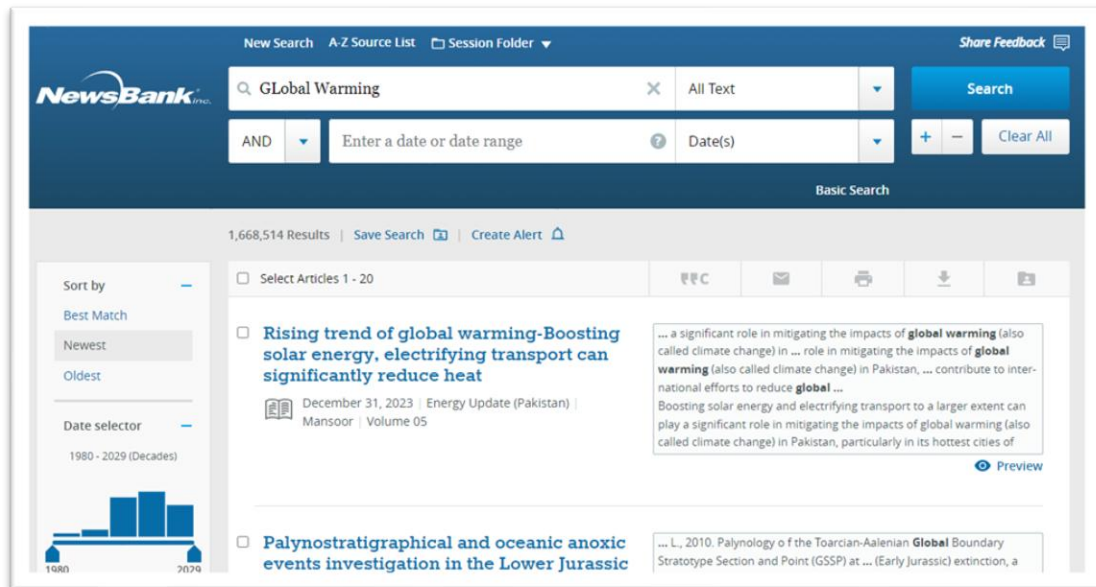


This is an advanced reading resource

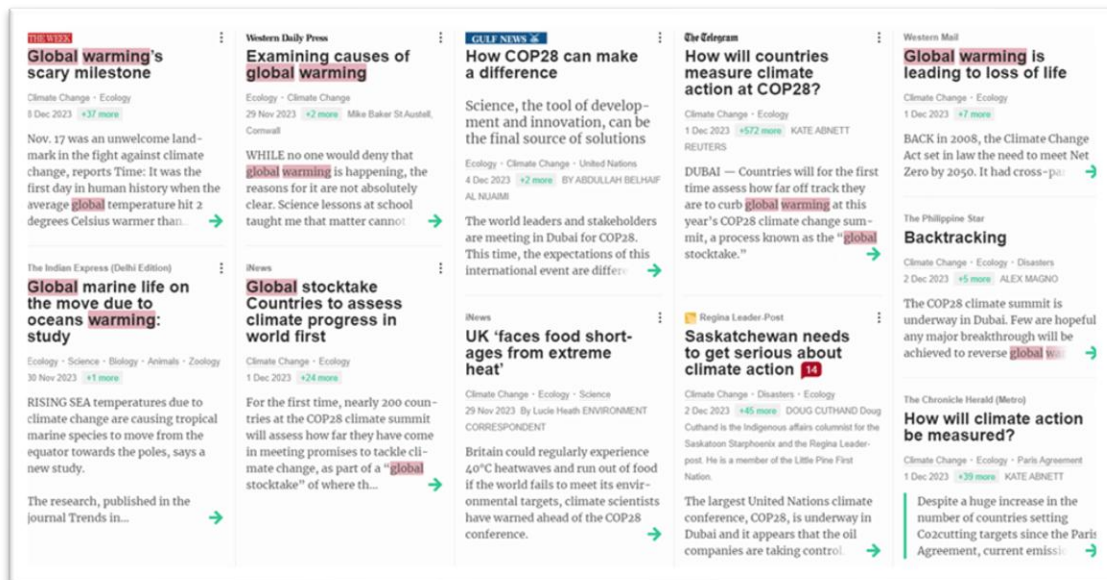


Featured databases

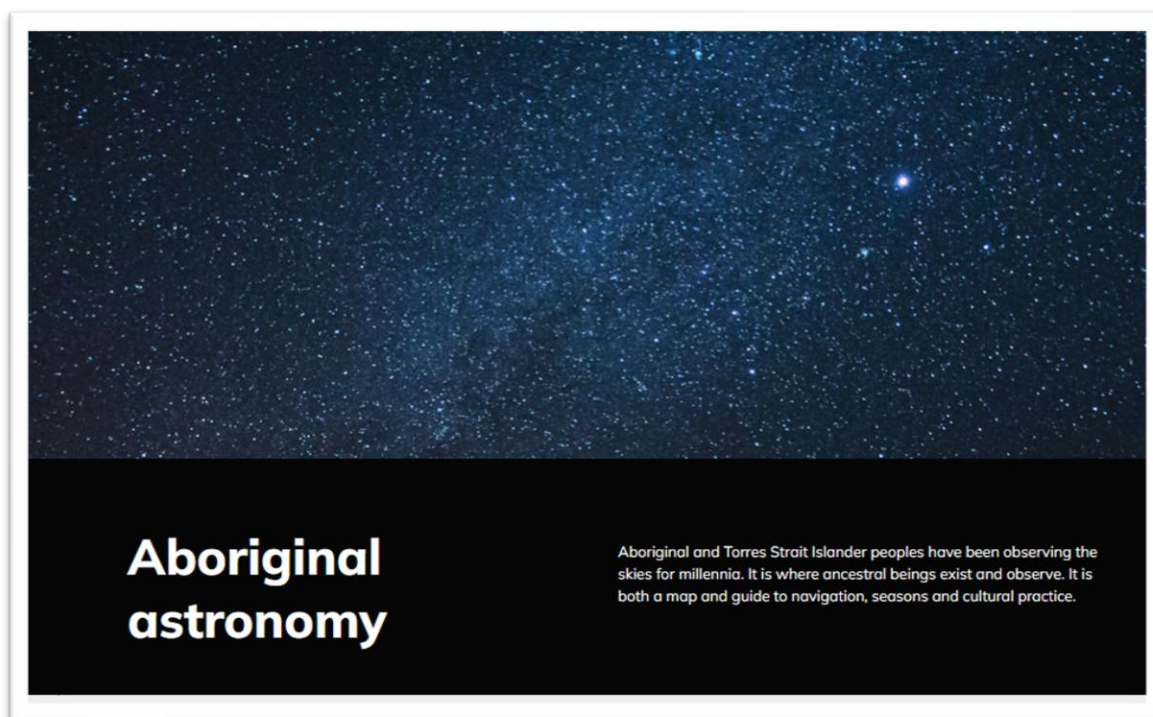
[NewsBank](#) provides a comprehensive collection of reliable news sources featuring over 8,000 titles from 200 countries covering a combination of global, regional, and local news from Queensland. The searchable archive features news articles back to the 1980s.



