



16th Émile Argand Conference on Alpine Geological Studies
Alpine Workshop
Siena, Italy • 16-18 September 2024

Programme & Timetable

Monday, 16 September

08:00–09:30 - Registration

09:30–10:00 - Opening Ceremony (Organizer welcome words)

Session T1 - Pre-Alpine heritage in the Tethyan realm, Mesozoic continental rifting and spreading: Regional studies. 9:00-10:45

Chairperson: Mark R. Handy

10:00–10:30 - **Carlo Doglioni**. *Fault activation energy*. **[Keynote Talk]**

10:30–10:45 - **Victoria Mowbray**, Christian Sue, Céline Beauval, Marguerite Mathey, Ane Lemoine, and Stéphane Baize. *Integrating structural and seismotectonic data in a fault catalog for Seismic Hazard Assessment for South East France*.

10:45–11:15 - Coffe Break

Session T2 - Subduction and collision in the Alps. 11:15–13:00

Chairperson: Claudio Rosenberg

11:15–11:45 - **Michel Ballèvre**. *Continental subduction in the Western Alps: major issues*. **[Keynote Talk]**

11:45–12:00 - **Hans-Joachim Massonne**, Botao Li, Salvatore Iaccarino, and Junfeng Zhang. *Metamorphic evolution of calcareous schists of the Margna Nappe at Valmalenco, Central Alps*

12:00–12:15 - **Paola Manzotti**, Martin J. Whitehouse, Heejin Jeon, Leo J. Millonig, Axel Gerdes, Marc Poujol, and Michel Ballèvre. *Petrochronology of the UHP Chasteiran Unit (northern Dora-Maira Massif)*

12:15–12:30 - **Botao Li**, Hans-Joachim Massonne, Salvatore Iaccarino, and Junfeng Zhang. *Polymetamorphic evolution of a micaschist from the ultrahigh-pressure terrane of the southern Dora Maira Massif, Western Alps*

12:30–12:45 - **Alessia Tagliaferri**, Filippo Luca Schenker, Stefan Markus Schmalholz, and Evangelos Moulas. *A multidisciplinary study of the Barrovian metamorphism in the Lepontine dome gives new insights into the heating history of the Central Alps*

12:45–13:00 - M. Sophie Hollinetz, **Benjamin Huet**, Bernhard Grasemann, David A. Schneider, Chris R.M. McFarlane, Gerhard Bryda, and Gerhard W. Mandl. *P-T-t-d history of low-grade Permian metasediments in the Austroalpine Unit*

13:00–14:30 - Lunch

Session T10 - Poster Session 1. 14:30–16:00

16:00–16:30 - *Coffe Break*

Session T3 - Subduction, collision and basin dynamics in the Alps, Apennines and peri-Mediterranean chains. 16:30–18:15

Chairperson: Paola Manzotti

16:30–16:45 - **Nicolas Bellahsen**, Claudio Rosenberg, Anne Paul, Ahmed Nouibat, Jean Baptiste Girault, Bastien Huet, Manon Sonnet, Loic Labrousse, Laurent Jolivet, Philippe Agard, Didier Marquer, Matthias Bernet, and Raphael Pik. *Deep structure and collisional processes in the Western and Central European Alps*

16:45–17:00 - **Alberto Ceccato**, Whitney M. Behr, Alba S. Zappone, Lorenzo Tavazzani, and Andrea Giuliani. *The structural evolution of the Rotondo granite (Gotthard nappe, Central Alps): constraints on the strength and timing of weakening of the European upper crust during Alpine collision*

17:00–17:15 - **Agathe Faure**, Nicolas Loget, Laurent Jolivet, Nicolas Bellahsen, Naïm Célini, Cécile Al-lanic, Charles Gumiaux, and Jean-Paul Callot. *Western alpine orogenic front geometry: new insight from the Digne nappe area by a 3D geometrical modelling approach*

17:15–17:30 - **Dorian Bienveignant**, Stéphane Schwartz, Yann Rolland, Matthias Bernet, Julien Léger, Adrien Vezinet, Maxime Bertauts, Clara Boullerne, and Thierry Dumont. *Revealing the temporal dynamics of fault reactivation in the W-Alpine foreland using in-situ U-Pb dating on calcite*

