

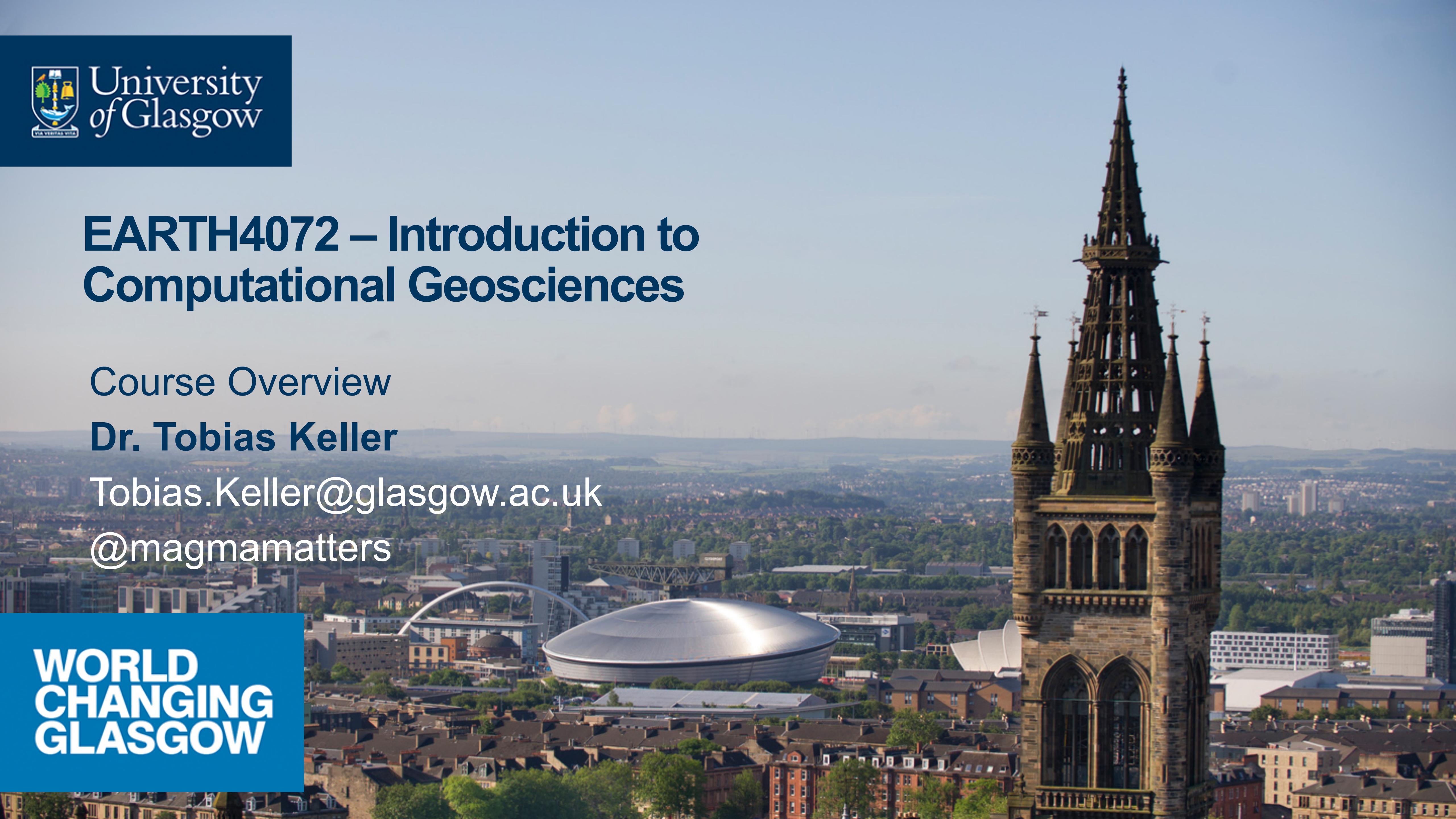
EARTH4072 – Introduction to Computational Geosciences

