



UNIVERSITÀ  
DEGLI STUDI  
DI PADOVA



DIPARTIMENTO  
DI GEOSCIENZE

# LA FALESIA DI LUMIGNANO

analisi di facies e sezione stratigrafica (Eocene -  
Oligocene dei Colli Berici)

Giovanni Stecca

A.A. 2022-2023

Matricola n° 1227258

# CONTESTO GEOLOGICO

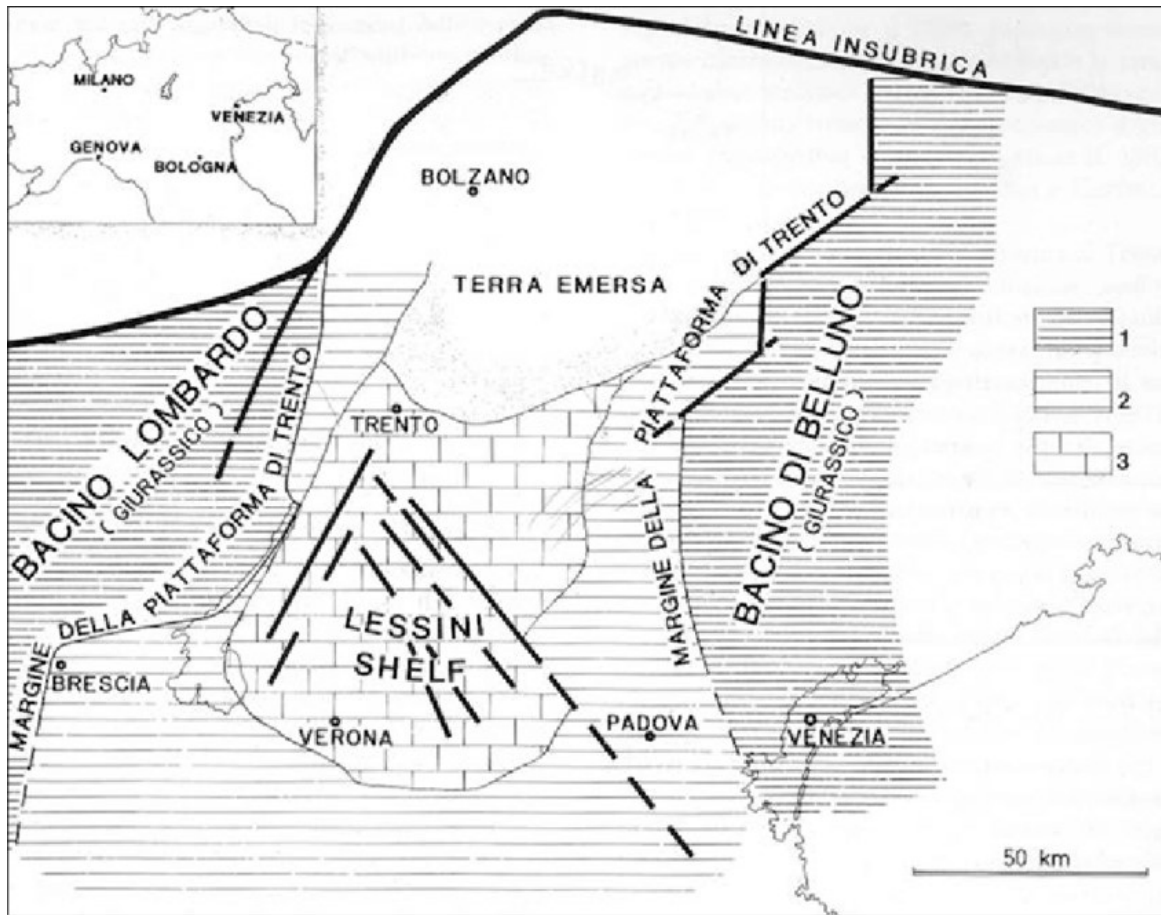


Fig. 1: la piattaforma carbonatica cenozoica dei Lessini. Bosellini, 1989.

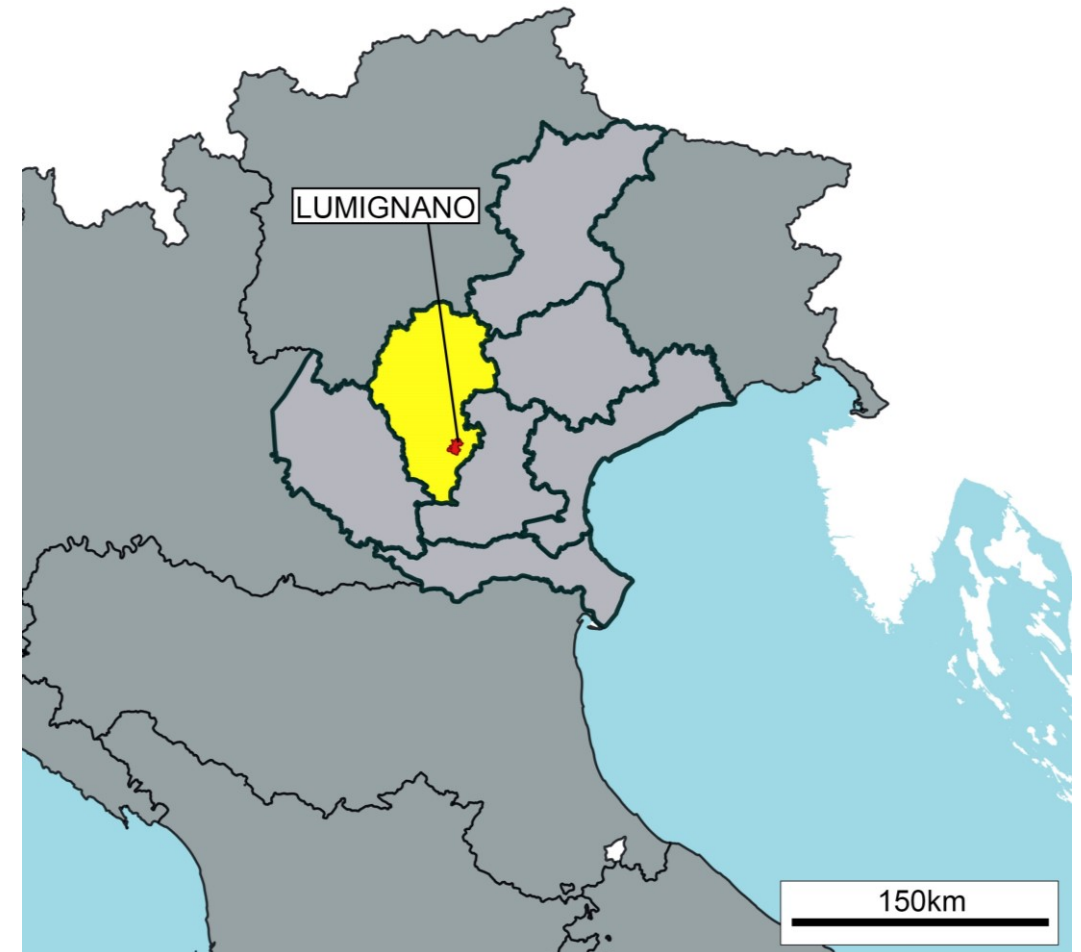


Fig. 2: la frazione di Lumignano, Longare (VI) Chimento et al., 2023.

