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della Svizzera italiana

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Olomouc



**UNIVERSITÀ  
DI TORINO**



**ITAM ARCCHIP**  
INSTITUTE OF THEORETICAL  
AND APPLIED MECHANICS

# Introduction to building and decorative raw materials used in Tessin Canton

Giovanni Cavallo

Mendrisio - April 24<sup>th</sup>, 2023



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  - Dolostones
  - Gypsum



# INTRODUCTION

“No other places in Switzerland offer an extraordinary variety of raw materials as in Tessin Canton, so that it may be considered the geologists’ paradise”

*(Luigi Lavizzari, 1859)*



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# INTRODUCTION



Tectonic schematic map of Switzerland

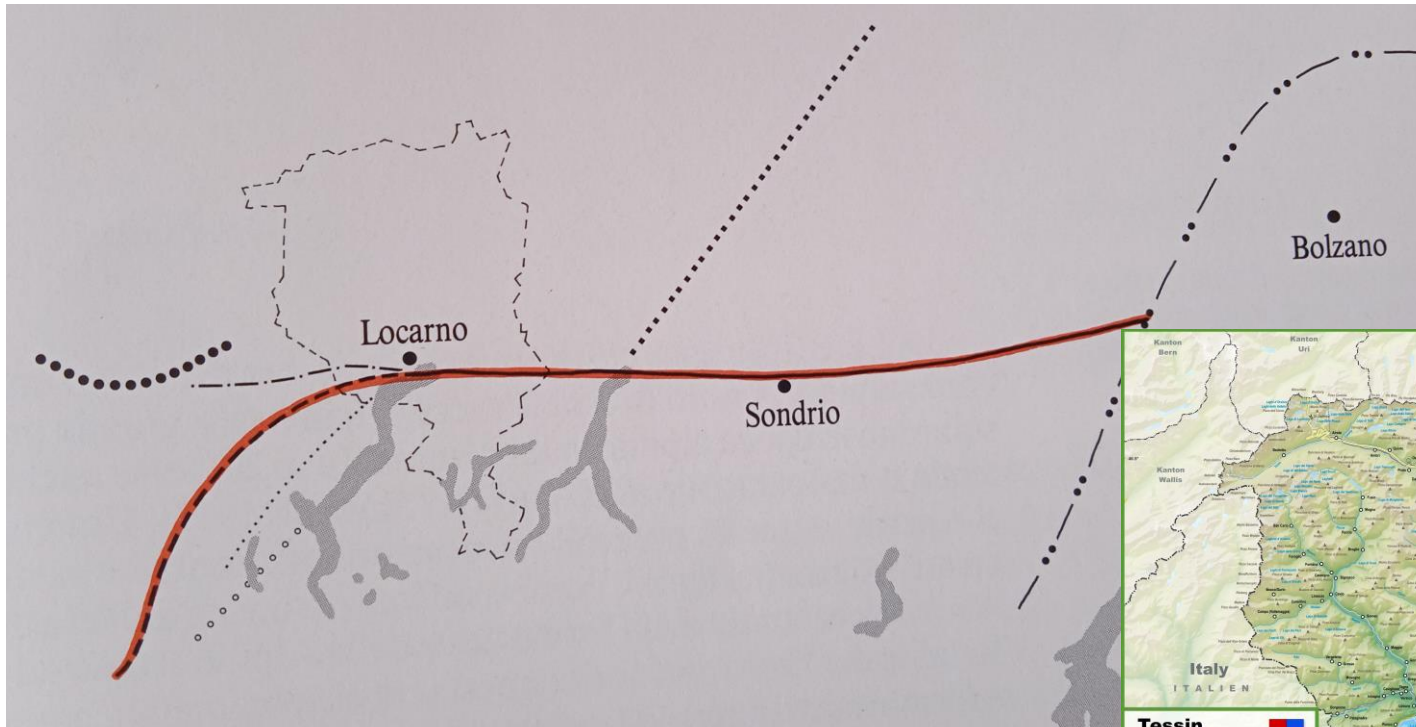


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# INTRODUCTION

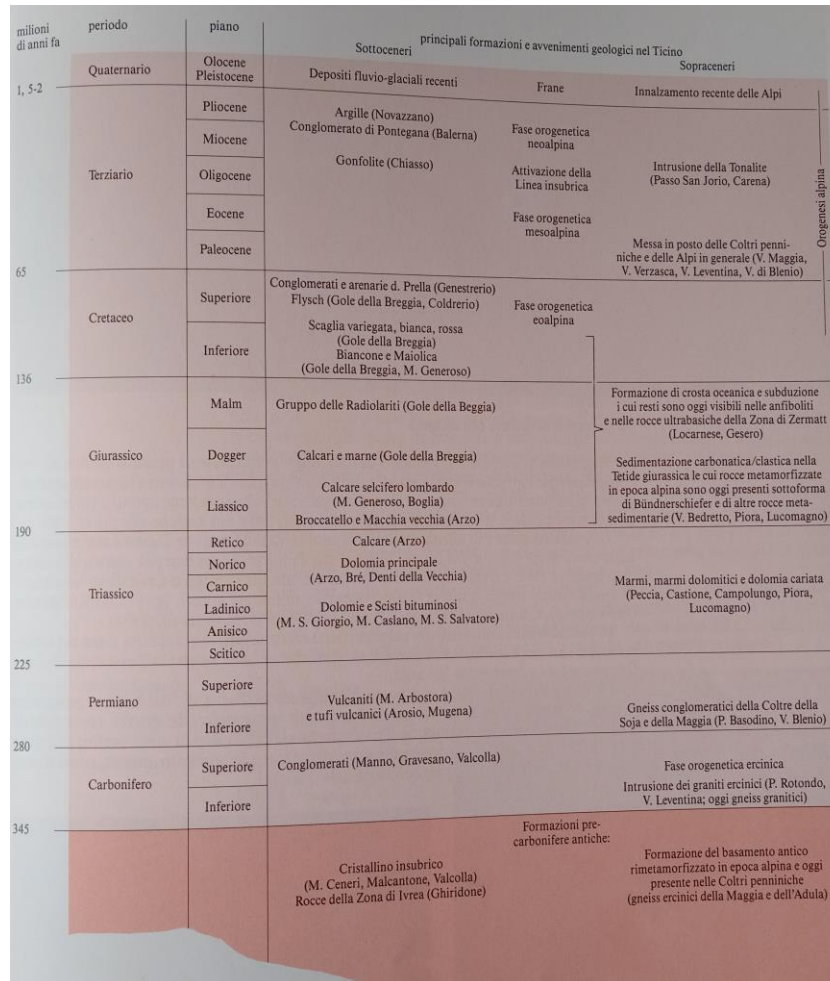


The Insubric line (red colour)



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# INTRODUCTION



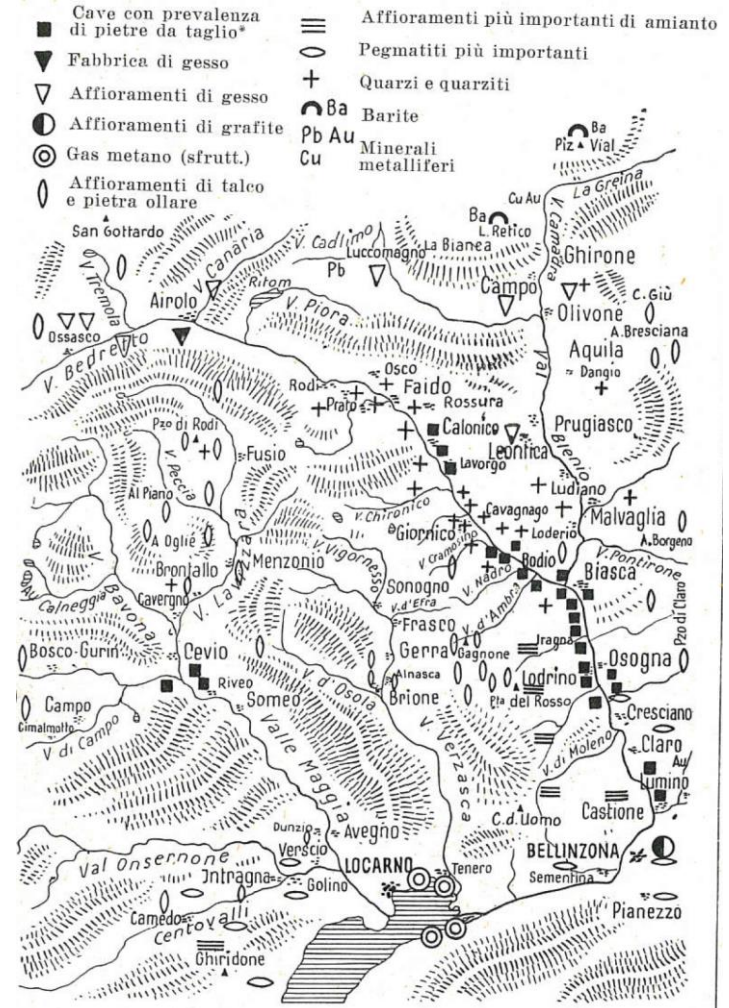
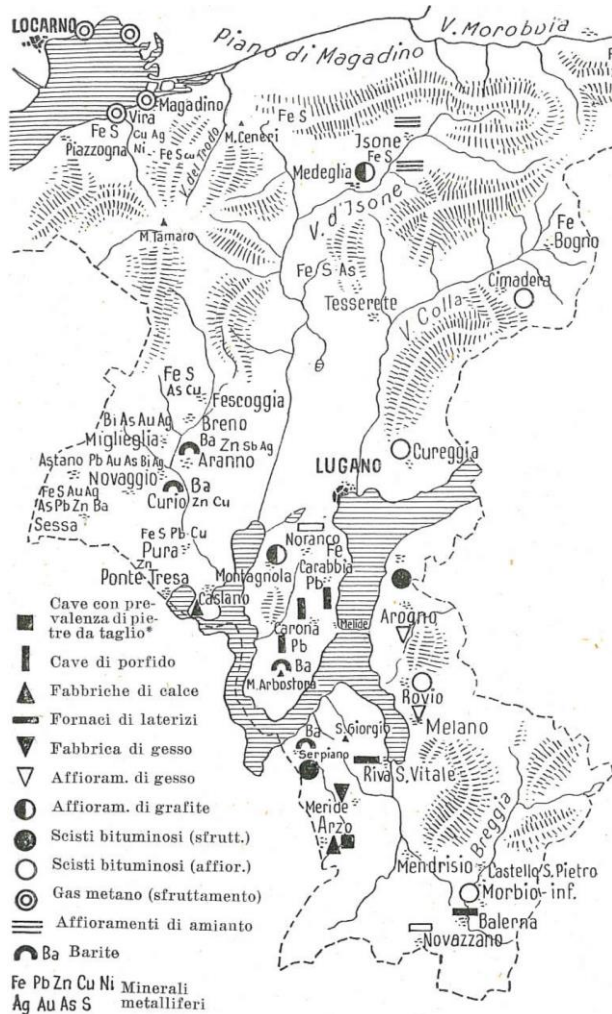
Main geological formations in Tessin Canton



