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GEOLOGICAL MAP OF THE MONVISO MASSIF (WESTERN ALPS)

Gianni Balestro⁽¹⁾, Gianfranco Fioraso⁽²⁾ & Bruno Lombardo⁽²⁾

(1) Dipartimento di Scienze della Terra, Università degli Studi di Torino, Via Valperga Caluso 35 - 10125 Torino, Italy. Email: gianni.balestro@unito.it
 (2) Istituto di Geoscienze e Georisorse, Consiglio Nazionale delle Ricerche, Via Valperga Caluso 35 - 10125 Torino, Italy

m 500 0 500 1000 1500 2000 m

QUATERNARY DEPOSITS

- F11** Alluvial and debris flow deposits, composed of gravelly cobbles and sandy gravels, clast-supported, well stratified to massive, sometimes containing decimetric- to metric-scale boulders (F11). Peat bogs (Plan del Re). *Late Upper Pleistocene - Present*
- Td** Mixed talus and debris flow deposits, composed of angular clasts, cobble and gravel with crude stratification, clast supported, sometimes with partially openwork texture (Td). *Late Upper Pleistocene - Present*
- Ti** Talus deposits, composed of centimetric to decimetric angular fragments and blocks, clast supported, with openwork to partially openwork texture (Ti). *Late Upper Pleistocene - Present*
- Ld** Landslide deposits, composed of chaotic accumulation of angular blocks and gravelly-sandy matrix (rock fall and earth flow) or loosened portions of bedrock (rock slide) (Ld). *Late Upper Pleistocene - Present*
- Ui** Undifferentiated glacial deposits, made up of diamicton with silty-sandy matrix and chaotic blocks accumulation. Blocks are locally devoid of lichens (Ui). *Holocene - Present*
- Rg1** Active rock glacier, composed of poorly sorted angular blocks, at surface, and blocks and fine material with interstitial ice, below the surface. Blocks are locally devoid of lichens (Rg1). *Holocene - Present*
- Rg2** Inactive rock glacier, composed of poorly sorted angular blocks, at surface, and blocks and fine material below the surface. Blocks are lichen covered (Rg2). *Holocene*
- Bs** Block stream composed of chaotic accumulation of angular blocks with coarsening-upward texture (Bs). *Holocene*
- F12** Ancient alluvial and debris flow deposits, composed of gravelly cobbles with sandy matrix, clast-supported, massive to crudely stratified, sometimes containing decimetric- to metric-scale boulders (Plan Meizé) (F12). *Late Upper Pleistocene - Holocene*
- Ug** Undifferentiated glacial deposits, made up of diamicton and chaotic blocks accumulation with silty-sandy matrix (Ug). *Upper Pleistocene*

QUEYRAS Schistes Lustrés

- Qc** Undifferentiated carbonate metasediments (calcschists s.l.) (Qc). *Early Cretaceous? - Late Cretaceous?*

