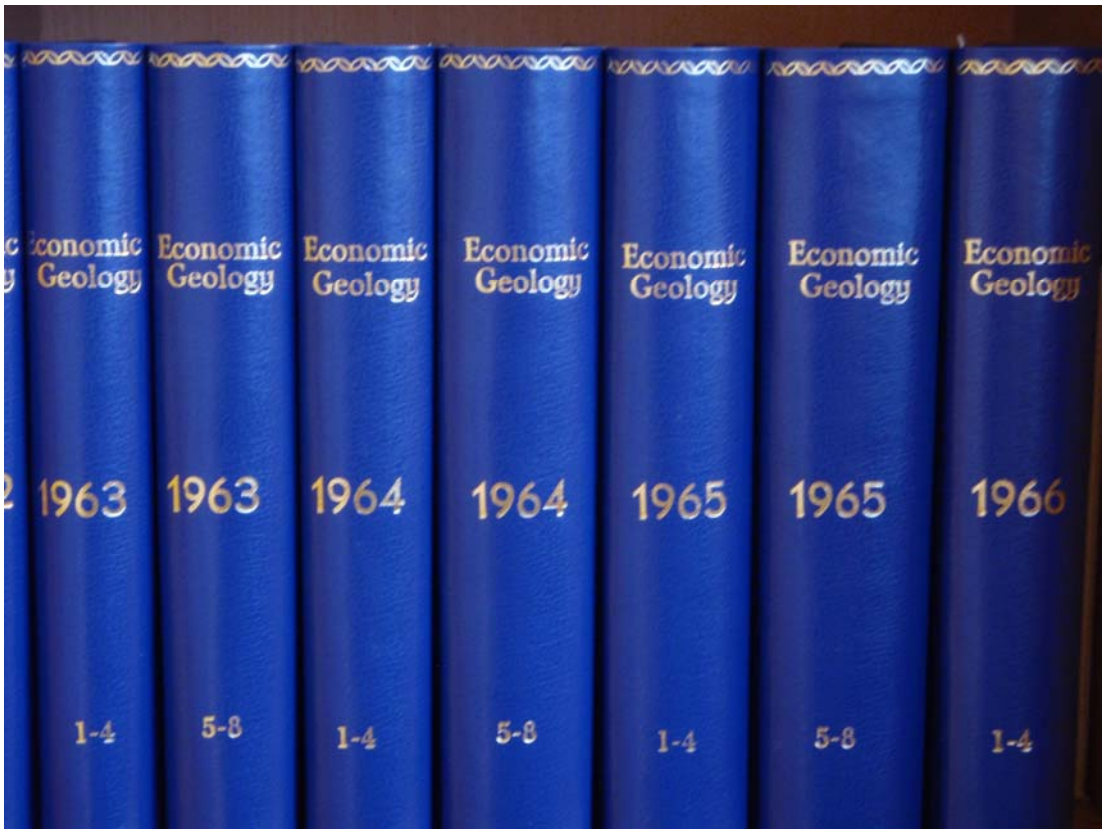
REDSTONE EXPLORATION SERVICES

REDSTONE EXPLORATION SERVICES: 'FILE NOTE SERIES'

Note **01**

HOW TO READ A SCIENTIFIC PAPER – A ONE-PAGE GUIDE



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Regular reading of scientific research papers, especially those outlining current research developments, is crucial for staying at the top edge in any field of science. You should make a regular habit of reading papers, and on average read at least two or three papers per week – this way, you will be able to churn through nearly 160 papers in a year. Remember that most of what you are dealing with has already been described from some other place in the world. Nature tends to repeat itself, though always with some small variations on the same theme. Therefore, no need to reinvent the wheel: a lot can be gleaned from extensive work which has already been done. So, how to make reading complex scientific papers a pleasurable exercise ?

First, you want to skim the paper in order to get an overview of what exactly it is about and what are the main findings. For this, you should attentively go through its:

(1) Title and Abstract

(2) Introduction

(3) Figures & Tables, and their captions

(4) Conclusions

Then, if you judge the paper merits your time, you should:

(5) Read the full body of the paper, line by line, as it goes, highlighting all key information (I personally use a yellow highlighter plus an additional red pen to underline the most important ideas). If there are words or concepts that you do not understand and which appear to be very relevant to the topic, you should look them up. You should understand what scientific problem is at the center of the paper, what was the objective of the authors' research, which methods they used, and what results they obtained. You should look at the latter very crictically, and try to come up with your own, independent conclusions. Then, when you read the *Discussion* part of the paper, you should compare your conclusions with the authors' and see if they converge. What was the hypothesis of the paper and has it been successfully demonstrated ? Did the authors collect enough representative data to demonstrate their point and was their methodology rigorously correct ? What are the possible flaws/shortcomings of the paper ? Were there problems that were not adressed and is there further research required ? What is the paper's main contribution to science and what would you like to remember from it ? Can you summarize this paper in a few sentences ? All these questions will help you to understand the paper better and benefit from it. And if you still have questions you are struggling with, well, read the paper a second time, then share it with some of your geo-friends and engage in a discussion. This is a very productive way of advancing science !