17:30–17:45 - **Stefano Zanchetta**, Martina Rocca, Chiara Montemagni, Andrea Fiorini, Eugenio Carminati, Luca Aldega, Andrew Kylander-Clark, and Andrea Zanchi. *Late Cretaceous S-verging thrusting in the central Southern Alps (N Italy) proved by U-Pb syn-tectonic calcite geochronology*

17:45–18:00 - **Edoardo Sanità**, Maria Di Rosa, Francesca Meneghini, Marroni Michele, and Pandolfi Luca. *Subduction imprint in the Internal Ligurian Units (Northern Apennines, Italy): evidence from multi-equilibrium thermobarometry*

18:00–18:15 - **Davide Dana**, Stefan M. Schmid, Salvatore Iaccarino, and André Michard. *Tectonic map and structural architecture of the “Briançonnais Zone” (Western Alps)*

Tuesday, 17 September

Session T4 - Pre-Alpine heritage in the Tethyan realm, Mesozoic continental rifting and spreading: Regional studies. 9:00–10:45

Chairperson: Chiara Montomoli

09:00–09:15 - **Romain Bousquet**. *Oceanic detachments in Tethys realm: core complexe or not?*

09:15–09:30 - **Marcello De Togni**, Gianni Balestro, Daniela Rubatto, Daniele Castelli, Marco Gattiglio, and Andrea Festa. *New geochronological data from mafic and felsic meta-intrusives of the Western Alpine Ophiolites: the missing magmatism of the Ligurian-Piedmont Ocean?*

09:30–09:45 - **Louise Boschetti**, Frederic Mouthereau, Stephane Schwartz, Yann Rolland, Gaetan Milesi, Philippe Munch, Matthias Bernet, and Melanie Balvay. *Mesozoic tectonic events in the southern*

European basement revealed by thermochronology - insight for margin paleogeography (Pelvoux and Maures-Tanneron massif) .

09:45–10:00 - **Hugo Ortner** and Anna-Katharina Sieberer. *Jurassic-Cretaceous transform faults control the present-day shape of the Eastern Alps.*

10:00–10:15 - **Jiří Žák**, Martin Svojtka, Jiří Sláma, Roger Zurbriggen, Andreas Schindlmayr, František Vacek, and Friedrich Finger. *New geochronologic constraints on the timing and geodynamic setting of Ordovician plutonism in the Ötztal nappe of the Eastern Alps*

10:15–10:30 - **Andrea Fiorini**, Stefano Tavani, Luca Aldega, Stefano Michele Bernasconi, Luigi Dallai, Andrew Kylander-Clark, Martina Rocca, Stefano Zanchetta, Andrea Zanchi, and Eugenio Carminati. *Control of pre-orogenic inherited faults on Alpine thrusting and fluid circulation: an example from transverse zones of the Central Southern Alps (Lombardy, Italy)*

10:30–10:45 - **Anna-Katharina Sieberer**, Ernst Willingshofer, Thomas Klotz, Hugo Ortner, and Hannah Pomella. *Relation between inherited basin size and fold-and-thrust belt deformation style in crustal-scale analogue models: implications for the evolution of the European eastern Southern Alps*

10:45–11:15 - Coffe Break

Session T5 - Mediterranean tectonics. 11:15–13:00

Chairperson: Eline Le Breton

11:15–11:45 - **Alina Polonia**. Marine sediments unveil earthquake signals to test plate convergence dynamics in the central Mediterranean Sea. [**Keynote Talk**]

11:45–12:00 - **Gaia Siravo** and Fabio Speranza. Paleomagnetic rotations and microplate-terrane dispersal during back-arc basin opening: from Greater Iberia rotation and fragmentation to Calabria and Peloritan terrane drift

12:00–12:15 - **Joseph Martinod**, Aurore Maldonado, Christian Crouzet, and Christian Sue. West Mediterranean subductions, puppeteers of the Alps: lessons from analog models and paleomagnetic data

12:15–12:30 - **Augusto Maresca**, Pablo Granado, Gianreto Manatschal, Eugenio Carminati, Gianpaolo Cavinato, Josep Anton Muñoz, and Stefano Tavani. A crustal balanced-cross section across the central Apennines and the relationship between thick- and thin-skinned tectonics

