Catania (Italy)
4th -10th July 2022
GEO-THINKING THE FUTURE PLANET

4-10 JULY 2022
DRT 2022

23rd International Conference on Deformation Mechanisms, Rheology and Tectonics

The DRT conference is a biennial international meeting that has been running for more than 40 years, organized and hosted by academic staff from different European universities. DRT is one of the main world forums for presenting and discussing research in the fields of rock deformation, structural geology, rheology, tectonics, microstructures, rock physics and interactions between deformation and metamorphic/diagenetic reactions. The 23rd DRT meeting will be hosted at the Benedictine Monastery, a jewel of the late Sicilian Baroque (UNESCO world heritage list) in Catania (Italy), and it is organized by researchers of the Department of Biological, Geological and Environmental Sciences, University of Catania (Italy) together with colleagues from the INGV (National Institute of Geophysics and Volcanology - Catania). This 23rd edition will keep the tradition of DRT focusing on the study of the deformation behavior, rheology of minerals, rocks and materials, and tectonics.

Looking forward to seeing you in the vibrant sunny Catania!

Università di Catania

Pre-conference excursion to Etna volcano

Post-conference field trips:

Calabrian crystalline basement
&
Hyblean Plateau

Join our community

DRT SOCIETY

European Society for Deformation Mechanisms, Rheology and Tectonics was established on the initiative of Prof. Paul Bons on 2019
http://drt-society.org/

Uni ct SCIENZE BIOLOGICHE, GEOLOGICHE E AMBIENTALI

Organizing Committee

- Eugenio Fazio (DRT secretary - Unict)
- Gaetano Ortolano (DRT treasurer - Unict)
- Rosalda Punturo (DRT 2022 repr. - Unict)
- Andrea Cannata - Unict
- Stefano Catalano - Unict
- Rosolino Cirrincione - Unict
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- Patrizia Fiannacca - Unict
- Rosanna Maniscalco - Unict
- Carmelo Monaco– Unict
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Scientific Committee

The scientific committee is composed by the members of the organizing committee, by the DRT-advisory board, whose members are:

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- Virginia Toy (Ombudsperson) — University of Mainz, Germany
- Tamara de Riese (Early career rep.) — Tubingen University, Germany
- Pengfei Li (Liaison China) — Chinese Academy of Science, China
- Manish Mamtani (Liaison India) — IIT Kharagpur, India
- Rosalda Punturo (2022 rep.) — Catania University, Italy

by an external advisory board, whose members are:

- Ian Alsop — Aberdeen University, UK
- Stefano Branca — INGV – Catania, Italy
- Susanne Buiter — RWTH Aachen University, Germany
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- Toru Takeshita — Hokkaido University, Japan
- Bo Zhang — Peking University, Beijing, China
- Zhongbao Zhao — China Academy of Geol. Science, Beijing, China

and by two early-career researchers:

- Chiara Montemagni — Milano Bicocca University, Italy
- Matteo Simonetti — Turin University, Italy

Thematic Sessions (Chairpersons)

S1. Microtectonics (Visalli R., Zucali M. - 5th July, 9:30-12:45)

S2. Active tectonics: local/regional observations and monitoring methods (Barreca G., Gross F., Gutscher M-A., 5th July, 14:00-15:30)

S3. Numerical & analogue modeling of geological processes (Llorens G. - 5th July, 16:00-17:30)

S4. Tectonics, Structural Geology and geophysical exploration (Caputo R., Gomez-Rivas E., Pepe F. – 6th July, 09:00-11:00)

S5. Mountains building & geodynamics (Bons P., Montomoli C. – 6th July, 11:30-15:30)

S6. Rock rheology and petrophysical properties of crustal and mantle rocks (Grujic D., Ortolano G. -7th July 09:00-11:00)

S7. Interplay between tectonics, crustal melting and granitoid magmatism (Mamtani M. – 7th July, 11:30-12:30)

S8. Innovative and classical approaches in geosciences (Fazio E., Grasemann B. – 7th July, 14:00-15:30)

Confirmed Invited Speakers

1. Rob Butler (Aberdeen University, UK) *S5. "Are collision mountain belts amplifications of pre-orogenic crustal-lithospheric heterogeneities?"*
2. Elena Druguet (Autonomous University of Barcelona, Spain) *S8. "The importance of structural inheritance in polideformed rocks" (Elena Druguet and Jordi Carreras)"*
3. Bernhard Grasemann (Vienna University, Austria) *S2. "Speleothems as recorder of active tectonics: Do they break or not?"*
4. Luca Menegon (University of Oslo, Norway) *S5. "High-stress deformation and short-term thermal pulse preserved in the microstructure of exhumed lower-crustal seismogenic faults"*
5. Claudia Trepmann (Munich University, Germany) *S6. "Interplay of transient high-stress deformation and long-term creep in shear zones"*
6. Paris Xypolias (University of Patras, Greece) *S1. "Complex recrystallization history of quartz at deep subduction levels: examples from Hellenides (Greece)"*
7. Jiří Žák (Charles University, Czech Republic) *S7. "Granite plutons as orogenic strain markers"*

AWARDS (best talk and best poster)

Poster judges

1 advanced-career researcher (on site nomination)
2 early-career researchers (on site nomination)

Talk judges

1 advanced-career researcher (on site nomination)
2 early-career researchers (on site nomination)

Henk Zwart Medal (TecTask - IUGS) award ceremony

Website and Facebook page of DRT Society:

European Society for Deformation Mechanisms, Rheology and Tectonics (drt-society.org)

Drt2022 Catania - Deformation mechanisms, Rheology and Tectonics - Posts | Facebook

CONFERENCE PROGRAMME DRT2022

Monday 4th July: Pre-conference excursion (Etna); icebreaker party (18:00 - Botanic Garden, Via Etnea n. 379, Catania)

Tuesday 5th July: Opening ceremony. Oral and poster sessions (Benedictine Monastery San Nicolò l'Arena, Piazza Dante 32 Catania - Aula Magna)

Wednesday 6th July: Oral and poster sessions, business meeting (16:00), HZM award ceremony, social dinner (19:30)

Thursday 7th July: Oral and poster sessions, best poster & talk awards (12:30), closure ceremony (16:00) & Benedictine Monastery tour (18:00)

Friday 8th & Saturday 9th July: Post-conference field trip (Calabria)

Sunday 10th July: Post-conference excursion (Hyblean plateau – Siracusa and Ragusa districts)

Social events in Catania

- **Social dinner - 6th July 2022 19:30** (this event is open only to delegates who made a reservation during registration process - Benedictine Monastery – Levante Cloister - same location of breaks)
- **Benedictine Monastery guided tour – 7th July 2022, 18:00** (this event is open to all delegates - meeting point in the court near the bookstore, right to the main entrance of the Benedictine Monastery – please see map for location)

Note: Clause on registration for conferences/excursions: no reimbursement of registration is due if the excursion cannot/should not take place (pandemic or other force majeure). If the in-person conference is not possible for the participant, it will be converted into a teleconference, in which case he/she must send a request by email by 15 June 2022 and the quote will be partially refunded of the difference between the in-person and virtual mode. Requests received after the above time limit will not be taken into consideration by the administration (reimbursement times may be long, in any case the payment due will be made within three months from the communication of the interested party).

