



UNIVERSITY OF CAPE TOWN
MASTERS THESIS

Physical and Biogeochemical processes within the Antarctic Marginal Ice Zone: Observations and Modelling

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Declaration

I hereby declare, that I am the sole author and composer of my thesis and that no other sources or learning aids, other than those listed, have been used. Furthermore, I declare that I have acknowledged the work of others by providing detailed references of said work.

I hereby also declare, that my Thesis has not been prepared for another examination or assignment, either wholly or excerpts thereof.

Place, Date

Signature

Abstract

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1 Introduction

1.1 Background

1.2 Aim of Thesis

2 Literature Review

Introduction of lit review (no title)- include sea ice importance and studies, antarctic region analysis and lit review breakdown, roll into MIZ

2.1 Antarctic Marginal Ice Zone

processes within the AMIZ, sea ice formation and dominant types, pancake ice cycle

2.2 Thermodynamics of Sea ice growth

2.3 Dynamics of sea ice growth

2.4 Biogeochemistry of sea ice

2.5 Summary

3 The Enhanced Sea Ice Model

methods, results of ESIM adaptation and run (Tedesco et al., 2008)

3.1 A brief history of nearly everything about ESIM

3.2 Methods

3.2.1 Atmospheric Forcing file comparison

The ESIM uses atmospheric forcing files from NCEP

NCEP forcing files

Sensitivity test

3.3 Results

4 The Biogeochemical Flux Model-SI

Methods, results of BFM experiments

4.1 A brief history of nearly everything about BFM-SI

4.2 Methods

4.3 Results

5 Discussion

discuss results of experiments

5.1 Limitations and improvements

6 Conclusion

conclude

6.1 future work

Bibliography

Tedesco, L., Vichi, M., Haapala, J., and Stipa, T. (2008). An enhanced sea-ice thermodynamic model applied to the baltic sea. *Boreal Environmental Research*.