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# INTRODUCTION



Georesources in Tessin Canton



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# METAMORPHIC ROCKS



GNEISS



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# METAMORPHIC ROCKS



GNEISS



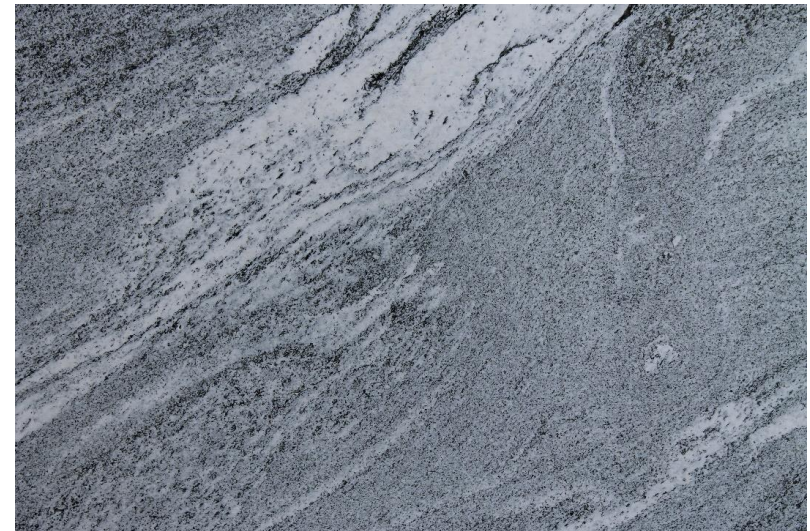
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# METAMORPHIC ROCKS

## Gneiss



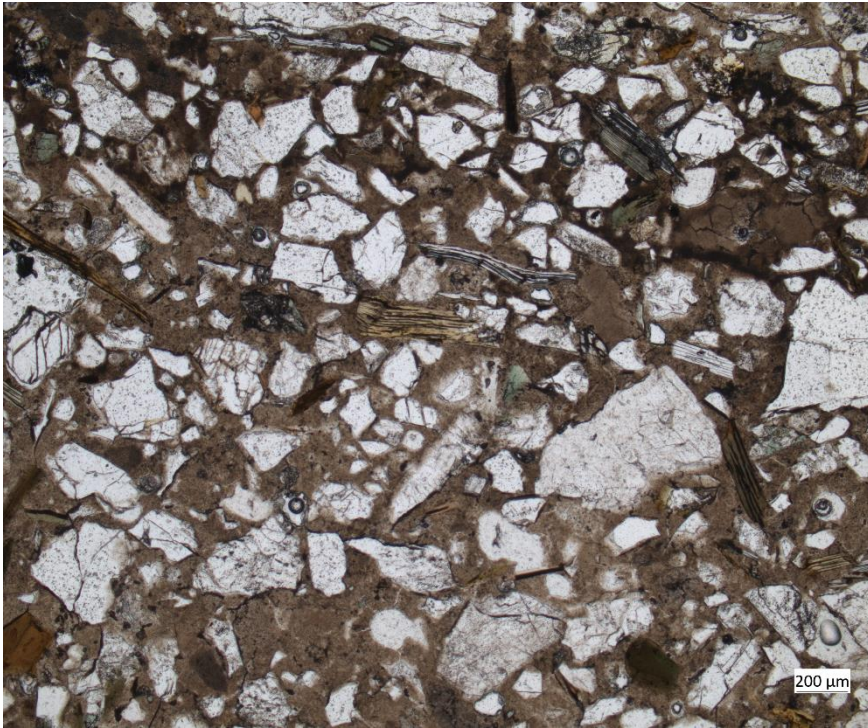
Gneiss Cresciano (Ongaro quarry, TI)



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# METAMORPHIC ROCKS AND SILICATE SANDS



Mortars from the Castel of Locarno



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# METAMORPHIC ROCKS



Marble Peccia (Cristallina quarry, TI)

Marble



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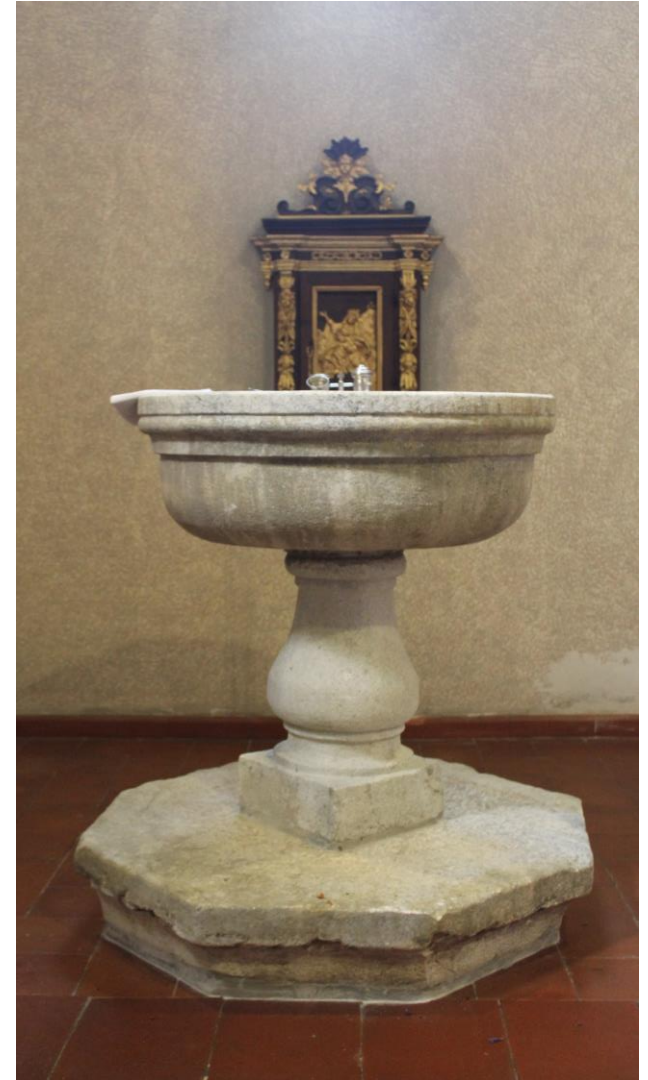


# METAMORPHIC ROCKS

Marble



Musso marble (Italy)



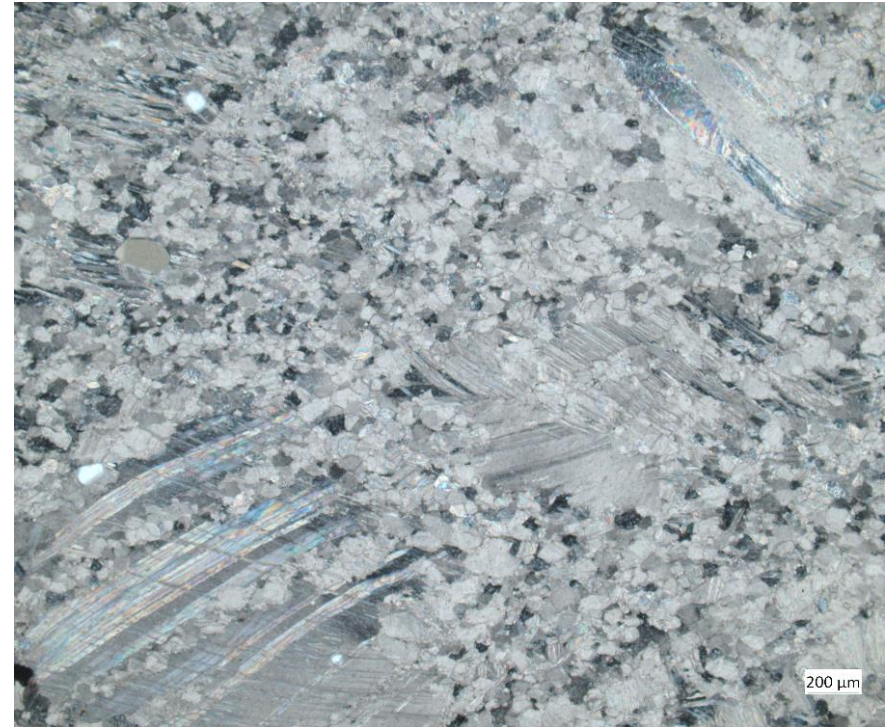
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# METAMORPHIC ROCKS