# LA SUCCESSIONE DI INTERESSE



Fig. 4: l'abitato di Lumignano sovrastato dalle pareti, Chimento et al., 2023.

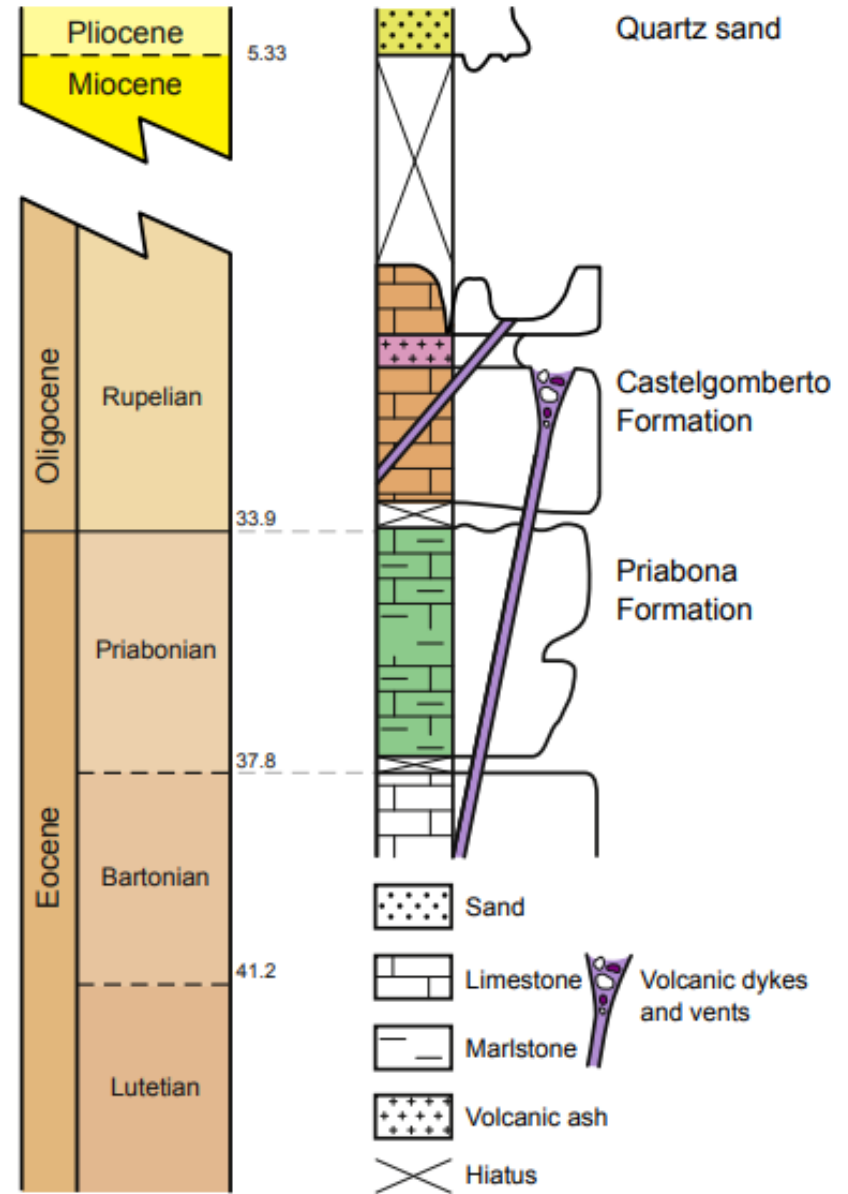


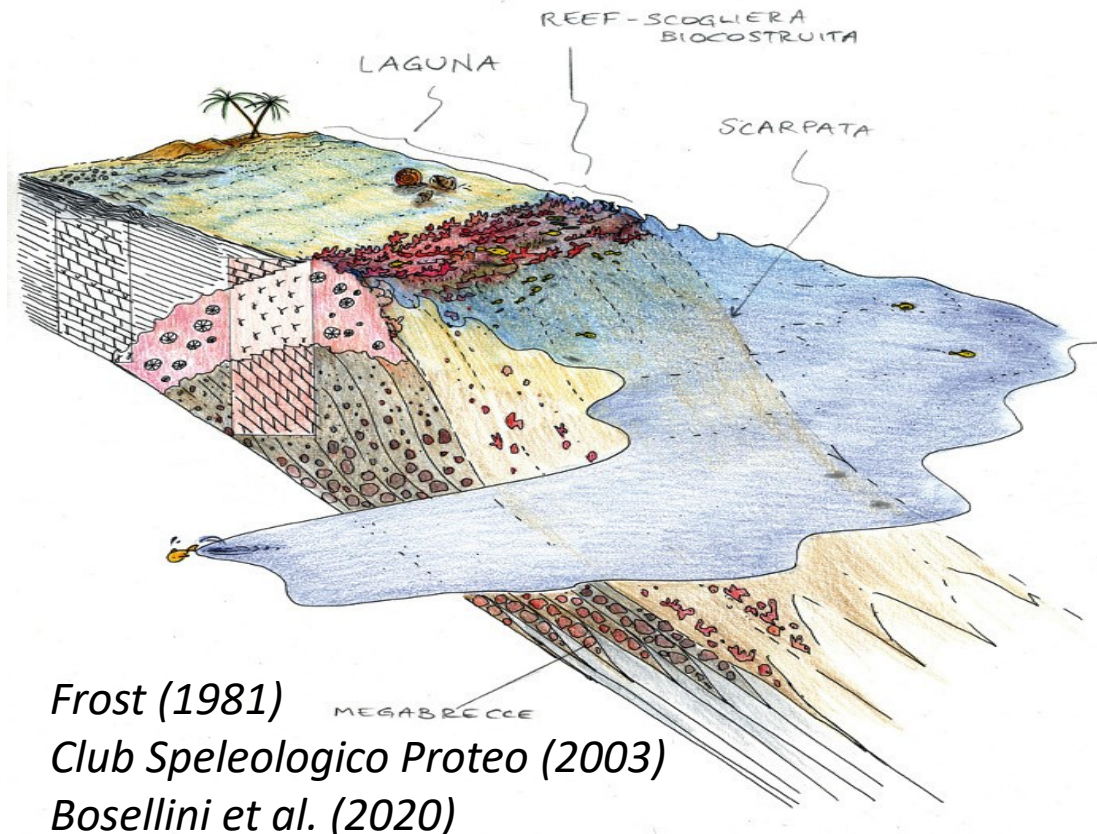
Fig. 3: la stratigrafia di Lumignano, Chimento et al., 2023 con modifiche.