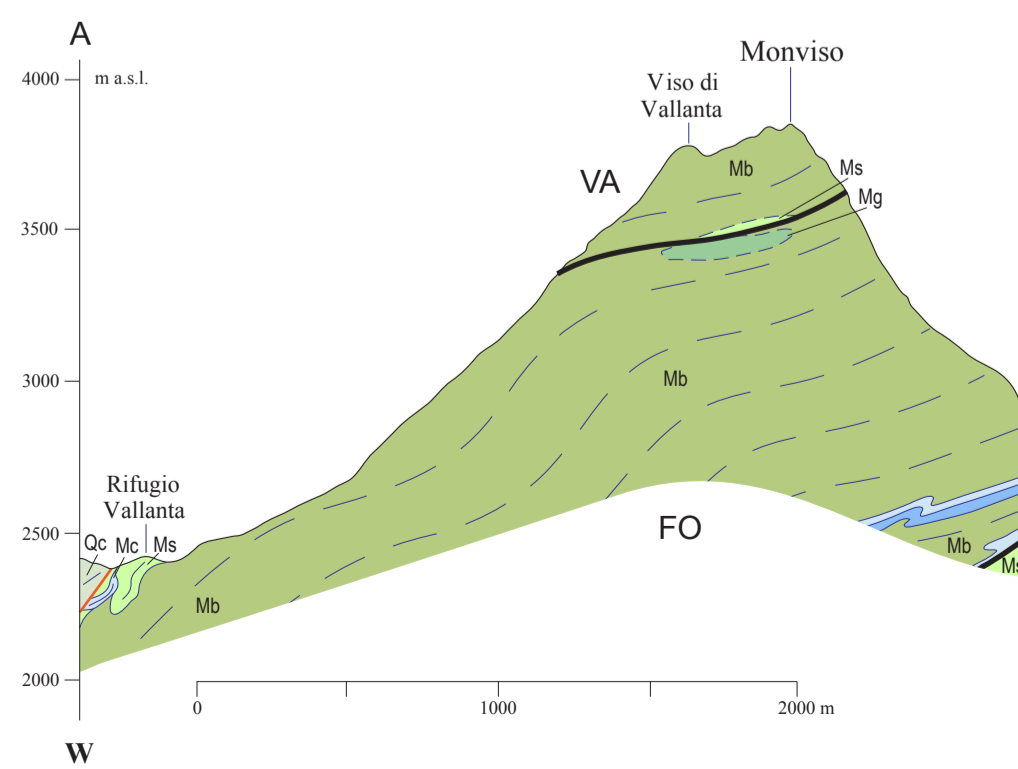
MONVISO META-OPHIOLITE COMPLEX

- Mc** Fine- to medium-grained lawsonite-bearing calcschists (Mc), in places with dm- to m-sized levels and bodies of metabasite (a). *Late Jurassic? - Cretaceous?*
- Mq** Quartz-rich, garnet-bearing micaschists (Mq); phengite, garnet-bearing metacherts (Monte Medassa, S of Lago Fiorenza, Monte Ghinica Pastour, Punta Forcion, NE of Punta Gastaldi, E of Passo delle Sagnette) (a). *Late Jurassic?*
- Mb** Banded epidote- Na-amphibole metabasites, greenschists (Mb); pillowed metabasites and basalt metabreccias (a); massive eclogite-facies metabasites (b). *Middle Jurassic? - Late Jurassic?*
- Me** Eclogite-facies Fe-Ti metagabbros and fine-grained eclogites (Me); eclogite metabreccias (Punta Forcion, SW of Testa Rossa, Colle di Luca) (a). *Middle Jurassic?*
- Mg** "Smaragdite"-bearing Mg-Al metagabbros (Mg); coarse-grained metagabbros with well-preserved magmatic fabric (a); cumulate metatroctolites (N and S of Punta Fiume) (b); greenschist-facies Mg-Al metagabbros (c); bodies of eclogite (d). *Middle Jurassic?*
- Ms** Antigorite serpentinites and antigorite schists (Ms); massive metaperidotites (Colle Armoine, SW of Lago Fiorenza, E of Punta Caprera) (a); meta-ophiolites (NE of Colle Armoine, NE of Costa Pelata, SE of Punta Rasciassa) (b); rodingite dykes (c). *Middle Jurassic?*