Scientific/cultural Patronages

- Università degli Studi di Catania
- INGV (Istituto Nazionale di Geofisica e Vulcanologia)
- SGI (Società Geologica Italiana)
- SIMP (Società Italiana di Mineralogia e Petrologia)
- TecTask (IUGS)
- CNG (Consiglio Nazionale Geologi)
- ORGS (Ordine Regionale Geologi di Sicilia)
- Assessorato Turismo Sport e Spettacolo Regione Sicilia

Sponsors

- INGV (Istituto Nazionale di Geofisica e Vulcanologia)
- Università degli Studi di Catania (Unict)
- Topcon Positioning (Italy)

Logistic partners

- Gather
- SGI (Società Geologica Italiana)
- Dipartimento Scienze Biologiche Geologiche Ambientali (Università di Catania)
- Dipartimento Scienze Umanistiche (Università di Catania)
- Funivia dell'Etna
- Comune di Palmi (RC)

List of Hotels & B&B near the congress venue

- Dimora De Mauro - https://www.dimorademauro.com/it
- La Collegiata - https://www.lacollegiata.com
- B&B Palazzo Bruca - http://www.brucaroomhotelcatania.it
- B&B Dimoramuri - https://www.dimoramuri.it
- Hotel Il principe - https://www.ilprincipehotel.com/new/en/
- Hotel Manganelli https://www.manganellipalace.it/

You can ask for special price offer as DRT2022 Catania delegate (University of Catania has special convention for hosts)

Scientific sessions

Talk duration: 12 min. + Q&A duration 3 min.

Poster size: A0 vertical – you will find the code on the panels at poster session - min. res. 300 dpi – max file size 20 Mb – please send your poster within the 25th June by mail to eugenio.fazio@drt-society.org - all posters will be available online on the Gather platform for all congress duration at DRT2022_Catania | Gather)

First day DRT2022 meeting

S1 Microtectonics (Visalli R. & Zucali M. – 5th July, 9:30-12:45)

ORAL PRESENTATIONS

09:30 – 09:55 – Xypolias P.: *Complex recrystallization history of quartz at deep subduction levels: examples from Hellenides (Greece)*

09:55 – 10:10 – Hu Y.: *Folding of a single layer in an anisotropic viscous matrix under layer-parallel shortening*

10:10 – 10:25 – Ortolano G: *The role that mylonitic rocks play in the kinematic reconstruction of the western Mediterranean microplates*

10:25 – 10:40 – Caso F.: *Permian high-temperature deformation in a pre-alpine continental crust: the case of the Valpelline Unit of the Austroalpine Domain (Western Alps, Italy)*

10:40 – 11:00 – *Organization Committee: general information about congress, social events, workshops/webinars, field trips*

11:00 - 11:30 - Break

11:30 – 11:45 – Mamtani M.: *Nanostructures in Oriented Thin Films – From Microtectonics to Nanotectonics and Nanokinematics in Deformed Rocks*

11:45 – 12:00 – Volpe G.: *Frictional control on the base of the seismogenic zone: insights from the Apenninic basement, Central Italy*

12:00 – 12:15 – Grujic D.: *Spatial and temporal stress change along a continental megathrust: case study across the Main Central Thrust in the Himalaya.*

12:15 – 12:30 – Pozzi G.: *The role of fault rock fabric in the dynamics of laboratory faults*

12:30 – 12:45 – Magni S.: *Stylolites In Carbonate Rocks: morphological variations according to host rock textures*

12:45 - 14:00 - Lunch break

S1. POSTERS

1-1A - Bestmann M. - *Influence of deformation and fluids on Ti exchange in natural quartz*

1-2A - Nania L. - *Quantitative textural analysis of sheath fold fabrics*

1-3A - Xypolias P. - *Columnar calcite modification in high-pressure marbles: mechanism and implications*

1-4A - Keppler R. - *Crystallographic preferred orientation analysis of Cretaceous high-pressure units of the Eastern Alps – preliminary results*

1-5A - Kirilova M. - *Origin and structural transformations of graphite in cataclasites from the Alpine Fault zone, New Zealand*

1- 6A - Montemagni C. - *The Simplon Shear Zone (Western Alps): how middle and upper continental crust reacts to prolonged extension*

1-7A - Simonetti M.- *Development of regional-scale shear zones revealed by multidisciplinary investigation: the case study of the Ferriere-Mollières Shear Zone (Argentera Massif, Western Alps)*

S2 Active tectonics: local/regional observations and monitoring methods (Barreca G., Gross F., Gutscher M-A. - 5th July, 14:00 - 15:35)

ORAL PRESENTATIONS

14:00 – 14:20 – Grasemann B.: *Speleothems as recorder of active tectonics: Do they break or not?*

14:20 – 14:35 – Gutscher M-A.: *The FOCUS project: monitoring a submarine strike-slip fault, using a fiber optic strain cable, seafloor geodesy and a land-sea seismological network*

14:35 – 14:50 – Margheriti.: FocusX temporary land-network (FXland), seismic data and preliminary analysis

14:50 – 15:05 – Puglisi G.: *Structural assessment of Mt. Etna from twenty-five years of SAR interferometry*

15:05 – 15:20 – Tringali G.: *The 8 February 2022 Santa Tecla creep event on Mt. Etna: observations from field, InSAR deformation and fault detachment*

15:20– 15:35 – Truttmann S.: *The scaling relations of faults and earthquakes: a multi-scale approach for orogen internal seismic deformation*

15:35 -16:00 - Break

S2. POSTERS

2-8A - Corradino M. - *Late Miocene - Recent evolution of the Squillace Basin (Offshore Calabria, Italy): a multiscale approach to detect* seismogenic faults

2-9A - Giuffrida S. - *GNSS monitoring of Belpasso-Ognina Fault, the southern boundary of Mt. Etna unstable flank*

2-10A - Murphy S. - *Observed deformation along a submarine cable offshore Catania between 2020-2021*

2-11A - Giuffrida S. - *3D modelling of Quaternary faults in Southern Calabria*

2-12A - Monaco C. - *Active tectonic deformation along the Alfeo-Etna Fault System (western Ionian Sea)*

2-1B - Russo D. - *Rheological modelling of the 1979 Montenegro epicentral area*

2-2B - Díaz-Azpiroz M. - *Active tectonics controls the dynamics of the Atlantic-Mediterranean divide in the western Betics (S Spain)*

2-3B - Velázquez Bucio M.M. - *Re-evaluation of the historical surface rupture of 1912 Acambay earthquake, Central Mexico. Morphological, paleoseismological and historical data*

