

Field Trip 2: From foreland to the thrust belt

September 15-16, 2018. Limit to 25 participants (10 minimum). Cost: Euro 70

The field trip is composed of two itineraries that can be purchased either separately or collectively.

Day 1: From foreland into the Maghrebian thrust belt. Field trip leaders: Rosanna Maniscalco & Rob Butler

September 15th 2018 - Limit to 25 participants (10 minimum). Cost: Euro 35

Themes: tectonics, stratigraphy and basin systems.



Left: Exposed substrate (cherts in red) at Vallone Lavinia, east of Monte Judica. Etna in the background.



Right: Centuripe thrust-top basin from south

This field trip will depart from Catania and follow a “geotraverse” from the orogenic foreland on the margin of the Iblean plateau into the thrust belt. Starting from Palagonia, we can deduce vertical movement from the interplay of submarine volcanism and shallow water carbonate sedimentation. We then proceed into the Gela Nappe, examining syn-depositional folding in Messinian strata before looking at exposed substrate stratigraphy near Monte Judica. Moving upsection from this we visit outcrops of Numidian turbidites to discuss syn-depositional substrate deformation before concluding with the youngest thrust-top basin successions around Centuripe. The excursion will take place in mid-September and the weather could be warm (about 30 degrees). It is important to wear sun hat, appropriate dress (also bring a raincoat) and use sunscreen. Most of the stops are roadside with the exception of a 1km walk to Mt. Pietraperciata). The schedule will include two refreshment breaks.

Day 2. Three orogenies in one day: a journey through space and time across the north eastern Peloritani Mountains

Field trip leaders: Patrizia Fiannacca & Gaetano Ortolano

September 16th 2018 – Limit to 25 participants (10 minimum) – cost: 35 €

Themes: Petrogenetic processes, Crustal evolution, Geodynamics

The Peloritani Mountains make up the southernmost sector of the Calabria-Peloritani Orogen, a poly-orogenic terrane bounded by the Tyrrhenian backarc system to the northwest and by the subducting plate of the Ionian oceanic crust to the southeast. The field trip will start at the NE margin of Gondwana in the Latest Neoproterozoic, when the final stages of the Cadomian Orogeny, at c. 550 Ma, resulted in high-grade metamorphism and attendant granitoid magmatism in a closing back-arc region. Then we will move to the Paleozoic volcano-sedimentary cover of the Cadomian basement, where Cambro-Ordovician alkali basalts formed during the early stages of the continental rifting, heralding the opening of the Paleotethys and the associated northward migration of the peri-Gondwana terranes to meet Laurussia first and then Gondwana again, making up the Variscan Orogen at c. 300 Ma. We can then observe the Variscan tectono-metamorphic effects recorded at different depths in the crust, passing from subgreenschist facies metabasites, porphyroids and metasedimentary rocks, to greenschist facies phyllites and schists, and up to upper amphibolite facies ortho- (either amphibolites and granite-derived augen gneisses) and paragneisses. The gneisses sometimes contain granulitic relics and, more often, show evidence of partial melting. Migmatites, dominantly metatexites, are indeed relatively common and are typically associated in the field with weakly to strongly peraluminous trondhjemites and leucogranites, intruded during the final stages of the Variscan Orogeny, at 315-300 Ma. Finally, the Alpine orogenic cycle was responsible of the present-day structural setting of the Peloritani Mountains, consisting in a set of south-verging basement nappes with metamorphic grade increasing upwards, and remnants of a weakly metamorphosed Meso-Cenozoic sedimentary sequence. The main Alpine tectono-metamorphic effects consisted in the isoclinal refolding of Variscan folds and, especially, in the production of horizons of cataclastic to mylonitic rocks which mark, at many places, the contacts between the different tectonic units. Related Neo-Alpine sub-greenschist to greenschist facies assemblages have been dated at c. 26 Ma. We will stop at selected landmark outcrops to show the features of the rocks and discuss their origin, age and P-T-d evolution, mostly based on large data produced in the recent years by our group.

The field-trip will take place at altitudes from 0 to 1130 m a.s.l. The weather is expected to be warm and sunny (25-30 °C) in mid September, but it is anyway advised to bring either sunscreen and raincoat, in addition to wearing appropriate clothing and shoes. Stops are roadside or, in a few cases, accessible by low difficulty 1-2 km walks. The cost includes transportation and packed lunch.

