

IT4050029 - ZSC-ZPS - Boschi di San Luca e Destra Reno

WHAT ARE GEOSITES

Geosites (or "geological places") are localities that show rare geological, geomorphological, mineralogical or paleontological aspects that exemplify the characteristics of a territory. They are clearly visible and well preserved, often forming spectacular landscapes and in all cases they return fundamental information for the knowledge of the Earth. The set of geosites of a given region constitutes its Geological Heritage and expresses its geodiversity. In Emilia-Romagna, the identification of geosites, caves and karst areas and their protection, planning and management are governed by the Regional Law of 10 July 2006, n. 9 "Regulations for the conservation and enhancement of the Geodiversity of Emilia-Romagna and related activities".

The Emilia-Romagna Region is actively involved in the census, filing and valorisation of geosites of regional/national significance and those of local significance: at the moment over 700 geosites have been catalogued, in addition to almost 900 caves and karst areas. And future research campaigns will provide further updates and knowledge, thus enhancing regionale Geographical Information Systems and Databases.

WOULD YOU LIKE TO KNOW MORE? GO TO THESE EMILIA-ROMAGNA REGION WEB PAGES.

The Geosites



File of this geosite



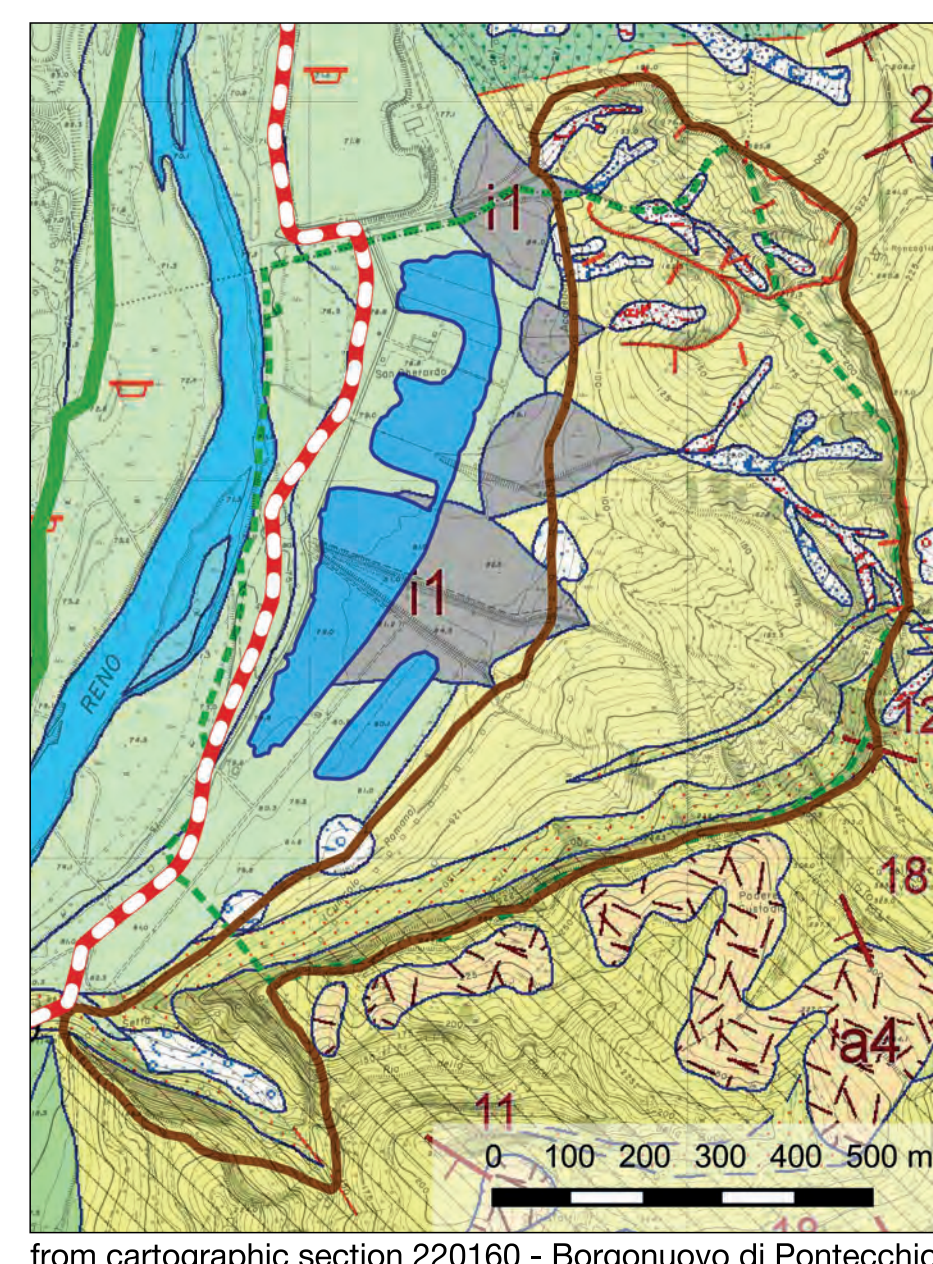
Itineraries and trails



WEB-GIS



Publications



GEOSITE GEOLOGICAL MAP 1:10,000

GEOSITE PERIMETER

FAA - ARGILLE AZZURRE

Gray and blue-grey clays, many clays, clayey and silty marls, sometimes leaden grey, in medium and subordinately thin layers, with little or no visible joints due to bioturbation, with subordinate thin reworked sandstone layers. Microfossils are always present, while macrofossils are concentrated in benches or nests. Variable environment from slope to platform. (Lower Pliocene - Lower Pleistocene)

FAAa - ARGILLE AZZURRE - SANDSTONE LITOFACIES

