ZIP NEWS
Issue 5 - April 2016
http://www.zip-itn.eu/

EDITORIAL

ZIP is now running since over 2 years, with most fellows participating to their second conference (EGU2016) and getting all benefit from secondments and interactions within the Network. ZIP is moving ahead towards the "Full synergy" stage during the incoming 1.5 years of its schedule, showcasing ZIP results at AGU 2016 and EGU 2017, and culminating with ZIP special events. These will be the last annual meeting in San Francisco (Dec 2016, pre-AGU and pre-EFIRE/ZIP meeting), the final conference in Barcelona (April 2017, pre-EGU) and the ZIP exhibition (Paris, Oct. 2017). These are all scheduled close to major conferences in order to maximize impact and dissemination of fellows results, foster interactions beyond the network, and promote post-doctoral job opportunities. A good number of ZIP fellows will also contribute oral presentations at the European Mineralogical Conference 2016 (Rimini, Italy) in September 2016.

Philippe Agard - ZIP coordinator
Marco Scambelluri - Responsible for ZIP outreach activities

ZIP PRE-EGU MINI-WORKSHOP
SUNDAY APRIL THE 17TH 2016

WHAT DO WE KNOW ABOUT INTERMEDIATE-DEPTH PROCESSES ALONG THE SUBDUCTION INTERFACE?

The mini-workshop aimed at embracing this key aspect of the plate interface, taking inspiration from and using our present-day knowledge on mechanical coupling in the seismogenic zone (~15-40 km depths) to discuss intermediate depth (~40-100 km) seismicity, rock lithologies and fluids, rock mechanics and models. It was organized at the Gästhaus Stafler (a nice little restaurant at 5 minutes walking distance from Meidling Hauptstraße U-Bahn). The workshop started at 2:30 pm on Sunday and gathered 31 scientists. Discussion continued during a nice dinner.

PROGRAM AND LIST OF ORAL PRESENTATIONS:

1. **INTRODUCTION**: what is our understanding of mechanical coupling? From observations (and models) made across the seismogenic zone: transients, long-term deformation, segmentation, hazard, earthquake triggering. Joint presentations by Christophe Vigny, Gianina Meneses, Emilie Klein (CNRS group).

2. **OVERVIEW OF THE LOCATION AND MOMENT RELEASE OF INTERMEDIATE DEEP EARTHQUAKES FROM SUBDUCTION ZONES ACROSS THE WORLD**: Marija Ruscic (ZIP fellow, Univ. CAU Kiel, as part of the work done during her secondment at UPMC).

3. **INTERMEDIATE DEPTH SEISMICITY AND SLAB STRUCTURE**: What can we learn from seismic waveforms?: Andreas Rietbrock (Univ. Liverpool).


5. **INTEGRATIVE RESEARCH FROM ZIP FELLOWS (PART 1, ROCKS & FLUIDS)**: based on the work of Léa Bayet-Mattia Gilio-Nicole Dilissen: What sort of rocks/fluids can we expect at those depths? What do we learn from field observations, what kind of questions arise?

6. **INTEGRATIVE RESEARCH FROM ZIP FELLOWS (PART 2, ROCK MECHANICS)**: based on the work of Michele Locatelli-Sarah Incel-Thomas Ferrand. Can we link intermediate-depth deformation patterns and mineral reactions in nature and in the laboratory?


**Participants:**
- **ZIP fellows**: Io Paraskevi Ioannidi (GFZ) / Gianina Meneses (CNRS) / Marija Ruscic (CAU) / Slaven Begovic (CSIC) / Nicole Dilissen (CSIC) / Daniel Peters (UB) / Léa Bayet (FUB) / Michele Locatelli (UPMC) / Gian Maria Bocchini (NOA) / Casper Pranger (ETH).
- **ZIP scientists**: Philippe Agard (Coordinator, UPMC) / Laetitia Le Pourhiet (UPMC) / Alexandre Schubnel (CNRS) / Christophe Vigny (CNRS) / César Ranero (CSIC) / Valenti Sallares (CSIC) / Onno Oncken (GFZ) / Samuel Angiboust (GFZ) / Thomas Meier (CAU) / Taras Gerya (ETH).
- **ZIP advisory board members**: Peter van Keken (Carnegie, USA) / Paola Vannucchi (Royal Holloway, London).
- **EFIRE NSF-PIRE partner**: Sarah Penniston-Dorland (Univ. Maryland, USA).
- **Invited speakers**: Andreas Rietbrock (Univ. Liverpool) / Emilie Klein (IPGP Paris) / Wasja Bloch (FUB).
- **Other participating scientists**: Jason Phipps Morgan (Prof. Royal Holloway, London) / Silvia Brizzi (ITN Creep) / Elenora van Rijssingen (ITN Creep) / Mathieu Soret (PhD) / Thais Hyppolito (post-doct. GFZ).