12:30–12:45 - **Víctor Tintero Salmerón**, Jesús Galindo-Zaldívar, Elia d'Acremont, Manuel Catalán, Yasmina M. Martos, Abdellah Ammar, and Gemma Ercilla-Zarraga. Alboran Sea igneous intrusions revealed by magnetic anomalies and related to extensional opening constrain the ongoing continental collision

12:45–13:00 - **Claudio Rosenberg** and Giancarlo Molli. Centennial of «Tectonics of Asia», by Emile Argand : a milestone for Alpine and Mediterranean tectonics

13:00–14:30 - Lunch

Session T11 - Poster Session 2. 14:30–16:00

16:00–16:30 - Coffe Break

Session T6 - Subduction, collision and basin dynamics in the Alps and peri-Mediterranean chains: Dinarids and Balkans. 16:30–18:00

Chairperson: Boštjan Rožič

16:30–16:45 - **Fabio Feriozzi**, Gaia Siravo, and Fabio Speranza. *The heritage of Tethyan oceanic transform faults within Alpine orogens: The Shkoder-Peja transverse zone (SPTZ) of Northern Albania*

16:45–17:00 - **Ana Mladenović**, Violeta Gajić, Kristijan Sokol, and Dejan Prelević. *Regional Strike-Slip Structures in the Internal Dinarides: Insights from the Zvornik Fault*

17:00–17:15 - **Duje Kukoč**, Duje Smirčić, Damir Slovenec, Mirko Belak, Tonči Grgasović, Marija Horvat, Branimir Šegvić, and Matija Vukovski. *Tracing the aborted Middle Triassic Neotethyan rift along the Dinarides*

17:15–17:30 - **Nikola Stanković**, Ana Mladenović, Dejan Prelević, Vesna Cvetkov, and Vladica Cvetković. *Can the dynamics of a subducted slab account for the Upper Cretaceous magmatism in the Sava-Vardar Zone and Timok Magmatic Complex? A Numerical Modelling Approach*

17:30–17:45 - **Tatiana Tkáčiková** and Jiří Žák. *Single or double subduction? New constraints from structural analysis and magnetic fabric from the Vardar suture zone, Serbia*

17:45–18:00 - **Dejan Prelević**, Kristijan Sokol, Ana Mladenović, Violeta Gajić, and Vladica Cvetković. *Reconstruction of the Tethys' Waning in the Balkans*

20:00 - Social Dinner

Wednesday, 18 September

Session T7 - Imaging Alpine orogenic systems in the Mediterranean area from Surface to the Mantle (AlpArray, 4DMB and AdriaArray). 9:00–10:45

Chairperson: Romain Bousquet

09:00–09:30 - **Anne Replumaz**. *From orogenic range to orogenic plateau, what evolution along the Tethys subduction zone from the Alps to Tibet?* **[Keynote Talk]**

09:30–09:45 - **Anne Paul**, Nicolas Bellahsen, Jean-Xavier Dessa, Anne-Gaëlle Bader, and Philippe Calcagno and the RGF-Abp geomodel working group. *A 3-D geological model of the Western Alps and Ligurian basin from joint interpretation of geological data and seismic imaging models*

09:45–10:00 - **Ferdinando Musso Piantelli**, Anina Ursprung, Pauline Baland, and Roland Baumberger. *Swiss Alps 3D: building a large-scale 3D underground model of the Central European Alps*

10:00–10:15 - **Marco Giovanni Malusà**, Stefano Solarino, Elena Eva, Anne Paul, Stéphane Guillot, and Liang Zhao. *Geological interpretation of the CIFALPS2 seismic tomography data in the Ligurian Alps*

10:15–10:30 - **Manon Sonnet**, Loïc Labrousse, Jérôme Bascou, Jérôme Fortin, and Hem Motra. *The role of petrophysics in interpreting geophysical images: the effect of rock chemistry and texture on seismic velocities*

10:30–10:45 - **Mark R. Handy**. Mantle rheology inferred from seismic tomography and foreland basin uplift around the Alps-Carpathian arc

10:45–11:15 - Coffe Break

T8 - Subduction – Eastern & Southern Alps + Dynamic interactions between mountain building, basin dynamics and surface processes. 11:15–13:00

