DEEP-SEATED GRAVITATIONAL SLOPE DEFORMATION INVOLVING GLACIAL EVIDENCE IN THE RODORETTO VALLEY (NW ALPS)

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QUATERNARY SUCCESSION

Holocene

- Debris consisting of decimetric angular clasts, mostly of calcschist.
- Torrential and avalanche sediments consisting of centimetric to decimetric stratified, from rounded to subrounded gravel, mostly of calcschist in the Rodoretto Valley and with a relatively various composition in the Germanasca Valley.
- Landslide sediments consisting of centimetric to metric angular clasts, mostly of calcschist, mixed to an abundant slightly consolidated and massive silty-sandy matrix, locally containing subangular and subrounded boulders deriving from reworking of glacial sediments.
- Glacio-lacustrine and lacustrine sediments with planar-parallel bedding, mostly consisting of centimetric angular clasts of calcschist, mixed to a silty-sandy matrix.

Lateglacial-Holocene

- Ice-marginal sediments consisting of decimetric to metric subangular clasts, mixed to a subordinate, normally consolidated, sandy-silty matrix, slightly carbonate cemented. Clasts, with a preferential arrangement according to external flanks of moraines, are essentially formed by calcschist.
- Subglacial sediments consisting of centimetric to decimetric angular and subangular clasts mixed to a subordinate overconsolidated sandy-silty matrix, grey in colour. Clasts show a preferential dip of 30-35°and are essentially formed by calcschist.

Last Glacial Maximum

- Ice-marginal sediments consisting of decimetric to metric subangular clasts, with few subrounded boulders, mixed to a subordinate, normally consolidated, sandy-silty matrix, slightly carbonate cemented. Clasts, with a preferential arrangement according to external flanks of moraines, are essentially formed by calcschist, in high and middle Rodoretto valley and by calcschist, metagabbro, prasinite, gneiss, quartz-micaschist, dolomitic marble, with rare serpentinite and chlorite schist in the low Rodoretto Valley, respectively.
- Subglacial sediments consisting of centimetric to decimetric angular and subangular clasts with few subrounded boulders, showing a dip of 30-35°, mixed to a subordinate overconsolidated silty-sandy matrix, grey in colour. Clasts are formed by calcschist, with rare metabasic rock, in high and middle Rodoretto valley and by metagabbro, prasinite, gneiss, quartz micaschist, dolomitic marble, with rare serpentinite, chlorite schist, and eclogite in the low Rodoretto valley, respectively.

- Fractured metamorphic bedrock: D) Dora-Maira Unit (Paleozoic-Triassic); S) Piedmont Zone (Schistes Lustrés, Jurassic-Creataceous)
- a: outcrop area; b: interpolation area
- Strongly fractured bedrock
- Roche moutonnée
- Litostratigraphic contact
- Dora Maira / Piedmont Zone tectonic boundary
- Trace of cross sections

GRAVITATIONAL ELEMENTS

- Gravitational saddle
- Open fracture
- Significant scarp edge (10s- to 100s-m high)
- Scarp edge (1- to 10s-m high): a) exposed, b) buried
- Counterscarp edge
- Trench: a) exposed, b) buried
- Doubled ridge
- Gravitational valley
- Bulging relief features: a) areal distribution, b) hypothesized basal sliding surface (only repoted in cross-sections)
- Bulging relief direction of movement
- Landslide detachement niche

TORRENTIAL ELEMENTS

- Spring
- Over-steepened water course
- Abandoned torrential valley
- Segmented torrential valley
- Alluvial and avalanche fan

GLACIAL ELEMENTS

- Glacial spillway
- Glacial diffluence
- Local glacier
- Deformed glacial deposits
- Erratic block from the Rodoretto Valley
- Erratic block from the Germanasca Valley
- Morainic crest: a) well preserved, b) reshaped
- Various scale glacial saddle
- Glacial terrace scarp