Course Overview

Dr. Tobias Keller

Tobias.Keller@glasgow.ac.uk

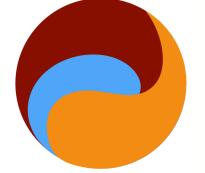
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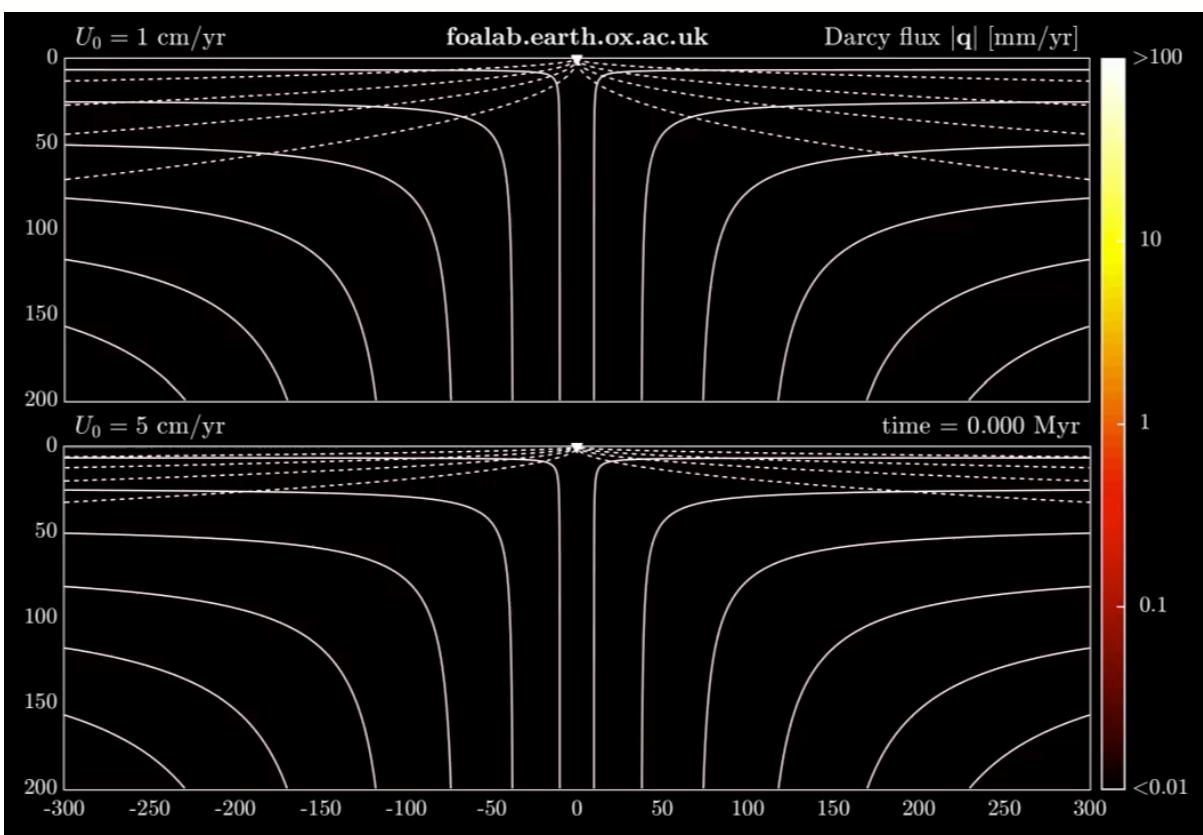


**WORLD
CHANGING
GLASGOW**



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			

Intended Learning Outcomes

- understand what scientific programming is and why it is useful
- understand the complementary roles of machine learning and process modelling
- take first steps with programming in *Python* including use of variables, lists and arrays, logic conditions, loops, and functions
- become familiar with using *Jupyter Notebooks*
- learn to compose basic computational algorithms
- gain first experience with computational data analysis including data visualisation and basic machine learning
- gain first experience with computational modelling including discretisation, initial and boundary conditions, and numerical stability

General Format

- One-week course, content split into 4 Workshops
- Each Workshop comprises an introductory Lecture followed by practical Activities.

Lecture Content

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

Intro Comp Geosci | Preamble

Activities

- Each Workshop comes with activities for you to learn techniques we introduce
- *Synchronous delivery* on EARTH4072 **MS Teams space** (Mon-Thur, 11-13)
- Launch at 11:00, wrap-up at 12:45 on **MS Teams** General channel (not recorded!)
- Activities completed in **MS Teams** Study Group channels
- Each activity based on **Jupyter Notebooks** (link, instruction video on Moodle)
- Course leader available throughout for questions, trouble shooting (not recorded!)

General Info, Q&A

- Use **MS Teams** for general questions, assistance, peer support, staying in touch
- Ask and/or upvote questions on **Slido** (link on Moodle)

Intro Comp Geosci | Preamble

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 apply computational techniques in upcoming coursework
 - Your independent projects next summer may be based on computational techniques

Intro Comp Geosci | Preamble

Expectations

- 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 an encouraging and inclusive community
- 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 given in Lectures
- To make this an engaging time, please participate actively when meeting on MS Teams
- In each study group, nominate a *daily speaker* to communicate feedback and questions