The ZIP pre-EGU mini-workshop
EGU ZIP PRESENTATIONS AND SESSION IN MEMORY OF E. BUROV

ZIP results were well-disseminated at the EGU in Vienna (April 18-22), contributing to 11 sessions with 13 presentations by 12 ZIP fellows (and co-advisors) and by ZIP associated PhD students. Scheduled contributions.

J. Ruh - Accretion/underplating, detachment and exhumation: short/long-term rheology of the subduction plate interface;
L. Bayet - Insights into a fossil plate interface of an erosional subduction zone: a tectono-metamorphic study of the Tianshan metamorphic belt;
M. Soret - Metamorphic soles: witnesses of early subduction dynamics;
M. Soret - Subduction infancy: stripping young slabs as a result of similar crust-mantle rheologies; Michele Locatelli: Eclogitic breccia from the Monviso meta-ophiolite complex: field and petrographic evidences of multiple-stage eclogite-facies brecciation;
W. Bloch - Watching dehydration: transient vein-shaped porosity in the oceanic mantle of the subducting Nazca slab;
D. Peters - Major to ultra trace element bulk rock analysis of nanoparticulate pressed powder pellets by LA-ICP-MS;
M. Ruscic - Similarity and Cluster Analysis of Intermediate Deep Events in the Southeastern Aegean;
G. M. Bocchini - Relocation of the Mw 6.4 July 1, 2009 earthquake to the south of Crete and modeling of its associated small tsunami;
N. Dilissen - Deciphering the dynamics of olivine nucleation and growth during antigorite breakdown;
S. Begović - Improvements of Travel-time Tomography Models from Joint Inversion of Multi-channel and Wide-angle Seismic Data;
C. Pranger - Towards three-dimensional continuum models of self-consistent along-strike megathrust segmentation;
All ZIP fellows from the Chianti cruise - Calabrian Arc Hazards in Ionian and Tyrrenthenian Seas: First results from the CHIANTI cruise.

Long-term rheological behavior of the crust and mantle inferred from observations and models at laboratory and geological time and spatial scales (in memory of E. Burov)

The special session dedicated to our friend and colleague E. Burov, attended by his wife and son (and by most renowned members of the Solid Earth community), was very moving and solemn. It also presented high quality science, as Evgeni would have enjoyed. The International Lithosphere Programme, whom Evgeni had become one of the Task force leaders, decided to create a special Evgeni Burov medal in recognition of significant advances made in the field of Lithospheric studies.
SUBDUCTION ACROSS SCALES / AGU SESSION

This session, organized within the frame of ZIP (convened by P. Agard, K. Wang, L. Fleitout and B. Hacker) hosted more than 100 abstracts and turned out to be the largest Tectonophysics session of this AGU. It consisted in 5 oral blocks (40 talks on Monday Dec. 12) and 2 poster sessions, with 3 out of 4 invited keynotes from ZIP members (advisory board members P. Vannucchi and M. Bostock, L. Le Pourhiet, and S. Sobolev) and 2 talks by ZIP fellows (N. Dilissen, L. Zheng), in addition to talks from ZIP advisors (A. Schubnel, C. Vigny). Contribution straddled three major trends: 1) megathrust processes, earthquake cycle(s) and paleoseismology, 2) large-scale dynamics, stress and long-term deformation and 3) slab, mantle wedge, petrology of exhumed subduction interfaces. The AGU meeting also turned out to be a nice opportunity for getting together and sharing ideas!