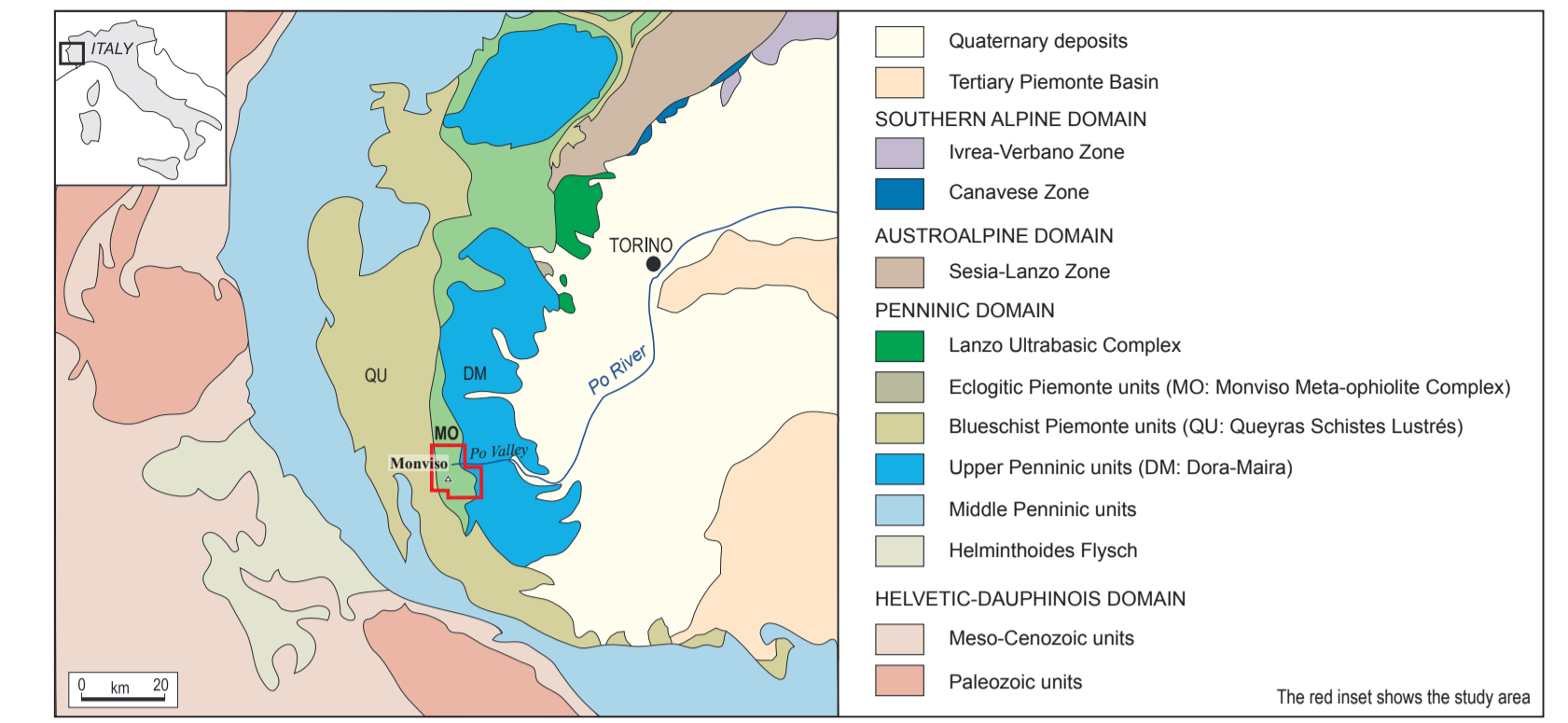
DORA-MAIRA

- Dc** Fine- to medium-grained calcschists with levels of micaceous marbles (Dc). *Early Jurassic?*
- Dm** White to grey fine-grained marbles and dolomite marbles (Dm). *Middle Triassic? - Late Triassic?*
- Dq** Micaceous quartzites and fine-grained micaschists (Dq). *Permian?*