## Marble



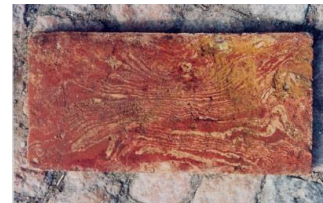
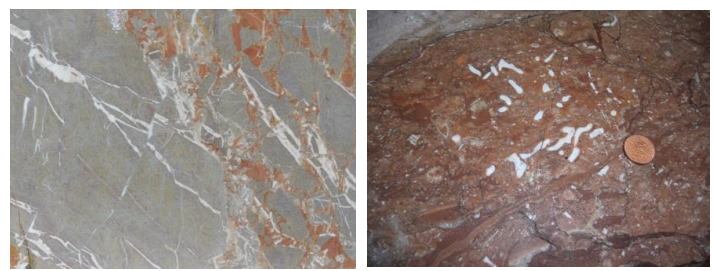
Musso marble (Italy)



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# SEDIMENTARY ROCKS



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# SEDIMENTARY ROCKS

N.º 4.º

**TABELLA**  
DELLE PIETRE E DELLE TERRE  
USCITE DAL CANTONE.

		1841	1842	1843	1844	1845	1846	1847
Mattoni	N.º	991,756	812,732	710,267	1,096,817	953,180	780,490	827,720
Tegole	»	549,800	1,076,745	799,946	1,058,514	854,018	746,336	700,160
Marmi greggi	Quint.	500	1140	1,858	1,159	1,846	1,670	1,291
Pietre tagliate	»	66	971	708	1,012	286	779	951
Calce	»	938	704	677	1,275	1,480	1,468	1,592
Gesso	»	80	4	91	198	249	36	85
Argilla smectica	»	76	1,052	820	1,100	520	223	868
Torba	»	2103	14,418	7,743	5,274	16,963	12,231	10,693

Materials exported from Tessin Canton (middle 19<sup>th</sup> c.)



# Clays (floor and ceiling tiles, bricks)



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# Clays

## Clays used

- *Tèra nègra*
- *Tèra rosa*
- *Lita*

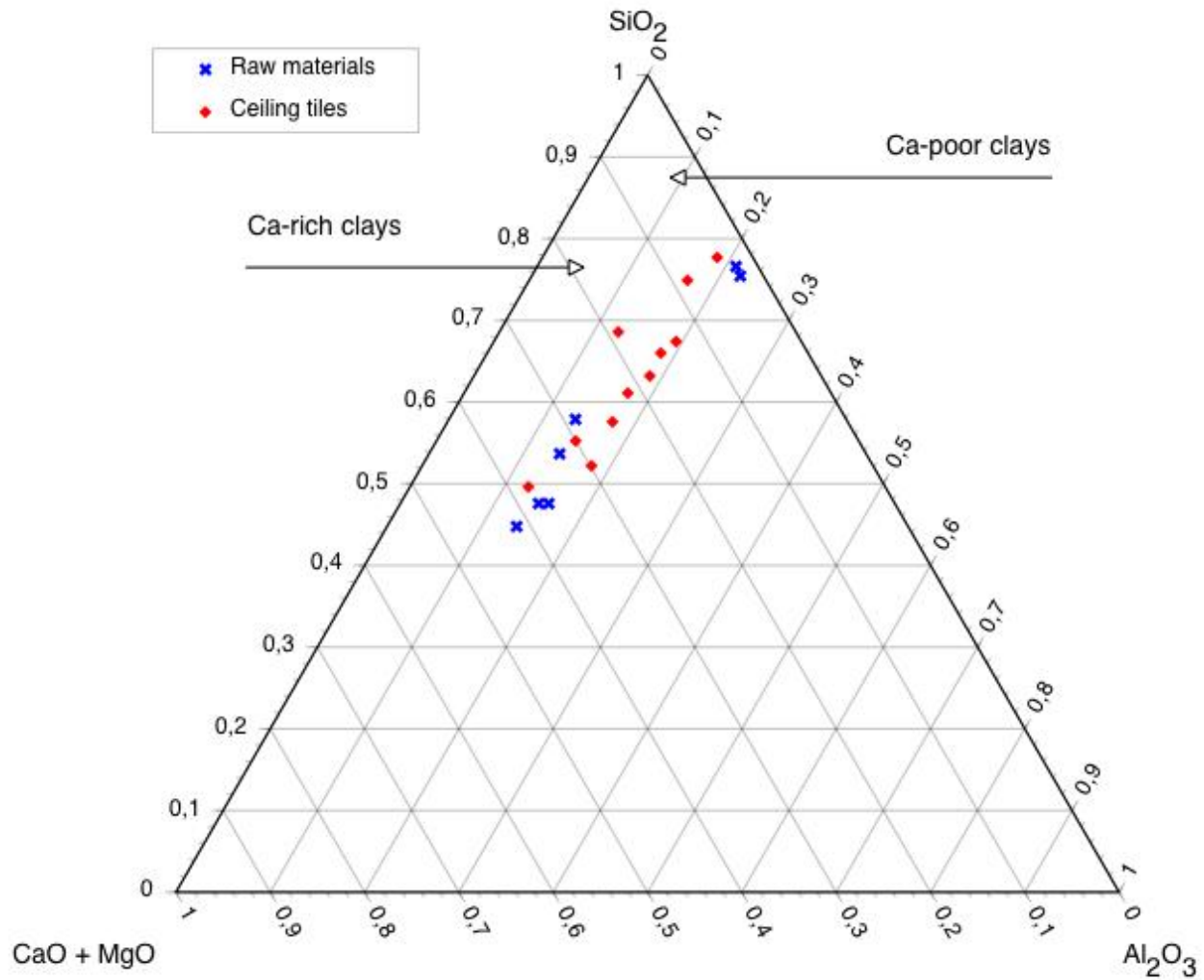


*Pianèla maciata o  
Pianèll da màgia*

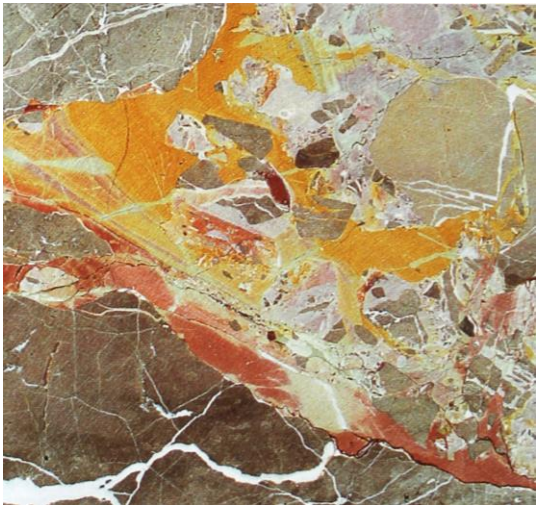
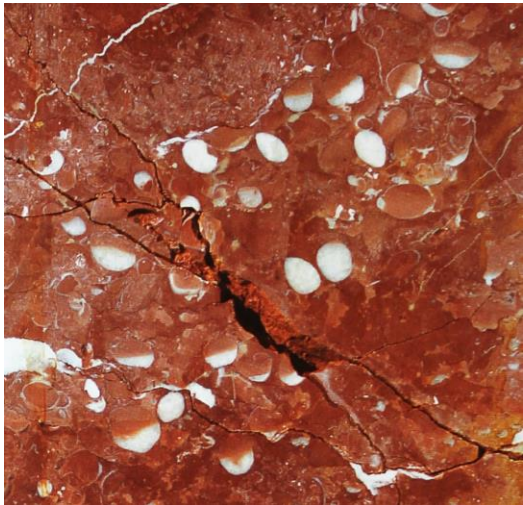




