

4D-MB Meeting 2018

SPP 2017-2020

Mountain Building Processes in 4D



Alpine thrust front in the southeastern Alps with Tagliamento river in the foreground (taken by Stefan Mroczek on the SPP field trip in September 2018).

08.11.2018 - 09.11.2018

Senckenberg Frankfurt, Biodiversität und Klima Forschungszentrum (SBiK-F)
"Maria-Sibylla-Merian-Haus" - Hörsaal, Georg-Voigt-Str. 14 - 16, 60325 Frankfurt am Main

Meeting Program

Thursday, 8. November 2018

09:00-09:30 Coffee

09:30-10:30 Session A - AlpArray & SPP Seismological Activities

09:30-09:50 Handy, Weber & Kaestle - Greeting, Information, update on AlpArray

09:50-10:00 Anke Dannowski: Ligurian Ocean Bottom Seismology and Tectonics Research (LOBSTER)
Kopp, Lange, Grevemeyer, Dannowski

10:00-10:10 Michael Weber: Seismology of the Western-Eastern-Southern Alps Transition (SWATH D)
Heit, Weber, Tilmann, Haberland

10:10-10:20 Wolfgang Friedrich: The German seismological contribution to AlpArray (UNIBRA / DSEBRA)
Friederich, Korn, Meier, Rümpker, Tilmann, Thomas, Wassermann

10:20-10:30 Discussion of Session A

10:30-12:20 Session B - Imaging slabs

10:30-11:00 Keynote: Claudia Piromallo (INGV, Rome) - The Mediterranean region: what have we learned from seismic tomography?

11:00-11:10 Felix Wolf - Towards Ambient noise studies in the Ligurian Sea
Lange, Thorwart, Grevemeyer, Wolf

11:10-11:30 Coffee break

11:30-11:45 Manuel Ditz - Imaging structure and geometry of Alpine slabs by full waveform inversion of teleseismic body waves
Friederich, Meier, Kaus, Paffrath, Fischer, Ditz

11:45-12:00 Amr El-Sharkawy - Surface Wavefield Tomography of the Alpine Region to Constrain Slab Geometries, Lithospheric Deformation and Asthenospheric Flow in the Alpine Region
Meier, Friederich, Ebbing, Tesch, El-Sharkawy

12:00-12:10 Rainer Kind - The Mid-Lithospheric Discontinuity—an artifact of data processing?
Kind

12:10-12:20 Discussion of Session B

12:20-13:30 Lunch (Provided in Venue)

13:30-15:15 Session C1 - Surface motion and fault kinematics

13:30-14:00 Keynote: Jean-Mathieu Nocquet (Geoazur, CNRS, Nice) - Present-day deformation of the European Alps: a critical review of geodetic data and models

14:00-14:15 Gesa Petersen/Rens Hofman - Seismicity, Motion Patterns and Stress Distribution in the Alpine Crust: Automatic Quality Control and Event Detection in the Swath-D Network
Kummerow, Cesca, Wassermann, Plenefisch, Schlömer, Petersen, Hofman

14:15-14:30 Azam Jozi Najafabadi, Vincent Verwater - Minimum 1D velocity model in Central Alps Fault kinematics of the Giudicarie Belt
Handy, Haberland, Le Breton, Jozi Najafabadi, Verwater

14:30-14:40 Christoph Gruetzner - Active faulting in NE Italy and NW Slovenia – insights from field studies, geophysics, and high-resolution DEMs
Gruetzner, Reicherter, von Blankenburg, Ustaszewski

- 14:40-14:55 Jochen Hürtgen - Quaternary faulting in the Upper Rhine Graben: evidence from geomorphology and geophysics
Reicherter, Ritter, Mader, Hürtgen
- 14:55-15:05 Elco Luijendijk - Thermal springs and the thermal effects of fluid flow in the Alps
Luijendijk, von Hagke
- 15:05-15:15 Discussion of Session C1
- 15:15-16:15 Breakout session and Refreshments
- 16:15-17:00 Steering Committee (SC) deliberates
- 19:00 Group Dinner (Apfelweinwirtschaft Wagner, Schweizer Str. 71, 60594 Frankfurt)