2-4B – Robertson R. - *Investigating controls on co- and post-seismic smectite production in fault cores*

S3. Numerical & analogue modeling of geological processes (Llorens G. – 5th July, 16:00-17:30)

ORAL PRESENTATIONS

16:00 – 16:15 – Kusbach: *Shear localization: analog modeling and anisotropy of magnetic susceptibility*

16:15 – 16:30 - de Riese: *The immense range of deformation structures evolving in highly anisotropic materials*

16:30 – 16:45 – Yu: *Ice modeling indicates formation mechanisms of largescale-folding in Greenland's ice sheet*

16:45 – 17:00 – Bistacchi :*Counterintuitive fracturing in a multilayer under extension: natural examples and numerical modelling*

17:00 – 17:15 - Spilotro: *Kinematics of direct faulting in the Bradanic Foredeep (Southern Italy) retrieved trough geomatic tools and faulting activity investigated by space-borne multi-temporal SAR interferometry*

17:15 – 17:30 – Massaro: *Mechanical characterisation of a new Sand-Hemihydrate rock-analogue material: Implications for modelling of brittle crust processes*

S3. POSTERS

3-5B - Llorens: *For how long can crystallographic preferred orientations be preserved under flow transitions?*

3-6B - Hao B. - *Full-field numerical simulation of dynamic recrystallisation in polycrystalline halite*

3-7B - Díaz-Azpiroz M. - *Analogue models of progressive arcs: characterization of finite strain in a ductile layer*

3-8B - Yu Y. *The effect of dynamic recrystallisation on olivine microstructures: a numerical study*

3-9B - Froemchen, M. - How do lithospheric thickness and strength variations facilitate the breakup of ancient cratonic lithosphere?

3-10B - Rogowitz A. - *The effect of the volume fraction of garnet on strain localization mechanisms in eclogite: Insights from high temperature – high pressure deformation experiments and numerical simulations.*

3-11B - Sachau T. - *Modeling the influence of a non-planar bedrock topography on flow dynamics and steady state geometry of ice sheets*

Second day DRT2022 meeting

S4. Tectonics, Structural Geology and geophysical exploration (Caputo R., Gomez-Rivas E., Pepe F. – 6th July, 09:00-11:00)

ORAL PRESENTATIONS

09:00 – 09:15 – Flórez-Rodríguez, A. G. *Linking fluid temperature and fault kinematics in Picos de Europa (NW Spain)*

09:15 – 09:30 – Gambino S. *Brittle vs. ductile deformation in the Western Ionian Basin: insights from seismic reflectors pattern and sequential restoration methods.*

09:30 – 09:45 – Acosta L. *Characterization of fracture patterns in Lower Cretaceous Platform carbonates: examples from the Iberian Chain*

09:45 – 10:00 – *Seagap fault: example of a large-scale long-lived crustal structure, west Somali basin, offshore Tanzania.*

10:00 – 10:15 – Cao D.-S: *Natural fractures controlled by strike-slip faults in ultra-deep carbonates: A case study of the Middle-Low Ordovician in the Tarim Basin, China*

10:15 – 10:30 – De Siena L.: *Seismic response to geodynamic processes and magmatism in the southern part of the Tyrrhenian Sea*

10:30 – 10:45 – Köhler S.: *Mesozoic stress cycles in the wedge between two collision events*

10:45 – 10:50 – Gayrin P. *Semi-automated fault extraction and quantitative structural analysis from DEM data of the Magadi and Natron basins, East African Rift System*

10:50 - 10:55 - Alhejoj I *Mesoscopic structural elements in Jordan and their possible mechanisms of formation*

10:55 – 11:00 – *Q&A – Discussion*

11:00 - 11:30 - Break

S4. POSTERS

4-1A - Naaman I. - *Morphological Characteristics and properties of Hydrothermal Breccia*

4-2A - Bons P.D. - *Fold and strain analysis of the large North-East Greenland Ice Stream*

4-3A - Syahputra R. - *A protracted and multiphase transition of the Cadomian active margin to a failed rift setting in northern Gondwana*

4-4A - González-Esvertit E. - *Introducing the Iberian Evaporite Structure Database (IESDB)*

4-5A - Aiken C. - *TWiST, CAST, and Drill: Three projects investigating geological hazards in the Northern Caribbean*

4-6A - Robledo F. - *Exploring fault patterns from the interpretation of high-resolution three-dimensional seismic reflection data*

4-7A - González-Esvertit E. -- *Structural analysis of giant quartz veins from the Eastern Pyrenees (SW Europe)*

4-8A - Díaz-Azpiroz, M. - *Wrinkle ridges and other structures related to the Deuteronilus shoreline in Utopia Planitia, Mars*

S5. Mountains building & geodynamics (Bons P. & Montomoli C. – 6th July, 11:30-15:30)

ORAL PRESENTATIONS

11:30 – 11:45 - Cofrade G.: *Dating the halokinesis at the frontal structures of the Serres Marginals Thrust Sheet: first results from Les Avellanes area, NE Spain*

11:45 – 12:00 – Fazio E.: *Petro-structural mapping of the Palmi shear zone (Calabria), a combined field and aerial-based survey*

12:00 – 12:15 Musso Piantelli F.: *Inversion of a nappe-basement system – a 4D reconstruction*

12:15 – 12:30 Yuzhen F.: *Subduction erosion associated with Paleo-Tethys closure: Insights from Early Paleozoic accretionary complexes in western Yunnan, SE Tibetan Plateau*

12:30 -12:45 Gemignani L.: *Response of drainage pattern and basin evolution to tectonic and climatic changes along the Dinarides-Hellenides orogen*

12:45 - 14:00: Lunch break

14:00 – 14:15 - Wicker V.: *Petro-structural investigations of the HP-LT Quartzite-Phyllite (QP) nappe in the northern Peloponnese, Southern Hellenides, Greece*

14:15-14:30 - Sanità E.: *Tectono-metamorphic evolution of the Briançonnais Units along the southwestern edge of the Alps: Constraints from the Marguareis Massif (Western Ligurian Alps)*

14:30 – 14:45 - Jouvent M.: *Growth and evolution of the Saxothuringian orogenic wedge and its extensional collapse: the Variscan P-T-t record of the metasediments of Erzgebirge, Bohemian Massif*

14:45 – 15:05 Menegon L.: *High-stress deformation and short-term thermal pulse preserved in the microstructure of exhumed lower-crustal seismogenic faults*

15:05 – 15:25 Butler RWH.: *Are collision mountain belts amplifications of pre-orogenic crustal-lithospheric heterogeneities?*

15:25 – 15:30 – *Q&A – Discussion*

15:30 - 16:00 – Break

16:00 -17:30 – General Assembly & Henk Zwart Medal award ceremony

17:30-18:00 - Lecture "From c-axes to grain size – 40 years of image analysis" by Renée Heilbronner (HZM recipient)

