ABSTRACT: SELLERI G., Karstic landscape evolution of southern Apulia foreland during the Pleistocene. (IT ISSN 1724-4757, 2007).

The Salento area is a narrow peninsula composed of Cretaceous and Neogenic carbonatic rocks constituting the southernmost part of the emerged Apulian foreland. A karstic landscape shaped on Upper Cretaceous – Lower Pleistocene rocks and covered by Middle Pleistocene terrigenous sediments has been recognized. The evolution of this karstic landscape was most likely promoted by new structural and geomorphological conditions due to the end of Apenninic orogenesis as well as eustatic sea level changes that occurred between the end of the Lower Pleistocene and the beginning of the Middle Pleistocene. During this period, in fact, the lowering of regional base level and a tectonic phase marked by NE-SW trending distensive structures occur. Afterwards, the karstic landscape was covered by a Middle Pleistocene marine terrigenous unit and during the last part of the Quaternary, partly re-exhumed and re-activated. The sequence of these phases has been controlled and influenced by structural changes occurred in the region.

Presently, the Salento Peninsula landscape shows at its inner and western parts wide karstic surfaces, remnants of the Middle Pleistocene sedimentary cover, and morphostructural ridges. The karstic surfaces are re-exhumed parts of the karstic landscape shaped between the Lower and the Middle Pleistocene. The morphostructural ridges are made of Mesozoic dolomitic-carbonatic units and show a policyclic landscape. Lastly, a number of young marine surfaces bordered by denudative scarps are shaped on the Middle Pleistocene sedimentary cover.

KEY WORDS: Karst, Marine terraced deposits, Salento, Apulia (Italy).

INTRODUCTION

The Salento region is a narrow and low elevated peninsula which constitutes the southernmost part of the emerged Apulian foreland. The landscape is made of different morphological units produced by the complex geomorphological evolution of this region. During the Neozoic, in fact, it occurred several times that a karstic landscape shaped during a morphogenetic phase was fossilized by a following phase marked by marine sedimentation or that ancient surfaces were re-exhumed during continental phases.

The Salento landscape is subsequently compound of different areas marked by peculiar geomorphological features produced during distinct morphogenetic phases.

Very few data can be found in literature about the karstic morphogenetic phases occurred in the Salento region. In fact, even if the Paleogene phase is well known, the more recent and Quaternary phases have not been
identified yet notwithstanding they are responsible for the most evident landforms in the Salento karstic landscape. Cotecchia & Dell’Anna (1959) and Crescenti & Vighi (1967) produced the first papers about the Paleogene phase. These Authors studied the bauxite deposits that mantle two continental surfaces occurring inside and at the top of Mesozoic dolomite-limestone basement. In the Salento Peninsula the most recent of these surfaces crops out; it is referred to the Paleogene since it is fossilized by Oligocene and Miocene marine carbonatic units. Small remnants of this surface are well exposed at the top of morphostructural ridges occurring in the inner and eastern part of the peninsula and are marked by the presence of tropical karstic landforms.

New recent data allowed the sequence of morpho-genetic phases to be integrated with the tectonic and stratigraphic evolution of the Salento peninsula. For example, Marsico & alii (2003) recognized along the Adriatic coast of southern Apulia remains of krypto-karstic landforms and proposed a geomorphological model for the genesis and evolution of these landforms taking into account the stratigraphic, tectonic, climatic conditions as well as sea level changes occurred in this area since the end of the Middle Pleistocene.

In this paper new data which allow to improve the definition of Salento geomorphological evolution during the Quaternary are reported. A new karstic morphogenetic phase has been recognized as well as the geomorphological evolution of inner and western parts of the peninsula has been defined in great detail.

GEOLOGICAL AND STRATIGRAPHICAL SETTING

The Salento region is the southernmost part of Apulian foreland made of a thick carbonatic basement which comprises different units whose age ranges from the Upper Cretaceous to the Lower Pleistocene. These units are covered by diffuse thin marine terrigenous sediments referred to the Middle-Upper Pleistocene (fig. 1).

The Middle-Upper Pleistocene units are the upper part of the Meso-Cretaceous carbonate sequence belonging to the Apulian carbonate platform which is several kilometres thick (Bosellini & Parente, 1994). More recent phases of marine sedimentation occurred between the Oligocene and the Lower Pleistocene. The most recent one produced at the end of the Lower Pleistocene the deposition of bioclastic calcarenites shading toward the Taranto Gulf into grey-bluish clayey marls. According to Ciaramini & alii (1988) and Tropeano & alii (2005) this sedimentary event would be referable to the Fossa Bradanica cycle.