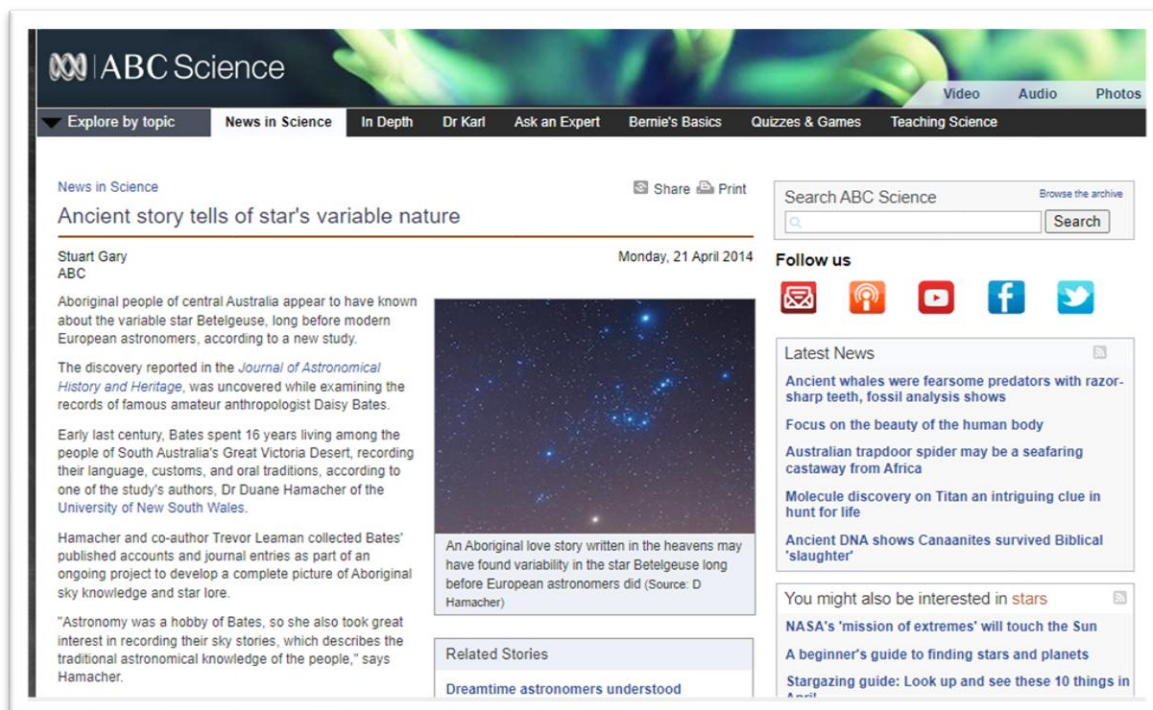
[PressReader](#) provides access to nearly 6000 newspapers and magazines from all over the world, featuring the latest issues of publications from over a hundred countries.



[Australian Institute of Aboriginal and Torres Strait Islander Studies](#) is a resource-rich platform providing insight to the knowledge and programs driven by First Nations knowledge and culture.



This article provides an example of links between First Nations oral histories and scientific evidence. This article is one of many examples of First Nations people.



[Queensland Museum](#) provide Learning Resources website students with many activities, fact sheets, images, and videos.

QUEENSLAND
MUSEUM
NETWORK

Learning Resources

HomeAboutSave list

Showing 15 of 66 resources



Carnivorous Sponges and Deep Sea Creatures
Years: 5, 6, 7, 8, 9, 11, 12



Project DIG 3D Gallery | Sketchfab
Years: Early Years, Prep, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12,
Other
Biology



Project DIG | Meet the Megafauna
Years: Early Years, Prep, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12,
Other
Biology

Big Bang Theory

Describe how the big bang theory models the origin and evolution of the universe and analyse the supporting evidence for the theory.

- Describing the major components of the universe using appropriate scientific terminology and units including astronomical units, scientific notation and light-years.
- Constructing a timeline to show major changes in the universe which are thought to have occurred from the big bang until the formation of the major components such as stars and galaxies.
- Examining how stars' light spectra and brightness is used to identify compositional elements of stars, their movements and their distances from earth.
- Explaining how each different type of evidence, such as cosmic microwave background radiation, red or blue shift of galaxies, Edwin Hubble's observations and proportion of matter in the universe, provides support for the acceptance of the big bang theory.
- Researching First Nations Australians' knowledge of celestial bodies and explanations of the origin of the universe.
- Identifying the different technologies used to collect astronomical data and the types of data collected.
- Exploring recent advances in astronomy, including the Australian Square Kilometre Array Pathfinder, and astrophysics, such as the discovery of gravitational waves, dark matter and dark energy; and identifying new knowledge which has emerged.

[Oxford Reference](#) spans 25 different subject areas, bringing together 2 million digitised entries across Oxford University Press's dictionaries, companions, and encyclopedias.