# IPOSTESI SULLA STRUTTURA DELLA PIATTAFORMA

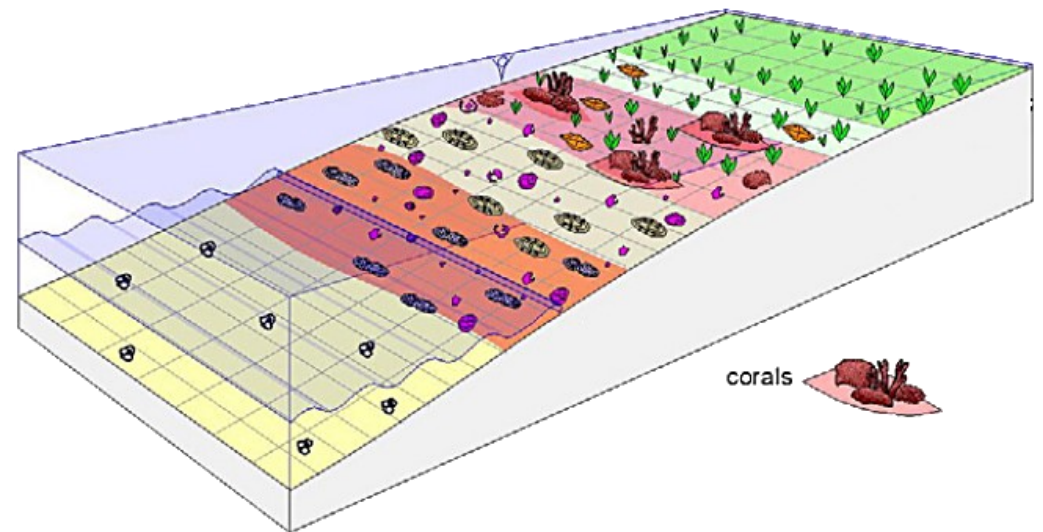
## 1) Piattaforma caraibica

Fig. 5: illustrazione di E. Manfrè.



## 2) Rampa poco inclinata

Fig. 6: Pomar e Haq, 2016.



# METODOLOGIE

1) Campionamento **sistematico** su 150m di [parete al nucleo del reef](#)



Fig. 7: friend e cliff usati per stabilizzarsi durante il campionamento



Fig. 8: QR code per il link al modello 3D delle pareti dal «Vomere» alla «Classica». Chimento et al., 2023.

2) Realizzazione di **sezioni lucide**

3) **Fotografate** con risoluzione anche del *decimo di mm* per la *classificazione*