# Clays



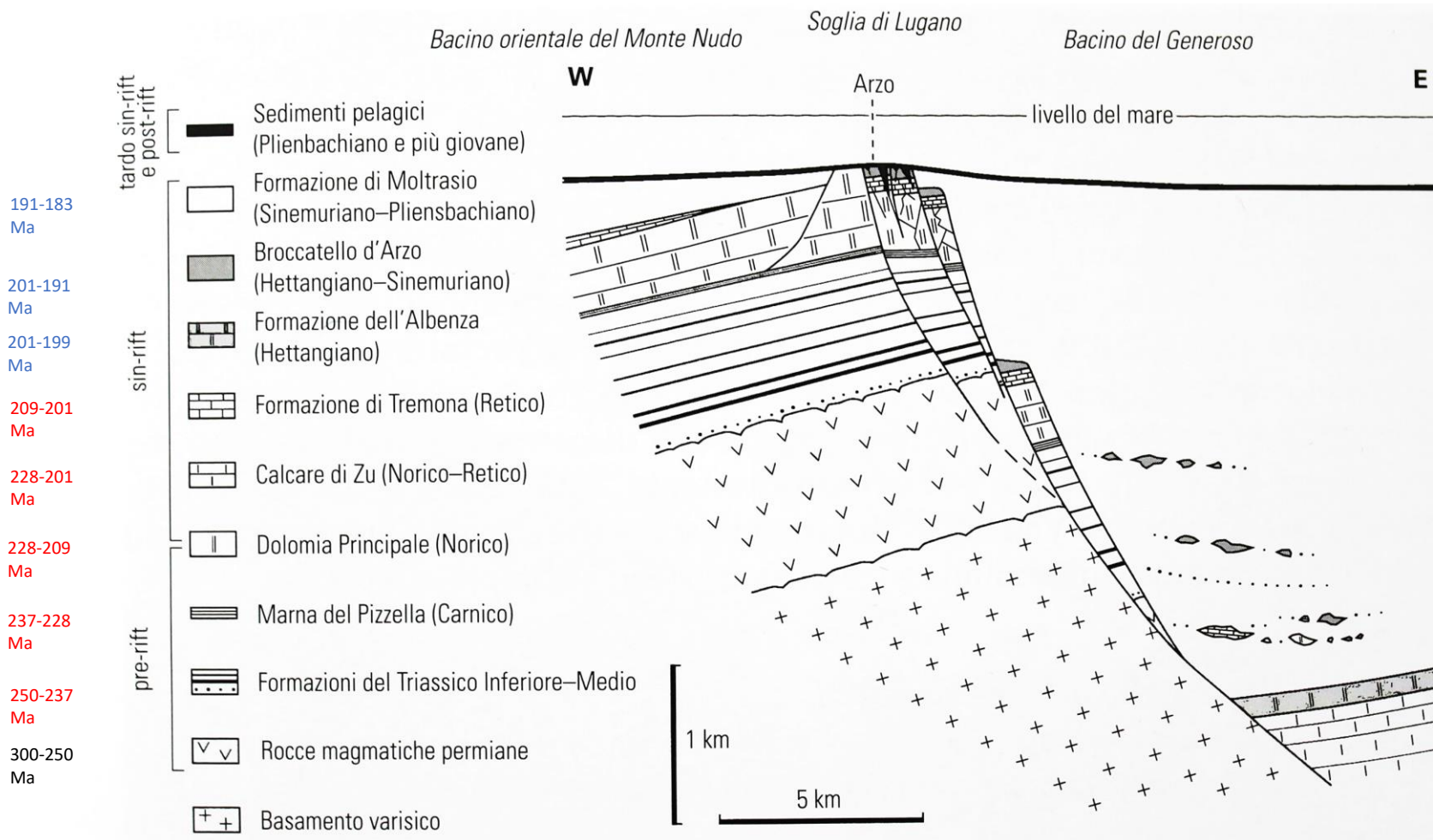
# Arzo stones



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# Arzo stones



— Triassico — Giurassico

Bernoulli et al. (2018). Note esplicative F. 1373 Mendrisio



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# Arzo stones



Parrish church, Arzo.

Felber (a cura di). Il Monte San Giorgio. Ed Casagrande, 2006



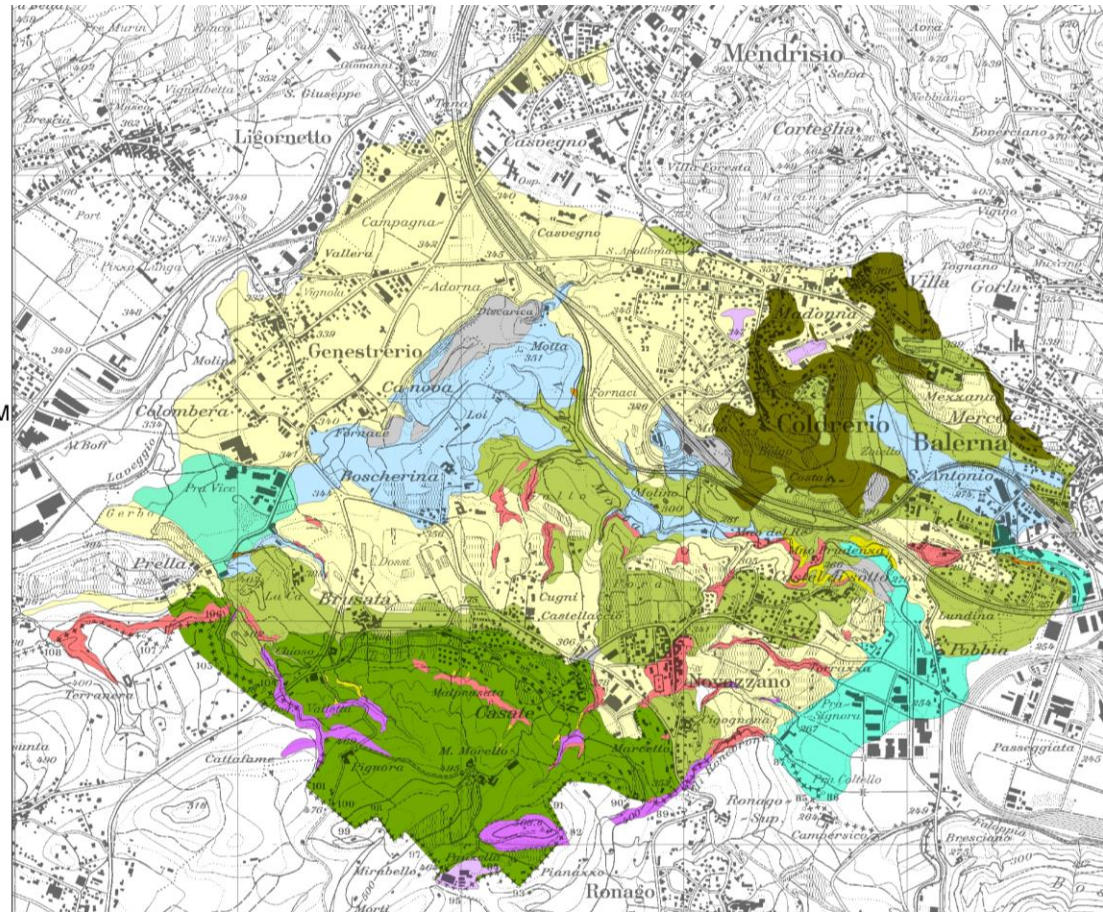
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# Sandstones

## Legenda

-  Depositi di origine antropica
-  Depositi alluvionali attuali
-  Depositi fluvio-glaciali
-  Depositi palustri e torbiere
-  Depositi di origine lacustre
-  Depositi di origine glaciale riferibili all'LGM
-  Depositi di origine glaciale precedenti all'LGM
-  Depositi fluvio-glaciali antichi (conglomerati)
-  Argilliti plioceniche
-  Conglomerato di Pontegana
-  Gonfolite
-  Flysch cretaceo



Foglio Mendrisio 1:25.000

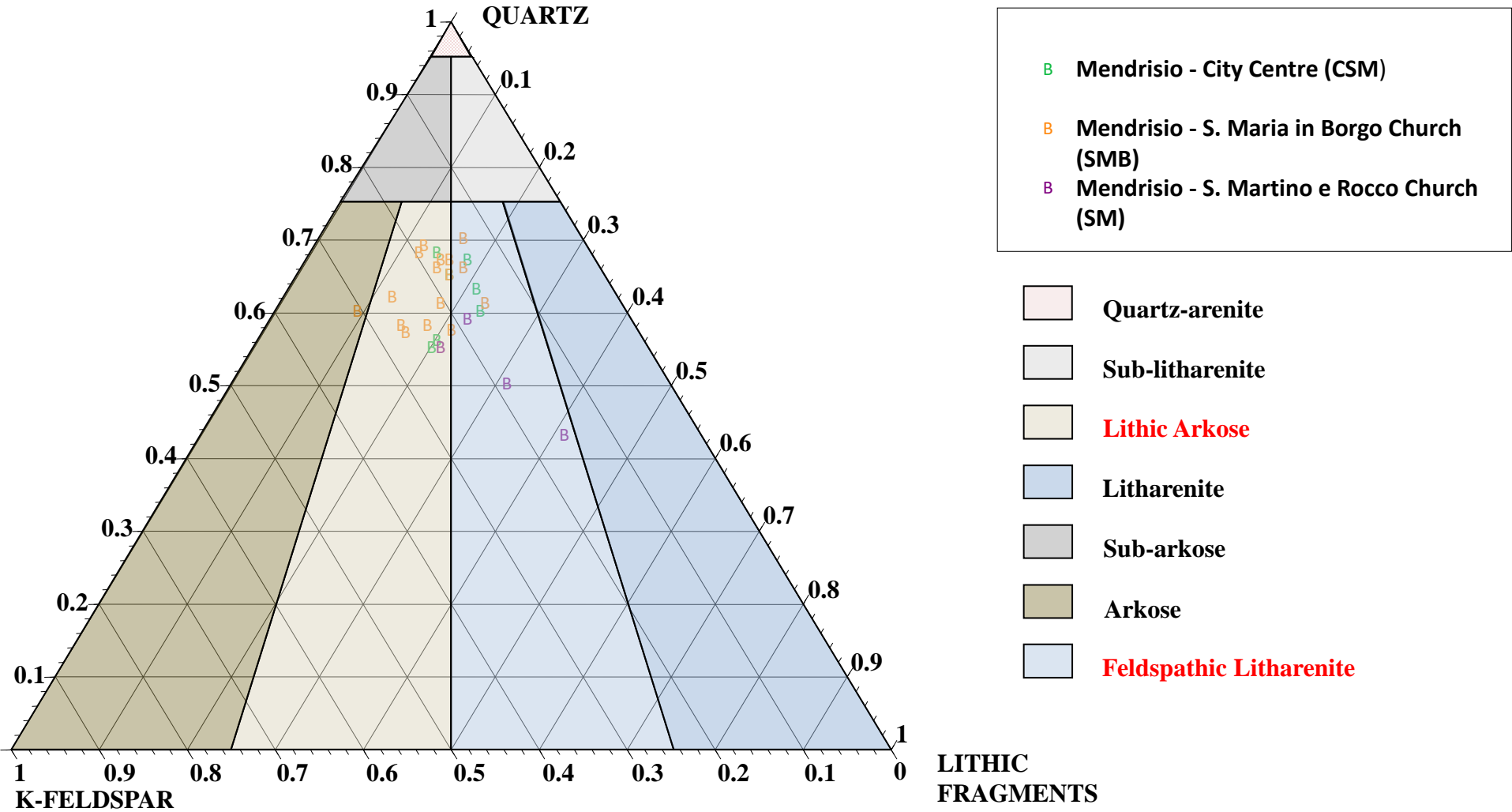


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# Sandstones



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# Sandstones



SS. Martino e Rocco church (Mendrisio)