The terrigenous covers of Upper-Middle Pleistocene age are up to 15-20 meters thick and are indicated as Marine terraced deposits (Ciaramini & alii, 1988). These covers formed during several marine transgressions which most likely never affected the eastern and southern part of the

FIG. 1 - Schematic geological map of Salento peninsula. Legend: 1 Pre-Neogene dolomite-limestone units; 2 Middle-Upper Miocene limestones and calcarenites (Pietra leccese, Calcareniti di Andrai, Nocavaglie formations); 3 Upper-Middle Pliocene calcarenites, breccia and calcareous marls (Uggiano la Chiesa and Leuca formations); 4 Lower Pleistocene calcarenites (Calcareniti di Gravina formation); 5 Middle-Upper Pleistocene terrigenous deposits (Marine terraced deposits); 6 Recent and present marsh and beach deposits; 7 Main coastal localities: a - Taranto, b - Brindisi, c - Otranto, d - Gallipoli, e - Santa Maria di Leuca; A-B position of the geomorphological sketch reported in fig. 2.
Salento peninsula. The deposits cropping out along the coast stretching from Gallipoli to Taranto, referred to the end of Middle Pleistocene and to the Last Interglacial Period (Dai Pra & Stearns, 1977; Dai Pra, 1982; Hearty & Dai Pra, 1985; Hearty & ali, 1986; Dai Pra & Hearty, 1988; Hearty & Dai Pra, 1992), as well as the Middle-Up-Per Pleistocene sequence recognized at Pescoluse, between Gallipoli and Leuca (D’Alessandro & Massari, 1997) are the best known ones among the Marine Terraced Deposits. Several different units cropping out in other parts of the Salento peninsula are still poor studied.

In the inner part of the region the outcropping units are referable to the Middle Pleistocene (D’Alessandro & ali, 1987; D’Alessandro & ali, 1994). The complete stratigraphic sequence is composed at the base of massive yellow-greenish clayey sands, very rich in glauconite, and belonging to the Sabbie a Brachiopodi unit. The palaeontological assemblage of this unit marked by the presence of Terebratula Scillae. Segueza suggests a deposition depth greater than 100 m (D’Alessandro & Palmentola, 1978; D’Alessandro & ali, 1994). The Sabbie a Brachiopodi unit is covered by silty clays deposited in a shallower basin (Salvatorini, 1969; D’Alessandro & ali, 1994). An erosive contact divides this last unit from sandy silt made of quartz, micas, carbonatic fraction and scarce oligotypic fauna (mainly Clamyds and Ostrea). The fauna as well as the sedimentological features would suggest that sedimentation occurred in shallow waters (Salvatorini, 1969) but below the wave base. In the inner areas these deposits lay directly on the Mesozoic limestone and locally they shade upward into sandstones marked by carbonatic cement. Calcareous sandstones («Panchina»), up to 2 m thick, cover by means of an erosive contact the sandy silt or directly the underlying clayey silt deposits.

Very few data regarding the lithological units cropping out diffusely between Brindisi and Lecce are available (i.e. Radina, 1968; Ricchetti, 1972; Balenzano e De Marco, 1981; De Marco 1983). In this area, in fact, recent research has been carried out only on a Lower-Middle Pleistocene sequence cropping out along the Torre San Gennaro cliff (Coppa & ali, 2001).

The main tectonic phases that affected the Salento Peninsula occurred during the Eo-Oligocene, at the end of the Miocene, in the Middle Pliocene and during the first part of Middle Pleistocene (i.e. Letouzey & Tremolieres, 1980; Auroux eck ali, 1984; Bossio & ali, 1987a; Argnani & ali, 1993; Tozzi, 1993; Gambini & Tozzi, 1994). The last two phases were marked by a NE-SW trending distension (Auroux & ali, 1984; Bossio & ali, 1987b; Tozzi, 1993). Furthermore, the entire Apulian foreland has been interested by a general uplift since the Middle Pleistocene (i.e. Doglioni & ali, 1994) or the end of Lower Pleistocene (Pieri & ali, 1996; Tropeano & ali, 2002). According to Patacà & Scandone (1989) uplift was due to the break of the subducted slab and subsequent isostatic compensation of foreland. Doglioni & ali (1994) suggest that at the beginning of the Middle Pleistocene the thick continental lithosphere of the Apulian swell reached the Apenninic subduction hinge, offering increased resistance to the flexure. The subsequent slowing down of the eastward rollback of the subduction hinge and the penetration of the slab, induced the buckling of the Apulian foreland and the subsequent uplift of the region. Anyway, the cause of foreland uplift should be linked to the end of Apenninic orogenesis. In the Salento peninsula this uplift was not continuous as in the Murge area. During the Middle Pleistocene, in fact, a phase of pronounced subsidence occurred at least in the western and inner part of the peninsula and produced the deposition of deep water marine sediments (Sabbie a Brachiopodi unit). A phase of uplift was then responsible for the emersion of wide areas of the Salento peninsula. Recent studies (Mastronuzzi & ali, 2006) proved that the uplift stopped at MIS 9.3, about 330 ka BP. From this moment significant uplift rates have been recorded only in the Taranto area (Ferranti & ali, 2006).