# DATI

## Formazione di Priabona

[0-19]m

*campioni GS [22-30]*

### RUDSTONE

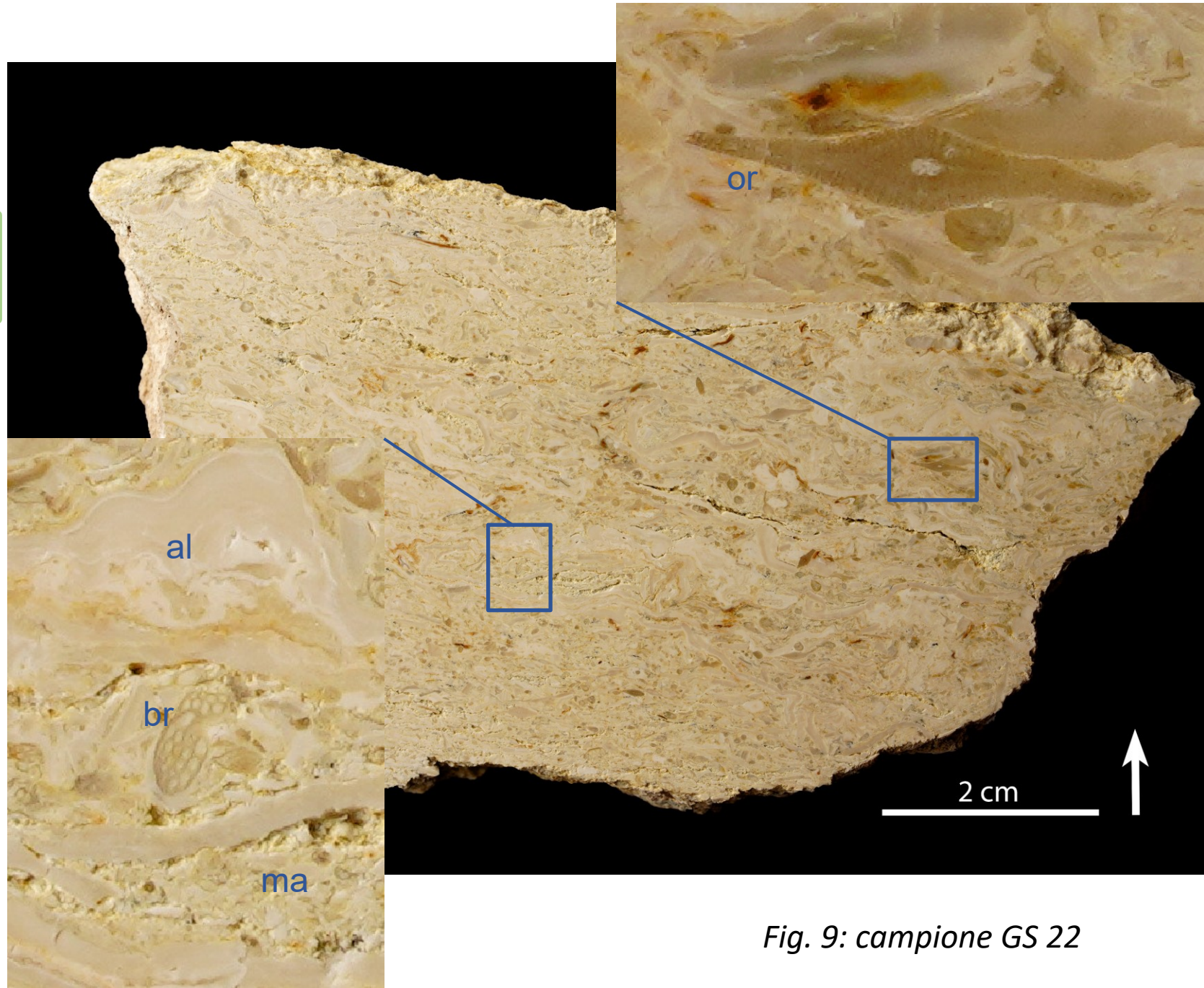


Fig. 9: campione GS 22



# DATI

## formazione di Castelgomberto

[20-150]m

*campioni*  
*GS [33-35]*  
*GS [1-21]*

## BOUNDSTONE

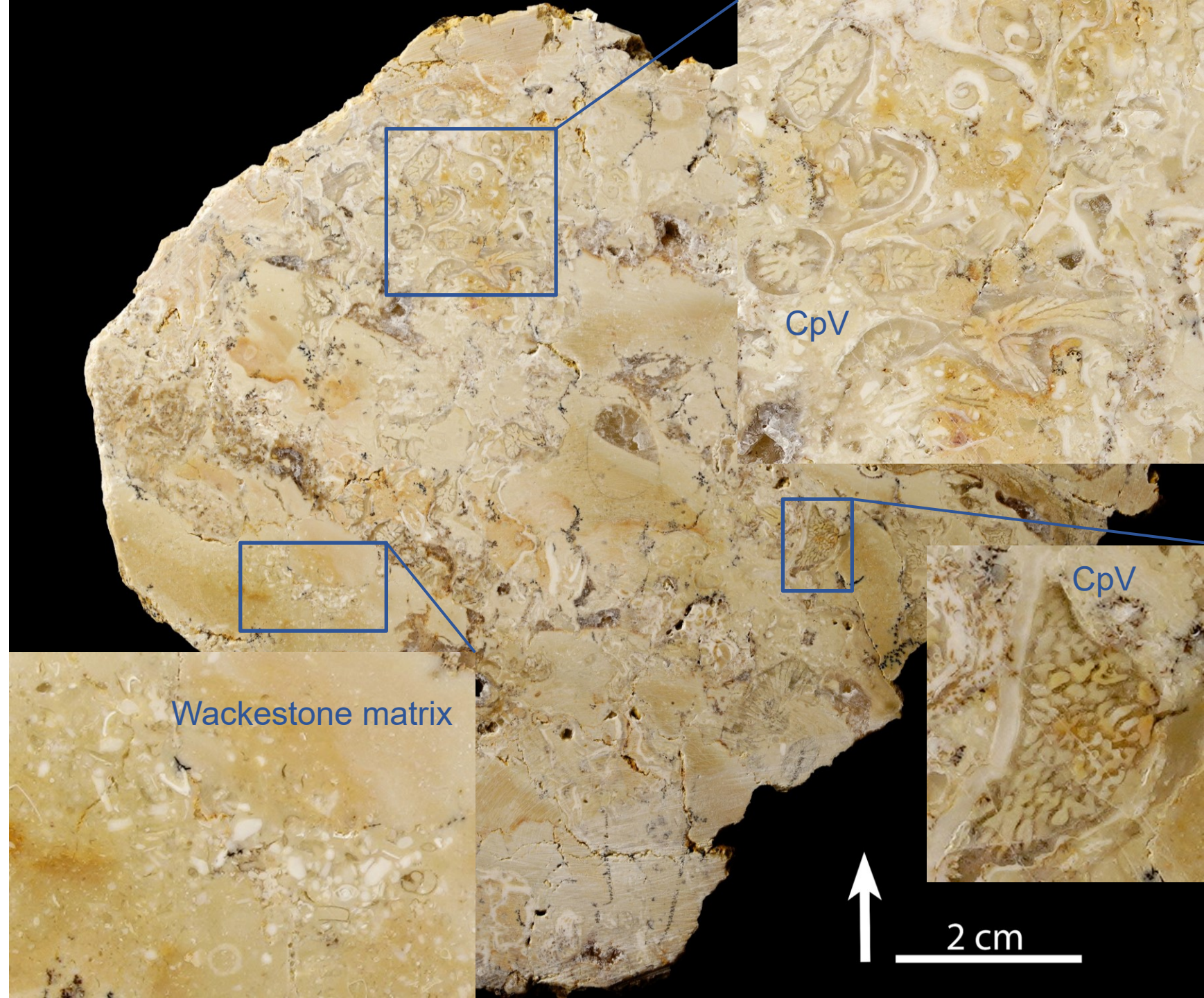


Fig. 10: campione GS 02



# DATI

## formazione di Castelgomberto

[20-150]m

*campioni  
GS [36-43]*

RUDSTONE

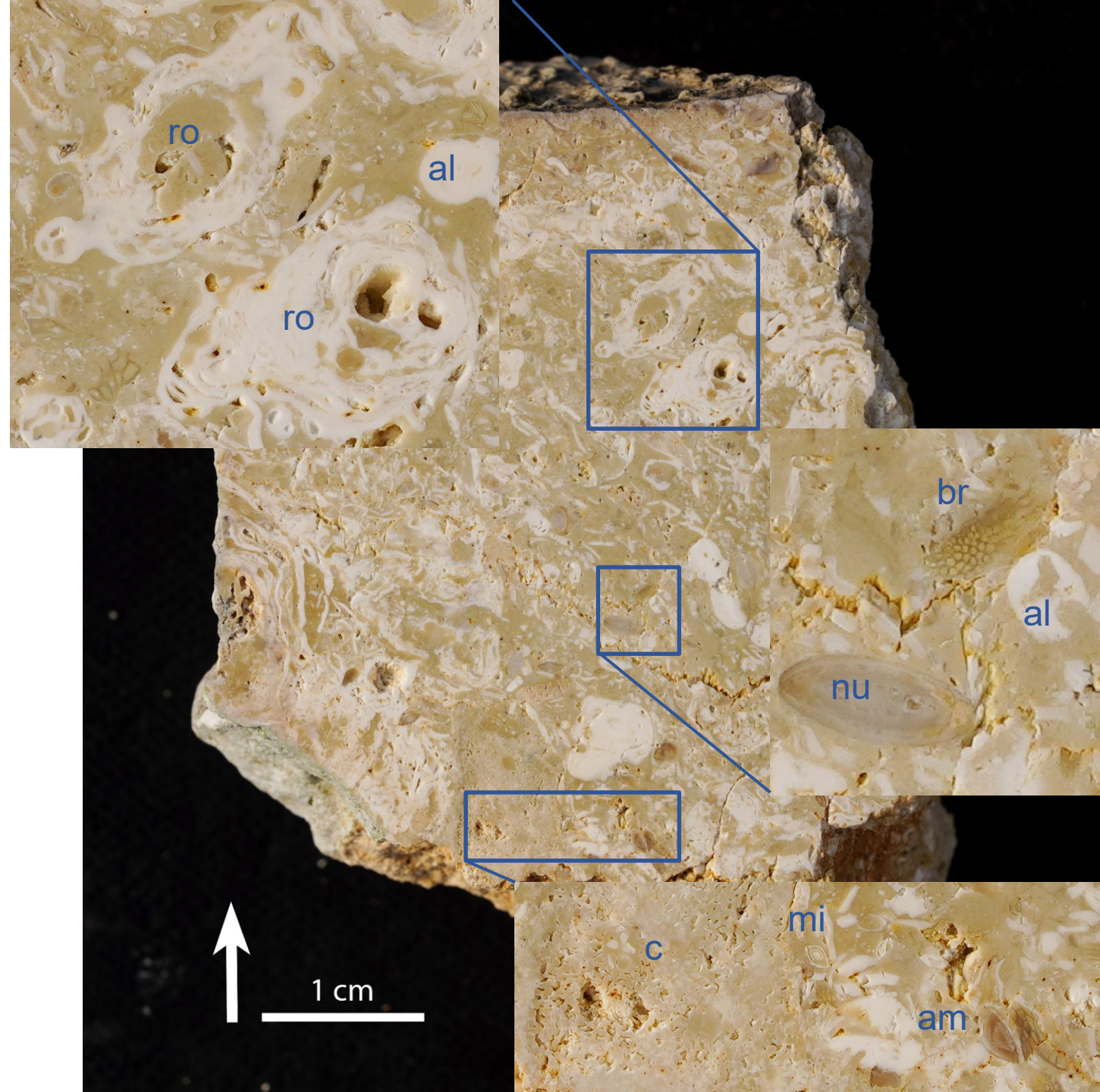


Fig. 11: campione GS 40



# DATI

**formazione di  
Castelgomberto**

*[20-150]m*

*campioni  
GS [44-48]*

PACKSTONE/GRAINSTONE



Fig. 12: campione GS 47

# Alcuni componenti della formazione di Castelgomberto

GS	R	CpV	F	C
48	x		x	x
47			x	x
46	x	x	x	x
45		x	x	
44	x		x	x
43	x		x	
42	x		x	
41	x		x	x
40	x		x	x
39	x		x	

