

The Effect of Earth's Atmosphere on Solar Radiation - Literature Search Plan

To gain a good understanding of the background of, and the various elements that effect our research, we must complete a literature research of previous studies. To find papers on related topics, we decided on a few search terms as a starting point, then branched out and refined accordingly. These search terms can be seen in the spider diagram below (fig.1). Three separate academic paper search engines were used to ensure we found the best results possible for each term; Google Scholar, Web of Science and SOHO/NASA Astrophysics Data System. An overview of the results obtained from these searches were then recorded in a table, as also shown below (fig.2) to help decide possible improvements in our search to make it more thorough.

fig.1

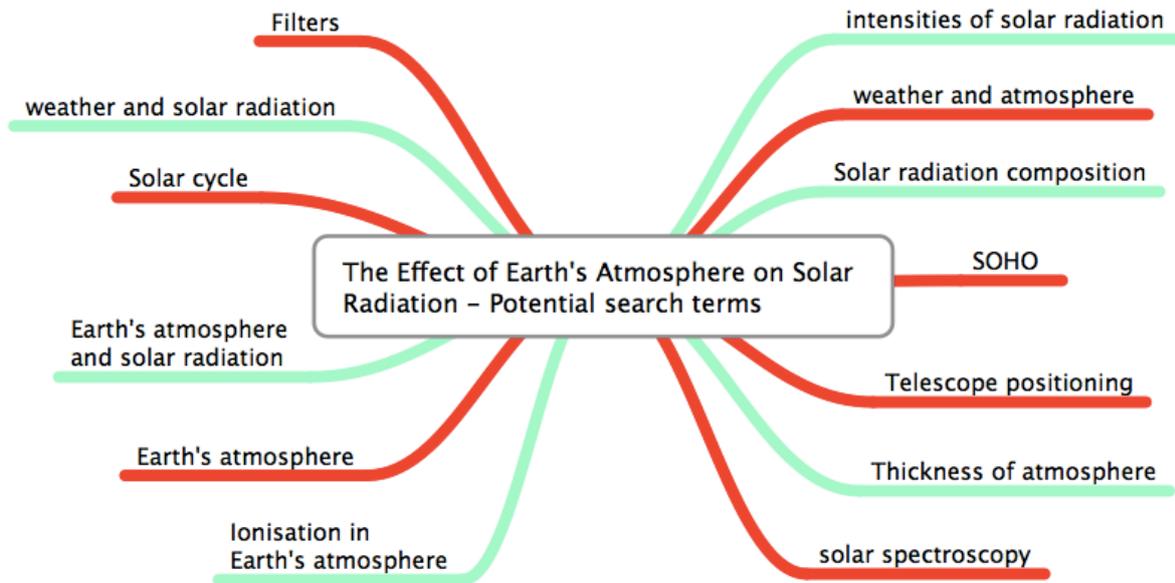


fig.2

Search Term	Search Engine	Comments
Earth's atmosphere and solar radiation	Google Scholar	Thousands of results, need to refine further to get more accurate results. Many papers from subject areas outside of physics. Once refined some very useful results appeared.
Earth's atmosphere and solar radiation	Web of Science	Much fewer results than google scholar (112), most papers not particularly relevant.
Earth's atmosphere and solar radiation	SOHO/NASA Astrophysics Data System	Very useful finds, of 200 results most were of relevant use.
Earth's atmosphere	Google Scholar	A few good results, mostly on composition and chemistry of the atmosphere. Remaining results tend to be on the evolution or heating of the atmosphere. Refining search to closer subject areas useful.
Earth's atmosphere	Web of Science	Many results, useful papers on spectroscopy of Earth's atmosphere.

Search Term	Search Engine	Comments
Earth's atmosphere	SOHO/NASA Astrophysics Data System	Irrelevant results, search engine itself is astrophysics topics only whilst the required research would fall into other categories.
Ionisation in Earth's atmosphere	Google Scholar	Most results are about cosmic-ray induced ionisation. Some other results are more relevant to effects of solar radiation. The search term could fall into many categories, refining the search further may lose useful information.
Ionisation in Earth's atmosphere	Web of Science	Only 25 results, all varied though none relevant to the research.
Ionisation in Earth's atmosphere	SOHO/NASA Astrophysics Data System	Very varied results. Few appear to be relevant to our research.
Solar cycle	Google Scholar	Plenty of sources, mainly looking at change in intensities though several which look at the relation between climate and atmosphere.
Solar cycle	Web of Science	Not too many relevant sources, most are related to looking at the differences between different solar cycles, though a few sources look into the relation of solar cycle and atmospheric temperatures.
Solar cycle	SOHO/NASA Astrophysics Data System	Some useful results towards the top of the search, though largely unrelated to atmospheric effects. 'Solar cycle and the atmosphere' may provide better results.

Below are some particularly useful abstracts found in the search:

1. Lacis, A., Hansen, J. A Parameterization for the Absorption of Solar Radiation in the Earth's Atmosphere. Journal of Atmospheric Sciences, vol. 31, Issue 1, pp.118-133 (1974) Link: <http://adsabs.harvard.edu/abs/1974JAAtS...31..118L>
2. Hottel, H.C. A Simple Model for Estimating the Transmittance of Direct Solar Radiation Through Clear Atmospheres. Solar Energy, vol.18, Issue 2, pp. 129-134 (1976) Link: <http://www.sciencedirect.com/science/article/pii/0038092X76900451>
3. Wild, M., Gilgen, H., Roesch, A., Ohmura, A., Long, C.N., Dutton, E.G., Forgan, B., Kallis, A., Russak, V., Tsvetkov, A. From Dimming to Brightening: Decadal Changes in Solar Radiation at Earth's Surface. Science, Volume 308, Issue 5723, pp. 847-850 (2005) Link: <http://adsabs.harvard.edu/abs/2005Sci...308..847W>