S. Maria delle Grazie Oratory (Mendrisio)



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# Sandstones



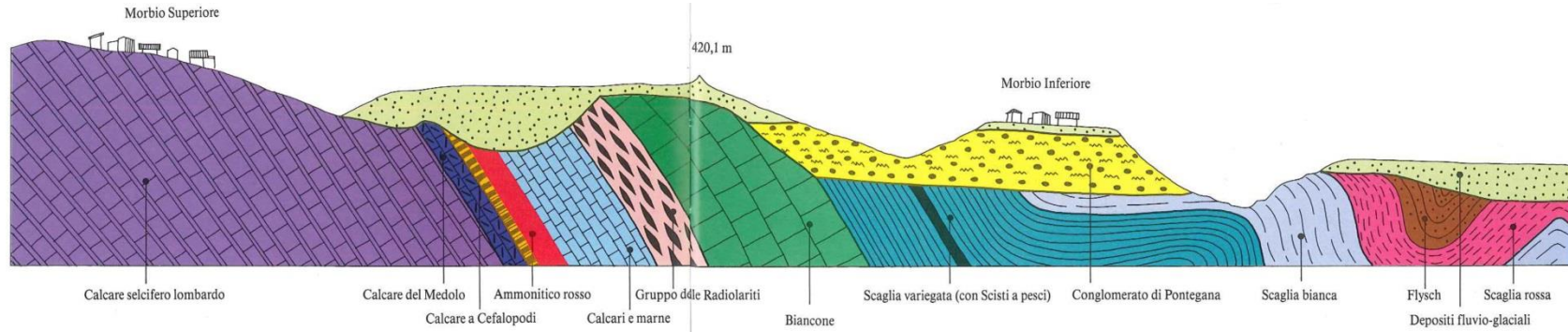
S. Maria in borgo Church 12th c. (Mendrisio)



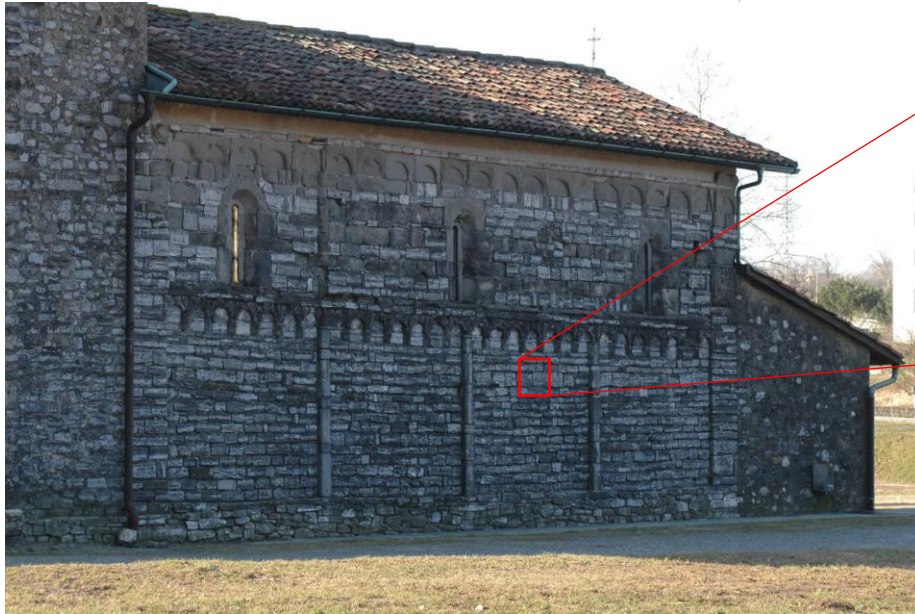
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# Limestones



Profilo geologico lungo le Gole della Breggia (da BERNOULLI & WIENMAYER 1967).

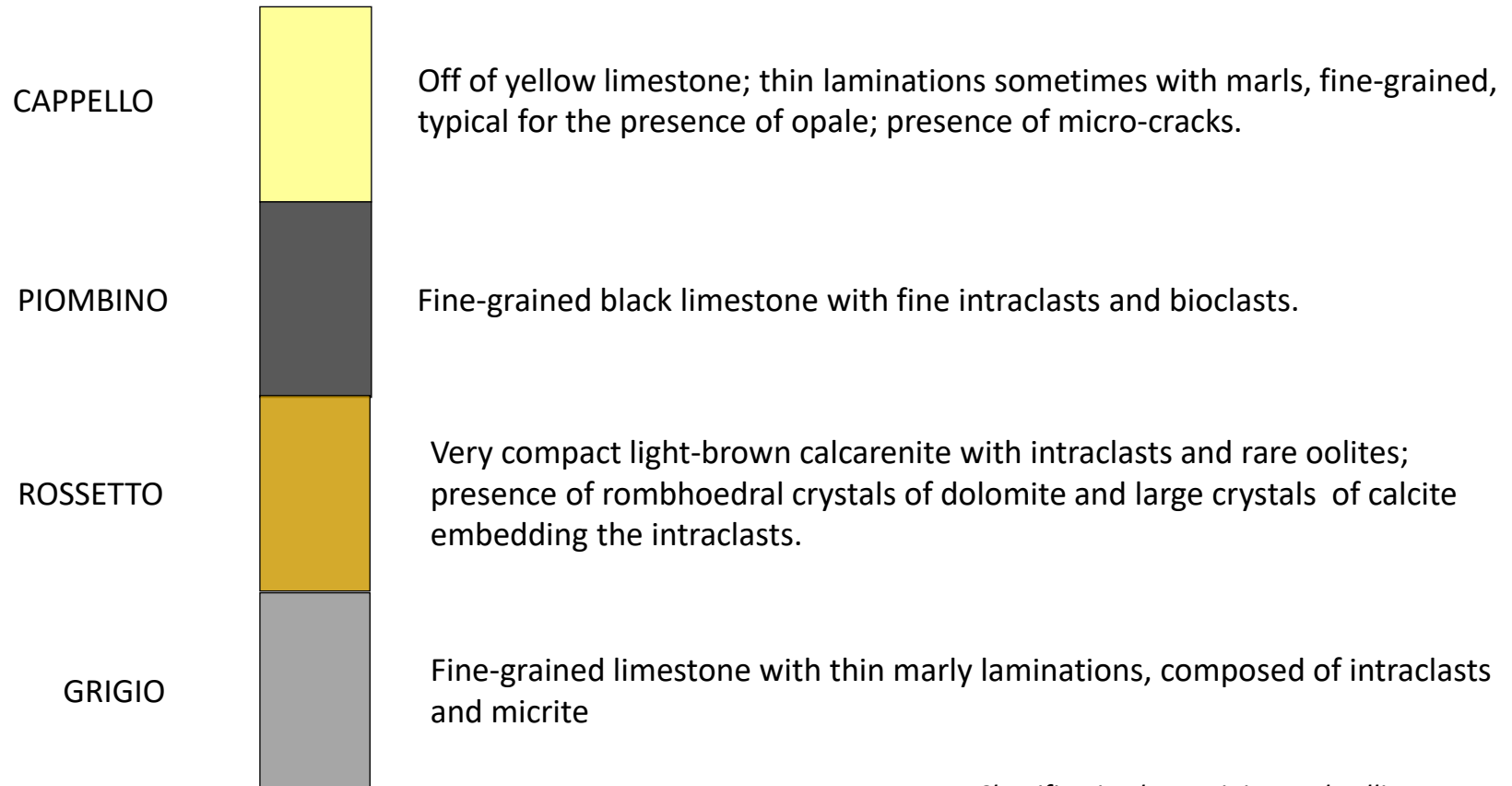


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# Saltrio limestones: lithotypes