The screenshot shows the Oxford Reference website interface. At the top, the 'Oxford Reference' logo is on the left, and a search bar is on the right. Below the logo, there are tabs for 'Subject' and 'Reference Type'. The main heading is 'Oxford Reference Search Results'. On the left sidebar, it says 'Signed in as: State Library of Queensland' with an 'AUTOMATICALLY SIGNED IN' button. Below that is a 'Sign in to an additional subscriber account' button. Further down is a 'Narrow Your Choices' section with a 'REFINE TERMS' dropdown set to 'All' and a search box containing 'big bang theory'. There are '+ Add Row' and 'Update' buttons. The main content area shows 'You are looking at 1-20 of 319 entries for: All: big bang theory'. Below this is a 'Did you mean' suggestion: 'big-bang theory, Big-Bang Theory, The' with a 'clear all' link. There are tabs for '319 ENTRIES' and '2 BOOKS'. Below these are filters for 'View' (list/icon), 'Items per page' (20), and 'Sort by' (Relevance). A pagination bar shows 'Page 1 2 3 4 5 6 7 ... 15'. The first result is 'big bang theory' with a book cover thumbnail. To its right, it says 'A Dictionary of Geology and Earth Sciences (5 ed.)'. Below the title, it lists 'Reference type: Subject Reference', 'Current Version: 2020', 'Subject: Science and technology, Earth Sciences and Geography', and 'Length: 81 words'. A 'Quick reference' link is on the far right. A snippet of the entry text is visible at the bottom: 'bang theory: The current explanation for the origin of the universe, in which it expands and'.

The [Britannica Library](#) has articles, images and more, with a selection of resources especially for teenagers.

The screenshot shows the Britannica Library website interface for teens. At the top, there's a 'Library' logo with a 'Teens' tag, a 'SEARCH' button, and navigation links for 'Your Britannica Resources', 'Research Tools and Materials', 'Help', and 'My Britannica'. The main heading is 'You searched for "Big Bang theory"' with a subtext 'DISPLAYING 1 - 10 OF 1,904 RESULTS.'. Below this is a 'Reading Level' selector with options 1, 2, and 3, where 2 is selected. To the right is an 'Advanced Search' link. Below the reading level are tabs for 'Articles', 'Images', 'Videos', and 'More'. The 'Articles' tab is active. The first article is 'big bang theory (cosmology)' with a star icon. Its snippet reads: 'big bang theory | The big bang theory is a general theory held by many astronomers that the universe may have originated about 12 to 15 billion years ago as ...'. The second article is 'cosmology (astronomy)' with a star icon. Its snippet reads: 'Evidence for the big bang theory | The first of these predictions was quickly supported by spectroscopic studies. Indeed, the visible matter in the universe ...'. Below the articles is a section 'images related to this search:' with a 'See all images' link. It shows four image thumbnails: a cosmic scene, a diagram of the universe's expansion, a portrait of a man, and a landscape with a river.

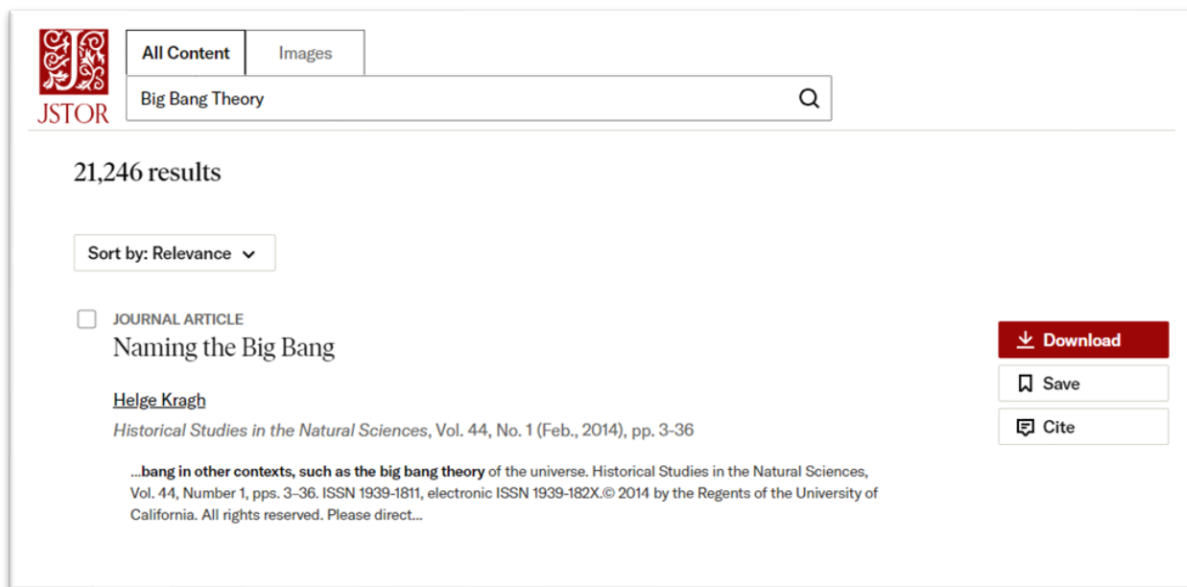
[National Geographic Virtual Library](#) is a powerful tool for research offering access to over 100+ years of magazines and hundreds of books, maps, videos, and images.