Friday, 9. November 2018

09:00-11:20 Session C2 - Surface response and denudation

- 09:00-09:30 Keynote: Hugh Sinclair (University of Edinburgh) - The response of Himalayan River catchments to orogenesis, with implications for the stratigraphy of foreland basins
- 09:30-09:50 Svetlana Botsyun - Neogene Paleo-elevation and Paleoclimate of the Central Alps: Global Climate Modeling Approach. *Botsyun, Krsnik, Methner, Mutz, Mulch, Ehlers*
- 09:50-10:00 Christoph Glotzbach - Structural thermochronology along the TransAlp geophysical profile.
Eizenhoefer, Glotzbach, Kley
- 10:00-10:15 Sarah Louis - Quantifying the timing and rate of exhumation of the eastern Subalpine Molasse by combining thermochronology data with structural models.
von Hagke, Luijendijk, Hindle, Kley, Louis
- 10:15-10:35 Refreshments
- 10:35-10:55 Philip Gross/Stefan Mroczek - Understanding subduction by linking surface exposures of subducted and exhumed crust to geophysical images of slabs.
Pleuger, John, Tilmann, Yuan, Kaus, Handy, Mechie, Mroczek, Gross, Zertani
- 10:55-11:10 Matthias Hauke/Nikolaus Froitzheim - Subduction channel vs. progressive accretion; Insights from the Western Alps / Modeled average elastic anisotropies of upper and lower crustal units in the Alps
Froitzheim, Keppler, Hauke
- 11:10-11:20 Discussion of Session C2

11:20-14:05 Session D - Modelling deep structure

- 11:20-11:50 Keynote: Taras Gerya (ETH Zürich) - 3D thermomechanical modeling of slab tear propagation during retreating arc-passive margin collision: implications for the evolution of Apennines
- 11:50-12:00 Alexey Petrunin - Inverse and forward multiscale numerical modeling of the Alpine orogeny
Petrunin
- 12:00-13:00 Lunch (Provided in Venue)**
- 13:00-13:15 Jan Philipp Kruse/Frederik Link - Physics of the subduction polarity switch: Constraints from first 2D thermo-mechanical models / Crustal anisotropy in the European Alps inferred from crustal phases in receiver functions - Preliminary results.
Rümpker, Schmeling, Kruse, Link

- 13:15-13:25 Georg Reuber: Constraining the dynamics of the present-day Alps with 3D geodynamic inverse models - model version 0.2.
Kaus, Friederich, Meier, Reuber
- 13:25-13:40 Ruth Keppler - Alpine subduction revisited – new structural and elastic wave velocity models for improved geophysical imaging towards greater depths
Keppler, Stipp, Froitzeim, Schmidtke
- 13:40-13:55 Cameron Spooner - 3D Structural Model – Preliminary results from a gravity constrained model of the Alps
Scheck-Wenderoth, Ebbing, Sippel, Götze, Sebera, Spooner
- 13:55-14:05 Discussion of Session D
- 14:05-14:45 Reports of research theme leaders
- 14:45-15:15 Final remarks & recommendations

List of Participants

Becker, Thorsten	University of Texas, Austin	twb@ig.utexas.edu
Botsyun, Svetlana	Universität Tübingen	svetlana.botsyun@uni-tuebingen.de
Dannowski, Anke	GEOMAR Helmholtz-Zentrum Kiel	adannowski@geomar.de
Ditz, Manuel	Ruhr Universität Bochum	manuel.ditz@rub.de
Ebbing, Jörg	Christian Albrechts Universität Kiel	joerg.ebbing@ifg.uni-kiel.de
Ehlers, Todd	Universität Tübingen	todd.ehlers@uni-tuebingen.de
Eizenhöfer, Paul	Universität Tübingen	p.eizenhoefer@icloud.com
El-Sharkawy, Amr	Christian Albrechts Universität Kiel	amr.elsharkawy@ifg.uni-kiel.de
Froitzeim, Nikolaus	Universität Bonn	niko.froitzeim@uni-bonn.de
Gerya, Taras	ETH Zürich	taras.gerya@erdw.ethz.ch
Glotzbach, Christoph	Universität Tübingen	christoph.glotzbach@uni-tuebingen.de
Götze, Hans-Jürgen	Christian Albrechts Universität Kiel	hajo.goetze@ifg.uni-kiel.de
Groß, Philip	Freie Universität Berlin	philip.gross@fu-berlin.de
Grützner, Christoph	Friedrich Schiller Universität Jena	christoph.gruetzner@uni-jena.de
Haberland, Christian	GFZ Potsdam	haber@gfz-potsdam.de
Handy, Mark	Freie Universität Berlin	mark.handy@fu-berlin.de
Hannemann, Katrin	Universität Leipzig	katrin.hannemann@uni-leipzig.de
Hofman, Rens	Freie Universität Berlin	rens@geophysik.fu-berlin.de
Hürtgen, Jochen	RWTH Aachen	j.huertgen@nug.rwth-aachen.de
Jozí Najafabadi, Azam	GFZ Potsdam	azam@gfz-potsdam.de
Kästle, Emanuel	Freie Universität Berlin	emanuel.kaestle@fu-berlin.de
Kaus, Boris	Johannes Gutenberg Universität Mainz	kaus@uni-mainz.de
Keppler, Ruth	Universität Bonn	rkep@uni-bonn.de
Kind, Rainer	GFZ Potsdam, Freie Universität Berlin	kind@gfz-potsdam.de
Kley, Jonas	Universität Göttingen	jkley@gwdg.de
Kopp, Heidrun	GEOMAR Helmholtz-Zentrum Kiel	hkopp@geomar.de
Krsnik, Emilija	Senckenberg Research Centre	emilija.krsnik@senckenberg.de
Kruse, Jan Philipp	Goethe Universität Frankfurt	jp.kruse@gmail.com
Kummerow, Jörn	Freie Universität Berlin	joern@geophysik.fu-berlin.de
Lange, Dietrich	GEOMAR Helmholtz-Zentrum Kiel	dlange@geomar.de
Le Breton, Eline	Freie Universität Berlin	eline.lebreton@fu-berlin.de
Link, Frederik	Goethe Universität Frankfurt	link@geophysik.uni-frankfurt.de
Louis, Sarah	RWTH Aachen	sarah.louis@uni-goettingen.de