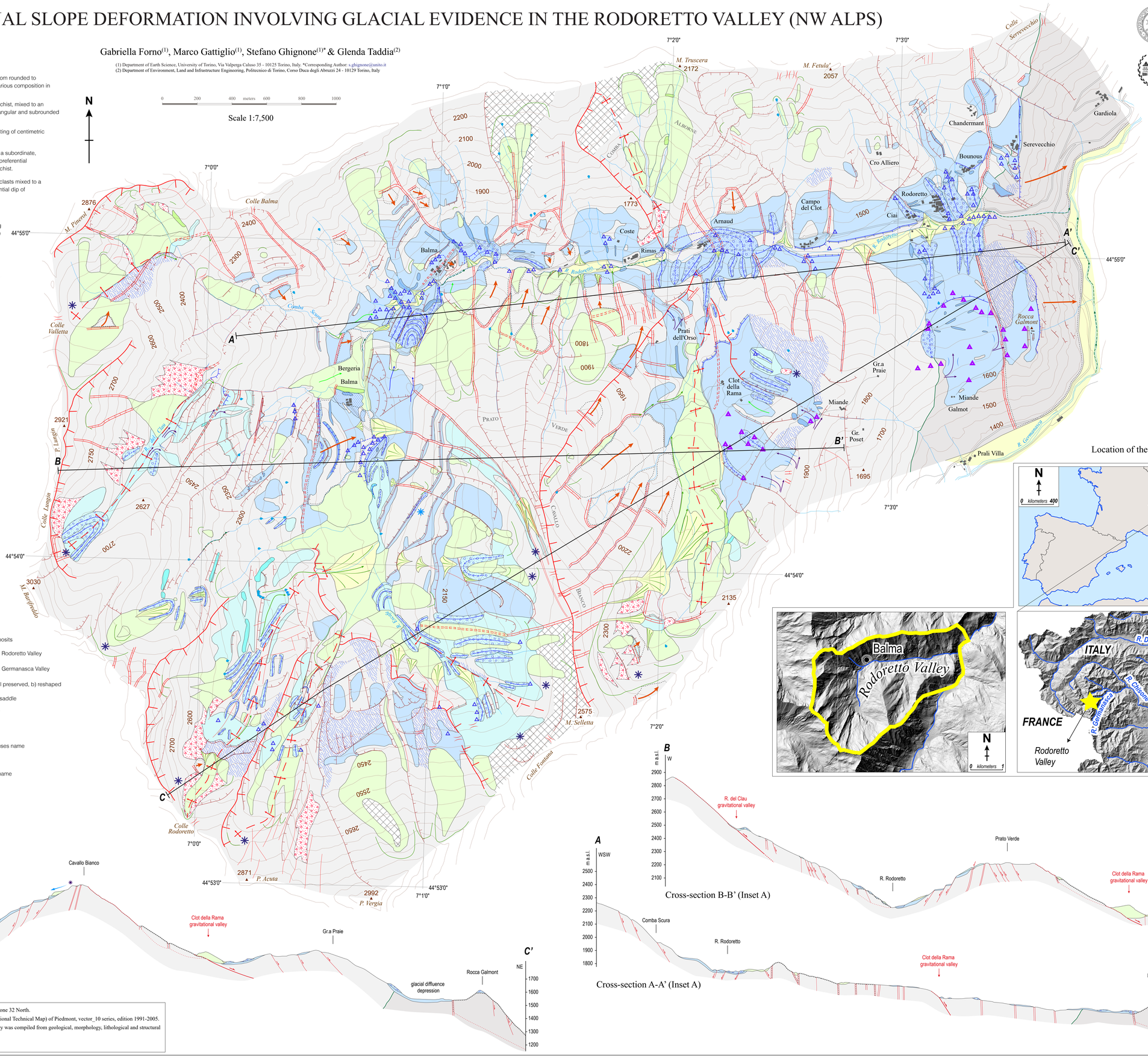
TOPONOMASTIC ELEMENTS

- Rodoretto — Villages, isolated houses name
- *R. Escafe* — Watercourses name
- *M. Selletta* — Mountains, saddles name
- 2200 — Elevation value
- COMBA ALBORNE — Areal toponym