S5. POSTERS

5-9A - Kotowski, A.J. - *Subduction, underplating, and return flow recorded in the Cycladic Blueschist Unit exposed on Syros, Greece*

5-10A - de Paz-Álvarez, M.I. - *Fluid flow at the base of Variscan thrust sheets in the Cantabrian Zone (NW Iberia)*

5-11A - Petroccia A. - *In shear we "thrust": deformation and temperature variation along a thrust-sense shear zone in the hinterland-foreland transition zone of the Sardinian belt*

5-1B - Sanità E. - *Structural architecture and kinematics of the Helminthoid Flysch-Briançonnais Units coupling: a key for deciphering the tectonic evolution of the southwestern Alps*

5-2B - Žák J. - *Reconstruction of dismembered Ocean Plate Stratigraphy (OPS) in the Blovice accretionary complex, Bohemian Massif*

5-3B - Expósito I. - *Contrasting orogenic grain and kinematic patterns along the Betics fold-and-thrust belt as potential expression of deep-seated mechanisms*

5-4B - Díaz-Azpiroz M. - *Strain partitioning at the active mountain front of the western Betics (southern Spain)*

5-5B - Pengfei Li - *Variable structural patterns along the Irtysh Shear Zone in Central Asia: a result of arc-arc collision at different crustal levels?*

Third day DRT2022 meeting

S6. Rock rheology and petrophysical properties of crustal and mantle rocks (Grujic D. & Ortolano G. – 7th July, 9:00-11:30)

ORAL PRESENTATIONS

09:00 – 09:25 – Trepmann C.: *Long-term creep and transient high-stress deformation in shear zones*

09:25 – 09:40 - Pongrac: *Influence of H2O on deformation behavior and microstructure of quartz: deformation experiments on Tana-quartzite*

09:40 – 09:55 – Keppler: *Elastic anisotropies of deformed upper crustal rocks in the Alps*

09:55 – 10:10 – Fazio M.: *Permeability evolution of Bentheim sandstone at georeservoir conditions*

10:10 – 10:25 – Rogowitz A.: *Panta rhei…But how? Deformation mechanisms at the eclogite type locality (Saualpe-Koralpe Complex, Eastern Alps, Austria).*

10:25 – 10:40 - Boneh: *Deformation mechanism and textural formation of hornblende – Insights from natural samples and laboratory experiments*

10:40 – 10:55 – Vinciguerra S.: *Multiscale analysis of physical rock properties at Stromboli Volcano: what controls the frictional properties?*

10:55 – 11:00 – *Q&A – Discussion*

11:00-11:30 - Break

S6. POSTERS

6-1A - Brückner L.M. - *Deformed pseudotachylytes from the Silvretta basal thrust – stress-strain conditions during interseismic periods*

6-2A - Chakraborty R. - *Variation in rock fabric with depth in the upper 1 km of the earth's crust and its implications for mineralization – a study from the Singhbhum region (India)*

6-3A – Dana D. - *Frictional-viscous cycles in the Brossasco-Isasca Unit (Dora Maira Massif, Western Alps) metagranitoids: from field mapping to microstructures*

6-4A – de Riese T. - *High-strain deformation of ice Ih*

6-5A – De Caroli S. - *Role of amphibole fabric formation and the rheology of subduction shear zones, two examples from exhumed blueschists in the Ryukyu arc (SW Japan) and Lento Unit (Corsica, France)*

6-6A – Hawemann F. - *Seismic fracturing under high grade conditions in a subduction zone (Central Cordillera, Colombia)*

6-7A – Yokoyama H. - *Reconstruction of the deformation environment of Shajigami shear zone at eastern margin of Abukuma Mountain, Northeastern Japan*

6-8A – Nania L. - *Microstructures superposition in marble mylonites: a tool to infer the progressive deformation of the South Tibetan Detachment System in Himalaya*

6-9A – Pozzi G. - *Slip velocity and fault stability in serpentine-rich experimental faults*

6-10A - Závada P. - *Anisotropy of magnetic susceptibility as a tool for understanding deformation of salt – example of a structural record in Kuh-e-Namak (Dashti) salt diapir*

6 – 11A - Tholen S. - *Deformation, reactions and phase mixing in the upper mantle shear zone of northwestern Ronda (Spain)*

S7. Interplay between tectonics, crustal melting and granitoid magmatism (Mamtani M. – 7th July, 11:30-12:40)

ORAL PRESENTATIONS

11:30 – 11:55 - Žák J.: *Granite plutons as orogenic strain markers*

11:55 – 12:10 - Torvela T.: *Multi-scale perspectives to strain partitioning within partially molten crust: weakening or strengthening behaviour?*

12:10 – 12:25 - Franciele Andres: *The Porto Belo Complex orthogneisses and granitoids as markers of collisional and post-collisional transpressive settings in the northern segment of the Dom Feliciano Belt, southern Brazil*

12:25 – 12:40 - Russo D.: *Insights from AMS study on tectonic evolution of the Serre Batholith (Southern Italy)*

12:40 – 12:45 – *Q&A – Discussion*

12:45 -14:00: Lunch break

S7. POSTERS

7-1B - Jonah J. - *Tectonic setting and magnetic fabric of the Central Bohemian dike swarm*

7-2B – Spagnoli M. - *Segregation and extraction of late magmatic melt and fluids in mushes: experimental approach at high pressure*

7-3B - Caso F. - *Microstructural and chemical analysis of biotite-gneiss from the Boulder Creek batholith (Front Range, Colorado, USA)*

7-4B - Závada P. - *Melt softening driven return flow of UHP metagranitoids in continental subduction channel*

7-5B - Russo D. - *Relationships between magma emplacement, tectonics and metasomatism in late Variscan granitoids (Peloritani Mountains, southern Italy)*

S8. Innovative and classical approaches in geosciences (Fazio E. & Grasemann B. – 7th July, 14:00-15:30)

ORAL PRESENTATIONS

14:00 – 14:05 - TOPCON (sponsor) *about products & services.*

14:05 – 14:30 - Druguet E. & Carreras J.: *The importance of structural inheritance in poly-deformed rocks.*

14:30 – 14:45 - Arienti G. et al.: *The importance of structural data in constraining 3D implicit structural models: the Northwestern Alps case study, Italy.*

14:45 – 15:00 - Forzese M. et al.: *Digital Outcrop Model (DOM): method vs. aim.*

15:00 – 15:15 - Thiele S.T. et al.: *Hyperspectral outcrop characterization for structural mapping.*

15:15 – 15:25 - Toy V. et al.: *How should we translate Structural Geology and Tectonics-specific terms to other languages?*

15:25 – 15:30 – *Q&A – Discussion*

15:30-16:00 - Break

S8. POSTERS

8-6B - Volpe G. - *Brittle microstructures of experimental faults in phyllosilicate-granular mixtures.*

8-7B - Casiraghi S. - *Predicting hydraulic properties in poly-deformed basement rocks with an outcrop analogue approach.*

