

Semantic Search for Literature Retrieval for the Environmental Domain

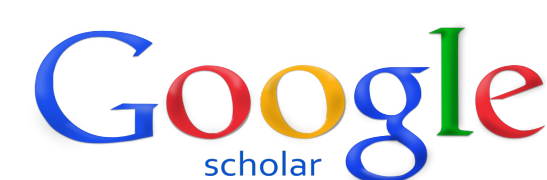
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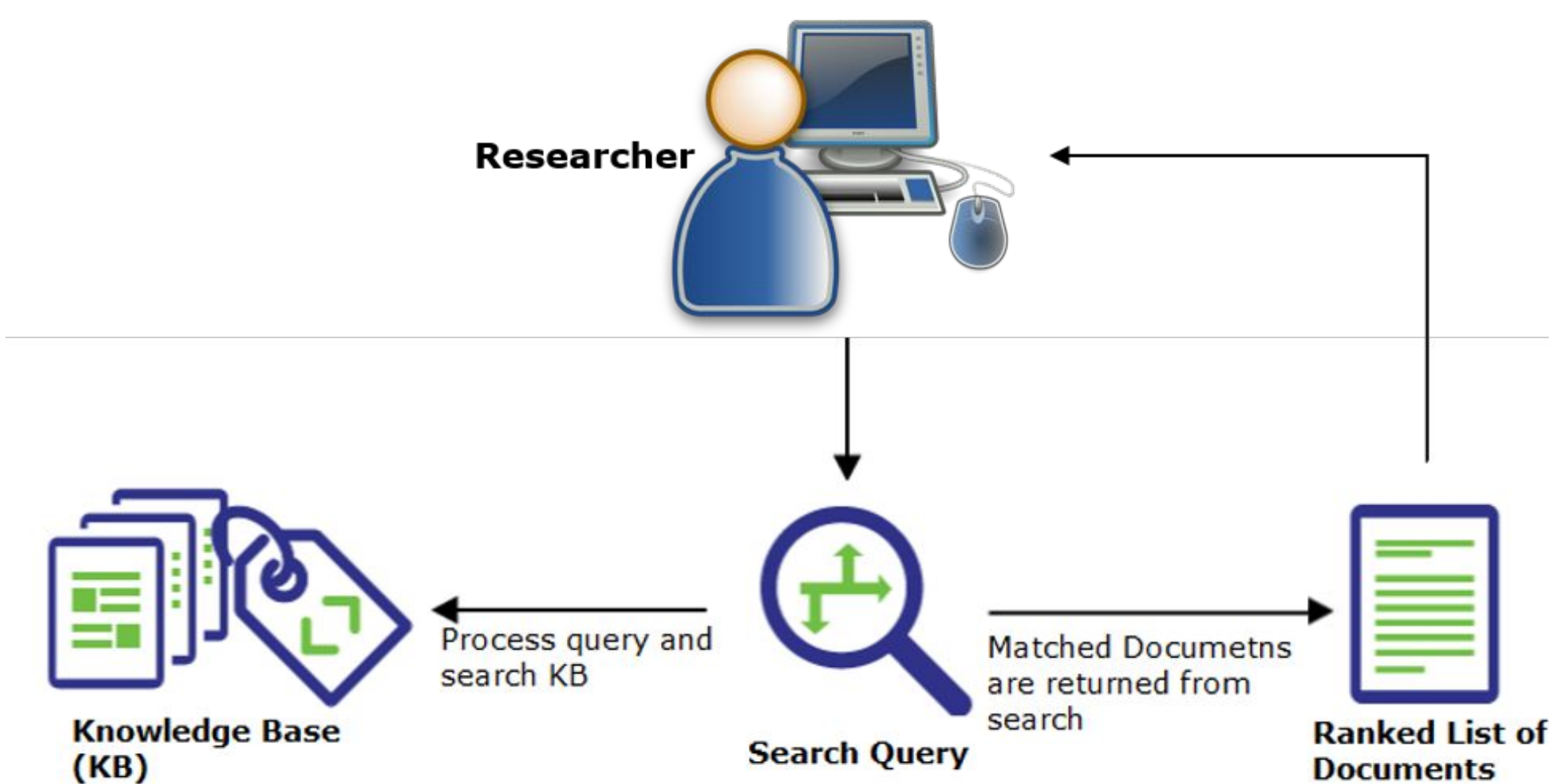
Problem

- **Literature search** is an unavoidable first task for any research project.
- Researchers rely on systems utilizing standard **search engine techniques**.
- Several key **articles or documents may be missed** in the search process due to those search engine techniques which rely on mainly on **keyword matching**.



