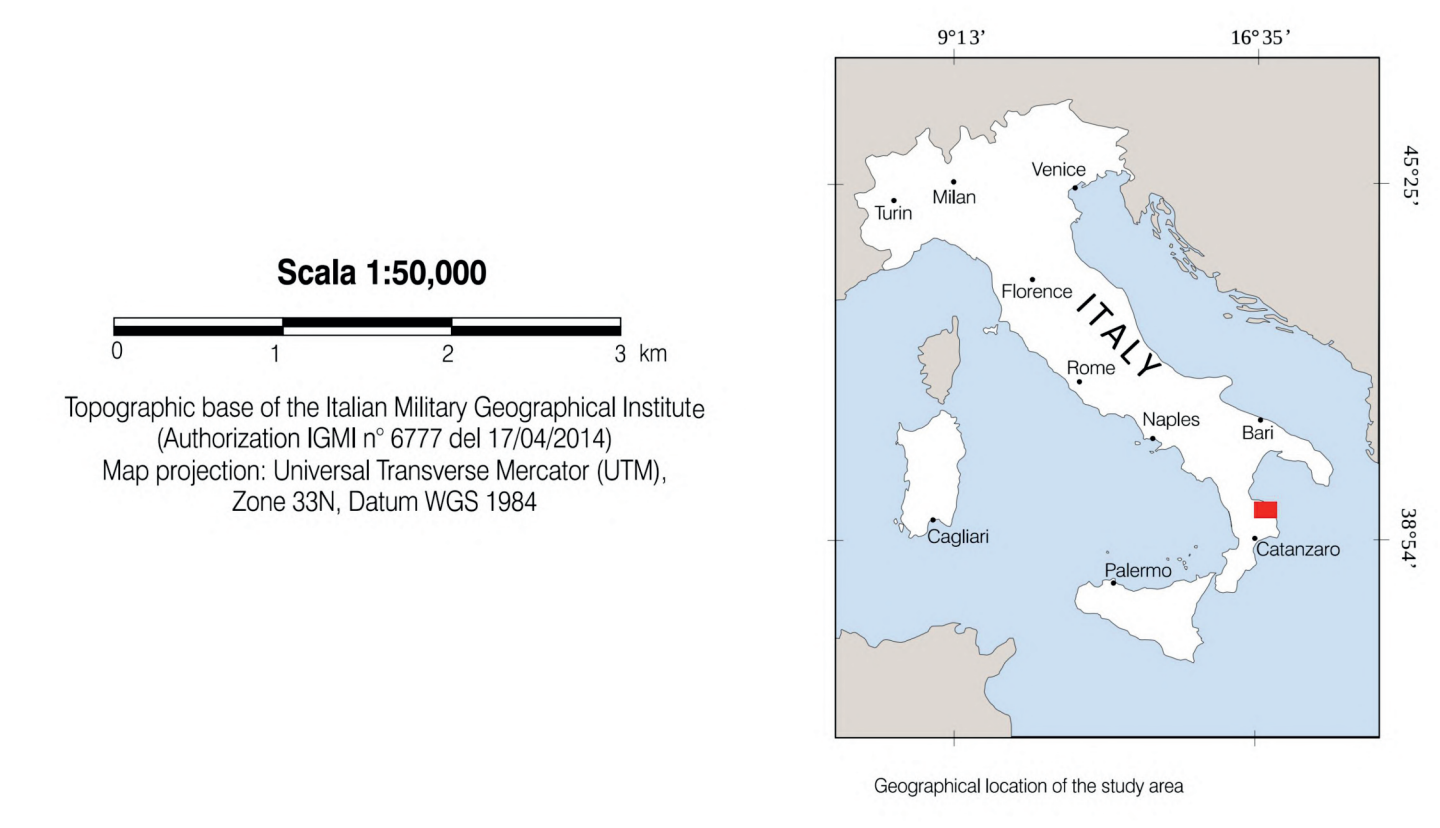


SEISMOTECTONICS AND LANDSLIDES OF THE NE BORDER OF THE CALABRIAN ARC (SOUTHERN ITALY)

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LEGEND

PLIOCENE - QUATERNARY DEPOSITS
Gravels, sands, silts, and clays from alluvial, coluvial, lacustrine, aeolian, coastal, and marine deposits.
Gravels, sands, silts, and clays from bathyal platform.

POST-EVAPORITIC DEPOSITS
Silty clay prevalent, ranging from greyish to bluish-grey poorly stratified, often containing rich microfossils. At the base there are intercalations of gravelly conglomerates and sands, grey silt and yellowish sand with calcareous bands. The intercalations often feature a rich macrofauna.
Soft brown sandstones, well stratified, with intercalations of marls and silty marls. Alternating layers of clayey marls, silty clays and silts with sandstones. Poligenic conglomerates with well-rounded pebbles.

EVAPORITIC DEPOSITS
Light to dark brown or whitish limestones. White to yellowish evaporitic limestones with occasional thin intercalations of marls and gypsum. Light grey marly clays and silts with intercalations of marly limestone and gypsum. Finely crystalline and well-stratified gypsum, ranging from sandy gypsum or apyferous sandstone to redhibitory pure gypsum.

PRE-EVAPORITIC DEPOSITS
Thinly laminated tripartaceous shale and marly clays. Soft brown sandstones with intercalations of bluish-grey sandstones with calcareous cement. Well-stratified conglomerates and sandstones with occasional thin intercalations of red silts and silty clays. Conglomerates ranging from massive to well-sorted, sometimes with intercalations of coarse sandstones.