Chairperson: Nicolas Bellahsen

11:15–11:30 - **Reinhard Wolff**, Kyra Hölzer, Ralf Hetzel, István Dunkl, and Aneta Anczkiewicz. *Late-orogenic extension ceases with waning plate convergence: The case of the Simplon normal fault (Swiss Alps)*

11:30–11:45 - **Eline Le Breton**, Anne Bernhardt, Robert Neumeister, Claudia Heismann, Arthur Borzi, Julian Hülscher, Richard Sanders, Patrick Grunert, and Mark Handy. *Early Miocene tectono-sedimentary shift in the eastern North Alpine Foreland Basin and its relation to changes in tectonic style in the Eastern Alps*

11:45–12:00 - **David Oakley** and Paul Eizenhöfer. *A Method for Recovering Fault Kinematics and Long-Wavelength Surface Uplift from the Inversion of Landscape Features and its Application in the Eastern European Alps*

12:00–12:15 - **Arjan de Leeuw**, Anton Matoshko, Marion Roger, Stephen Vincent, Andrew Morton, Peter van der Beek, Laurent Husson, Oleg Mandic, Marius Stoica, and Wout Krijgsman. *Evolution of the Carpathian Foreland Basin and its link with collision and slab detachment*

12:15–12:30 - **Hannah Pomella**, Thomas Klotz, Anna-Katharina Sieberer, and Istvan Dunkl. *The complex thermotectonic history of the eastern Southern Alps*

12:30–12:45 - **Boštjan Rožič**, Petra Žvab Rožič, Lučka Slapnik, and Luka Gale. *Detailed stratigraphic studies encourage geostructural reinterpretation of the eastern Southern Alps*

12:45–13:00 - **Benjamin Scherman**, Boštjan Rožič, Ágnes Görög, Szilvia Kövér, and László Fodor. *Dinaric thrust sheet over the Slovenian Basin. Where is the contact of Southern-Alps and Dinarides? Structural and stratigraphical constraints.*

13:00–14:30 - Lunch

T9 - The end session. 14:30–15:30

Chairperson: Mark R. Handy

14:30–15:30 - Final remarks and discussion of next Alpine Workshop.

End of Conference.

List of Posters

Poster Session 1 (Session T10).