8-8B – Druguet E. - *Applying a triclinic transpression model to a complex high strain zone at Cap de Creus (Eastern Pyrenees). Preliminary results.*

8-9B - Sleath et al.: *Using virtual outcrops to investigate strain compatibility when thrusts deform stiff beams – a new model for thrust fault formation.*

8-10B - Fazio E. et al.: *The use of 3D virtual outcrop models for teaching purposes: an example from Cap de Creus folded quartzites.*

8-11B - Stipp M. et al.: *Tectonometamorphic development of the Eckergneis Complex (Harz Mountains, Germany).*

Workshops and webinars (in person & online)

W2. (6th July – 14:00-16:00) Workshop "Flank stability and structure on volcanoes": Bonforte A. (INGV Catania) - Di Traglia S. (OGS Trieste) It will be focused on studies, datasets, methodologies, models and, in general, state of the art of the current knowledge about the stability of volcanic edifices in the World. The workshop will last 2 hrs and will be introduced by 3 or 4 invited talks in the first hour, to introduce some methods, models, applications, and then, in the second hour, participants will present some case studies and/or open questions to be discussed together interactively.

W3. (7th July – 9:00-11:00) Webinar "Present-day kinematics of Sicily from a PS-InSAR analysis of Sentinel-1 data": Henriquet M. (CEREGE, Aix-en-Provence) The Quaternary geodynamics of Sicily is controlled by the slow convergence of the Nubian-Eurasian plates and the rapid retreat of the Ionian slab along the volcanically and seismically active Eastern Sicilian Margin. We processed Sentinel-1 satellite radar images with a Permanent-Scatterer approach to provide an island-wide quantification of surface displacements at a high spatio-temporal resolution over the 2015-2020 timespan. The calculated mean surface velocities along the satellite line-of-sight were converted into the Nubia and ITRF2014 reference frames by using GNSS velocities derived from MAGNET time series. The resulting pseudo-3D velocity field confirms the general uplift of the Nebrodi-Peloritani range (1.5±0.5 mm/yr) and its differential motion relative to mainland Sicily along the Cefalù-Etna seismic zone. The vertical velocity field in the Eastern Hyblean region also reveals a long-wavelength eastward down-bending of the margin, with coastal vertical rates 2-3 mm/yr lower than the Quaternary, and centered on the inferred epicentral area of the 1693 Noto earthquake. The low activity of Western Sicily is, however, in agreement with the previously estimated Quaternary rates. Fast transient processes are also captured over the studied period (2015-2020), notably the tectono-magmatic activity of Mount Etna, as well as gravitational instabilities and anthropogenic ground subsidence all over Sicily.

W4. (6th July - 9:00-11:00) Workshop "Quantitative microstructural analysis": Ortolano G. (University of Catania) – Visalli R. (University of Catania): the workshop intends to furnish skills about informatic instruments, use of devices, and semiautomated workflows able to facilitate the quantitative restitution of mineralogical, compositional, and fabric arrangement of rocks at the microscale. This result will be achieved by the combined use of two ArcGis based package tools, namely: a) The Quantitative - X-Ray Map Analyzer (Q-XRMA), based on the statistical processing of X-ray images, able to recognize the minerals and sub-mineral phases, potentially calibrating each pixel of the classified images; b) The Micro-Fabric Analyzer (MFA) useful for the quantitative extrapolation of rock microstructural features, that takes advantage of both of the characteristics of the X-ray images and the optical images features. The Q-XRMA/MFA combined effects allow thus quantifying fabric parameters subdivided per mineral type, automating the numerical fabric data extrapolation at the thin section scale in a GIS environment.

W5. (5th July . 14:00 – 16:00) Workshop "Virtual outcrop & 3D models": Fazio E. (University of Catania) – Thiele S. (Freiberg) – Lanzafame G. (University of Catania): Part 1 – Aerial survey & virtual structural geological mapping (Fazio E.): a brief introduction about aerial images acquisition up to the recognition of geological structures and their orientation on virtual outcrops will be made. A workflow through the various steps consisting of drone planning mission (PiX4D free software), passing through 3D virtual outcrop reconstruction (Agisoft Metashape) to virtual structural-geological analysis (GeoVis3D) will be shortly delineated. **Part 2: Mapping cliffs with UAVs and hyperspectral cameras - challenges, advances and opportunities (Thiele S.):** cliffs present spectacular and revealing geological exposures for detailed and spatially continuous structural mapping, but are difficult to investigate in detail due to access limitations and safety concerns. Uncrewed Aerial Vehicles (UAV) and Structure from Motion Multi-View Stereo (SfM-MVS) workflows provide a powerful new tool for mitigating these access issues, but have required the development of a new generation of quantitative, objective and reproducible digital mapping methods. This session will cover developments in this area, including: (1) fusing hyperspectral data and digital outcrop models for enhanced lithological and structural mapping; (2) semi-automatic approaches for delineating structures and contacts in dense 3-D point clouds, and; (3) methods for estimating 3-D orientation (strike and dip) and associated uncertainty. Finally, implementations of these methods in CloudCompare and the hylite python package will be demonstrated. **Part 3: Computed microtomography and image analysis: 3D investigations at micron scale (Lanzafame G.):** this part of the workshop aims to show the main techniques of computed microtomography and image analysis to unveil the 3D structure of geologic materials at micron scale and to retrieve, from 3D images, qualitative and quantitative information about the phases composing the investigated materials. Required software: ImageJ (or Fijii) available at https://imagej.net/software/fiji/downloads.

Field Trips

Meeting Point (15 min. walk from congress venue): Via Dusmet – Catania (37.50198072741107, 15.089288212021131); Plus code: G32Q+QP Catania, Città metropolitana di Catania
(please arrive 15 min. before departure to facilitate check-in and passenger loading)

Pre-conference field trip: Etna volcano	**Post-conference field trip: Calabria crystalline complexes**	**Post-conference field trip: Hyblean Plateau**
Monday 04-07-2022	**Friday 08 & Saturday 09-07-2022**	**Sunday 10-07-2022**
Dep. 08:00; Arr. 17:30	Dep. 8:00 AM; Arr. 21:00* * This is a rough estimate as it is necessary to take the Calabria - Sicily ferries (scheduled departures every 40 minutes)	Dep. 08:00; Arr. 17:30
Volcano-tectonics evidences (Field trip leaders: Puglisi, Monaco, Punturo, De Guidi)	From ductile to brittle deformation: crystalline basement: Palmi Shear Zone (Field trip leaders: Cirrincione, Fazio, Ortolano) - Rovaglioso syn-tectonic granitoids (Field trip leaders: Fazio, Fiannacca) & Messina Strait fault system (Field trip leaders: Monaco, Barreca).	Faults and sedimentary basins (Field trip leaders: Catalano, Maniscalco)

Aerial view of the Catania city center with meeting point location (in red): Via Dusmet – Catania (37.50198072741107, 15.089288212021131); Plus code: G32Q+QP Catania, Città metropolitana di Catania

Route (ca. 15 minutes by walk) from the Benedictine Monastery (DRT2022 venue) to the meeting point location for field trips: Via Dusmet – Catania (37.50198072741107, 15.089288212021131); Plus code: G32Q+QP Catania, Città metropolitana di Catania.