WP6.2 - ZIP SHORT-COURSE ON “PRIVATE SECTOR & CAREER DEVELOPMENT”

This short-course forms the second part of fellows’ training to “transferable skills”, meant to enhance their career perspectives, develop their communication and management skills across disciplines and sectors, improve their Personal Career Development Plan (PCDP), and help them define their career aspirations towards either Industry and/or Academia. This short-course based on hands-on practical aspects was a great success and really appreciated by the fellows.

Day 1: First steps of grant proposal writing, towards identifying the right funding scheme and develop a first concept of their proposal, useful for either (1) discussing the project with peers, asking support at funding agencies, contacting stakeholders, potential host institutions or collaborators, or (2) as a first outline for a research statement. Participants worked on targeted exercises with respect to funding scheme fingerprints, results and objectives, a first work plan and impact.

Day 2-3: Time Management Goals, to manage time and be more efficient at work. Practicals: apply powerful time planning methods, balance work and private life, make decisions and develop initiative, work with clear (smart) goals at different timely horizons. Emphasis was placed on planning time realistically: project plan, weekly and daily planning, setting priorities, getting rid of time-killers, working with maximum concentration. Job Application Training Goals, in order to be better prepared to apply to jobs (academia and private sector). Practicals: get information about the desired Network professionally, apply professionally (CV, Cover Letter and job interview), how to behave in a job interview, train job interview situations.

Day 4: Interacting with a scientist turned to the Private sector. Dr. Anselm Smolka shared his experience in the Risk assessment branch of MunichRe (reinsurance company), explaining his role and the development of the Global Earthquake Model project: how the idea started, how it got funded, the first results.

Day 5: Interacting with a young recipient of an ERC grant. Maria Seifert presented the details of how applying for ERC starting grants: deadlines, different steps, University support. Benedikt Kaufer described how he got his ERC grant and what the commission expects from a grant proposal.
ZIP network says good luck to our dedicated post-doctoral fellows, who sailed to new adventures by the end of March. Jonas Ruh (UPMC) started a new 3 year post-doctoral project granted by the Swiss National Fund, working in Barcelona, where he stayed during his ZIP secondment. Liang Zheng (ETH) just returned to China to become dad (congratulations Liang!) and search for a teaching position there.

FALL 2016 — A LOT HAPPENING IN DECEMBER 2016!

From this year on, ZIP actively partners with his companion US project EFIRE ("ExTerra Field Institute and Research Endeavor"); coordinators: M. Kohn, S. Penniston-Dorland, M. Feinemann), which was funded last year by the National Science Foundation as a NSF "PIRE" project (a highly competitive scheme to support international partnerships). We are very enthusiastic, as this is a direct measure of the impact of ZIP on the international scientific scene, and because it provides the possibility to continue with the main ZIP subduction plate interface theme.

The new E-FIRE program gathers 8 PhDs and 2 post Docs, seeking to understand the dynamic transport of materials in subduction zones by studying exhumed high-pressure terrains. EFIRE will in particular use "field institutes" to gather US and European researchers and students (during summer 2017) to pursue collaborative research and international student exchanges.

Next December 2016, just before the AGU Fall meeting in San Francisco, the two International E-FIRE and ZIP teams merge for the first time during a workshop which will also be the E-FIRE kick-off meeting. Sharing ideas, plans and defining the state of the art on the subduction issue! ZIP fellows and scientists will contribute with ideas and data to launching the E-FIRE program. We sincerely look forward to establish a long-lasting cultural and human exchange between EU and USA research and training systems.

ZIP-related publications: Submit papers!

Zippians are thinking of a special issue on subduction plate interface in Lithos, which could be entitled "Zooming into Subduction Plate Interface Lithologies and Processes". A number of potential contributors (both reviews and ‘fresh’ science, in particular from the fellows) have been identified and discussions are in progress to refine the scope of this special issue.

A special volume dedicated to subduction as a whole, “Subduction Top to Bottom”, 2, will be published in Geosphere in 2017, as a follow-up to the popular “Subduction to to bottom” AGU monograph published 20 years ago. The call for paper is now open! (http://geosphere.gsapubs.org/site/misc/smargn.xhtml)