GEOLOGICAL MAP OF THE ARERA & VEDRA VALLEY MINING AREA

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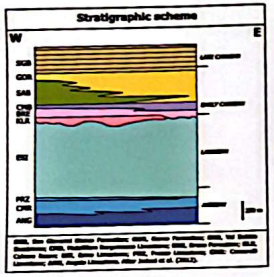
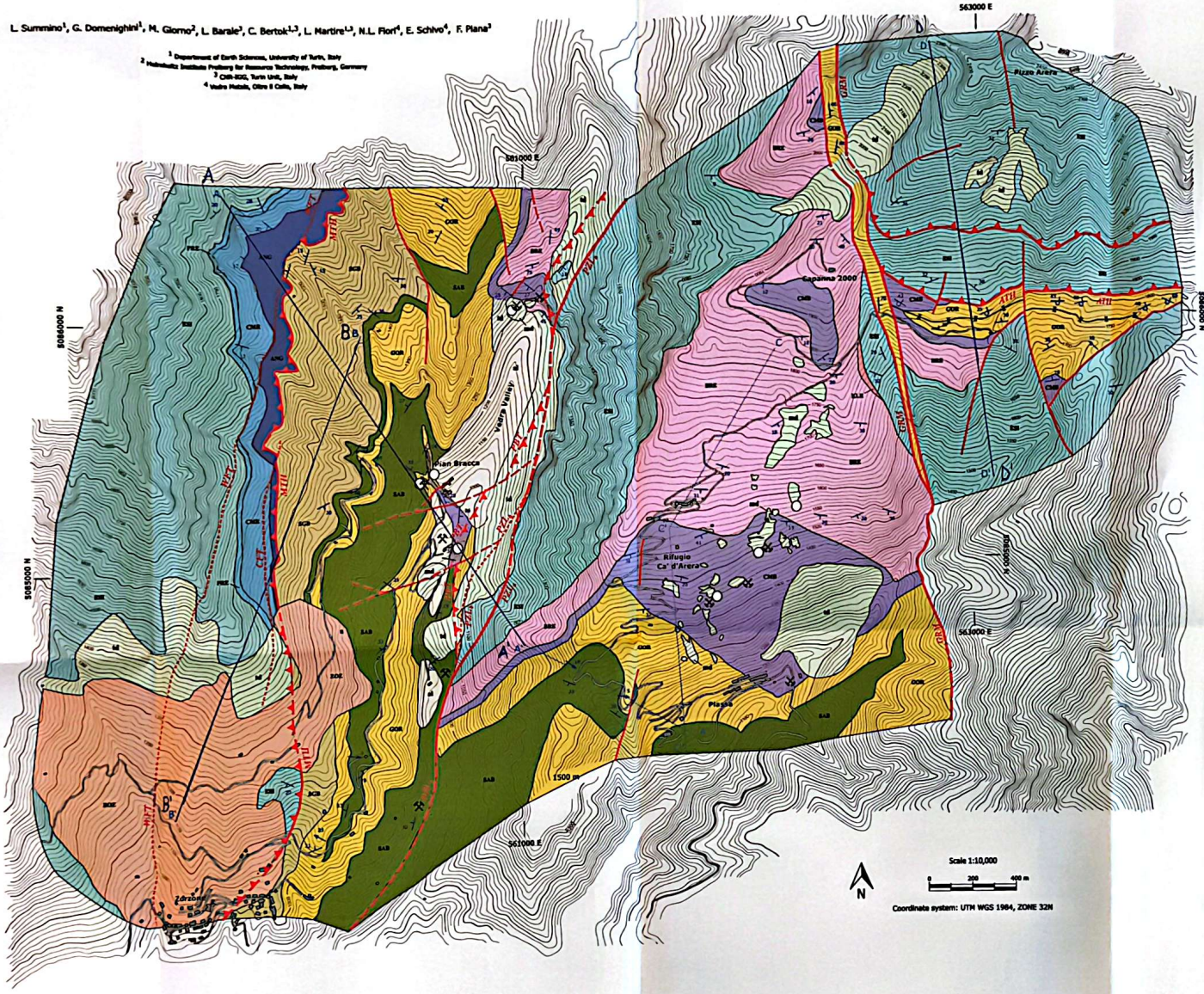


SCB, Sion Glauconit Sandstone Formation; CCR, Cenomanian Formation; SAB, Val Sabbia Formation; CMB, Maiolica Biancastra Limestone; ESI, Erbia Formation; ELA, Calcare Selcifero Lombardo Formation; FRZ, Prezzo Limestone; CMB, Concordia Limestone; ANC, Angolo Limestone. After Jadoul et al. (2002).