The screenshot shows the National Geographic Virtual Library interface. At the top, there's a banner with the text 'ALE PRESENTS NATIONAL GEOGRAPHIC' over a background image of elephants. Below the banner is a search bar containing 'Bang theory' and an 'Advanced Search' button. To the right of the search bar are navigation links: 'Browse Magazines', 'About', 'Explore Topics', 'Search History', and a 'Go' button. Below the search bar, it says 'VIEWING RESULTS FOR' followed by a list of content types: 'Content Types' (selected), 'Featured Articles (6)', 'Books (3)', 'Brief Articles (3)', and 'Videos (2)'. On the left, under 'CONTENT TYPES', there's a link to 'h Terms: Keyword: Big Bang theory' and a 'Revise Search' button. Below this, 'FEATURED ARTICLES (6)' are listed. The first article is 'A First Glimpse of the Hidden Cosmos' by Timothy Ferris and Robert Clark, published in National Geographic Magazine, Jan. 2015, Volume 227, Issue 1, p. 108. It is an 'Article' found in the National Geographic Archive 1995+. A 'Keyword Preview' image is shown next to the title. The second article is 'Beyond the Big Bang: Einstein's Evolving Universe'. On the right, there's a 'FILTER YOUR RESULTS' section with buttons for 'Subjects', 'Publication Title', 'Publication', 'Document Type', and 'Search Within'. Below that is a 'TOPIC FINDER' section with the text 'Discover topics and results related to your search' and a 'Start the Topic Finder' button. At the bottom right is a 'TERM FREQUENCY' section with a 'Term Frequency' button.

[ProQuest Central](#) brings together 47 databases across 175 subject areas, providing easy intuitive access to an incredibly broad and comprehensive range of content.

The screenshot shows the ProQuest Central interface. At the top, there's a header with the text 'ProQuest Central' and a search bar containing 'Big Bang Theory'. Below the search bar, there's a 'Select 1-20' button and a 'Quick look' button. Below the 'Quick look' button, there's a list of results. The first result is 'THE STORY OF SCIENCE: From the Writings of Aristotle to the Big Bang Theory' by Kirkus Reviews; Austin Vol. LXXXIII, Iss. 6, (Mar 15, 2015). The description includes: '...geology and biology, from earth science to Darwin's theory of natural selection...', '...author begins with Einstein's theory of relativity and covers works on quantum...', and '...chaos theory. In addition to guiding inquisitive readers to the original texts...'. There are buttons for 'Abstract/Details' and 'Full text'. The second result is 'Big Bang Theory: The Learning Network' by New York Times (Online); New York Times Company. Mar 12, 2001. The description includes: '...reading and discussing "New Gun Control Politics: A Whimper, Not a Bang"...', '...of "New Gun Control Politics: A Whimper, Not a Bang" (1 per student) -classroom...', and '...2. As a class, read and discuss "New Gun Control Politics: A Whimper, Not a Bang...'. There are buttons for 'Abstract/Details' and 'Full text'.

[JSTOR](#) provides access to more than 12 million scholarly journal articles and eBooks, and is especially good for primary sources.



The screenshot shows the JSTOR search results page for the query "Big Bang Theory". At the top left is the JSTOR logo. To its right are two tabs: "All Content" (selected) and "Images". Below these is a search bar containing the text "Big Bang Theory" and a magnifying glass icon. Below the search bar, it says "21,246 results". Underneath that is a "Sort by: Relevance" dropdown menu. To the left of the article listing is a checkbox labeled "JOURNAL ARTICLE". The first result is titled "Naming the Big Bang" by Helge Kragh. Below the title is the journal information: "Historical Studies in the Natural Sciences, Vol. 44, No. 1 (Feb., 2014), pp. 3-36". To the right of the article title are three buttons: "Download" (red), "Save" (white with a bookmark icon), and "Cite" (white with a document icon). Below the journal information is a snippet of the article's text: "...bang in other contexts, such as the big bang theory of the universe. Historical Studies in the Natural Sciences, Vol. 44, Number 1, pps. 3-36. ISSN 1939-1811, electronic ISSN 1939-182X. © 2014 by the Regents of the University of California. All rights reserved. Please direct..."