THE KARSTIC LANDSCAPE

The Salento peninsula is a low elevated plain made of several wide surfaces placed between 150-160 m of altitude and the sea level (fig. 2). These surfaces are bordered by N-S, NW-SE and NNW-SSE partly degradated fault scarps or by scarps due to differential erosion (i.e. fault line scarps). The coastal area is marked by a staircase of marine terraces developed during the Middle-Upper Pleistocene (Palmentola, 1987; Ciaranfi & ali, 1994).

Wide depressed areas mark the inner and western parts of the peninsula which is characterized by Lower Pleistocene calcarenites outcroppings. These areas are bordered by the Middle Pleistocene terrigenous deposits as well as by the morphostructural highs where Apulia carbonatic platform units crop out. Wide depressions with complex shape and shallow dolinas partly filled up by some meters thick soil are the most widespread landforms. Dolinas show mainly circular or elliptic shape; they are rarely coalescent and with diameter ranging from 10 to more than 200 m. The spatial density of dolinas changes from area to area reaching the maximum value of 15 dolinas/km2. The speleological survey carried out during the last years points out the presence of complex karstic systems developed mainly along NW-SE, NNW-SSE directions. In the northwestern part of the peninsula also E-W and WNW-ESE directions have been recognized. The deepest caves of peninsula have been explored down to the karstic phreatic surface.

The morphostructural highs which border the Lower Pleistocene outcroppings are narrow ridges elongated in NW-SE direction, locally named «Serre». A subhorizontal surface roughly coincident with the geological structure constitutes the ridges top. However, a staircase of lithostructural plains characterizes the upper part of the most elevated highs as that one stretching from Galatone to Leuca reaching an elevation of 198 m. These surfaces are partly covered by continental deposits made at the base of residual clays and by aeolian quartz sands at the top. According to Palmentola (1987) short tracts of a relict hydrographic network can be still recognized on these surfaces.
The remnants of the relict marine surfaces emerged at the end of Middle Pleistocene due to a new phase of uplift have been recognized in the areas marked by marine terraced deposits outcroppings. These areas are bordered by differential erosion scarps or by degraded surfaces crossed by numerous endoreical drainage networks flowing towards the depressed areas characterized by Lower Pleistocene calcarenites outcroppings.

The areas at the inner and western part of Salento Peninsula where Lower Pleistocene calcarenites crop out are a clear example of contact karst (Selleri et al., 2002). The formation and evolution of this type of karst is promoted by the presence of a contact (stratigraphic limit, tectonic contact, etc.) between carbonatic and non-carbonatic rocks (Gams, 1994; 2001). The main factors influencing the geomorphological evolution of these areas are the amount of allogenic waters and their chemical characteristics, the quantity and the grain size of solid load carried by the allogenic rivers, the permeability of carbonatic rocks, the local relief, the ratio between carbonate and non-carbonate areas and, lastly, the age of the karst (Gams, 1994).

The contact karst of inner and western Salento is produced by the subhorizontal stratigraphic limit between the terrigenous, poor permeable Middle Pleistocene deposits which host a perched groundwater and the Lower Pleistocene calcarenites which represent in this area the carbonatic bedrock exposed at the bottom of shallow depressions. These geomorphological conditions promoted the flowing of a large amount of allogenic waters at the border of calcarenitic depressions enhancing karstic processes.

The landscape changes abruptly to the east of Maglie-Castiglione d'Otranto ridge, at the eastern part of peninsula. This sector has been most likely emerged since the beginning of the Pleistocene and is composed of different morphological units. Wide dolina fields affect the areas shaped on Pliocene calcarenites and marly calcarenites (Palmentola, 1987). A karstic landscape marked by a very low relief and wide depressions is recognizable in the areas where Miocene calcarenites and limestones crop out. Along the coast a surface showing large dolinas and low shield-like reliefs is shaped on different units belonging to the Eocene and the Oligocene. This surface is cut by the first and uppermost paleocliif of marine terrace staircase. Finally, on the top of morphostructural ridges where Mesozoic limestones crop out, the remains of a Paleogene karstic surface can be recognized.