FT1 (Etna – 4th July 2022)

- Morning
  - Departure from Catania (Via Dusmet) and arrival at Etna Sud
  - Transfer by funicular to an altitude of 2500 metres.
  - Itinerary on foot: Piccolo Rifugio, Cratere del Laghetto, Schiena dell'Asino, Targa Malerba, Grotta Pitagora, "Piano del Vescovo" forest entrance: Topics of interest: crater area, dykes, Valle del Bove, eruptive apparatus and flows.

- Lunch (Terrazza dell'Etna Restaurant; Plus code: MXXX+VF Nicolosi, Città metropolitana di Catania).

- Afternoon
  - Transfer to Acireale - Santa Tecla- Visit to the Timpe. Topics of interest: structures linked to current tectonics. Return to Catania.

Etna lava flows, lava fountains and ash plumes

Notes and suggestions: even though in summertime the temperature can be pretty warm, it can be a little fresher on Etna due to its altitude. We suggest you dress in layers and wear comfortable clothes; a pair of light long pants, a t-shirt and a light cardigan, as well as a wind-stopper water proof jacket and hiking boots with a good grip (sandals and open shoes to be avoided). Bring with you two hats, to protect you from cold and from warm sun, respectively, and a sunblock. Do not forget to bring with you a backpack with water and a light snack.

FT2 (Calabria – 8-9th July 2022)

The field-trip will take place at altitudes from 0 to 500 m.a.s.l. The weather is expected to be warm and sunny (30-35°C) in early July; it is advised to bring sunscreen in addition to wearing appropriate clothing and shoes. Stops are roadside, outcrops are often near the coastline or, in a few cases, accessible by low difficulty 500 m walks. The cost includes transportation, hotel accommodation, dinner (1st day) and packed lunch (1st & 2nd days).

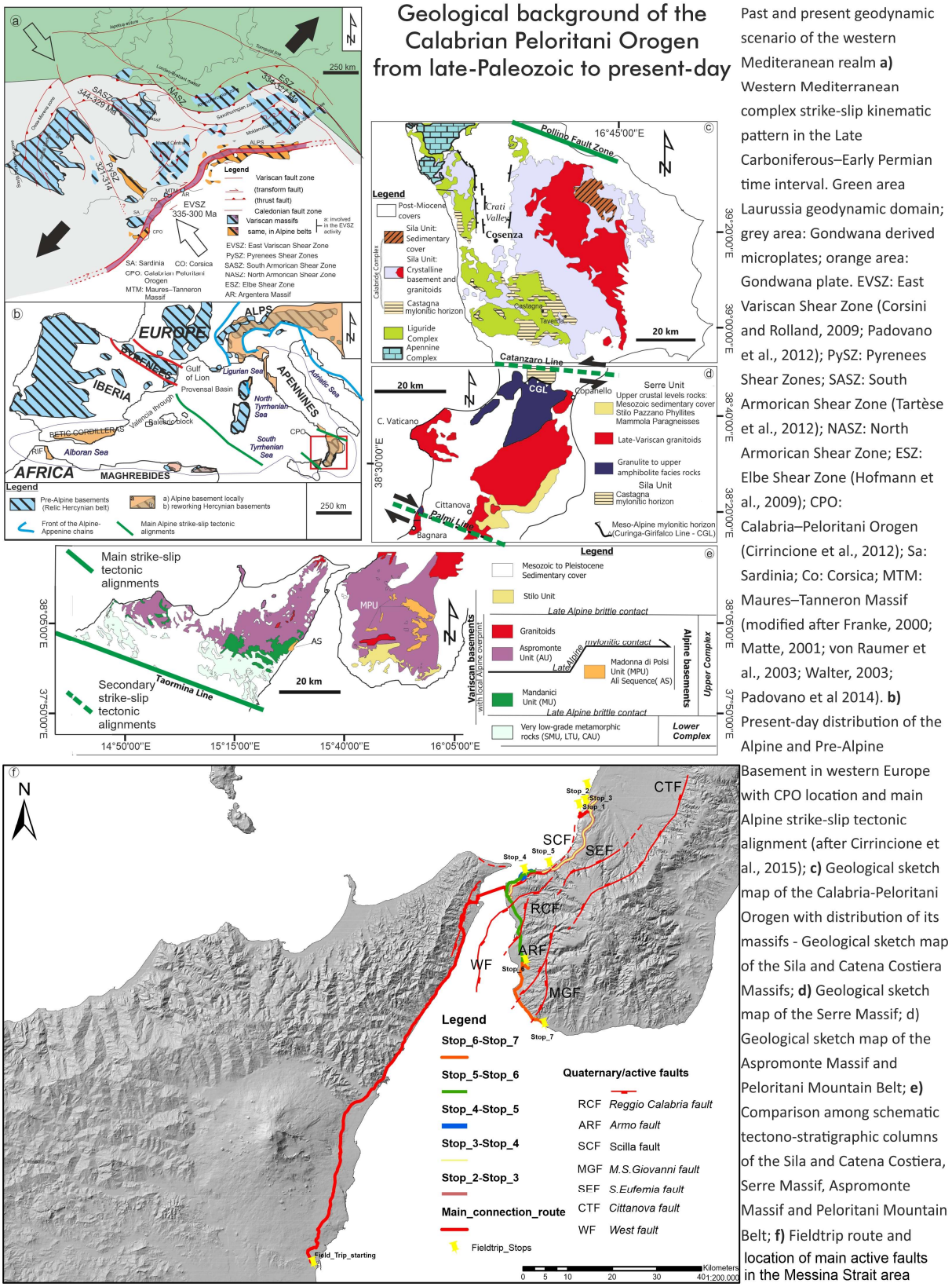
1st day (8th July – Stops 1-3)

- Morning
  - Departure from Catania and arrival at Rovaglioso outcrop. Topics of interest: Variscan magmatism interplay with tectonics – Alpine shear zone reworking (pseudotachylytes). Transfer to Palmi dock by bus. Transfer by boats to Palmi shear zone stacks.
- Lunch (Ulivarella Restaurant)
  - Palmi shear zone outcrops at the Tonnara beach. Topics of interest: kinematic indicator; eye-type folds; folding interference patterns. Alpine shear zone reworking (pseudotachylytes).
- Afternoon
  - Transfer to Arcobaleno Hotel (Palmi – RC)
  - Guided tour and visit to the Taureani archeological site. Return to the hotel

Palmi shear zone outcrop: interference folding pattern; dx kinematic indicators; migmatites.