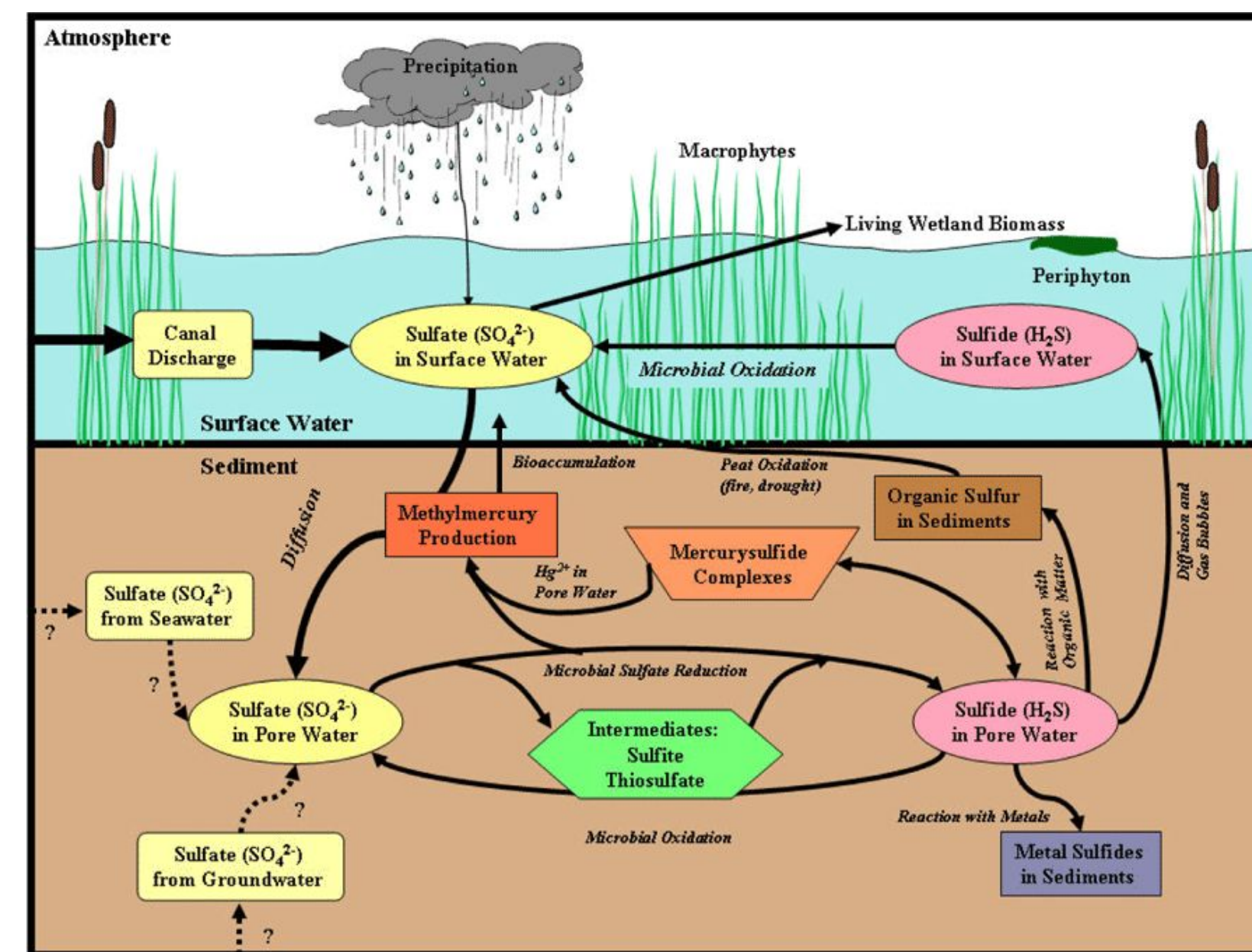
Solution

Build a **semantic search system** to enhance the literature retrieval for the environmental domain.