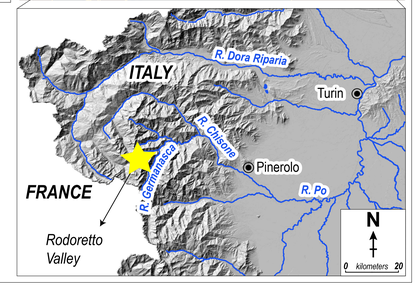
N

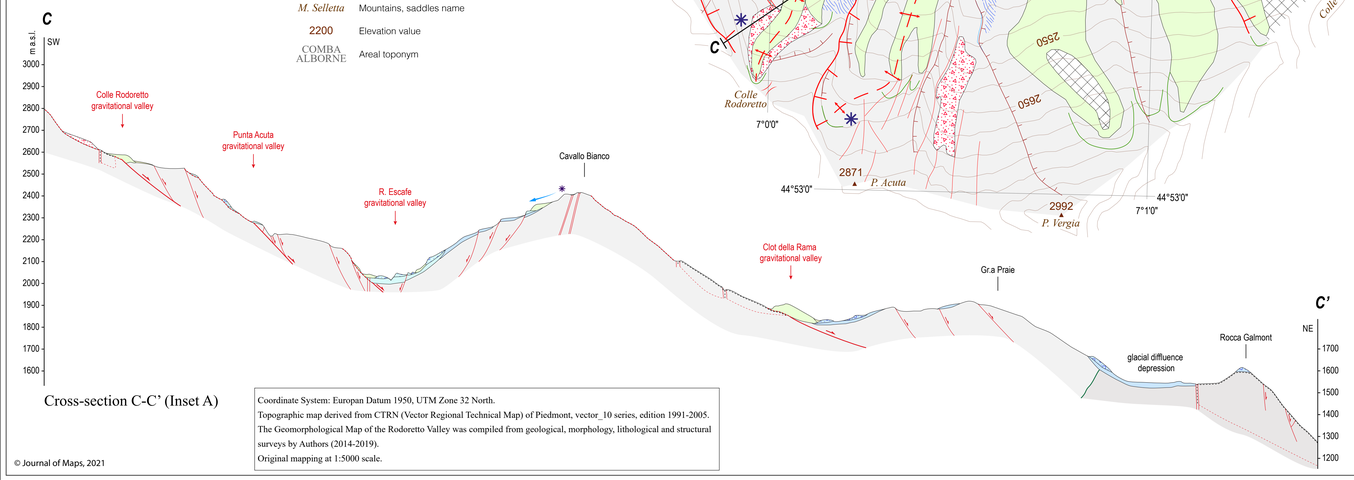
0 200 400 meters 600 800 1000

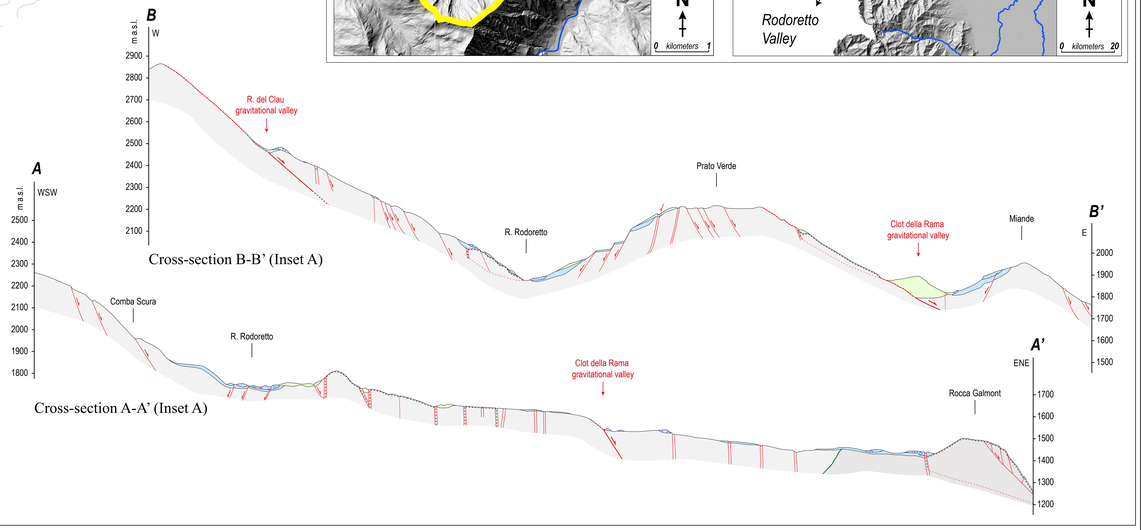
Scale 1:7,500



Location of the study area







Coordinate System: Europan Datum 1950, UTM Zone 32 North.
Topographic map derived from CTRN (Vector Regional Technical Map) of Piedmont, vector_10 series, edition 1991-2005.
The Geomorphological Map of the Rodoretto Valley was compiled from geological, morphology, lithological and structural surveys by Authors (2014-2019).
Original mapping at 1:5000 scale.