

Testing the importance of explicit glacier dynamics for future glacier evolution in the Alps

MASTER'S THESIS

in Atmospheric Sciences

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MASTER OF SCIENCE

by
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Innsbruck, August 2020

To Psycho

Abstract

The abstract is a short summary of the thesis. It announces in a brief and concise way the scientific goals, methods, and most important results. The chapter “conclusions” is not equivalent to the abstract! Nevertheless, the abstract may contain concluding remarks. The abstract should not be discursive. Hence, it cannot summarize all aspects of the thesis in very detail. Nothing should appear in an abstract that is not also covered in the body of the thesis itself. Hence, the abstract should be the last part of the thesis to be compiled by the author.

A good abstract has the following properties: *Comprehensive*: All major parts of the main text must also appear in the abstract. *Precise*: Results, interpretations, and opinions must not differ from the ones in the main text. Avoid even subtle shifts in emphasis. *Objective*: It may contain evaluative components, but it must not seem judgemental, even if the thesis topic raises controversial issues. *Concise*: It should only contain the most important results. It should not exceed 300–500 words or about one page. *Intelligible*: It should only contain widely-used terms. It should not contain equations and citations. Try to avoid symbols and acronyms (or at least explain them). *Informative*: The reader should be able to quickly evaluate, whether or not the thesis is relevant for his/her work.

An Example: The objective was to determine whether ... (*question/goal*). For this purpose, ... was ... (*methodology*). It was found that ... (*results*). The results demonstrate that ... (*answer*).

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Chapter 1

Introduction

1.1 Motivation

1.2 State of Research

1.3 State of Research

1.4 Goals and Outline

Chapter 2

Model implementation

2.1 General concepts

2.1.1 Glacier volume/area scaling

2.1.2 Temperature index model

2.2 Implementation

2.3 Problems

Chapter 3

Results

3.1 Equilibrium experiments

3.1.1 Constant climate scenario

3.1.2 Random climate scenario

3.2 Sensitivity experiments

3.3 Future projection

Chapter 4

Discussion

The chapter Results answers the question: *What* has been found? (Facts). The chapter Discussion answers the question: *How* has the result to be interpreted? (Opinion).

The most important message should appear in the first paragraph. The answer to the key question may appear in the first sentence: e.g., did your original idea work, or didn't it? The following questions may be answered in the discussion section:

- Why is the presented method simpler, better, more reliable than previous ones?
- What are its strengths and its limitations?
- How significant are the results?
- How trustworthy are the observations?
- Under which precondition/assumption and for which region are the results/method valid?
- Can the results be easily transferred to other regions or fields?

Chapter 5

Conclusions

This chapter contains consequences that derive from your results. It may also contain speculations. It may provide suggestions for future studies. Hence, the conclusions may provide an outlook and list open questions. Sometimes this chapter is part of the discussion. In such a case, the chapter reads “Discussion and Conclusions”.

Appendix A

Large Quantities of Data

Large quantities of data should be placed in an appendix. They should only be “summarized” in the chapter Results. Another way is to present some representative cases together with some extreme cases in the chapter Results. In any case, there should always appear a reference to the appendix in the main part of the thesis.

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Acknowledgments

Now it is time to thank all people who have contributed to your work and who have supported you during your study. Do not forget to mention all relevant data providers and funding agencies (also provide the grant numbers).

Curriculum Vitae

FirstName LastName

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Born on 01 April 1976 in Town, Country

EDUCATION AND PROFESSIONAL TRAINING:

- 1999–2003 Research assistant and Ph.D. student in the group of Dr. LastName at the Institute of Meteorology and Geophysics, University of Innsbruck.
- 1998–1999 Diploma thesis under the guidance of Dr. LastName, Institute of Meteorology and Geophysics, University of Innsbruck: *“Title of your diploma thesis”*.
- 1993–1998 Diploma study at the University of Innsbruck. *Master of Natural Science (Magister rerum naturalium)* in Meteorology.
- 1989–1993 Highschool, Town. *Matura*.

METEOROLOGICAL TRAINING COURSES: “Numerical methods and adiabatic formulation of models”, ECMWF, 1998; “Data assimilation and use of satellite data”, ECMWF, 1998.

PARTICIPATION IN FIELD EXPERIMENTS: Gap flow study (MAP), Austria, 1999.

Epilogue

Here is the place where you may want to tell a little story or a fairy tale which has some relevance for your thesis, such as “Once upon a time, ...”. The Epilogue is optional.