GS	R	CpV	F	C
38			x	x
37	x		x	x
36			x	x
21			x	
20		x	x	
19		x	x	
18		x	x	
17			x	x
16			x	
15		x	x	

GS	R	CpV	F	C
14		x	x	
13		x	x	
12			x	x
11		x	x	
10		x	x	
9		x	x	
8		x	x	
7		x	x	
6		x	x	
5		x	x	

GS	R	CpV	F	C
4		x	x	
3		x	x	
2		x	x	
1			x	
35		x	x	
34			x	x
33		x	x	


GS = n° del campione, in ordine di altezza in tabella

R = rodoliti

CpV = coralli in **posizione di vita**

F = **fango** carbonatico

C = coralli

 = parete

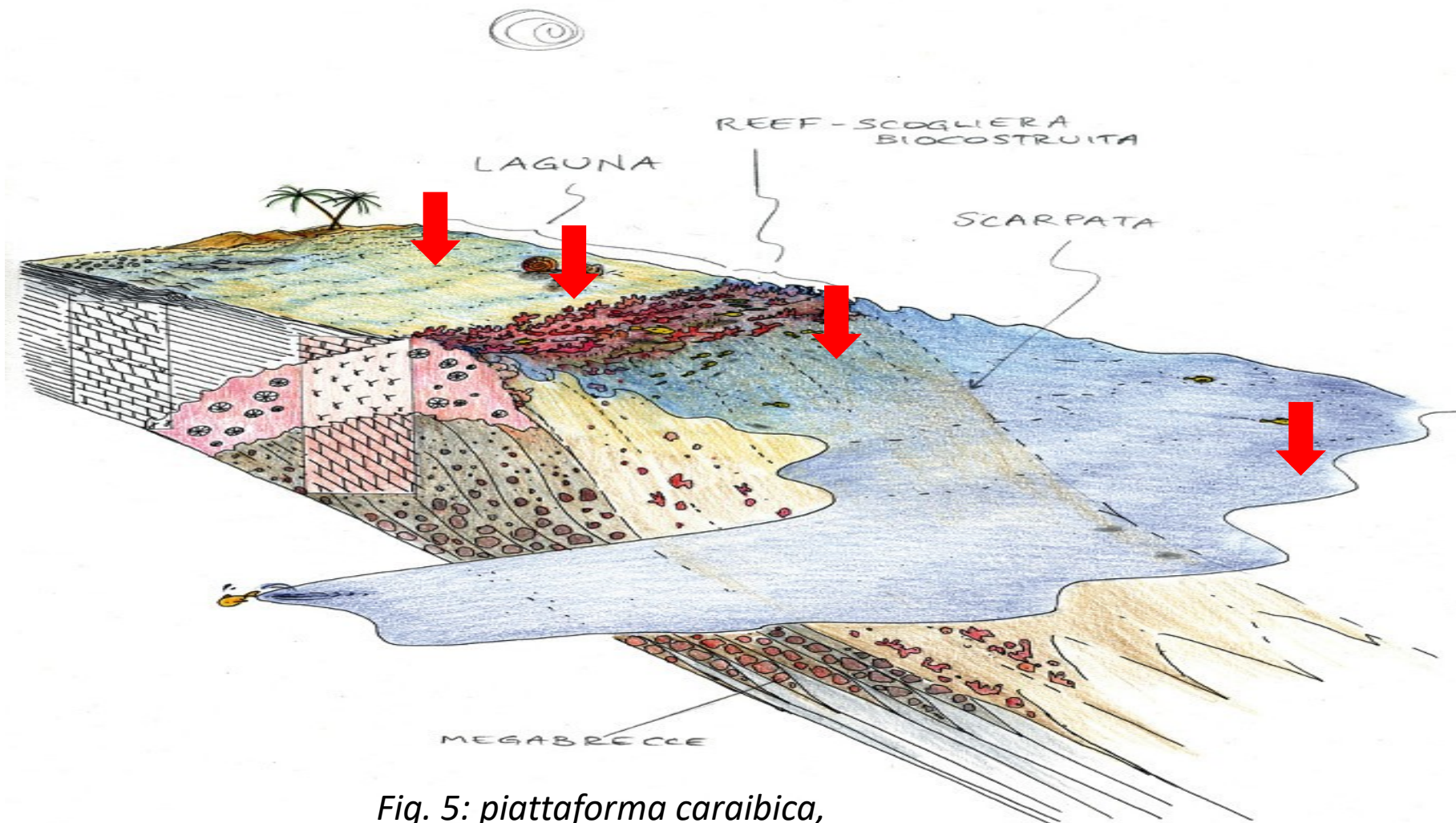


# RISULTATI

Elementi		Ambiente
Fango carbonatico	→	<b>sotto</b> la base <i>d'onda</i>
Coralli, alghe rosse, foraminiferi, briozoi	→	zona <b>fotica</b> , ma non necessariamente <i>eufotica</i>

Dove si può trovare un ambiente di questo tipo?