Markedly lenticular bodies with a maximum transversal extension of a few hundred metres. They are always well stratified with a sand-pelite ratio ranging from 1/1 to 10/1. Sandstones with subordinate biocalcareous and biocalcudites, in thin to thick layers, organized in decametric parcels; outcrops at different stratigraphic heights. A few tens of meters thick. (Lower Pliocene - Lower Pleistocene)

ADO2 - MONTE ADONE FORMATION - MEMBER OF THE GANZOLE

Fine sandstones and subordinate bioturbated sandy mudstones in medium to very thick beds; tabular, wedge-shaped and concave geometry. The appearance of pelitic layers make the stratification more marked and evident. Sometimes there are layers of dark gray mudstones. Macrofossils concentrated in beds. (Middle and upper Pliocene - Lower Pleistocene?)

«PROTECTED LANDSCAPE HILLS OF SAN LUCA» AND OF NATURA 2000 SITE IT4050029

«WOODS OF SAN LUCA AND RIGHT RENO» WESTERN PERIMETER

«SAN GHERARDO NATURAL OASIS» PERIMETER - MUNICIPALITY OF SASSO MARCONI

VIA DEGLI DEI (HIKING PATH)

SAN GHERARDO BASINS

(created after the map was made)

The regional geological map 1:10,000 is a very rich map that represents numerous information: geological units, outcrops of stratigraphic, tectonic or sedimentological interest, landslides, slope and alluvial deposits, particular geological processes, geomorphological and anthropic elements, structural elements, points obser-

vation and measurement, resources/prospecting.

It is not easy to read: for this reason, we have placed in the legend **only the geological units described within the geosite** and we have added other elements that **may be of interest to tourists** during excursions (protected areas, hiking roads).

A geosite that tells us about the Pliocene ancient gulf

Inside the Natural Oasis of San Gherardo there is a large part of the Geosite of local interest "Balzo dei Rossi, rio Conco and gullies of Roncaglio". Here the geosite is characterized, already at first glance, by two very evident and very different geomorphological and landscape elements:

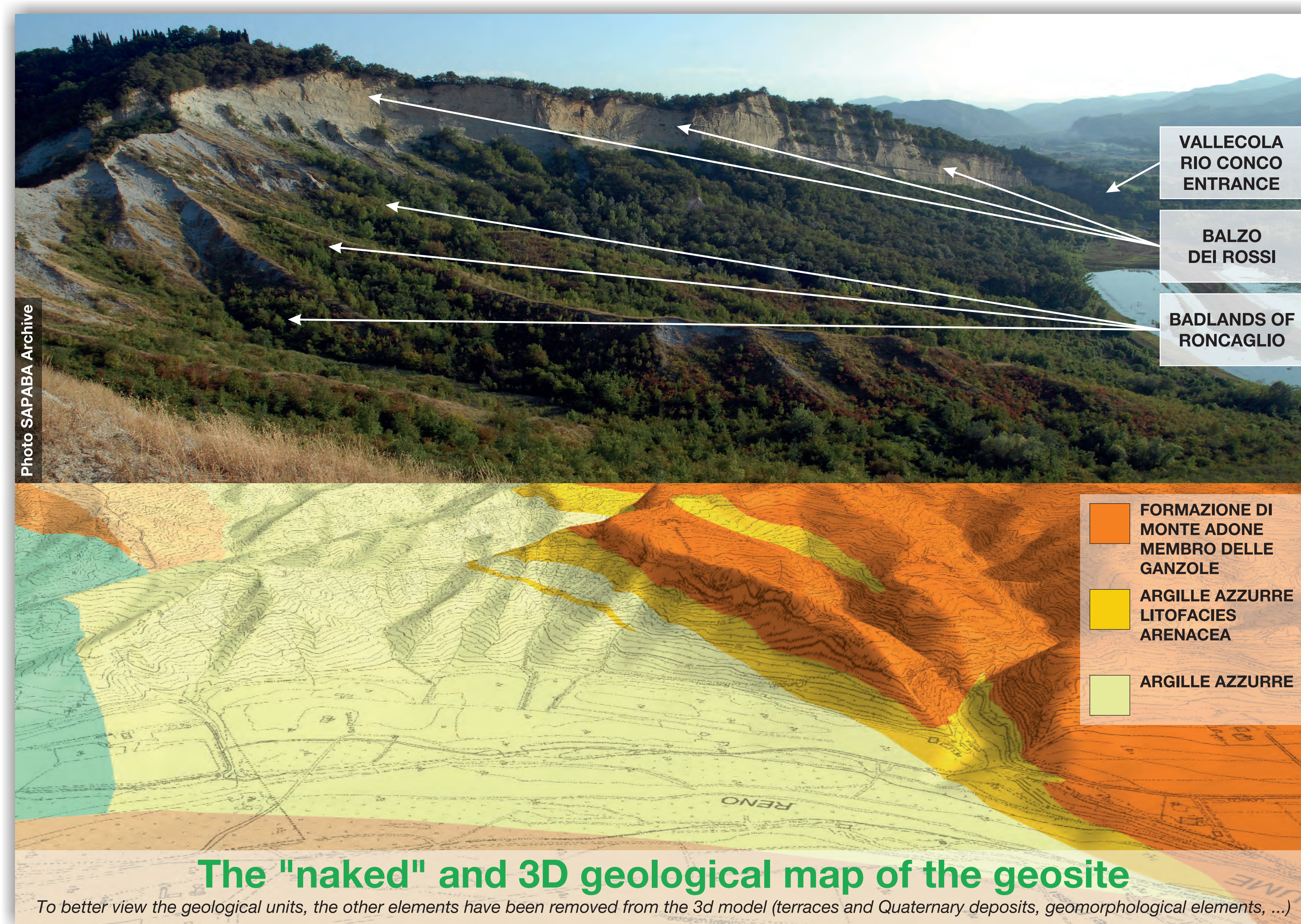
- the **badlands of Roncaglio**, modeled in the Pliocene Argille Azzurre (Blue Clay) Formation and which are rich in fossils (especially molluscs);

- the **Balzo dei Rossi cliff** made up of sandstones from the Monte Adone Formation - Member of the Ganzole, where the stratifications and some interesting sedimentary structures are highlighted.

Just outside the oasis, towards the south, there is the third significant element of the geosite: **the narrow and short valley of the rio Conco**. It is engraved in Pliocene sandstone: the outcrops of the Ganzole Member of the Monte Adone Formation stand out at the top, while the valley floor and the lower portion develop on the sandstone lithofacies of the Argille Azzurre Formation. At the end of the small valley there is a waterfall about 20 meters high, characterized by a travertine casting and by the opening of one of the lateral access galleries to the ancient Roman Aqueduct of Bologna.

The outcrops of the geosite tell us about a marine gulf that occupied this area during the **Pliocene**, a period of geological history ranging **from 5.33 to 2.58 million years ago**.

Towards the end of the previous geological epoch (Miocene), the so-called "salinity crisis" had dried up the Mediterranean Sea several times. The beginning of the Pliocene was marked by the return of full marine conditions

