

## How to Write a Good Geophysics Paper

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Students attending modern Universities listen to the professors' lectures and read textbooks. Seldom do they realize that each piece of information comprising a current textbook was once a scientific paper. In this lecture, I will discuss what makes a research paper good and bad, what typically needs to be emphasized, and what should be downplayed. This lecture will be useful to students because knowing how to do things beforehand could help them to avoid finding the correct path with the trial-and-error method in the future.

I will begin my lecture with a brief introduction to the philosophy of science and touch on the following questions: What is the science? Why do people engage in science? What is the role of papers in the entire scientific landscape?

Next, we will talk about the motivations for writing a research paper. They range from straightforward degree requirements to the urge to contribute to the development of your subject area and, through it, to the well being of mankind. Based on my observations, papers written in accordance with a predetermined schedule are seldom outstanding. Conversely, the masterpieces are created from an unexpected vantage point that makes it possible to untangle the perceived complexity of a problem, so that the problem lends itself to an elegant and useful solution. I will give examples of such papers.

Another important point is the subject. The majority of papers are light on novelty. They typically fill a tiny gap between the already existing pieces of knowledge and require an expert to recognize that something new has been accomplished. Before writing a paper, you might ask yourself why people would want to read what you are about to write and how they can benefit from it. If the answers to those questions are unclear, perhaps the paper is not going to be good and should not be written.

The style of writing is also important. A research paper is a cultural phenomenon and, hence, should obey the style customary to a given subject area. The styles of different disciplines vary. It is critical to know how to write before the writing even begins. The same pertains to writing in a foreign language. If you feel a need to look in a dictionary while working on your paper, it is a sign to stop. Your paper will be poorly written regardless of its content. Does it make sense to write a paper that is difficult to read by design?

The consequences of a scientific publication deserve discussion as well. It suffices to write a single paper to forever change your area of science and open new and prolific research directions. On the other hand, just one paper could cause irreparable damage to the reputation of a scientist.

I plan to illustrate the above points with numerous examples from my work at the editorial board of Geophysics. I realize that some of my views might differ from those of the attendees and I will be happy to participate in a discussion.