- P1 - Rift-related differentiation of sedimentary environments: a case study from the Middle Triassic of NW Croatia. Duje Smirčić, Duje Kukoč, Damir Slovenec, Matija Vukovski, Branimir Šegvić, Tonči Grgasović, Marija Horvat, and Mirko Belak
- P2 - Alpine (c. 96 Ma) metamorphism revealed by monazite dating in the Veporic unit, Western Carpathians. Marian Janák, Igor Petřík, Dušan Plašienka, and Nikolaus Froitzheim
- P3 - Evolution of a post-Variscan mid-crustal shear zone in relation to the Tethyan rifting (Ivrea-Verbano Zone, Southern Alps). Matteo Simonetti, Antonio Langone, Mattia Bonazzi, Corvò Stefania, and Matteo Maino
- P4 - Pre-Variscan evolution and high temperature metamorphism of the Oetztal-Stübai Complex (Eastern Alps). Stefano Piccin, Silvia Favaro, Luca Minopoli, Stefano Poli, Gianluca Sessa, Massimo Tiepolo, Luca Toffolo, Simone Tumiat, and Stefano Zanchetta
- P5 - The Santa Lucia Nappe (Alpine Corsica): paleotectonic heritage and deformation history. Giancarlo Molli and Ivan Zibra
- P6 - Tectonic map and structural architecture of the "Briançonnais Zone" (Western Alps). Davide Dana, Stefan M. Schmid, Salvatore Iaccarino, and André Michard
- P7 - Basement-cover tectonostratigraphic relationships in the northern Dora-Maira Massif (Western Alps). Matthieu Roà, Gianni Balestro, Carlo Bertok, Andrea Festa, Marco Gattiglio, and Chiara Groppo
- P8 - Diamonds formation revealed by their internal structure: a case study from Pohorje, Eastern Alps, Slovenia. Tim Sotelšek, Marian Janák, Sorour Semsari Parapari, Nik Gračanin, Sašo Šturm, and Mirijam Vrabc
- P9 - Tectonometamorphic evolution of a long-lived crystalline basement: the northern Dora-Maira Massif in the Germanasca – Pellice Valleys (Western Alps). Davide Dana, Francesco De Cesari, Chiara Montomoli, Salvatore Iaccarino, Daniela Rubatto, Simone Lenci, Alberto Corno, and Rodolfo Carosi
- P10 - Step-by-step microstructural characteristics of coesite-quartz phase transition during exhumation of UHP white-schists from Dora Maira Massif, Western Alps. Tomáš Potočný, Karolina Košmiňská, and Jaroslav Majka
- P11 - Unveiling the Tectono-Metamorphic Framework of northern Dora-Maira Massif (Western Alps): new preliminary data from Pellice and Chisone valleys. Francesco De Cesari, Davide Dana, Chiara Montomoli, Salvatore Iaccarino, Daniela Rubatto, Albero Corno, and Rodolfo Carosi
- P12 - Exhumation of the western part of the Sava suture zone: Insights from Zrinska Gora (Croatia) (withdrawn). Iva Olić, Borna Lužar-Oberiter, Bojan Matoš, István Dunkl, Hilmar von Eynatten, and Tamara Troškot-Čorbić
- P13 - Syn-collisional exhumation of the San Bernardino eclogites (Adula unit, central Alps). Chiara Montemagni, Riccardo Monti, Nadia Malaspina, and Stefano Zanchetta
- P14 - Two Paleozoic orogenic cycles preserved in the Central Alpine basement (Central Alps, Switzerland). Alfons Berger, Schaltegger Urs, Ulyanov Alexey, Rubatto Daniela, Gerdes Alex, Abrecht Jürgen, Spikings Richard, and Wiederkehr Michael
- P15 - Shaping the crustal structure of the SW-Alpine Foreland: Insights from 3D Geological modeling. Dorian Bienveignant, Ahmed Nouibat, Christian Sue, Yann Rolland, Stéphane Schwartz, Matthias Bernet, Thierry Dumont, Jérôme Nomade, Séverine Caritg, and Andrea Walpersdorf
- P16 - Gravitational sliding at the southern end of the western Alpine arc. Claudio Rosenberg, Quentin Brunsmann, and Nicolas Bellahsen
- P17 - The "Digital Structural Model of Italy", the new geological map of Italy, Alps and adjacent areas at a scale of 1:250,000. Paolo Conti and Gianluca Cornamusini
- P18 - Northern Apennines transpressive structuring result of Nubia Plate oblique subduction (Upper Oligocene – Early Miocene). Andrea Cerrina Feroni

Poster Session 2 (Session T11).

P19 - Discovering Earth's Challenge: Insights of Out-of-Sequence Thrusts in Alpine-Himalayan Orogenic Belt. Rajkumar Ghosh

P20 - Relationship between Olivine Fabrics and Seismic Anisotropy in the Yugu Peridotites, Gyeonggi Massif, South Korea. Munjae Park

P21 - The partitioning of present-day deformation in the W-Alps controlled by mantle indentation. Stephane Schwartz, Yann Rolland, Ahmed Nouibat, Christian Sue, Thierry Dumont, Louise Boschetti, Dorian Bienveignant, and Frederic Mouthereau

P22 - Active faulting in the Alps as seen by GNSS: comparative case-studies from the Belledonne and High-Durance fault systems. Andrea Walpersdorf, Christian Sue, Lina Al Najjar, Margot Mathey, and Victoria Mowbray

P23 - Kinematics of the Western Alpine arc: insights from paleomagnetic data and vertical axis rotations. Quentin Brunsmann, Claudio Rosenberg, Nicolas Bellahsen, and Fabio Speranza

P24 - New constraints on the crustal structure and rifting processes of the Liguro-Provençal Basin, Western Mediterranean. Alex Jensen, Eline Le Breton, Sascha Brune, Anke Dannowski, Dietrich Lange, Louisa Murray-Bergquist, and Heidrun Kopp

P25 - The European margin to and from the mantle depth: insights from the Lower Units (Alpine Corsica, France). Maria Di Rosa, Edoardo Sanità, Chiara Frassi, Jean-Marc Lardeaux, Michel Corsini, Michele Marroni, and Luca Pandolfi