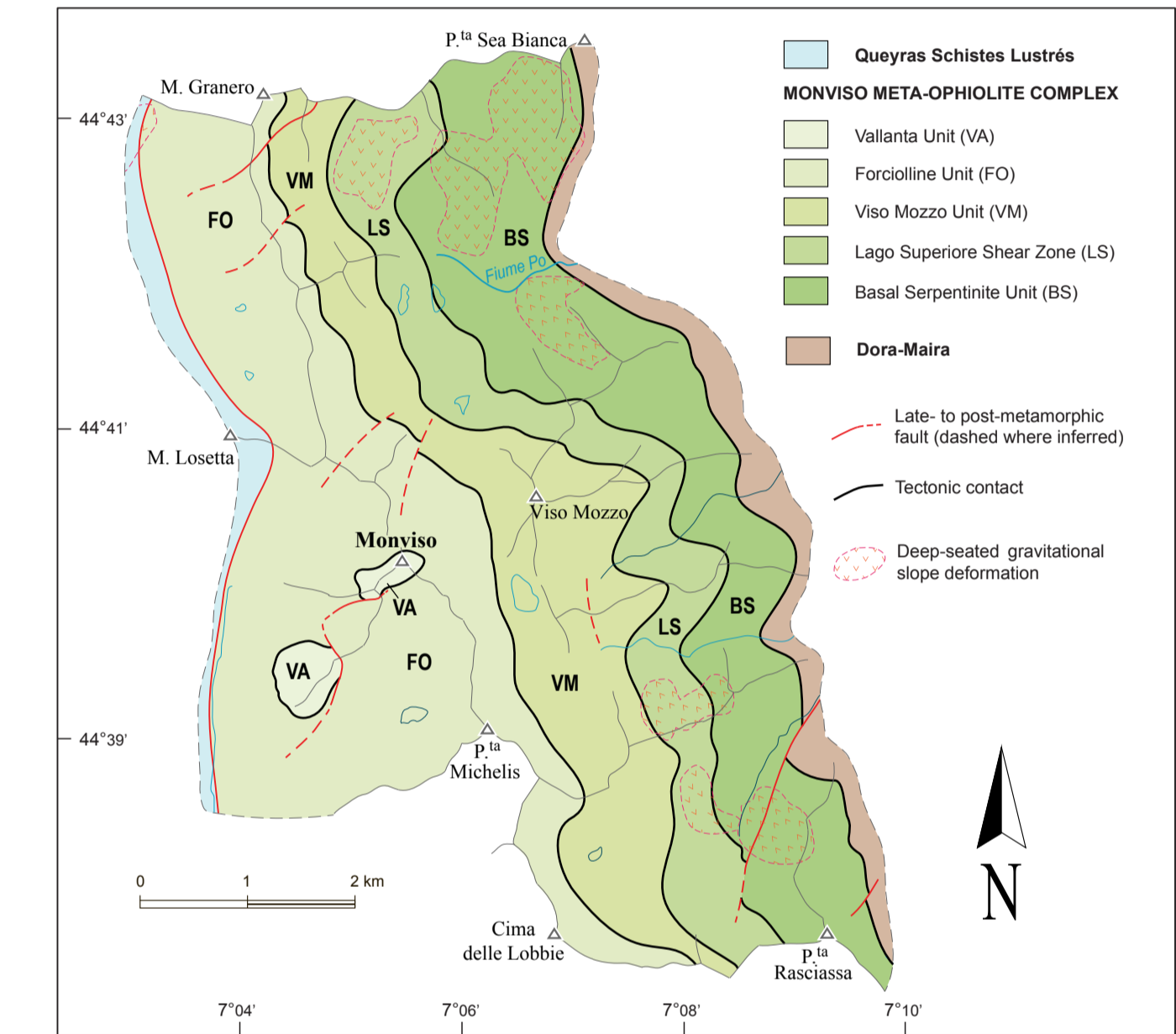
- Lithological contact
- Tectonic contact
- Late- to post-metamorphic fault (dashed where inferred)
- Main foliation (Sp)
- Pre-Sp foliation
- Syn-Sp fold axis
- Protalus rampart
- Post-Sp fold axis
- Post-Sp axial surface
- Trace of cross section
- Alluvial and debris flow fan
- Mixed fan
- Talus fan
- Upper Pleistocene moraine
- Little Ice Age and subsequent moraine
- Rock glacier ridge
- Trench
- Counter-slope
- Yielding surface
- Boundary of the 1999 Coolidge ice avalanche accumulation