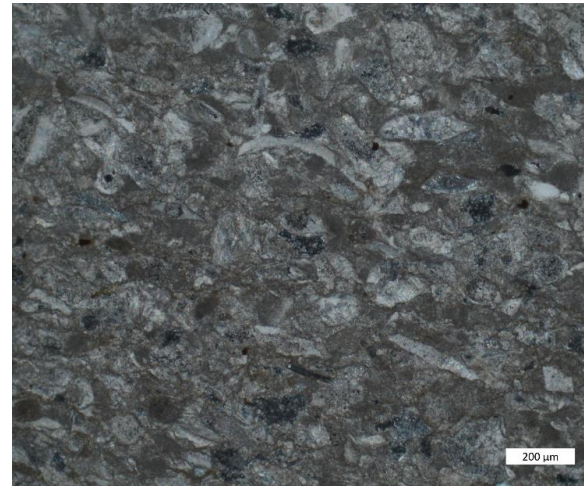
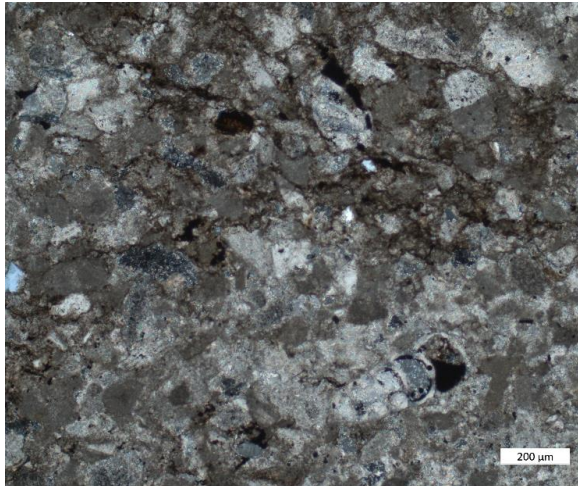
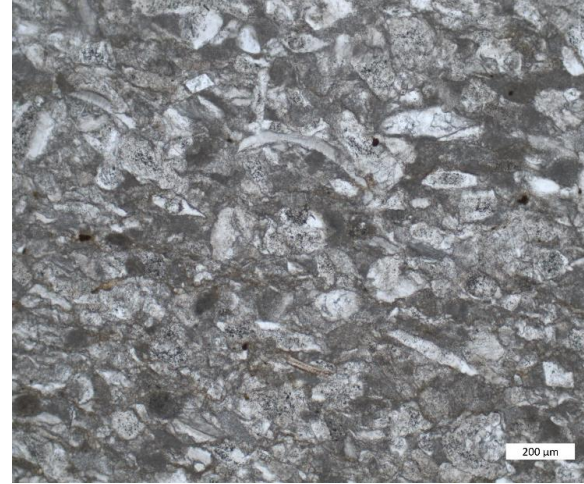
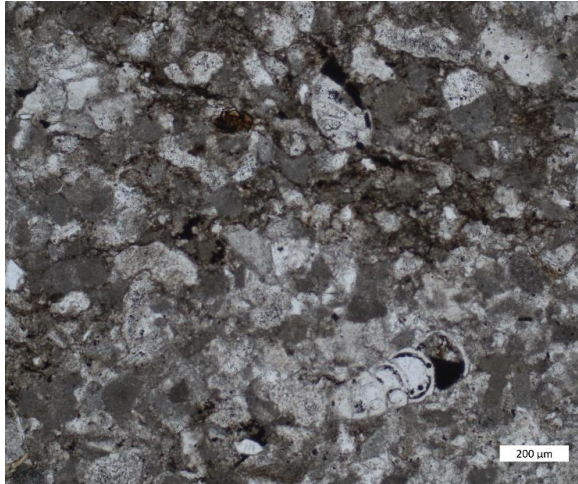
*Litho-stratigraphic column (not scaled)*

*Classification by Bugini R. and Folli L.*



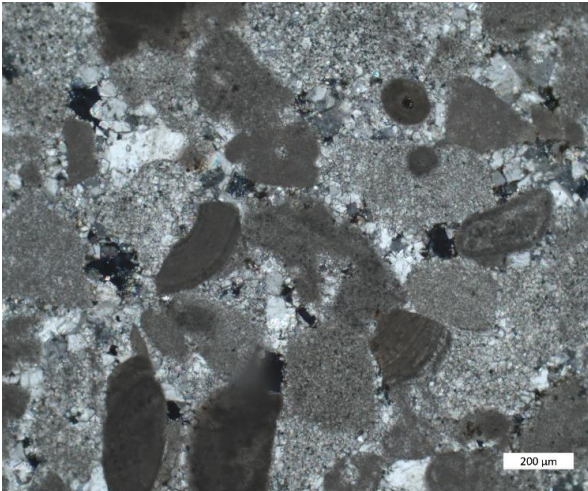
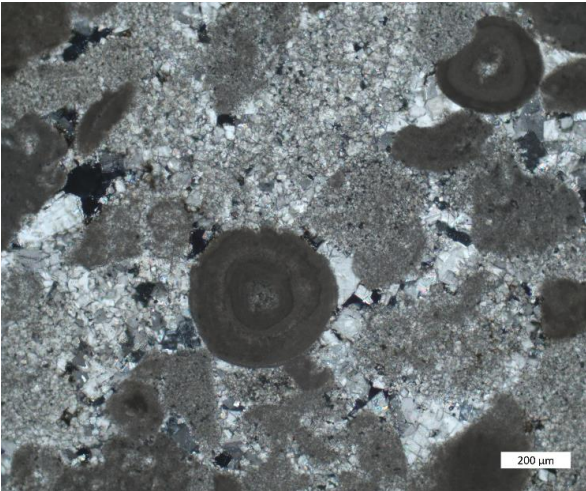
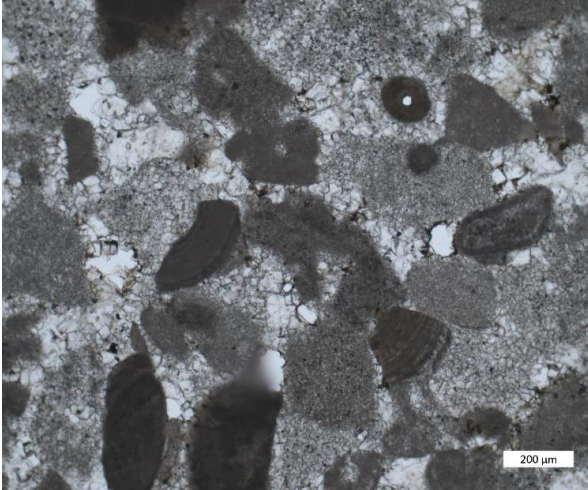
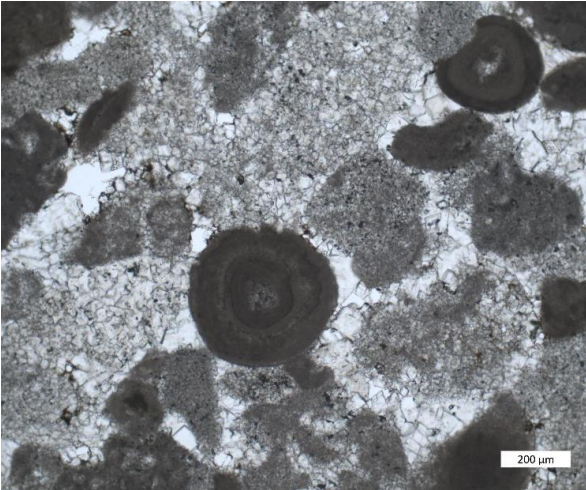
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# Saltrio limestone





# Viaggiù limestone



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# Saltrio limestones



Main portal – Morbio Inf.