P26 - The basins of the Calabria Arc, important constraints for the dynamics of the Tyrrhenian opening. Giulia Penza, Gerardo Cuturello, Algiro Martino, Francesco Muto, Pietro Paolo Pierantoni, and Eugenio Turco

P27 - Updated gravity and geophysical model for the crust and upper mantle transect from the Ligurian Sea to the Po Basin. Tamara Yegorova, Anna Murovskaya, Andrea Artoni, Luigi Torelli, Aasiya Qadir, and Fabrizio Storti

P28 - The reconstruction of middle Miocene-late Pleistocene Tuscan shelf evolution (Tyrrhenian Sea, Italy) through a re-interpretation and geometrical-kinematic validation of seismic profiles. Francesco Mazzarini, Mauro Buttinelli, Francesco Emanuele Maesano, Roberta Maffucci, and Giovanni Musumeci

P29 - The Apulia plate's response to the interaction between Calabrian and Hellenic orogens: tectono-stratigraphic evolution and implications on intra-plate deformation (Northern Ionian Sea, Central Mediterranean). Nicolò Chizzini, Andrea Artoni, Luigi Torelli, Alina Polonia, Luca Gasperini, and Aasiya Quadir

P30 - Building topography in the Northern Hellenides: insights from geomorphic analysis and cosmogenic nuclides. Chiara Bazzucchi, Silvia Crosetto, Paolo Ballato, Hella Wittmann, Claudio Faccenna, and Francesca Rossetti

P31 - Building the Albanides by deep underplating: insights from low-temperature thermochronology and 3D thermokinematic modeling. Francesca Rossetti, Maria Giuditta Fellin, Paolo Ballato, Claudio Faccenna, Maria Laura Balestrieri, Bardhyl Muceku, Stéphane Rondenay, Francesco Maesano, Silvia Crosetto, Çercis Durmishi, Chiara Bazzucchi, and Colin Maden

P32 - Wedge-top basins of the Ukrainian Outer Carpathians and the Northern Apennines as tracers of (almost) coeval evolution of accretionary-collisional orogens. Ganna Murovska, Oleg Hnylko, Andrea Artoni, Fabrizio Storti, and Milena Bohdanova

P33 - Chaotic complexes of the Meliata Unit: biochronology, lithostratigraphy and geochemistry of a mélange near Čoltovo (Western Carpathians, Slovakia). Marína Molčan Matejová, Tomáš Potočný, and Dušan Plašienka

P34 - The long-lasting exhumation history of the Ötztal-Stubai Complex (Eastern European Alps): New constraints from zircon (U-Th)/He age-elevation profiles and thermo-kinematic modeling. Reinhard Wolff, Kyra Hölzer, Ralf Hetzel, and István Dunkl

P35 - Strain Partitioning in Front of the Dolomites Indenter: Field Observations in the Austroalpine Nappe Stack. Martin Reiser

P36 - Neotectonics in the Corsica-Sardinia block: relationships between surface processes and lithospheric structure. Leonardo Casini, Fabrizio Cocco, and Antonio Funedda

P37 - Palaeoceanographic significance of the Jurassic and Cretaceous phosphatic events in geotectonic history of the Pieniny Klippen Basin (Carpathians). Michał Krobicki

TIMETABLE

Sunday, 15 September 2024

18:00-20:00 Registration & Icebreaker party

Monday, 16 September 2024

8:00-9:30 Registration
9:30-10:00 Opening Ceremony

10:00-10:45 Session T1 Oral

10:45-11:15 *Coffee Break*

11:15-13:00 Session T2 Oral

13:00-14:30 *Lunch*

14:30-16:00 Poster Session 1

16:00-16:30 *Coffee Break*

16:30-18:15 Session T3 Oral

Tuesday, 17 September 2024

9:00-10:45 Session T4 Oral

10:45-11:15 *Coffee Break*

11:15-13:00 Session T5 Oral

13:00-14:30 *Lunch*

14:30-16:00 Poster Session 2

16:00-16:30 *Coffee Break*

16:30-18:15 Session T6 Oral

20:00 *Conference Dinner*

Wednesday, 18 September 2024

9:00-10:45 Session T7 Oral

10:45-11:15 *Coffee Break*

11:15-13:00 Session T8 Oral

13:00-14:30 *Lunch*

14:30-15:30 Session T9 - Closing Ceremony