Lithostratigraphic units

NEOGENE-QUATERNARY CONTINENTAL DEPOSITS

Mine dumps AQUACINE

Slope and talus debris PLEISTOCENE - HOLOCENE

Unclassified alluvial and fluvioglacial deposits UPPER PLEISTOCENE

Terrazzo conglomerate Quaternary, well cemented, clast-supported conglomerate with angular clasts and no matrix. UPPER PLEISTOCENE

MIDDLE - UPPER TRIASSIC LOMBARDIAN BASIN SUCCESSION

San Giovanni Bianco Formation
Red continental siltstones and conglomerate pebbles of the Verrucano alpino transformed by diagenetic fluids of carbonate and evaporite precursors in the upper part.
Depositional environment: alluvial plain. Maximum estimated thickness: 200 m. UPPER CARNIAN

Val Sabbia Conglomerate
Green to purple sandstone and conglomerate alternated or disjointed by carbonate-rich beds. Silicon system minerals are scarce. It shows lateral heterogeneous relationship with the Grone Formation.
Depositional environment: alluvial to inner delta plain. Maximum estimated thickness: 400 m. LOWER CARNIAN

Grone Formation
Alternation of mainly carbonated black limestones and dark marly shales in beds up to 20 cm thick, locally brecciated (Breccia). The transitional part to (SAB), affected by different grades of tectonic deformation, and is locally intensely crossed with 2-4 cm calcite ("black dolos" pseudomorphs after halite). It shows lateral heterogeneous relationship with the Valsecca Sandstone.
Depositional environment: lagoonal to coastal. Maximum estimated thickness: 300 m. LOWER CARNIAN

Calcare Metallifero Bergamasco
Black, bituminous, dark limestones in 10-40 cm-thick beds, with micropelitic laminae, locally affected by tectonic deformations. The basal section is characterized by pyroclastic and tuffaceous. In the upper part, centimetric marly beds are interlayered and locally dark chert nodules are present. The Calcare Metallifero Bergamasco lies on the Grone Formation.
Depositional environment: Tethyan basin. Maximum thickness: 30 m. LOWER CARNIAN

Breno Formation
Black marly limestones, commonly well bedded with dm- to m-thick beds. Bedded limestone consist of mudstones and floatstones with gastropods, bivalves, dasycladacean algae, and ostracodes; the base is often marked by thin pelite breccia with early-diagenetic clasts in a calcareous silicic matrix. The lower and upper-most intervals are characterized by lower abundance, stratigraphic horizon and thickness. Nonetheless, intermediate intervals are commonly affected by low-grained early dolomitization. The Breno Fm. lacks 2n-F3 sulfide mineralization and is locally affected by hydrothermal dolomitization.
Depositional environment: Tethyan basin. Maximum thickness: 300 m. LOWER CARNIAN

Colzano Beds
Gray to pink limestone with nonbedded, polymictic breccia concordant to discordant with respect to bedding, with carbonate cements and siliceous or greenish clasts matrix. Thick-thick beds with layer-dimension breccia zones.
Depositional environment: Tethyan basin affected by repeated and prolonged emersions and sub-aerial exposures. Maximum thickness: 20 m. UPPER LADINIAN - LOWER CARNIAN

Salmo Sandstone
Massive light-gray limestone in dm- to metre-thick beds, showing upward to sandstone transitions with prevalence material from the sandstone layers, gastropods and bivalves. Dolomite and calcarenite layers are common in the transitional intervals.
Depositional environment: platform prograding up to tidal flat. Maximum estimated thickness: 700 m. UPPER ANISIAN - LOWER LADINIAN

Prezzo Sandstone
Thick-bedded limestone in dm-thick beds alternating in dark marls. Bivalves and ammonoids are common. Thick-bedded limestone in Ogna marble. Maximum thickness: 30 m. UPPER ANISIAN

Concordia Limestone
Dolomitic calcareous and pyroclastic in dm-thick beds, showing upward to concordia and locally floatstone. Dolomitic calcareous cements platform margin with coral patch-reefs. Maximum thickness: 40 m. MIDDLE - UPPER ANISIAN

Angolo Dolostone
Gray, fine-grained bituminous limestones in dm-thick beds with thin silty and tuffaceous. Stromatolitic algae and bivalves are common.
Depositional environment: open marine. Maximum thickness: 100 m. LOWER - MIDDLE ANISIAN

Symbols

- Strike and dip of bedding (dip values in degrees)
- Strike and dip of overturned bedding (dip values in degrees)
- Strike and dip of fold axis (dip values in degrees)
- Fault (a), buried or inferred (b), and projected from underground data (c)
- Main thrust (a), buried or inferred (b) See "Structural Sections" for details
- Stratigraphic contact
- Axial surface trace of F3, Vedrana syncline
- A — A' Trace of geological section
- Mining activity (in exploitation, in research)
- Tunnel (in exploitation, in projected) See "Tunnel Plan" for details
- Exploration trench (in exploitation, in projected)
- Hydrothermal extension (Pb-Zn sulfides)
- Hydrothermal breccias
- Silica-associated mineralization
- Carbonate-hosted sulfidic mineralization