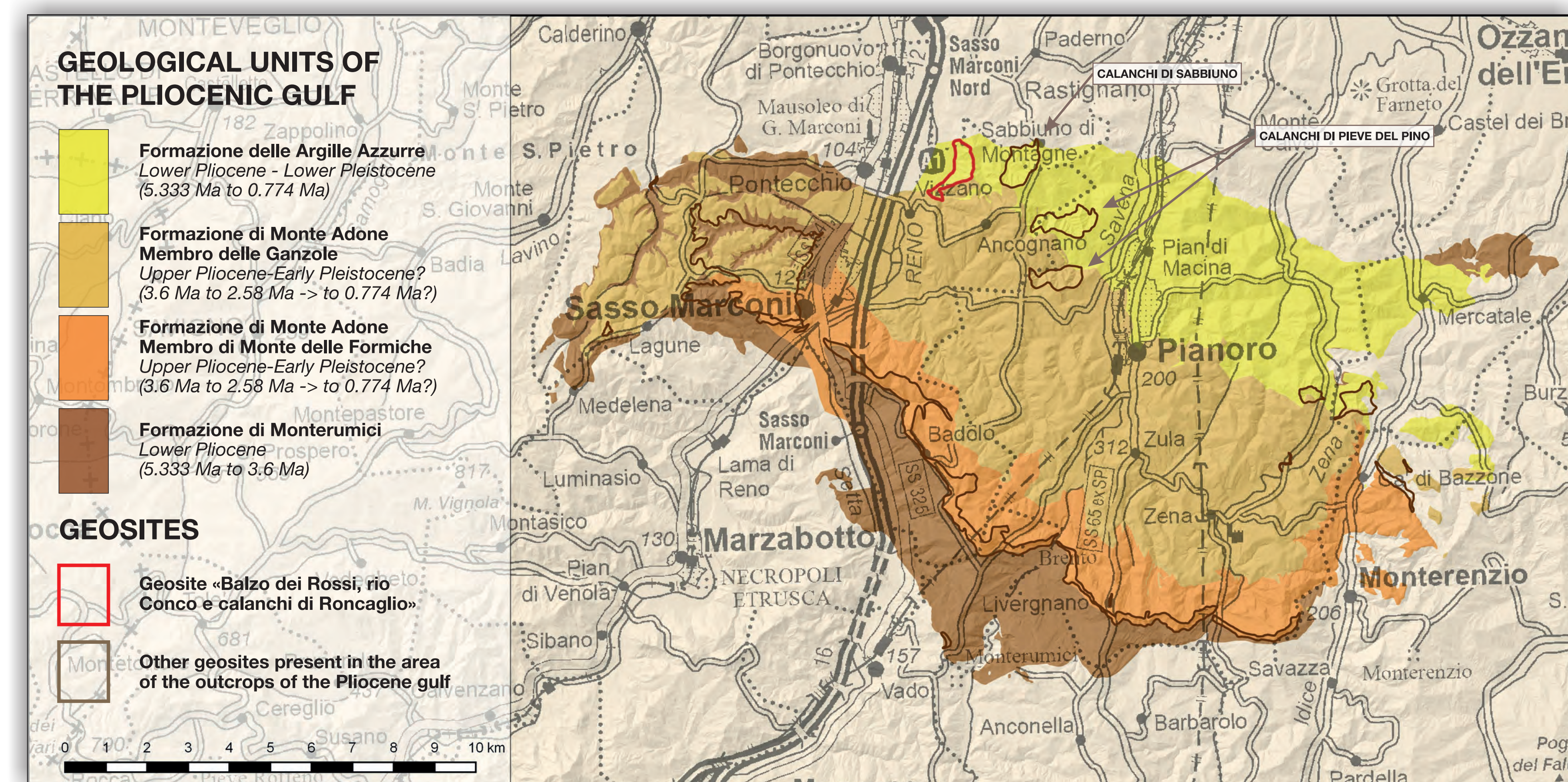


The "naked" and 3D geological map of the geosite

To better view the geological units, the other elements have been removed from the 3d model (terraces and Quaternary deposits, geomorphological elements, ...)

throughout the area and the Po Valley became a marine arm in direct connection with the Adriatic and adjacent to the Apennine chain, partly already emerged.

In the Bologna area, the coast line of the Po Valley formed a marked inlet which, due to its position inside the Apennines, is called the **Pliocene intra-Apennine basin (or gulf)**, into which flowed the precursor waterways of today's Reno, Setta, Savena and Idice.



These discharged the sediments produced by the erosion of the Apennine hills that had already emerged into the Pliocene gulf, forming beaches where the sandy granules were reworked by the wave motion (**Monte Adone Formation**), while in areas far from the coast, on deeper and more tranquil seabeds, the finest part of the materials transported, i.e. clays and silts (**Argille Azzurre Formation**). However, the deltaic mouths of the paleo Reno, Setta, Savena and Idice were marked by the high energy of the river floods, thanks to which the pebbly sediments could reach the beaches, giving rise to the important thicknesses of gravel that are observed today in the southernmost outcrops of the Pliocene basin (**Monterumici Formation** and **Monte Adone Formation – Monte delle Formiche Member**).

In this geosite, the outcrops **bear witness above all to what happened on seabeds far from the coast**, in particular the progressive transition **from a deep marine type environment to one of submerged beach**, therefore marked by shallower seabeds.

The passage also marks two different sedimentation cycles, since, due to complex geological events linked to the uplift of the Apennine chain, subsidence, climate change and sea level changes, the sea retreated for the first time in this gulf during the Pliocene to then return to rise and then fall again, and the depth of the seabed (with the associated marine environments) changed accordingly.

Even the outcrops that can be observed in the nearby **"Calanchi di Sabbiuino"** and **"Calanchi di Pieve del Pino"** geosites allow us to observe similar segments of this geological history, in particular the change of the different sedimentary environments witnessed by the passage between the clays of the badlands to the sandstones of the cliffs that overlook them.