Global Warming

Use models of energy flow between the geosphere, biosphere, hydrosphere and atmosphere to explain patterns of global climate change.

- Examining the role of radiation from the sun and how its interactions with the atmosphere, ocean and land are the foundation for the global climate system.
- Investigating indicators of climate change such as changes in ocean and atmospheric temperatures, sea levels, biodiversity, species distribution, permafrost and sea ice.
- Identifying changes in global climate over time, exploring visualisations and using simulations to explore why energy balances have changed.
- Examining the factors, including energy, that drive deep ocean currents, their role in regulating global climate and their effects on marine life.
- Investigating how quantum computers enhance modelling of complex weather and climate systems.
- Predicting changes to the Earth system and identifying strategies designed to reduce climate change or mitigate its effects.

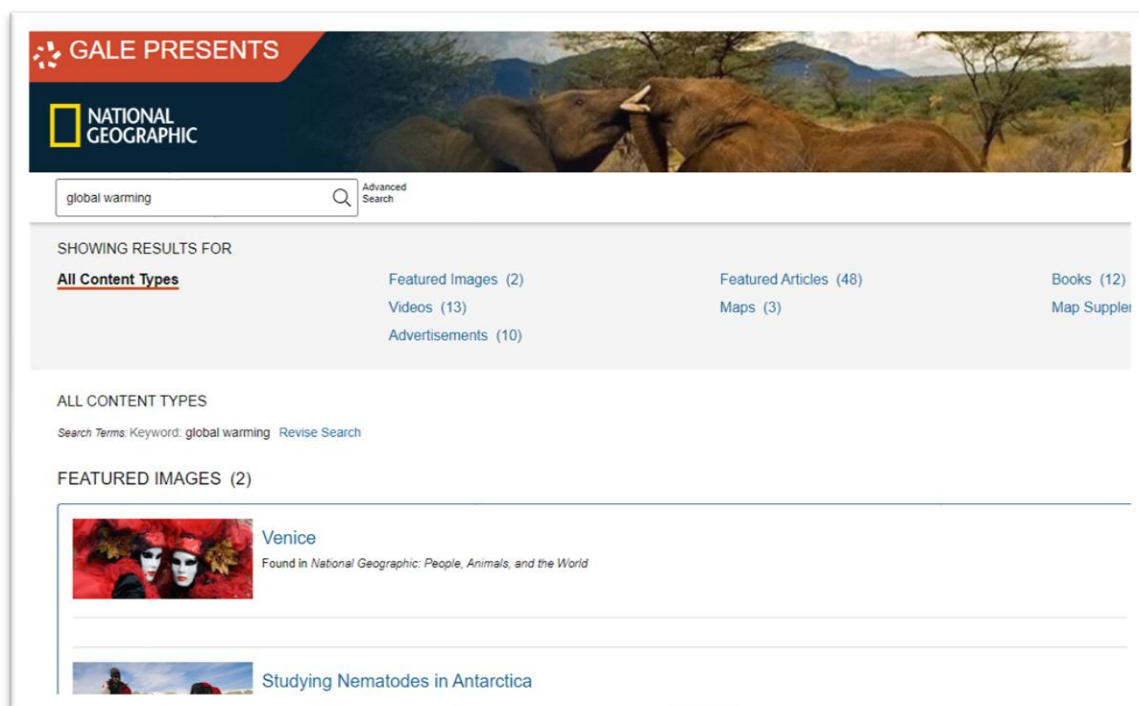
[Oxford Reference](#) spans 25 different subject areas, bringing together 2 million digitised entries across Oxford University Press’s dictionaries, companions, and encyclopedias.