Main portal – Coldrerio



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# Saltrio limestones



Reinassance Altar - Morcote



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# Saltrio limestones



Monumental cemetery - Genova

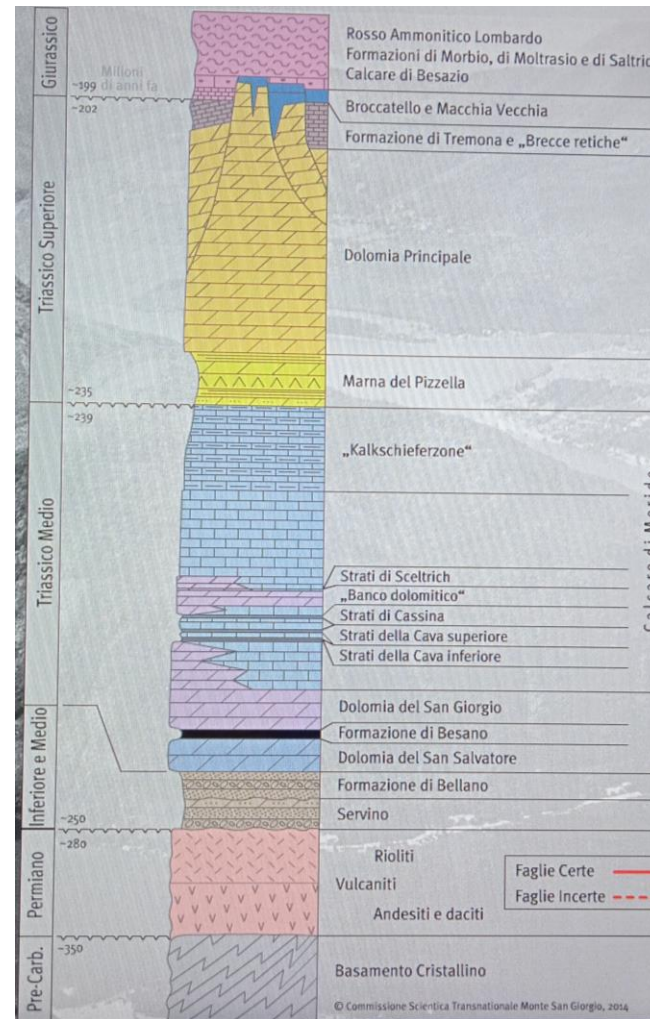


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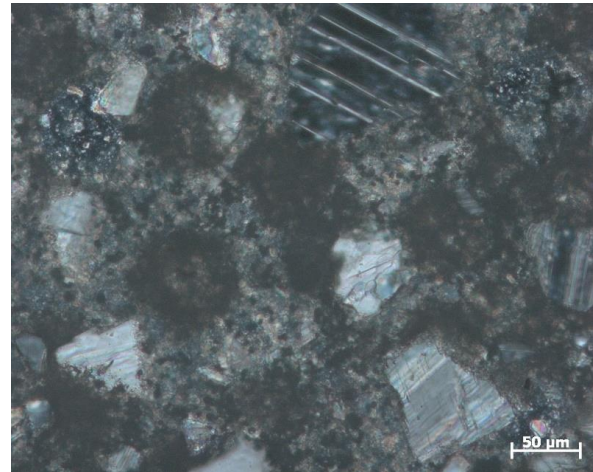
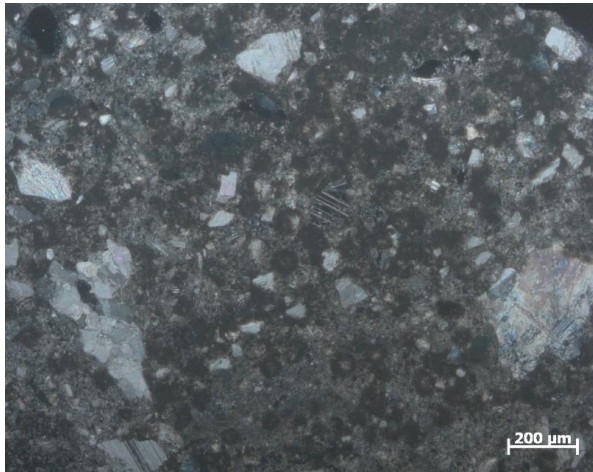
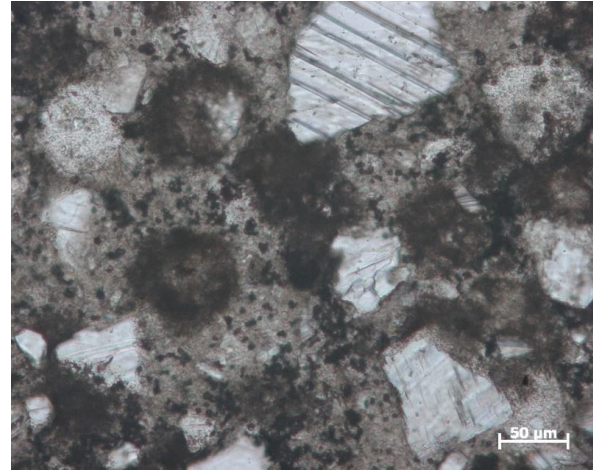
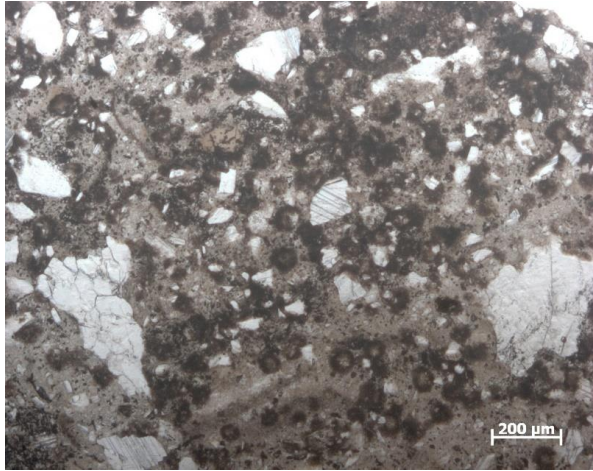
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# Dolostone Mt S. Salvatore, Mt S. Giorgio

## Dolomia principale







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# Gypsum (Limonta and Nobiallo)



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# Gypsum (Limonta and Nobiallo)

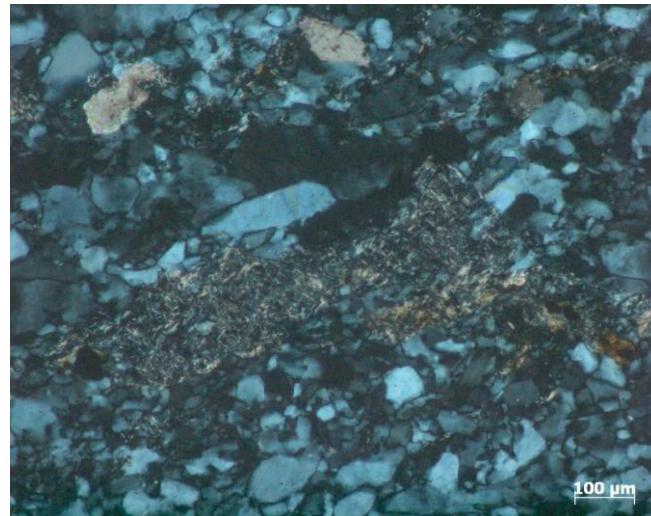
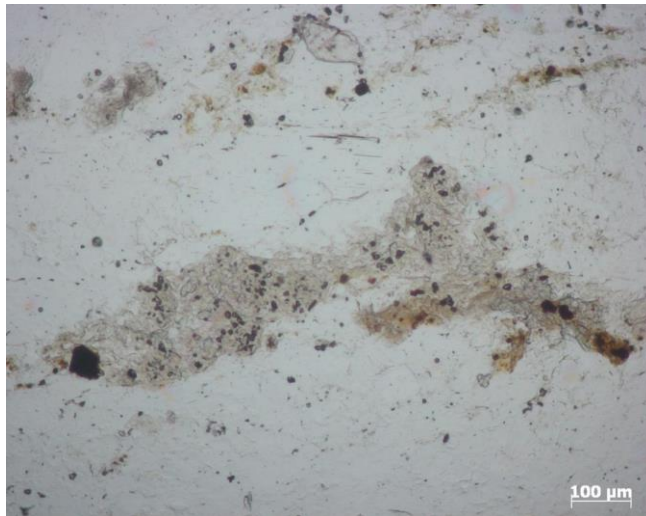
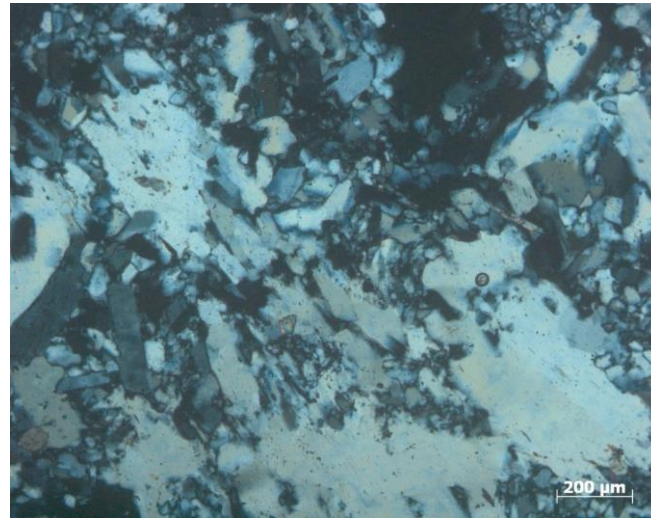
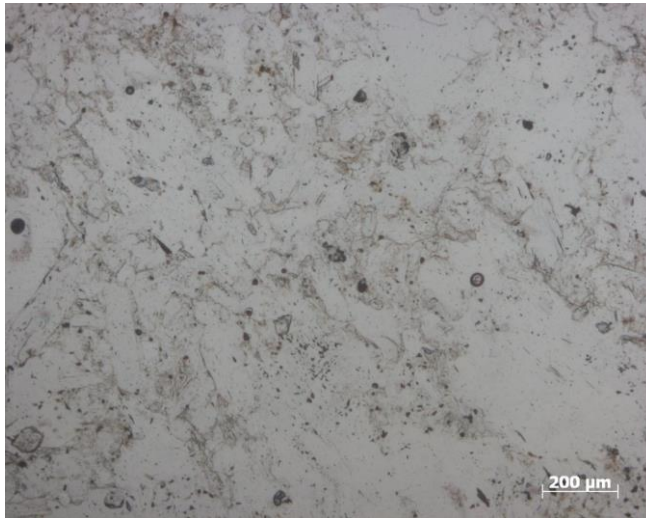


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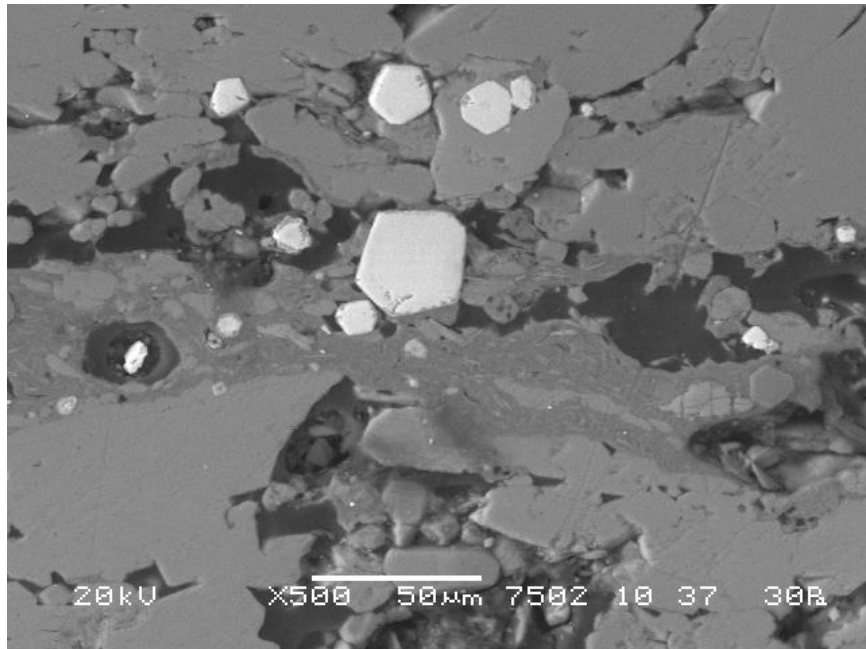