# RISULTATI



*Fig. 5: piattaforma caraibica,  
illustrazione di E. Manfrè.*



# RISULTATI

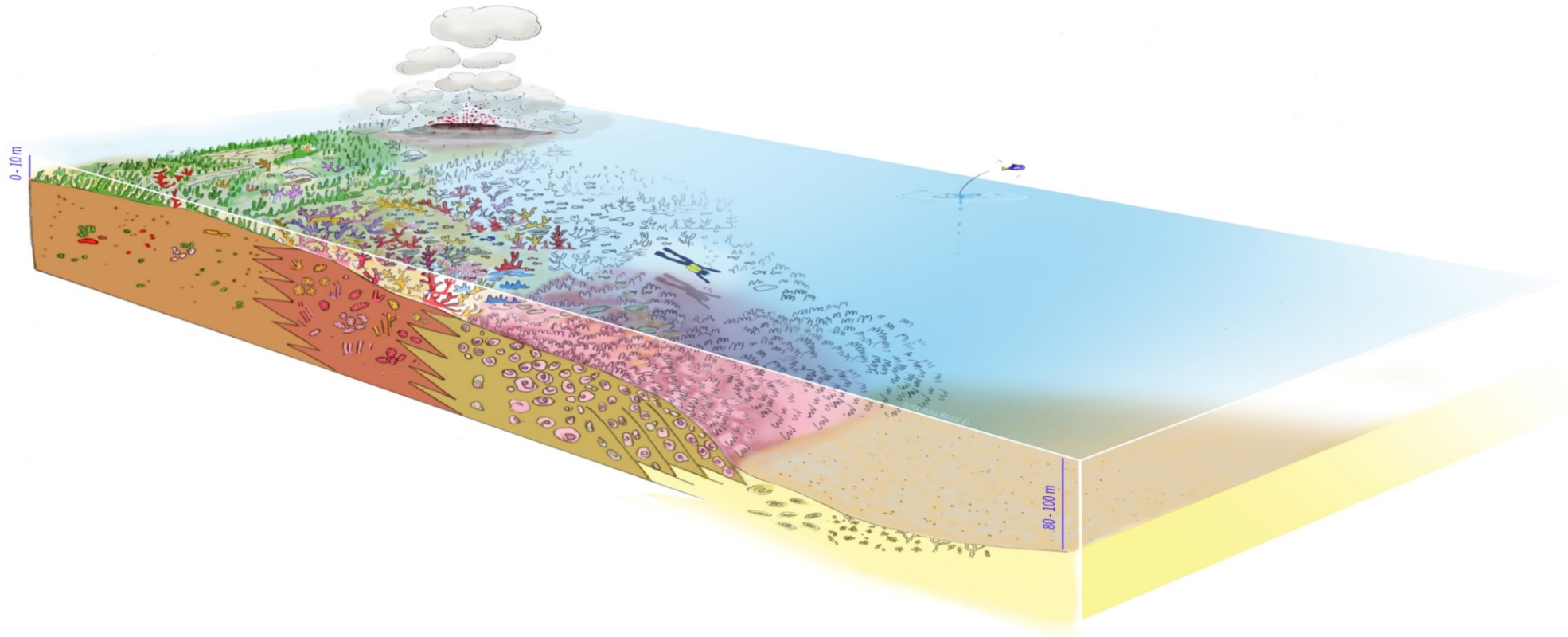


Fig. 13: la piattaforma oligocenica di Lumignano. Chimento et al., 2023, con modifiche



# RISULTATI

## GEOLOGIC MAP OF LUMIGNANO (Vicenza, North of Italy)

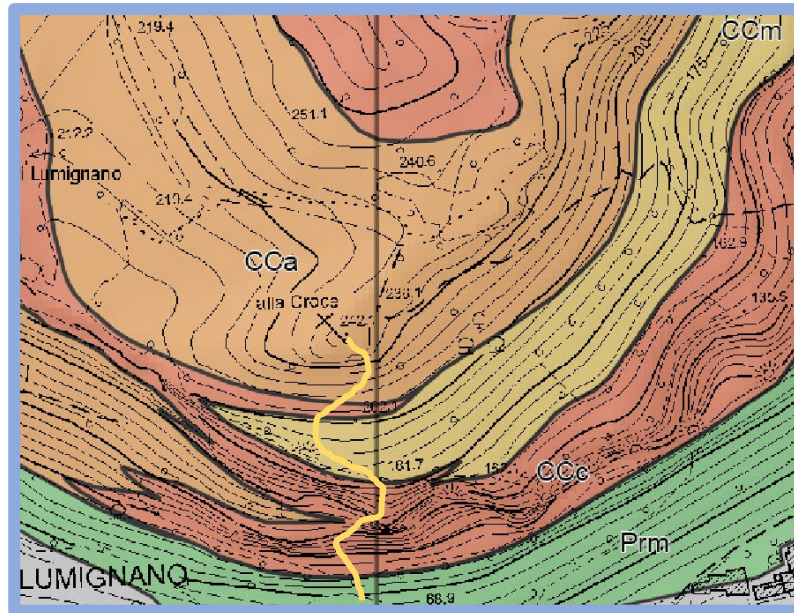
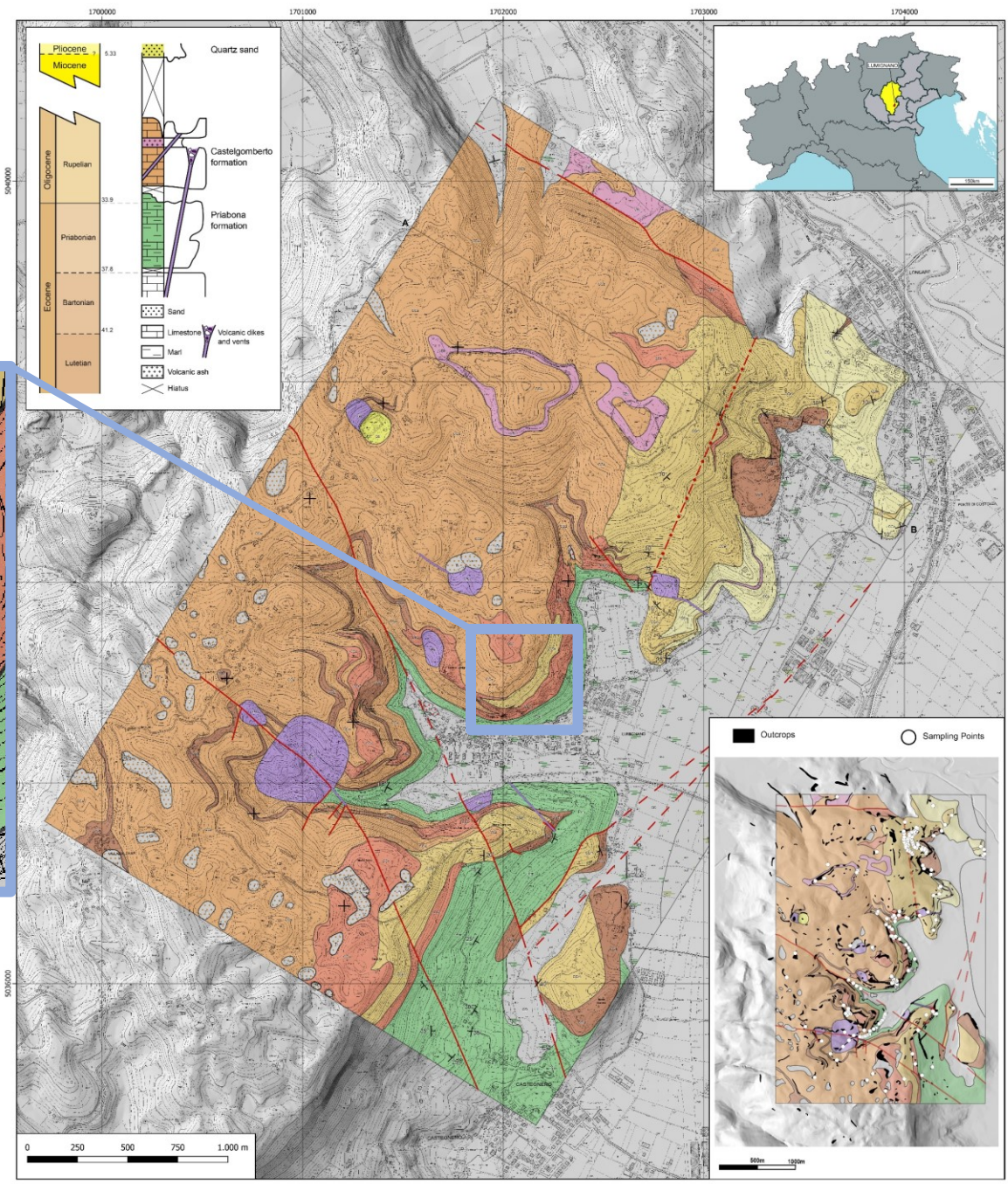
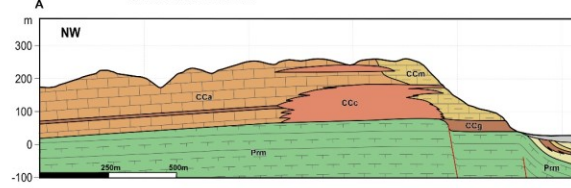
Filippo Tusberty<sup>1,2</sup>, Federica Chimento<sup>3</sup>, Marco Brandano<sup>3</sup>, Anna Breda<sup>1</sup>, Matteo Massironi<sup>1</sup>, Maria Luisa Perissinotto<sup>4</sup>, Laura Tomassetti<sup>1</sup>, Nereo Preto<sup>1</sup>