The screenshot shows the Oxford Reference website interface. At the top, the 'Oxford Reference' logo is on the left, and a search bar is on the right. Below the logo, there are tabs for 'Subject' and 'Reference Type'. The main heading is 'Oxford Reference Search Results'. On the left sidebar, it says 'Signed in as: State Library of Queensland' with an 'AUTOMATICALLY SIGNED IN' button. Below this is a 'Sign in to an additional subscriber account' button. The 'Narrow Your Choices' section has a 'REFINE TERMS' dropdown set to 'All' and a search box containing 'global warming', with 'Add Row' and 'Update' buttons. The main content area shows 'You are looking at 1-20 of 1,632 entries for: All: global warming'. It includes a 'Did you mean' suggestion for 'Global Warming, global warming' with a 'clear all' link. Below this are tabs for '1,632 ENTRIES' and '5 BOOKS'. The 'View' section shows 'View: [list icon] [grid icon] [table icon]', 'Items per page: 20', and 'Sort by: Relevance'. The 'OVERVIEW' section for 'global warming' lists the subject as 'Science and technology, Environmental Science' and provides a brief definition: 'The gradual increase in the overall temperature of the earth's atmosphere due to the greenhouse effect caused by increased levels of carbon dioxide, CFCs, and other pollutants.'

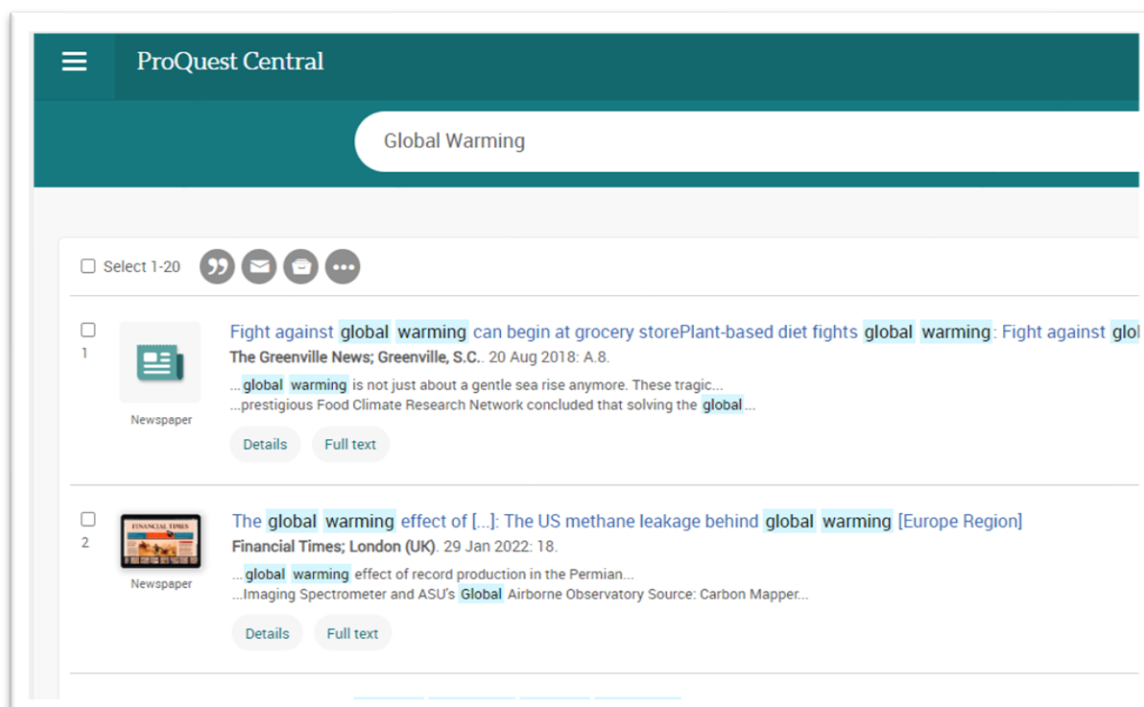
The [Britannica Library](#) has articles, images and more, with a selection of resources especially for teenagers.

