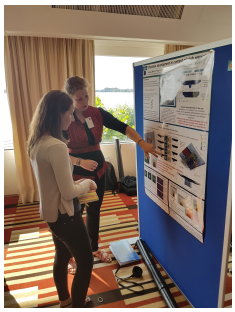
Subito! E-Newsletter #4: December 2017

1 Introduction

Welcome to the 4th Subitop Newsletter. This is a special edition as from this newsletter onwards we are merged with the newsletter for SUBITOP private partners that was separate until this autumn. We will make sure to have private partner news in each upcoming newsletter. In this edition you can read about the experience of some of our ESR's at the August Nethermod Workshop in the Netherlands. You will also find an interview with our latest ESR, Ehsan Kosari. We are all very excited that he started his PhD at the GFZ in Potsdam and can't wait to meet him. Also, some of the ESR's are convening a session at EGU 2018! You will find more information about this in this newsletter. Boris Gailleton recounts his first visit to Wales where he had his initial meeting with his industrial partner, CGG. And finally we share some SUBITOP-relevant upcoming events.

2 Nethermod 2017

The 15th International Workshop on Modelling of Mantle and Lithosphere Dynamics is part of the EGU conference series and took place at a lakeside hotel near Putten, The Netherlands, between 27-31 August 2017. Four of the SUBITOP ESRs (Nico, Manar, Jessica, and Kittiphon) participated and presented their posters during the workshop. Nico (ESR8, Durham), who won the best student poster award on the final day's poster session, presented his work on the distribution of magmatism after delamination during continental collision. Manar (ESR10, Montpelier) displayed her work on the modelling of upper plate deformation in response to trench retreat rate. Jessica (ESR4, Zürich) presented her work on development of oroclines in context of slab retreat. Kittiphon (ESR5, Barcelona) presented a collaborative project for which he wrote the kinematic modelling code. His poster showed preliminary results from kinematic modelling of the dependence of slab buoyancy on composition and convergence rate.



The workshop was sectioned into 5 sessions over the 4 days: 1) Crust/lithosphere modelling; 2) Global modelling of early and recent Earth; 3) Subduction and mantle flow modelling; 4) Rheology; and 5) Methodological advances. All keynote talks were an hour long, so the speakers had time to dive deep into their content.

A field-specific conference such as NetherMod, gives young researchers/students a great opportunity to meet people in the same field from all over the world. It also provides insights into how research and methodologies in the field are developing - this all makes for a very interesting conference!

A wide range of geo-modellers from all career stages attended the workshop, creating a great crowd. The informal atmosphere allowed the younger students to throw their opinions and ideas into

the mix leading to very fruitful discussions. It was an eye-opener to see so many (sub)disciplines of geoscience utilizing numerical modelling, everything from geochemistry to the study of exoplanets! All talks gave interesting insights into the philosophy of numerical modelling, regardless of their specific field. Finally it was great to be able to meet those big shots in the field whose papers will define and guide us through our PhD's.

3 A new ESR: Ehsan Kosari

We are finally complete! Even though we started over a year ago we were missing one of our colleagues all along. But the wait is finally over as Ehsan Kosari recently started his PhD at the GFZ in Potsdam, Germany. We did a short interview with Ehsan so we all get to know a little bit about our newest ESR.

Hi Ehsan! It is so nice you can join SUBITOP! What are three important things we should know about you?

I am delighted that you invited me to participate in this interview. Thank you! As probably you know our country is situated in the heart of the Alp-Himalayan seismic belt and experienced several huge, destructive, and fatal earthquakes. I believe that this issue encouraged me to become a researcher on active deformation and earthquakes. Outside of academia I like photography, studying and I am a football fan.

Could you describe your academic background?

My bachelor degree was from University of Tehran in the field of geology, I immediately started my MSc in the field of Tectonics in Research Institute for Earth Sciences, Geological Survey of Iran. My thesis was on structural analysis using subsurface data such as seismic profiles and well data and also analogue modelling in the Persian Gulf. After finishing my thesis in 2015, I worked in the Geological Survey of Iran on active faulting and earthquake evaluation for seismic hazard assessment under the supervision of the director of the institute Dr. Morteza Talebian. My focus was primarily on the Zagros Fold and Thrust belt.

What are you working on now?

In the SUBITOP project, we focus on topographic effects of deformation processes related to megathrust and their associated continental uplift and subsidence patterns. It will consider topographic signals from the megathrust seismic cycle and seismotectonic feedback on relevant time scales, from milliseconds to millions of years. In this project we monitor megathrust-related deformation using analogue modelling and remote sensing data and the models will be correlated by analytical and numerical models and validated against nature. The project is being performed under the supervision of Prof. Onno Oncken and Dr. Matthias Rosenau. Validating models and correlating them with natural cases so as to achieve meaningful results on the monitoring of deformation, working at the GFZ in a research group with such a high academic level and the interesting collaborations with other groups and ESRs are all very exciting!