Hydrology Application

- Determine the role of shallow groundwater in the transport of sulfate, effect on methylmercury
- Improve search results and find missing links in pre-existing data
- Expand limited search results for data concerning sulfate research in Everglades

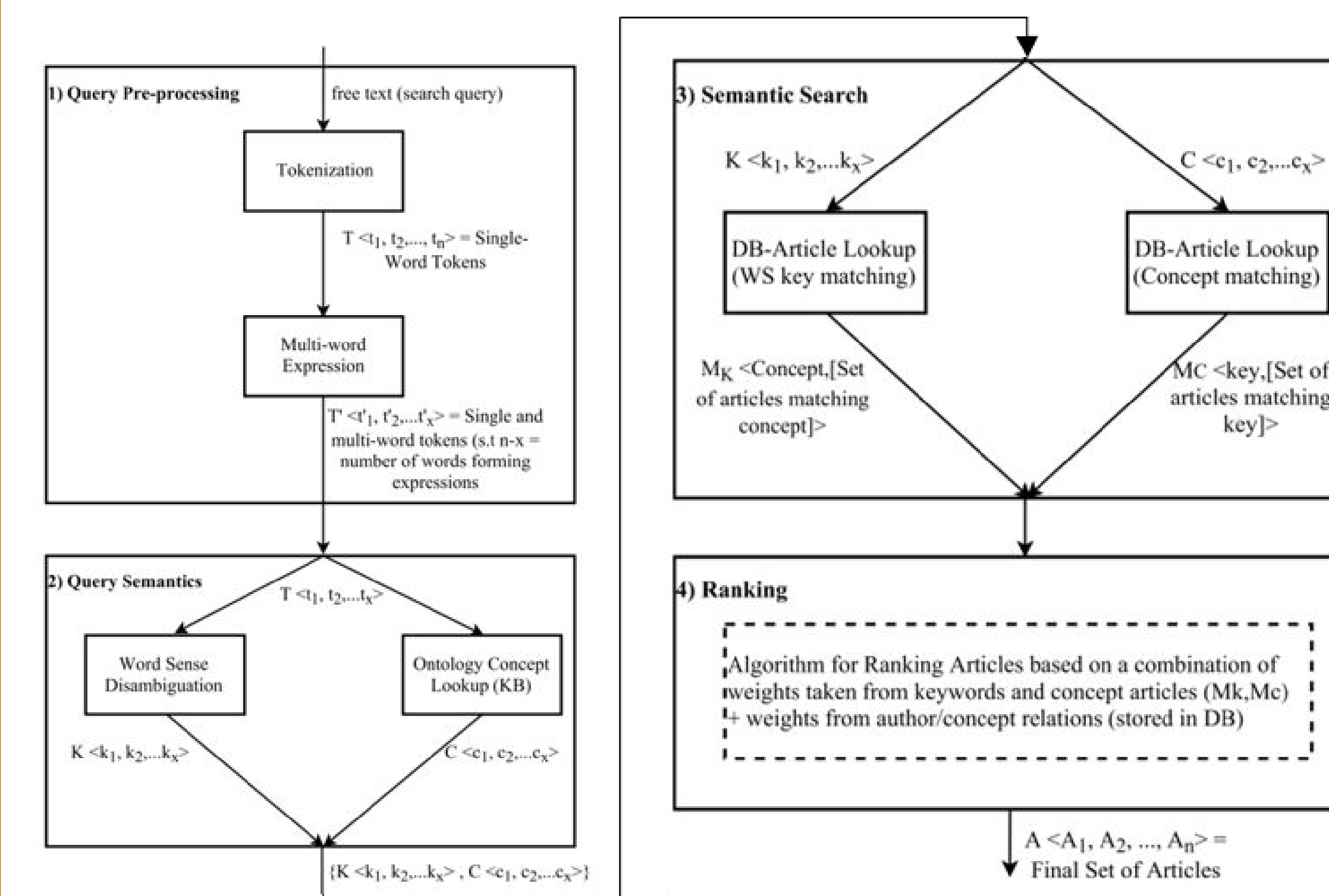


Sulfur cycle in the Everglades freshwater, mostly occurring in pore water. <https://sofia.usgs.gov/publications/ofr/2007-1374/review.html>