2nd day (9th July – Stops 4-7)

- Morning
  - Transfer to Scilla (RC); Topics of interest: raised Holocene wave-cut platfom; view of the Scilla village. Transfer to Santa Trada (RC) site; Topics of interest: Scilla Fault; Messina Strait tectonic features; marine terraces; Transfer to Oliveto village. Topics of interest: Armo Fault; syn-tectonic Quaternary sequence.
- Lunch (bag: meal/drink provided by organization)
- Afternoon
  - Transfer to Capo dell'Armi – Topics of interest: uplifted Holocene beach rock, millstones as indicators of relative sea-level change.
  - Visit to Museum of Reggio Calabria (Bronzes of Riace) – drop-off at Villa San Giovanni railway station.
  - Return to Catania.



Past and present geodynamic scenario of the western Mediteranean realm **a)** Western Mediterranean complex strike-slip kinematic pattern in the Late Carboniferous–Early Permian time interval. Green area Laurussia geodynamic domain; grey area: Gondwana derived microplates; orange area: Gondwana plate. EVSZ: East Variscan Shear Zone (Corsini and Rolland, 2009; Padovano et al., 2012); PySZ: Pyrenees Shear Zones; SASZ: South Armorican Shear Zone (Tartèse et al., 2012); NASZ: North Armorican Shear Zone; ESZ: Elbe Shear Zone (Hofmann et al., 2009); CPO: Calabria–Peloritani Orogen (Cirrincione et al., 2012); Sa: Sardinia; Co: Corsica; MTM: Maures–Tanneron Massif (modified after Franke, 2000; Matte, 2001; von Raumer et al., 2003; Walter, 2003; Padovano et al 2014). **b)** Present-day distribution of the Alpine and Pre-Alpine Basement in western Europe with CPO location and main Alpine strike-slip tectonic alignment (after Cirrincione et al., 2015); **c)** Geological sketch map of the Calabria-Peloritani Orogen with distribution of its massifs - Geological sketch map of the Sila and Catena Costiera Massifs; **d)** Geological sketch map of the Serre Massif; d) Geological sketch map of the Aspromonte Massif and Peloritani Mountain Belt; **e)** Comparison among schematic tectono-stratigraphic columns of the Sila and Catena Costiera, Serre Massif, Aspromonte Massif and Peloritani Mountain Belt; **f)** Fieldtrip route and location of main active faults in the Messina Strait area

Itinerary of the two days field trip – Calabrian crystalline basement

FT3 (Hyblean Plateau – 10th July 2022)

The field trip focuses on fault systems, controlling the western margin of the Hyblean Plateau and forming the Scicli Line, respectively. Along the western margin, separating the Gela Foredeep from the Hyblean forebulge, we will examine the style of the incipient contractional deformation that affected the foreland sequences before the rise of the modern plateau.

Flat-on-ramp geometry within the Oligocene carbonate sequence (Leonardo Mb. of the Ragusa Fm.) of the Hyblean Foreland

Some spectacular examples of the morphostructural evidence of the fault are the main object of the analysis of the impressive Quaternary Scicli Line, crossing the Ragusa sector of the plateau.

Dragged Miocene carbonate levels along the Scicli Line, to the south of Ragusa

Flat-on-ramp geometry within the Oligocene carbonate sequence (Leonardo Mb. of the Ragusa Fm.) of the Hyblean Foreland

SAFETY NOTES

These notes are provided to participants on field excursions associated with the DRT 2022 meeting. General comments are followed by some specific notes concerning each locality.
You are each responsible for your own safety and that of others on the field excursions. The field leaders are not expected to provide first aid – ensure you have adequate supplies for your own needs.
No safety advice or hazard assessment can be comprehensive. All participants should remain vigilant. Please follow instructions from the trip leaders. If you are not content with any safety issues please raise them either to the leaders or to the group as a whole straight away. **If you have any personal health issues that may affect your participation then please advise the trip leaders (in confidence) – no activities are compulsory!**

Please read the daily notes before departure.

General medical issues
During field days we will be a long way (several hours) from 24-hour medical facilities. Although there are prescription chemists etc. in Palmi (RC), please bring any medicines you need with you.

Covid-19
Our priority is the health and well-being of all participants in the meeting. During DRT2022 and according to present Italian government guidance and protocols at Catania University we suggest measures to help prevent the spread of the virus and keep everyone safe. These may also be obligatory in some settings (e.g. underground, coach, etc.).

Social distancing:
Social distancing is recommended, however if this will not be possible (on the coach, in meeting and poster rooms, etc.) the wearing of FFP2 face masks is requested.

General hygiene measures:
Workshops areas are regularly cleaned, especially reception areas and common touch points.
Hand sanitizer will be made available for participants to use.

Transport.
We will be travelling in self-drive vehicles and coaches. Please do not distract the drivers. All vehicles are non-smoking. Please take care not to leave rolling objects on the floors – which might impede vehicle controls. Take special care when exiting vehicles, watching for other road traffic.

Outcrop notes

Seaside, roadside and near roadside outcrops. Take particular care with traffic (cars, boats) at all locations.

SOS Emergency call number: 112

Hospitals in Catania (CT) Open 24h

Presidio Ospedaliero Garibaldi-Centro: Piazza Santa Maria di Gesù, 5 -
95123 Catania +39 (0) 95 7591111

Azienda Ospedaliero Universitaria Policlinico "G.Rodolico - San Marco", via
Santa Sofia 86C, building 7 - 95123 Catania

Azienda Ospedaliera Cannizzaro
Via Messina, 829 +39 (0) 95 726 1111

Ospedale San Marco: Viale Carlo Azeglio Ciampi, 95121 Catania CT
Phone: +39 (0) 95 743 1111

Hospitals in Reggio Calabria (RC)

Morelli Hospital
Europa Street - 89133 Reggio Di Calabria (Reggio di Calabria) +39 0965 397111

Ospedale Civile Francesco Pentimalli
Via Gaetano Donizzetti 6 - 89015 Palmi (RC) +39 0966 45471

Giovanni XXIII Hospital
Madame Curie Street - 89013 Gioia Tauro (RC) +39 0966 4181

Hospital Tiberio Evoli - Melito P.S.
Viale Garibaldi 129 - 89063 Melito Di Porto Salvo (RC) +39 0965 774111

Hospitals in Ragusa (RG)

Ospedale Maggiore Emergency room
Via della Resistenza Partigiana 1 - 97015 Modica (RG) 0932 448111

Ospedale Guzzardi -Pronto Soccorso
Via Papa Giovanni XXIII, 97019 Vittoria (RG) +39 0932981111