Where does your project fit within the SUBITOP network? Can you see the potential for collaboration with other members of the network?

Definitely yes! Although the individual projects independently will have their own results, we ESRs are working hard to try and complete an amazing Geo-hazard puzzle. It is clear that we should put pieces together so as to arrive at a correct solution We need to get evidence across a wide spectrum, from the surface to mantel and use a variety of data, direct and indirect as well different approaches such as numerical, analogue and mechanical modelling. Concerning my project's relevance to the other projects, it would be necessary to make close-knit relationships with the ESRs working

on elastic deformation patterns, sharing our results regularly. That will certainly have a constructive effect on the final results.

What are you looking forward to?

I am very excited to live here. My living in Deutschland can be broken down to two parts, academic and non-academic. For the first part, I am trying to do my best in pursuing and performing my project, learning and making connections with other SUBITOP and non-SUBITOP research groups. And for the second part, I hope to get more familiar with German culture and learn their language very soon. Hope to see you all in the next meeting!

4 Subitop session at European Geosciences Union 2018 (EGU2018)

Following up the successful participation of several Subitop ESRs at last year's EGU in Vienna, some the ESRs decided to organise a SUBITOP-themed session themselves. In previous years EGU has offered several sessions on SUBITOP-related topics in a more general form. However, a session that combines deep and shallow processes, which shape the surface at subduction zones, has not been on the program.

With this in mind, Malwina, Jessica, Carlos, Joost, Manar and Nico organise the session **'Actio – Reactio: From Subducting Slabs to Shaping the Surface' (TS4.1/GD5.3/GM4.9)**. As the title hints, the session will focus on understanding the dominant processes contributing to surface topography in subduction zones as well as the interplay between shallow and deep processes and surface deformation.

Given the ESR's different backgrounds and areas of expertise, the conveners are able to cover a large range of topics: from numerical modelling, analogue modelling and field studies to geomorphology and geochemistry. The conveners are further delighted to announce that Jeremy Caves (ETH Zurich) and Joao Duarte (Lisbon University) have chosen to accept our invitation for a sollicited presentation.

Besides the scientific goal the session has two other goals. Convening of this session will be a great experience for the conveners from which they will greatly benefit. The session will also increase exposure of, and serve as good publicity for the Subitop programme. We are all looking forward to the first Subitop session at the upcoming EGU and are now hoping to get enough abstracts to get the session confirmed!

5 Private Partner Plans - Boris Gailleton

Boris Gailleton is doing his PhD in geomorphology in the University of Edinburgh. He recently visited his Private Partner, CGG Robertson in Llandudno in Wales where he started his collaboration with his private partner. He presented his project to part of the staff who were interested in his work and methods. The aim of this first meeting was to get an overview on possible collaborations between a Geomorphologist and oil and gas exploration. Although the timescale of the respective fields seems significantly different, a common interest lies in the evolution of drainage network. Timing and detection of capture event within actual topography can provide significant information about sediment fluxes in a source-to-sink system which is crucial for oil and gas exploration. Such sudden or gradual events are a key feature

of tectonic gemorphology, changing in depth the drainage network morphology and parameters. A longer meeting to settle down this partnership is planned early 2018.

6 Upcoming events

- **SUBITOP Mid-term meeting:** May 6th-9th 2018, Rome, Italy

  Note: An important focus of this workshop will be formed by exchanges with the private sector partners and sharing of key experiences from the industry secondments of the ESRs. **Academic and private partners are expected to attend the meeting.**

- **AAPG Granada: Alpine Folded Belts and Extensional Basins**; 15th-16th May 2018; Granada, Spain

- **EGU 2018 General Assembly:** April 8th-13jth 2018; Vienna, Austria

- **EGU Gailileo Conferences: exploring new frontiers in fluid processes in subduction zones:** June 24th-29th 2018, Leibnitz, Austria

7 Contacts and further information

Project Coordinator:	Niels Hovius(subitop@gfz-potsdam.de)
Project Manager:	Micha Dietze (subitop@gfz-potsdam.de)
Contact with Private Partners:	Susanne Buiter (susanne.buiter@ngu.no)

Further information on the intranet
(requires login - please contact Micha Dietze if you are missing login credentials)

- Grant and Consortium Agreements
- Information and details on the entire SUBITOP Team (ESRs, PI's, Private Partners, Partner Schools)
- Newsletters and further official documents
- Information on SUBITOP workshops and short courses
- SUBITOP logo and document template files

8 The SUBITOP Group

Newsletter by Joost van den Broek, Boris Gailleton, in collaboration with other ESRs.