# Nobiallo sypsum

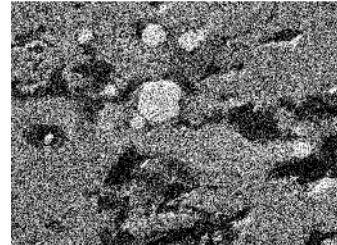




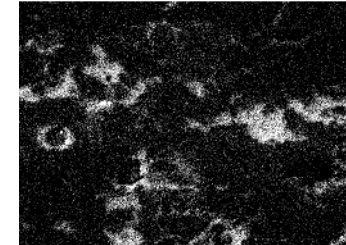
# Nobiallo sypsum



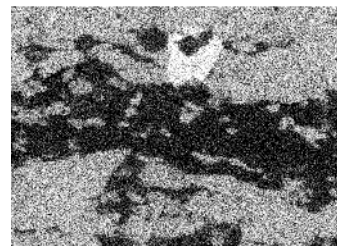
O



C



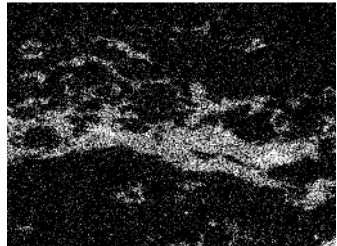
Ca



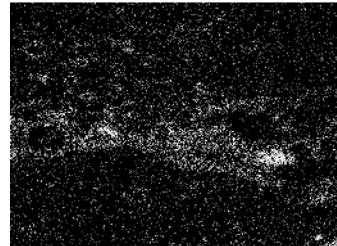
S



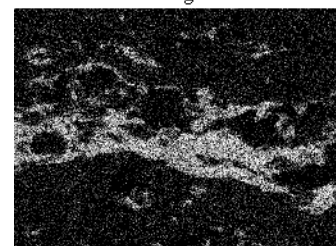
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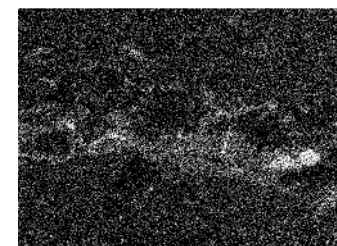
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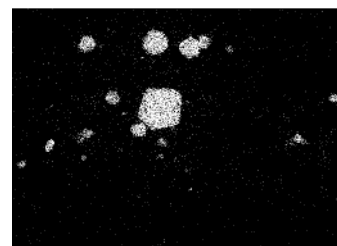
Mg



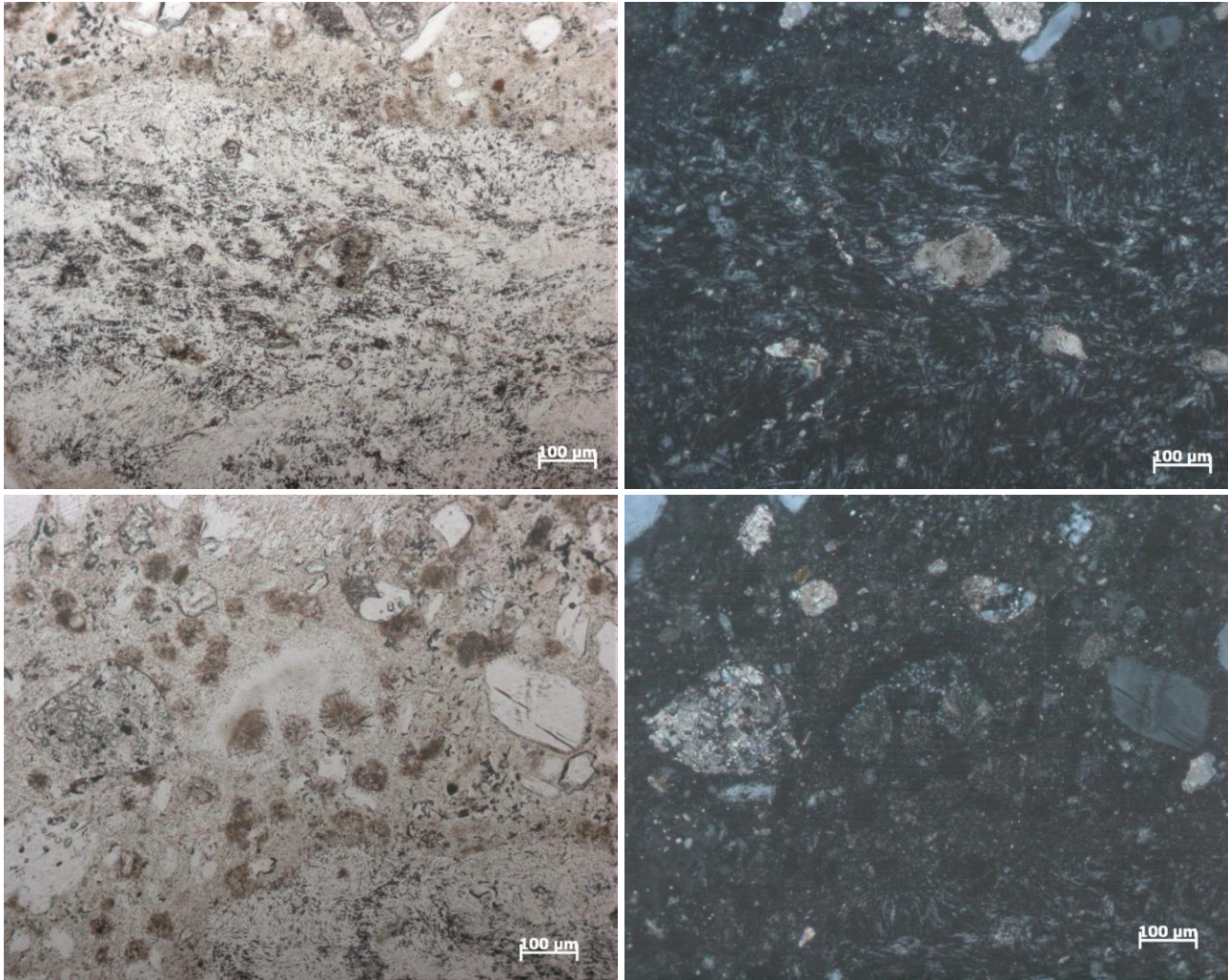
Al



Fe



# Nobiallo sypsum



Ground layer stucco decorations (Morbio Inferiore)

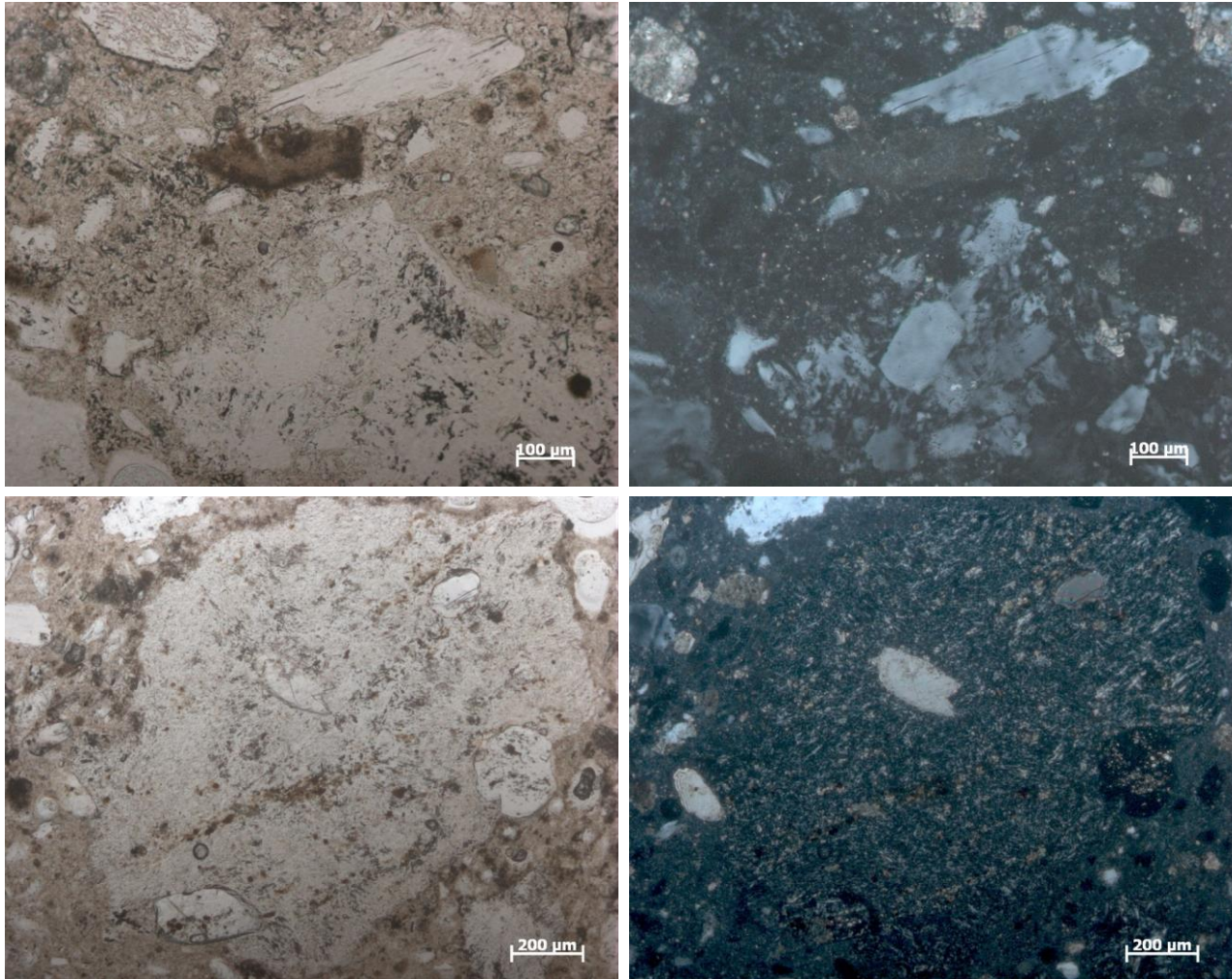


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# Nobiallo sypsum



Ground layer stucco decorations (Morbio Inferiore)







[giovanni.cavallo@supsi.ch](mailto:giovanni.cavallo@supsi.ch)

