Finding Quality Information for an Academic Paper

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Types of Sources to Support Your Paper

- **Books** (Extended, broad treatment of the topic)
- **Scholarly Articles** (in-depth treatment of part of the topic)
- **Magazine & Newspaper Articles** (general, easy & current)
- **Primary Sources** - (Data, testimony, images, artifacts)
  - (Examples: weather data, census data, public opinion polls, news photos)
- **Other Web Sources** (Organizations, institutes, governments)
- **Human Sources** – (Interviews, social media, etc.)

The Process

1. **Find** your sources -- through good search strategy
2. **Evaluate** each source -- as you find it
3. **Organize and study** the most relevant sources
4. **Integrate the source** into your paper through:
   - Making notes on a copy of it (pre-writing),
   - Making separate notes about the source, and
   - working information from it into your outline.

Selecting Library Databases to find scholarly works

What kinds of sources will be best
for your topic
and to **what sources do you have access?**

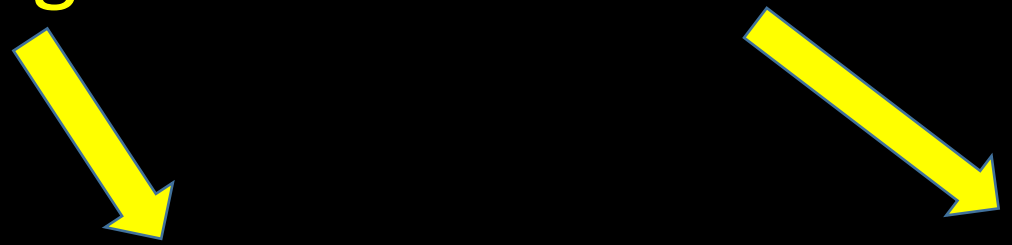
General Databases – Academic Search Complete
Specialized Subject Databases - Environment Complete
Books on the Environment
Environmental Organization Websites

What sources will have info on your topic?

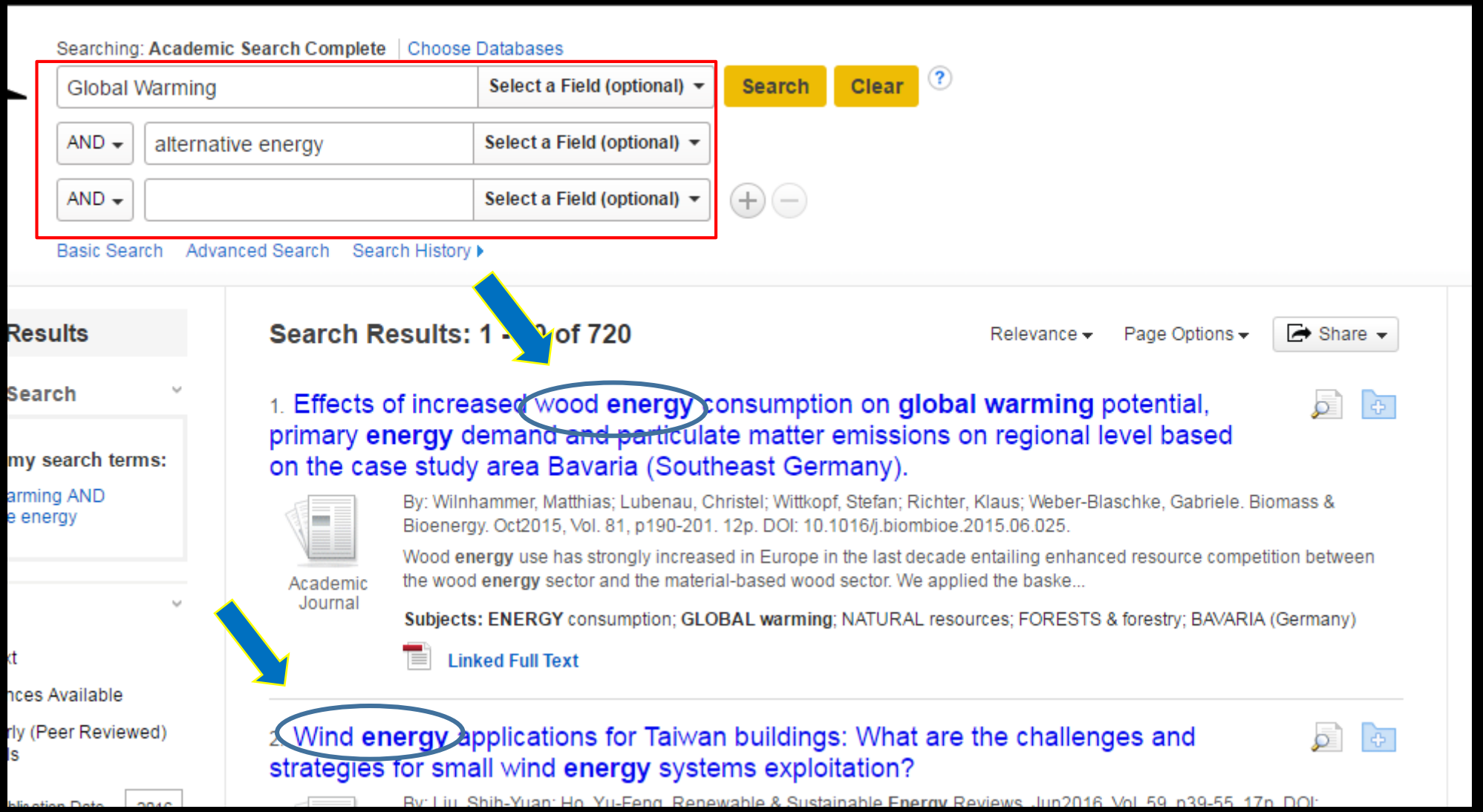
What databases do you have in your library?