The screenshot shows the Britannica Library website interface. At the top, a large teal banner reads 'You searched for "Global Warming"'. Below this, it says 'DISPLAYING 1 - 10 OF 83 RESULTS.' On the right, there are '+' and '-' buttons and an 'Advanced Search' link. Below the banner is a 'Reading Level' selector with options 1, 2, and 3, where 2 is selected. A navigation bar shows 'Articles' (selected), 'Images', 'Videos', and 'More'. The main content area features a result for 'global warming (Earth science)' with a star icon. The description states: 'global warming | The rise of air temperatures near Earth's surface over the past one to two centuries is known as global warming. Earth has experienced ...'. Below this is a section for 'Weather Modification' from the article 'weather', with a star icon. The description says: 'Large fans can mix warmer air from above with the cold air near the ground on clear, calm nights, and smoke from smudge pots can help trap heat near the surface. A major ...'. At the bottom, there is a section 'images related to this search:' with a 'See all images' link and a row of five image thumbnails.

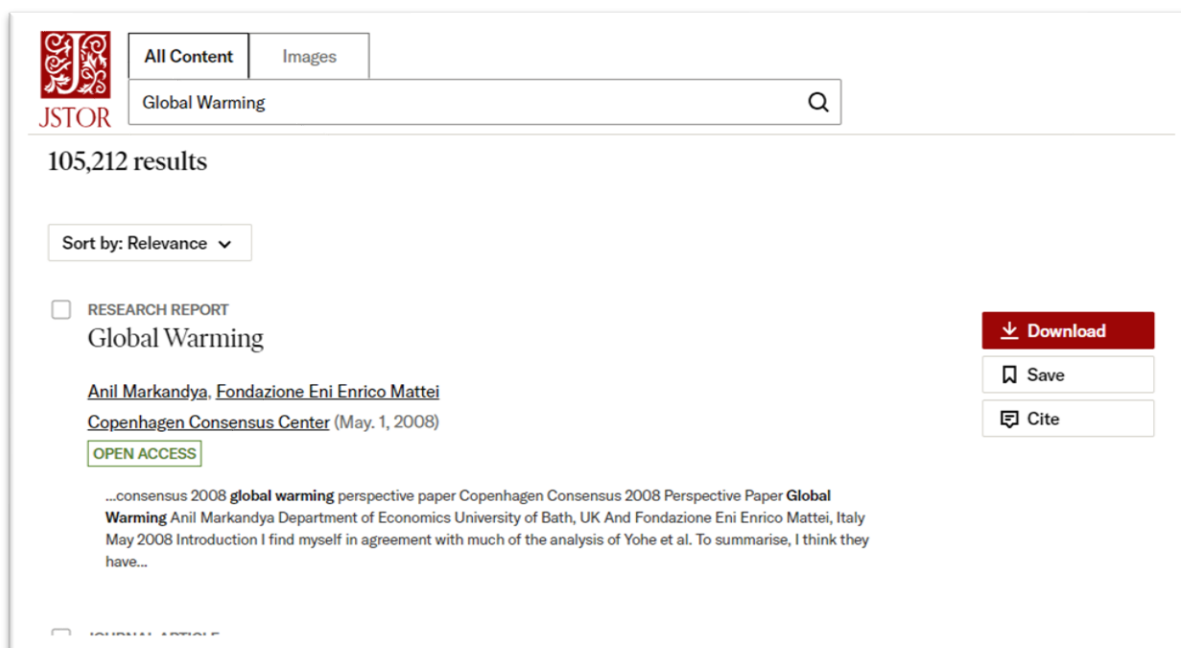
[National Geographic Virtual Library](#) is a powerful tool for research offering access to over 100+ years of magazines and hundreds of books, maps, videos, and images.



[ProQuest Central](#) brings together 47 databases across 175 subject areas, providing easy intuitive access to an incredibly broad and comprehensive range of content.



[JSTOR](#) provides access to more than 12 million scholarly journal articles and eBooks, and is especially good for primary sources.



More research

Borrow items

Order items online through State Library's One Search catalogue and [borrow items from State Library's collections](#) when you visit us onsite.

Ask a librarian

[State Library staff](#) are available to advise on keywords and search strategies and suggest databases to help you carry out independent research.

Please note that librarians can guide and support your research process, but they cannot complete your assessment, select sources for you or provide answers to assessment questions.

Visit State Library with your class

Ask your teacher to [bring your classroom to State Library](#) and explore exhibitions, research for your assessments or undertake independent study.