EARTH4072 – Igneous Geology

Introduction to Computational Geosciences

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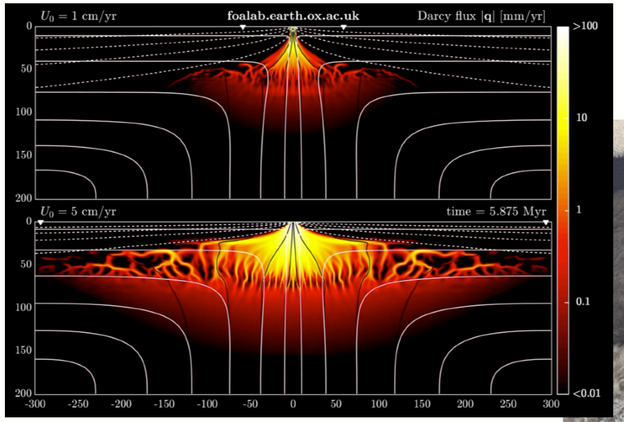
WORLD CHANGING GLASGOW

Intro Comp Geosci | About me

Dr. Tobias Keller

- Lecturer in Computational Geosciences at UofG since 2019
- *magma matters* Research Group
- Computer simulations of volcanic, magmatic processes
- postdocs at Stanford, Oxford, undergrad & PhD at ETH Zürich
- love cooking, hiking, travelling, reading, photography, cats



Intro Comp Geosci | Programme

Week	WKSHP I	WKSHP II	WKSHP III	WKSHP IV
19/10/2020	First Steps	Comp Data Analysis	Comp Modelling I	Comp Modelling II
26/10/2020	Igneous Geochemistry & Geochronology with Iain Neill			
02/11/2020	Igneous Geochemistry & Geochronology with Iain Neill			
09/11/2020	Volcanology with Davie Brown			

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Intended Learning Outcomes

- understand what *scientific programming* is and why it is useful
- take first steps with programming in *Python*
- become familiar with using *Jupyter Notebooks*
- *learn to compose basic computational algorithms*
- understand complementary roles of *machine learning* and *process modelling*
- gain first experience with data analysis by *machine learning*
  - analyse atmospheric CO2 record of past 60 years
- gain first experience with process modelling by the *finite-difference method*
  - model contact heating of the crust by magma intrusion

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General Format

- One-week course, content split into **4 Workshops**
- Each Workshop comprises introductory **Lecture** followed by practical **Activities**
- All resources (videos, slides, links to resources) on **Moodle**
- Online live sessions and group work on **MS Teams**
- General Q&A: ask and/or upvote questions on **Slido** (#91931)
- Software requirements: robust internet browser, **Google Chrome** recommended

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Lecture Content

- **NO synchronous delivery**, work through content in your own time
- Process Lecture content during **first hour** of scheduled time (Mon-Thu, 10-11)
- Lecture videos and slides available on **Moodle** on morning of scheduled Workshop
- Complete any feedback tasks after each lecture (e.g., **Padlet**)

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Activities

- Each Workshop comes with **Activities to practice techniques** we introduce
- *Synchronous delivery* on EARTH4072 **MS Teams space** (Mon-Thur, 11-13)
- Online live sessions **will not be recorded**
- Launch at 11:00 on **MS Teams** general channel
- Activities completed in usual **MS Teams** study group channels
- Each activity based on **Jupyter Notebooks** (link, how-to video on Moodle)
- Each study group nominates *daily speaker* to communicate feedback and questions
- Wrap-up at 12:45 on **MS Teams** general channel, collect feedback, Q&A
- Course leader available throughout for questions, trouble shooting

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Assessment

- The content covered in Intro to Comp Geosci **will not be assessed** in this course
- However, we expect you to **take this block seriously** for following reasons:
  - Computational techniques are increasingly indispensable for academic work
  - Computational techniques are regularly ranked high on employability checklists
  - We expect you to to apply computational techniques in upcoming coursework
  - Your independent projects next summer may be based on computational techniques

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Expectations

- To keep up with the content, please process Lecture content before 11 am each day
- To help us keep on track, please complete all interactive tasks as requested
- To make this an engaging time, please participate actively on MS Teams
- This semester is different, let’s take it on as a positive challenge
- This topic will be new to most, let’s tackle it as a supportive and inclusive community