The DRT2022 Organizing Committee, June 2022

Monday 04/07/2022	Tuesday 05/07/2022			Wednesday 06/07/2022			Thursday 07/07/2022		
	Sessions	Workshops	Posters	Sessions	Workshops	Posters	Sessions	Workshops	Posters
9:00	09:00 - 09:30 Welcome by DRT Society President and Hosting Institution			09:00 - 11:00 S4 Tectonics, Structural Geology and geophysical exploration	09:00 - 11:00 W4 - Quantitative microstructural analysis		09:00 - 11:00 S6 Rock rheology and petrophysical properties of crustal and mantle rocks	09:00 - 11:00 W3 - Present-day kinematics of Sicily from a PS-InSAR analysis of Sentinel-1 data	
10:00	09:30 - 11:00 S1 Microtectonics								
11:00	11:00 - 11:30 Break		11:00 - 11:30 S1 - S2 - S3	11:00 - 11:30 Break		11:00 - 11:30 S4 - S5	11:00 - 11:30 Break		11:00 - 11:30 S6 - S7 - S8
12:00	11:30 - 12:45 S1 Microtectonics			11:30 - 12:45 S5 Mountains building & geodynamics			11:30 - 12:30 S7 Interplay between tectonics, crustal melting and granitoid magmatism		
							12:30 - 12:45 Best poster award (PhD student)		
13:00	12:45 - 14:00 Lunch break		12:45 - 14:00 S1 - S2 - S3	12:45 - 14:00 Lunch break		12:45 - 14:00 S4 - S5	12:45 - 14:00 Lunch break		12:45 - 14:00 S6 - S7 - S8
14:00	14:00 - 15:30 S2 Active tectonics: local/regional observations and monitoring methods	14:00 - 16:00 W5 - Virtual outcrop & 3D models		14:00 - 15:30 S5 Mountains building & geodynamics	14:00 - 16:00 W2 - Flank stability and structure on volcanoes		14:00 - 15:30 S8 Innovative and classical approaches in geosciences		
15:00	15:30 - 16:00 Break		15:30 - 16:00 S1 - S2 - S3	15:30 - 16:00 Break		15:30 - 16:00 S4 - S5	15:30 - 16:00 Break		15:30 - 16:00 S6 - S7 - S8
16:00	16:00 - 17:30 S3 Numerical & analogue modeling of geological processes			16:00 - 17:30 General Assembly - European DRT Society & Henk Zwart Medal (HZM) award cerimony (TecTask - IUSG)			16:00 - 18:00 Closure ceremony & Benedictine Monastery Tour		
17:00	Evening reception		17:30 - 18:00 S1 - S2 - S3	17:30 HZM lecture		17:30 - 18:00 S4 - S5			
18:00	Close			Close			Close		
19:00	18:00 - 19:30 Icebreaker & Registration								
20:00	Gather			Conference Dinner			TOPCON		

Venue: Monastero Benedettini San Nicolò l'Arena, Piazza Dante, 32 Catania (IT)

Botanic garden - Via Etnea, 397

Registration desk at the Aula Magna Room entrance

Slides center: room 254

Oral sessions	Aula Magna (Santo Mazzarino)
Workshops	Rooms 252 & 254
Poster onsite	Corridor next to Aula Magna
Lunch & breaks	Chiostro di Levante

All posters (A0 - vertical; pdf/jpg; min. res. 300dpi) are available in virtual mode during all days conference (Gathertown)

Wardrobe: room 268

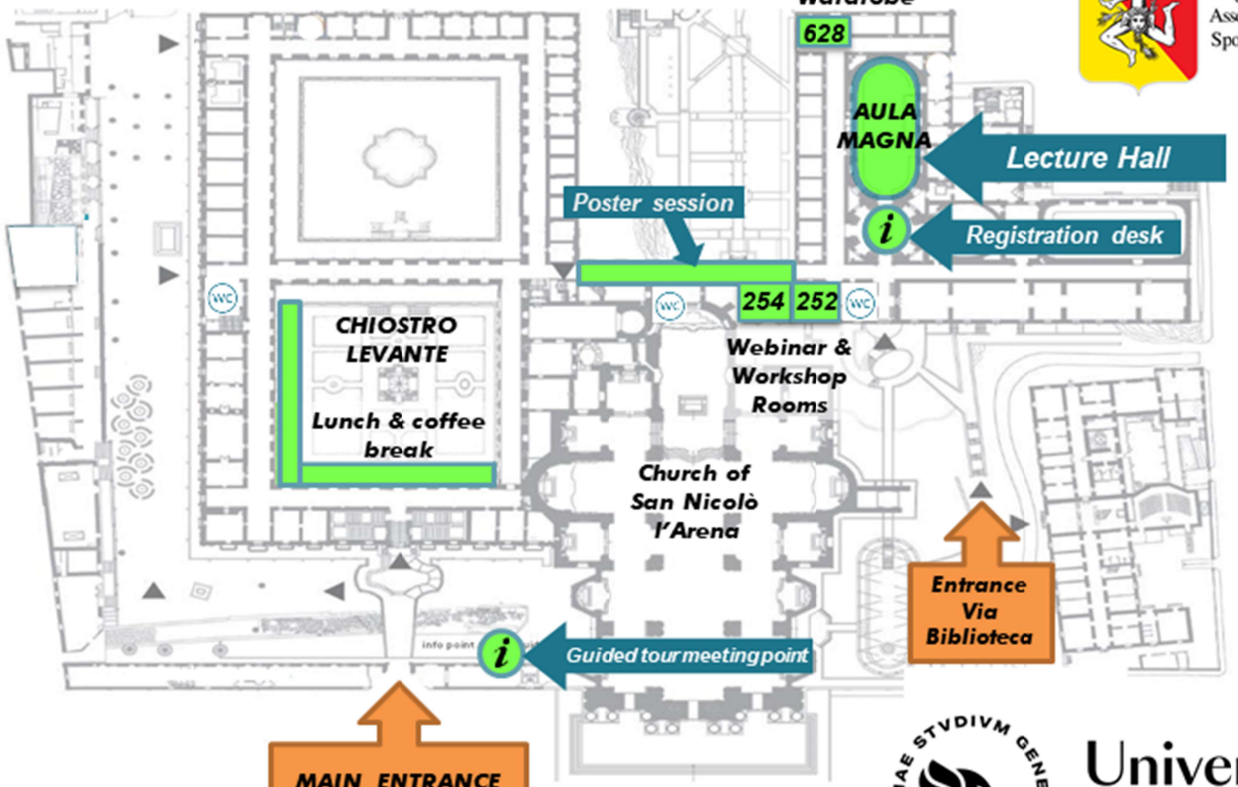
DRT2022 International Meeting (Deformation mechanisms, Rheology, Tectonics)

Benedictine Monastery San Nicolò Arena – Piazza Dante, 32 Catania (Italy)

DRT Catania (Italy) 4th -10th July 2022 GEO-THINKING THE FUTURE PLANET

TOPCON

Regione Siciliana Assessorato Turismo Sport e Spettacolo



CONSIGLIO NAZIONALE DEI GEOLOGI

Ordine Regionale Geologi Sicilia

Uni ct SCIENZE BIOLOGICHE, GEOLOGICHE E AMBIENTALI

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