Create **search terms** of your topic

Example Topic:
Converting to alternative energy sources can reduce global warming



Search Terms: **Global warming** and **alternative energy**



First do a KEYWORD search and examine results for other words or additional words to search

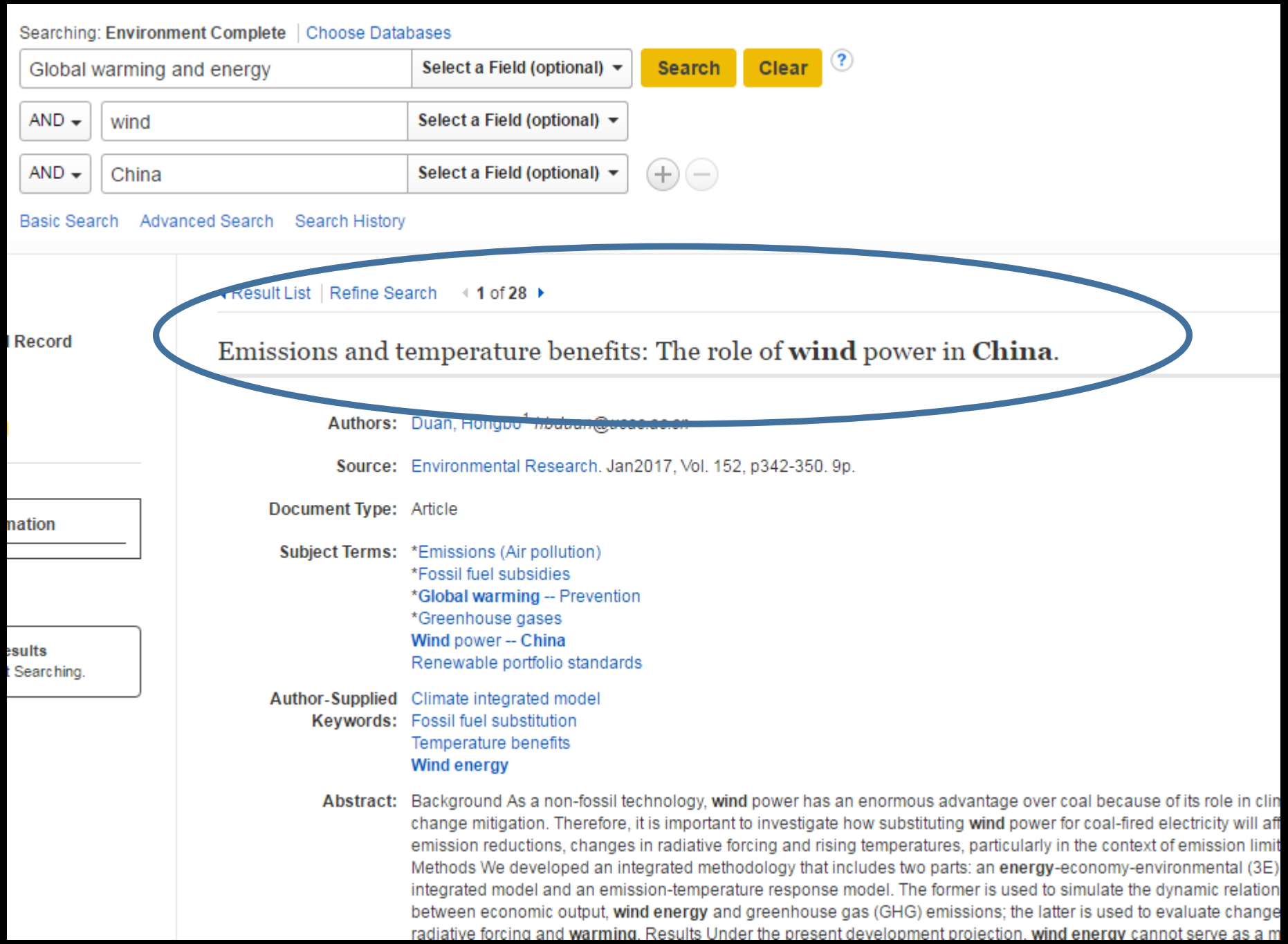
Adding **search terms** to your search

Adding Search Words:

Global warming and **alternative energy** **and** **wind**

Adding and Removing More Words:

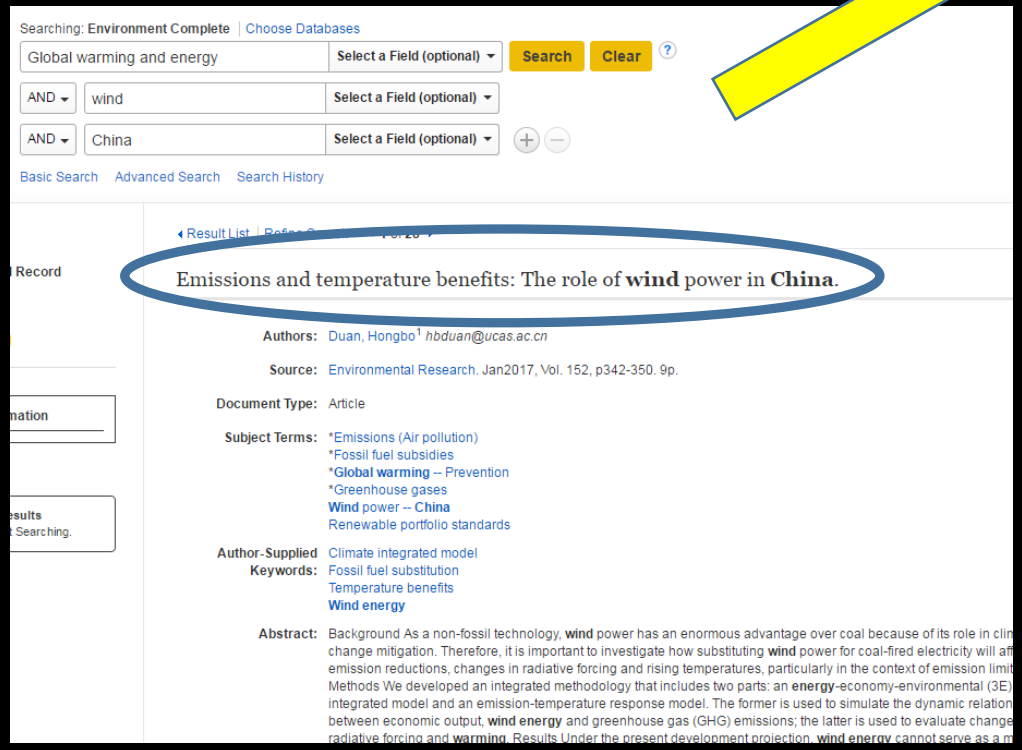
Global warming and **energy** **and** **wind** **and** **China**



Refined search:

Global warming and **energy** and **wind** and **China**

Duan, H. (2017). Emissions and temperature benefits: The role of wind power in China. *Environmental Research*, *152*342-350.