Luijendijk, Elco	Universität Göttingen	eluijen@gwdg.de
Mader, Sarah	Karlsruhe Institut für Technologie (KIT)	sarah.mader@kit.edu
Matthias Hauke	Universität Bonn	mhauke@uni-bonn.de
Mechie, James	GFZ Potsdam	jimmy@gfz-potsdam.de
Meier, Thomas	Christian Albrechts Universität Kiel	thomas.meier@ifg.uni-kiel.de
Methner, Katharina	Senckenberg Research Inst., Frankfurt	katharina.methner@senckenberg.de
Mroczek, Stefan	GFZ Potsdam	mroczek@gfz-potsdam.de
Mutz, Sebastian	Universität Tübingen	sebastian.mutz@uni-tuebingen.de
Nocquet, Jean-Mathieu	Geoazur, Nice	nocquet@geoazur.unice.fr
Paffrath, Marcel	Ruhr Universität Bochum	marcel.paffrath@rub.de
Pesaresi, Damiano	Ist. Oceanografia e Geofisica Sperimentale (OGS)	dpesaresi@inogs.it
Petersen, Gesa	GFZ Potsdam	gesap@gfz-potsdam.de
Petrunin, Alexey	GFZ Potsdam	alexei@gfz-potsdam.de
Piomallo, Claudia	Ist. Naz. di Geofisica e Vulcanologia (INGV)	claudia.piomallo@ingv.it
Plenefisch, Thomas	BGR Hannover	thomas.plenefisch@bgr.de
Pleuger, Jan	Freie Universität Berlin	jan.pleuger@fu-berlin.de
Reuber, Georg	Johannes Gutenberg Universität Mainz	reuber@uni-mainz.de
Ritter, Joachim	Karlsruhe Institut für Technologie (KIT)	joachim.ritter@kit.edu
Scheck-Wenderoth, Magd.	GFZ Potsdam/RWTH Aachen	magdalena.scheck@gfz-potsdam.de
Schmeling, Harro	Goethe Universität Frankfurt	schmeling@geophysik.uni-frankfurt.de
Schmidtke, Michael Jared	Universität Bonn	michael.schmidtke@uni-bonn.de
Sinclair, Hugh	University of Edinburgh	hugh.sinclair@ed.ac.uk
Sippel, Judith	GFZ Potsdam	sippel@gfz-potsdam.de
Spooner, Cameron	GFZ Potsdam	spooner@gfz-potsdam.de
Stampa, Johannes	Christian Albrechts Universität Kiel	johannes.stampa@ifg.uni-kiel.de
Tesch, Marcel	Christian Albrechts Universität Kiel	marcel.tesch@ifg.uni-kiel.de
Thorwart, Martin	Christian Albrechts Universität Kiel	martin.thorwart@ifg.uni-kiel.de
Tilman, Frederik	GFZ Potsdam	tilmann@gfz-potsdam.de
Ustaszewski, Kamil	Universität Jena	kamil.u@uni-jena.de
Verwater, Vincent	Freie Universität Berlin	vincent.verwater@fu-berlin.de
von Hagke, Christoph	RWTH Aachen	christoph.vonhagke@emr.rwth-aachen.de
Weber, Michael	GFZ Potsdam	mhw@gfz-potsdam.de
Wolf, Felix	GEOMAR Helmholtz-Zentrum Kiel	fnwolf@geomar.de
Yuan, Xiaohui	GFZ Potsdam	yuan@gfz-potsdam.de