PALLIDI FORMATION
Poligenic conglomerates and breccias with sandy matrix, reddish and greenish marls containing layers of sandstones (quartz-feldspathic) and conglomerates, oolitic of limestone, plutonic and metamorphic rocks and chert-bearing limestone, tuffaceous arenitic layers.

CAOTIC COMPLEX (MELANGE)
Reddish to green clays (Variegated Clays) including oolitic of limestone and marls, argillite calcarenite, Numidian quartz-feldspathic sandstones, and quartzitic sandstones.

SILA UNIT
Mesozoic Sedimentary Cover
ZONGHIBRICO GROUP: Conglomerates, quartzarenites and silt-limestones, and pelites ranging in color from reddish-purple to white. Dark grey to black limestones, marly sandstones, and oolitic calcarenite. Grey marly, marly limestones with intercalations of (quartzitic) sandstones and tuffaceous conglomerates. Turbidite succession consisting of layers of (quartzitic) sandstones and tuffaceous conglomerates. Lower Jurassic.
CALVETO GROUP: Red micro limestones and nodular marly limestones, hard sandstones, red marls, pink micritic limestones with apite and ammonite, chert, quartzitic calcarenites and sandstones, conglomerates and breccias with clasts and phylades and granites. Lower Jurassic to Lower Cretaceous.
Sila Batholith
Plutonic rocks and tonalites intersected by numerous intrusive bodies, ranging in composition from gabbro and diorite to monzonitic and leucocratic granite. Dense network of foliated veins, ranging from microgranitic to leucocratic. Porphyry dykes ranging from leucocratic to monzonitic and basic dikes with variable composition from gabbro to diorite.
Mandatoriccio Unit
Mica schists and para-gneisses. Schistose structure, heterogeneous grain size, presence of porphyroblasts ranging from millimetric to centimetric in size. Subordinate intercalations of garnet gneisses, derived from original granitoids, with a granuloblastic structure. Rare levels of siliceous marbles and lenses of metabasites. Intrusion of lamprophyric dikes. Metamorphism in the amphibolite to granulite facies and thermal metamorphism at the contact with the Sila Batholith.
Bocchigliero Unit
Schists composed of quartz, mica, albite, graphite, chlorite, and calcite, with a very low metamorphic grade. Porphyroblasts composed of quartz, K-feldspar (orthoclase), plagioclase, apatite, zircon, muscovite, and chlorite. Local mesoschists, porphyritic schists, meta-andesites, and metamorphic limestones.
Pala-Coppola-Carbone Unit
High grade metamorphic rocks (ranging from granulite facies to amphibolite facies) with thickened garnet composition, occurring in layers with thicknesses ranging from decimeters to meters. The structure ranges from massive (granulite) to migmatitic (knitginites), and is composed of porphyroblasts of garnet, lenses of biotite and sillimanite, plagioclase, cordierite, quartz, and staurolite. Siliceous marbles are present, interbedded with the gneisses, as well as layers and/or lenses of porphyro-plagioclase-amphibole-chlorite granulites, and small lenses of serpenitine and metabasite. Abundant foliated dikes of microgranite, apite, and pegmatite intrude the unit.

FLIOCIENE - QUATERNARY DEPOSITS
Strike and dip of beds (dip of beds between 1° and 15°)
Strike and dip of beds (dip of beds between 15° and 50°)
Strike and dip of beds (dip of beds > 50°)
Strike and dip of schistosity (dip of schistosity < 45°)
Strike and dip of schistosity (dip of schistosity > 45°)

Active or very recent normal fault (ticks on the downthrown block, uncertain and buried faults are dotted)
Active or very recent normal left-lateral fault (arrows indicate the horizontal component of movement; ticks on the downthrown block, uncertain and buried faults are dotted)
Active or very recent thrust (triangles for hanging wall, uncertain and buried faults are dotted)
Transpressive thrust (related to the transcurrent fault motion (arrows indicate the horizontal component of movement; triangles for hanging wall, uncertain and buried faults are dotted)
Tectonic contact between the units of the chain (ancient overthrust)

Mesostructural measurement station
Historical earthquake epicenter

FOCAL MECHANISM OF THE EARTHQUAKE
Magnitude
Depth of earthquakes

SYMBOLS OF ELEMENTS OF GRAVITATIONAL AND TECTONO-GRAVITATIONAL ORIGIN
Landslides active in the period 2008-2012 that affected residential areas (with more than 200 inhabitants) and roads (Source: ABR - Calabria (2014))
Groups of movements
Slide
Flow
Fall
Shallow landslide area
Deep landslide area
Area of intense erosion

Landslides before 2008 that have affected residential areas (with more than 200 inhabitants) and roads (Source: ABR - Calabria (2001))
Groups of movements
Active "dominant"
Slide
Flow
Complex
Fall
Deep seated gravitational slope deformation
Shallow landslide area
Deep landslide area
Area of intense erosion

Large Landslides and Gravitational and Tectono-Gravitational Slope Deformations
Sources: Sorino-Vulvo & Tani (1996); Tani et al. (2004); Hydrogeological Plan for Soil Protection (HSP) of the Calabria Region, Italy, Italian Authority.

Groups of movements
Large Landslide Slide
Sacking