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Emissions and temperature benefits: The role of wind power in China

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ARTICLE INFO

Article history:
Received 12 July 2015
Received in revised form
23 May 2016
Accepted 12 July 2016
Available online 5 August 2016

Keywords:
Climate integrated model
Wind energy
Fossil fuel substitution
Temperature benefits

ABSTRACT

Background: As a non-fossil technology, wind power has an enormous advantage over coal because of its role in climate change mitigation. Therefore, it is important to investigate how substituting wind power for coal-fired electricity will affect emission reductions, changes in radiative forcing and rising temperatures, particularly in the context of emission limits.
Methods: We developed an integrated methodology that includes two parts: an energy-economy-environmental (3E) integrated model and an emission-temperature response model. The former is used to simulate the dynamic relationships between economic output, wind energy and greenhouse gas (GHG) emissions; the latter is used to evaluate changes in radiative forcing and warming.
Results: Under the present development projection, wind energy cannot serve as a major force in curbing emissions, even under the strictest space-restraining scenario. China's temperature contribution to global warming will be up to 21.76% if warming is limited to 2 degrees. With the wind-for-coal power substitution, the corresponding contribution to global radiative forcing increase and temperature rise will decrease by up to 10% and 6.57%, respectively.
Conclusions: Substituting wind power for coal-fired electricity has positive effects on emission reductions and warming control. However, wind energy alone is insufficient for climate change mitigation. It forms an important component of the renewable energy portfolio used to combat global warming.

1. Introduction

The latest studies reveal that the current atmospheric CO_2 concentration has exceeded the 400 ppmv threshold (WMO, 2015). If this trend continues, the global average surface temperature will have increased by 4 degrees by the end of this century (relative to pre-industrial levels). This warming is predicted to cause the extinction of one-sixth of the planet's species (Onozuka and Hagihara, 2015; Urban, 2015). Most climatologists agree that limiting global temperature rise to 2 °C is necessary to avoid climatic catastrophe. Achieving this goal will require a 41–72% reduction in emissions in 2050 from 2010 levels, and near-zero emissions in 2100. The realization of these reduction targets depends on the development of non-fossil technologies, particularly wind power. The share of non-fossil fuel energy in 2050 and 2100 energy in less than 15 years, given that the current share of non-fossil energy in TPEC is just 11%, and this goal is likely to be unattainable without the rapid penetration and use of renewables such as wind power (Sun et al., 2015). In fact, as an energy source with near-zero emissions, wind power is widely regarded as a crucial substitute for conventional fuels. This is particularly true for China, which simultaneously faces a high increase in energy demand and the need for significant emission reductions. It is advantageous for China to develop wind energy for many reasons.

First, China is rich in wind resources, which provides a solid foundation for development of wind power technology. Recent statistics show that China's total wind energy potential is over 3000 GW, of which 86.7% is 70 m offshore and the rest is 100-m onshore wind. Even with current technology, developable wind energy resources are as high as 2000 GW. The present 'surveyor's

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wind energy.

Some limitations of the present work should be mentioned. First, we use composited GHG factors (CO_{2eq}) instead of individual emission factors to calculate GHG emissions and the associated radiative forcing and temperature rise. This choice was due to limited data availability, but it overlooks the potential interactions between different GHGs and may add uncertainty to our evaluation results (Myhrvold and Caldeira, 2012). Second, this study only examines the climate benefits arising from wind-for-coal substitution. We do not consider other alternative energies such as nuclear, PV solar and biomass. These remain a challenging but

for his help in the calculation of radiative forcing. We thank professor Shouyang Wang and Ying Fan for their help in preparing the manuscript. Special thanks to all the anonymous referees for their valuable comments.

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