### LEGEND

- BED ATTITUDES
- SUB-HORIZONTAL BED ATTITUDES
- SEALED FAULT
- INFERRED FAULT
- FAULT
- [R] ROCKFALL DEPOSITS: clusters of boulders (up to tens of metres in diameter) accumulated at the base of steep walls.  
Age: Quaternary
- [AL] ALLUVIAL DEPOSITS: deeply weathered sand and silt deposited by rivers of the Venetian plain.  
Age: Quaternary
- [CD] COLLUVIAL DEPOSITS: reworked terra rossa soils and poorly sorted gravel deposits with soil matrix at the foot of the hills.  
Age: Quaternary
- [Tr] TERRA ROSSA: reddish-coloured residual deposits (soils and colluvium) that fills karstic depressions (dolines). It may include weathered blocks of limestone.  
Age: Quaternary
- [Qs] QUARTZ SAND: medium-fine layered quartz sand with silt intercalations bearing plant fragments, filling the San Rocco Doline. The unit has been almost completely mined.  
Age: Miocene - Pliocene
- [Vd] VOLCANIC DIKES: sub-vertical dikes, up to 1 m wide, filled by altered basalt with sparse vesicles.  
Age: Chattan - Rupelian p.p.
- [VBd] INTRA-DIATREMIC BRECCIA: volcanic breccias filling pipes which cutting across the Priabona and Castelgomberto formations. These breccias are made of vesicular basalt and limestone fragments up to some dm in diameter, and seldom include also some isolated fossils (corals and large molluscs). The intergranular space is filled by volcanic ash and by a bioclastic cement. Layering and normal grading are seldom observed.  
Age: Rupelian p.p.
- [VBt] EXTRA-DIATREMIC BRECCIA: tuffs and tuffites intercalated within the Castelgomberto formation, in layers up to some metres thick. Internal lamination and normal grading are common. Usually very altered and seldom include limestone clasts.  
Age: Rupelian p.p.

### CASTELGOMBERTO FORMATION - AGE: Rupelian p.p.

- [CCa] LAYERED GRAINSTONE-RUDSTONE LITHOFACIES: well-sorted grainstone/rudstone with diverse skeletal fragments, including miliolids, other benthic foraminifera and fragmented red algae. Encrusting (epiphytic) forms are common. Bedding is decimetric to metric and distinct, bed joints are undulous. Bioturbation is common. Corals are also common, both fragmented and transported and in life positions. In situ corals occur in layers (biostromes), or may form patch reefs few metres in diameter, with minimal relief. Additionally, mollusc shells, echinoids and fragments of crabs may be found.  
Thickness: > 250 m (the upper boundary does not outcrop in this area)
- [CCc] CORAL BOUNDSTONE LITHOFACIES: Massive limestone containing branching or massive corals in life position, immersed in a grainstone/packstone matrix with mostly fragmented red algae. At the core of walls, packstone and wackestone matrix prevail. Grainstones are instead prevalent at the margin or in the basal portions of the units composed of this lithofacies.
- [CCm] CORALLINE ALGAL LITHOFACIES: limestone (rudstone or floatstone) marly limestone or marlstone in poorly defined metric layers, with abundant branching coralline algae (māeri) and rhodoliths, and with a variable clay component. Small nummulitids and bryozoans are common, large oyster shells and irregular echinoids may also occur. Locally, rodoliths rudstone with coral fragments at the nucleus of rodoliths is present.
- [CCo] MARL AND FINE PACKSTONE LITHOFACIES: marlstone or marly limestone, poorly cemented, in decimetric layers. The main components are bryozoans, echinoderms and small foraminifera, including planktonic foraminifera. Bivalve shells and molluscs also occur. Layers of rudstone with rhodoliths, dm- to m-scale, are locally intercalated.
- [CCg] VICENZA STONE LITHOFACIES: massive, white/yellowish porous grainstone, very well sorted, in stratiform bodies, continuous for many hundreds of metres to a few kilometres, with a thickness up to few tens of metres, embedded in the layered grainstone-rudstone lithofacies. It also forms a horizon up to 40 metres thick at the base of the formation in the easternmost portion of the area.
- [Prm] PRIABONA FORMATION: marlstone to marly limestone where individual grains are easily recognizable and can be often isolated. Benthic larger foraminifera, including nummulitids and Oribolites, are common along with red algae, which can be encrusting, branched or often form rhodoliths. In the field, it crops out with undisturbed layers, cm to m thick, which are poorly cemented, erodible and often covered with vegetation.  
Thickness: up to 200 m (base is not exposed in the study area)  
Age: Rupelian p.p. - Priabonian



Percorso campionamento

Fig. 14: carta geologica dell'area di Lumignano, da Tusberty et al.