Research Methodology

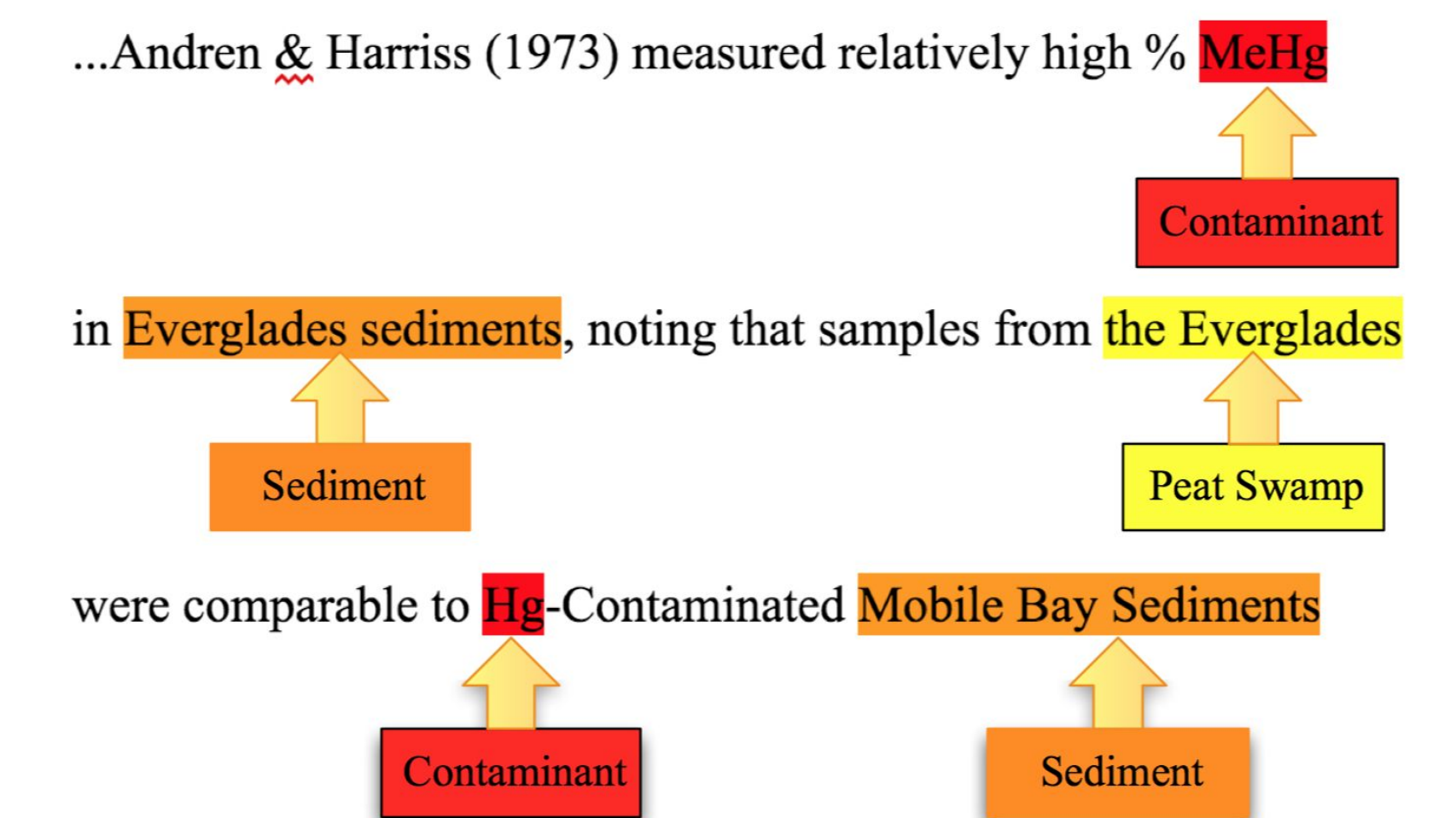
- Modern semantic search uses ontologies for modeling domain specific knowledge
- Our system uses the EnvO Environmental Ontology
- Academic papers will be indexed by the environmental concepts they contain
- Concepts and relationships expressed in queries will be matched with scholarly articles

System Design



Annotation Study

- Getting human judgements on what environmental concepts are discussed in scholarly texts.
- Annotations are ground truth for evaluating performance of our system.



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