Report title
Author 1, Author 2

Abstract

Put your abstract here.

1 Introduction

Put your introduction here. Cite literate as [**?**] or ArcticAmplification.

2 Instruments, Data and Methods

2.1 Darcy's law

Darcy's law describes the hydraulic flux of a fluid through a cross section using the hydraulic conductivity.
Without gravitational influence the instantaneous flux $q[m/s]$ though a porous medium with cross section $A[m^2]$ and permeability $k[m^2]$ of a fluid with viscosity $\mu[Pa\ s]$ is given by equation **??**

$$q = -\frac{k}{\mu}\nabla p \tag{1}$$

Where $\nabla p[Pa]$ is the pressure difference over length $L[m]$. The negative sign means that the fluid flows from high pressure area to a low pressure area. In the case of vertical flux and by assuming a static fluid pressure we can relate the pressure to the height of the fluid by Stevin's law.

$$q(t) = -\frac{\rho g k}{\mu L}\Delta h(t) \tag{2}$$

Where g is the gravitational acceleration, and ρ is the density of the fluid. Note that we have added a time dependency of the height and thus flux. As the volume is filled up, the height(and pressure) increase, altering the flux.
The solution to the differential equation **??** shows an exponential relation between height and time.

$$h(t) = h_0\ exp\left(-\frac{\rho g k t}{\mu L}\right) \tag{3}$$

Linearizing equation **??** and solving for the permeability k yields:

$$k = \frac{a\rho g}{\mu L} \tag{4}$$

Were as a is a linear relation coefficient, which can be found by regression.

2.2 Empirical model

3 Results

Put your results here.

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Figure 1: Caption of the dummy figure

4 Discussion

Put your discussion here. Your conclusion could be included in this part, or given in the extra "05_discussion.tex" file. Remember to include or exlude the files (comment or uncomment) in "COMPILE_REPORT.tex" and "main.tex" accordingly!

5 Summary

Put your summary/conclusion here, if it is not included in the discussion section. Remember to include or exlude the files (comment or uncomment) in "COMPILE_REPORT.tex" and "main.tex" accordingly!

6 Appendix

Put your appenx here, if you have any. Remember to include or exlude the files (comment or uncomment) in "COMPILE_REPORT.tex" and "main.tex" accordingly!

If you have multiple appendices and want to structure them, you can use subsections as bellow!

6.1 Appendix 1

Put appendix 1 here.

6.2 Appendix 2

Put appendix 1 here.