# Conclusioni

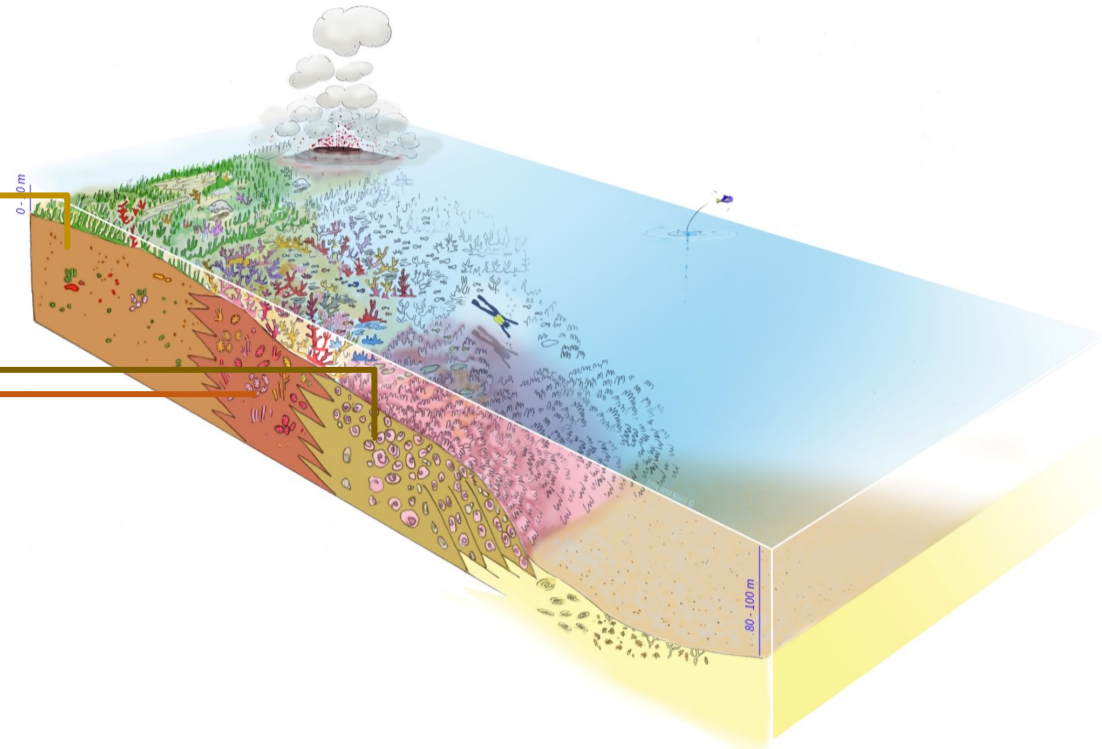
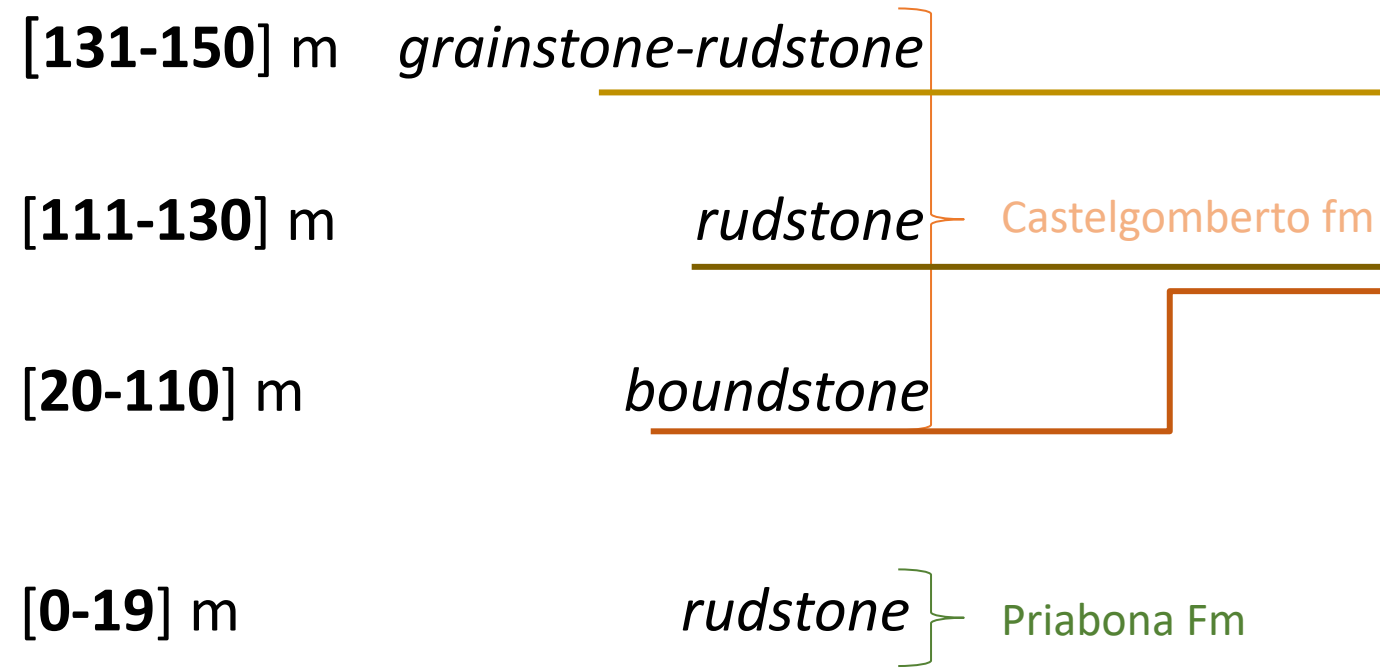


Fig. 13: la piattaforma oligocenica di Lumignano, modificato da Chimento et al., 2023

# RINGRAZIAMENTI

*Un ringraziamento particolare va al **relatore** per l'estrema disponibilità,  
a **Federica e Michele** per l'assistenza durante il campionamento,  
alla **famiglia** che mi ha supportato durante questi anni di studi,  
ai miei **compagni di corso** con cui ho condiviso inestimabili momenti di crescita,  
all'intero **Dipartimento di Geoscienze** per aver permesso tutto ciò.*

**Grazie a tutti per l'attenzione!**



# BIBLIOGRAFIA

- Bosellini, A., 1989. Dynamics of Tethyan Carbonate Platforms, in: Crevello, P.D., Wilson, J.L., Sarg, J.F., Read, J.F. (Eds.), Controls on Carbonate Platforms and Basin Development. SEPM Society for Sedimentary Geology, p. 0. <https://doi.org/10.2110/pec.89.44.0003>
- Bosellini, F.R., Vescogni, A., Wolfgang, K., Zoboli, A., Di Giuseppe, D., Papazzoni, C.A., 2020. Revisiting reef models in the Oligocene of northern Italy (Venetian Southern Alps). *Bollettino della Società Paleontologica Italiana* 59, 337–348. <https://dx.doi.org/10.4435/BSPI.2020.12>
- Chimento F , Tusberti F , Brandano M, Breda A, Massironi M, Perissinotto M L & Preto N (2023). Is it Possible to Inventory Geoheritage Without Available Geological Maps? The Case of Lumignano and Costozza (Berici Hills, Northern Italy)', *Geoheritage* **15**, 55. <https://doi.org/10.1007/s12371-023-00820-1>
- Chimento F, Perissinotto ML, Preto N, Tusberti F (2022) Arrampicare Tra i Coralli. *Montagne* 360: 44–47.
- Frost, S.H., 1981. Oligocene Reef Coral Biofacies of the Vicentin Northeast Italy, in: *European Fossil Reef Models*, SEPM Special Publication. SEPM (Society for Sedimentary Geology), pp. 483–539.

# BIBLIOGRAFIA

- Geister, J., Ungaro, S., 1977. The Oligocene coral formations of the Colli Berici (Vicenza, Northern Italy). *Eclogae Geologicae Helvetiae* 70, 811–823.
- Nebelsick, J.H., Bassi, D., Lempp, J., 2013. Tracking paleoenvironmental changes in coralline algal-dominated carbonates of the Lower Oligocene Calcareniti di Castelgomberto formation (Monti Berici, Italy). *Facies* 59, 133–148. <https://doi.org/10.1007/s10347-012-0349-6>
- Pomar, L., Baceta, J.I., Hallock, P., Mateu-Vicens, G., Basso, D., 2017. Reef building and carbonate production modes in the west central Tethys during the Cenozoic. *Marine and Petroleum Geology* 83, 261–304. <https://doi.org/10.1016/j.marpetgeo.2017.03.015>
- Pomar, L., Haq, B.U., 2016. Decoding depositional sequences in carbonate systems: Concepts vs experience. *Global and Planetary Change* 146, 190–225. <https://doi.org/10.1016/j.gloplacha.2016.10.001>
- Tusberti F, Chimento F, Brandano M, Breda A, Massironi M, Perissinotto ML, Tommasetti L, Preto N. Geometry and stratigraphic relationships of lower Oligocene coral reefs in Lumignano (Berici Hills, northern Italy), *Italian Journal of Geosciences*; unpublished, under review.