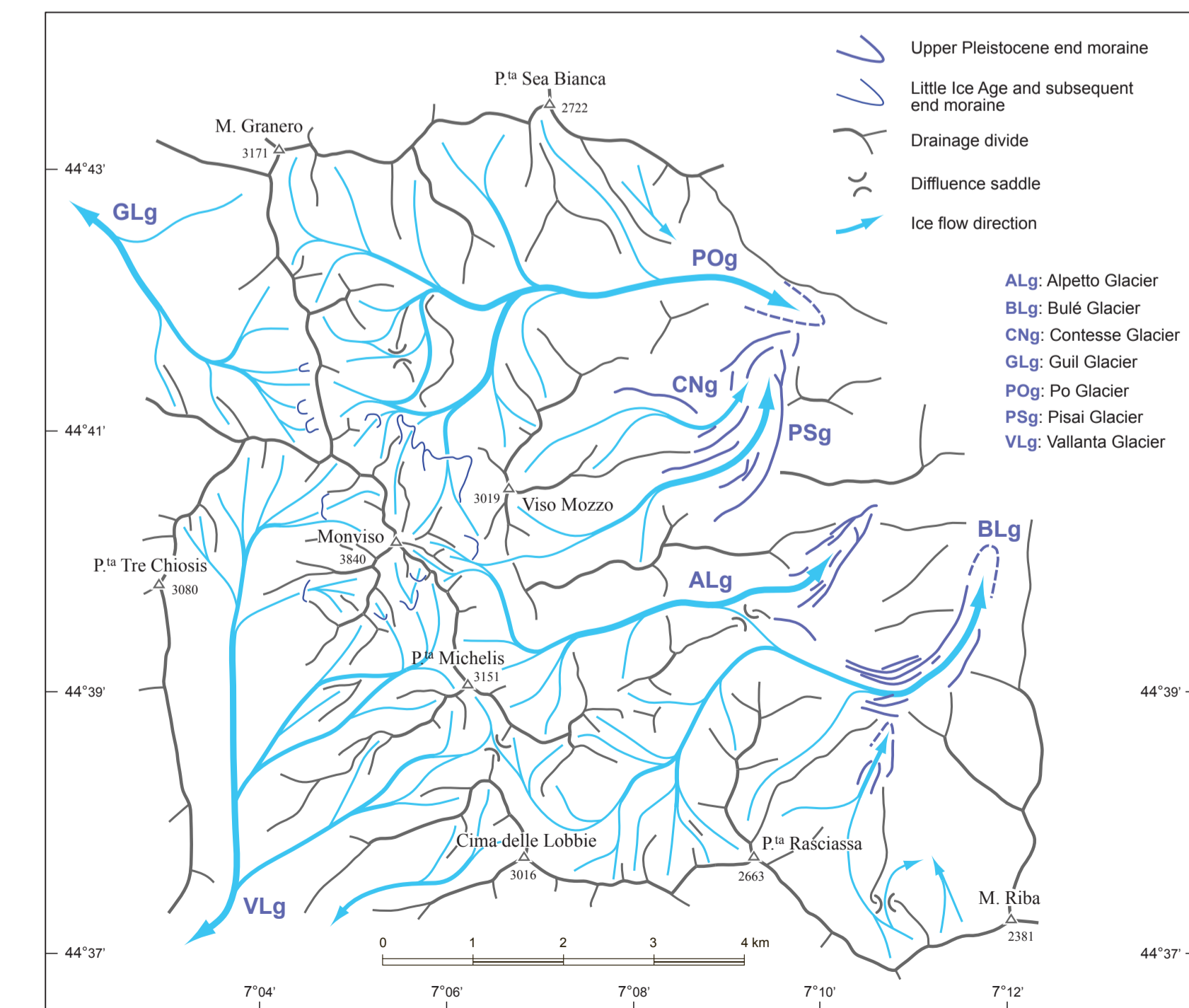
Tectonic map of the Western Alps



Tectonic sketch map



Ice-flow pattern of glaciers during the Last Glacial Maximum



The topographic map derives from the Carta Tecnica Regionale of the Regione Piemonte (vector_50 series; Coordinate System WGS 1984 UTM Zone 32N).