THE NEW MORPHOLOGICAL AND STRATIGRAPHIC DATA

Karstic landforms fossilized by the Middle Pleistocene deposits have been recognized in numerous localities at inner and western Salento. These landforms are well exposed in the inner part of the peninsula, between the Cutrofiano and Tricase villages, in the surroundings of Santo Donno locality between Nociglia and Supersano villages, in the quarries placed close to the Aradeo, Novoli, Lequile, San Pietro and Veglie villages (fig. 3).

Cutrofiano-Tricase area

In this area the widest Lower Pleistocene calcarenites outcropping occurring in the innermost part of Salento peninsula has been surveyed. The area is bordered to the east by a low degraded fault scarp; it is NNW-SSE trending and about 20 km long. To the north a wide outcropping of Middle Pleistocene quartz-mica sandy silt occurs; along its margins several cover dolinas have been found.
The karstic surface shaped on the Pleistocene calcarenites is a flat plain, dipping towards NW; it is placed between 120 m of elevation along the coastal area and 40-50 m along its northern border. Its central and northern parts receive a large amount of surface waters from the areas where the Middle Pleistocene sandy silts crop out. Its southern part is higher in elevation and does not receive any flows of allogenic waters.

The karstic landscape is marked by the diffuse presence of dolinas with diameter up to 200 m and closed depressions up to some km² wide, elongated in NW-SE and NNW-SSE direction. The spatial density of dolinas can locally reach values of 14-15 dolinas/km². These landforms are filled with sediments so that they are not well expressed in the landscape. The complete sequence of the dolinas filling is made from the bottom to the top of (fig. 4):

– thin layers of reddish residual clays laying directly on the Lower Pleistocene calcarenites;
– yellowish sandy silt, mainly made of quartz and micas, up to 15 m thick, that can be referred to the Middle Pleistocene unit cropping out at the western margin of Cutrofiano-Tricase area;
– sandy-silty reddish paleosol, up to several meters thick, showing a coarse fraction made of oxides aggregates and quartz grains covered by oxide varnish;
– clayey-silty brownish soil, up to 1.5 m thick. The coarse fraction is similar to that one of underlying paleosol.

The shape of some dolinas has been reconstruct by means of geophysical surveys and boreholes. Shallow subcircular dolinas marked by an asymmetric cross profile, up to 50 m wide, have been individuated as well as subcircular dolinas bordered by subvertical slopes, up to 60 m wide and 20 m deep.

Aradeo area

The village of Aradeo is placed at the northernmost part of quartz-mica sandy silt outcropping occurring in the Cutrofiano-Tricase area (fig. 3). The Lower Pleistocene carbonatic basement marked by endokarst landforms fos-
silized by the cover sediments is well exposed in several quarries occurring in the Aradeo area. The exposed caves develops along NW-SE and NNW-SSE directions, deepens below the quarry floor and some of them retain speleothems (fig. 5). Furthermore, along the quarry cliffs the contact of sandy silts on the Lower Pleistocene calcarenites is well exposed; it is marked by small dolinas and meter-scale cylindrical depressions (fig. 6).

Santo Donno locality (Nociglia)

The Santo Donno locality is placed along the western margin of quartz-mica sandy silts occurring at Cutrofiano-Tricase area (fig. 3). Here two adjacent cover dolinas, few meters deep and with an elliptic shape, have been found. The major axis of dolinas is of about 15-20 m; the minor axis is of about 10 m. In this locality the sandy silts are about 15 m thick and cover the Lower Pleistocene calcarenites. A perched groundwater is present in the area.

An electric tomography has been carried out at the border of the two depressions (fig. 7). A first layer with resistivity lower than 40 Ohm*m has been identified; it corresponds to the Middle Pleistocene sandy-silty cover. In this layer, lenses with higher or lower resistivity occur. The first ones represent the water layer which disappear near two sinkholes. The latter are small cemented levels inside the sandy silts. The layer marked by resistivity values lower than 40 ohm*m lays on a unit with higher resistivity that can be interpreted as the Lower Pleistocene calcarenite. The geophysical survey reveals a very irregular contact between the sandy-silty cover and the bedrock. It is characterized by wide depressions bordered by gentle slopes (flat dolina type) and large pits with vertical walls, more than 10 m deep. The fragmentation of the perched groundwater close to the sinkholes is most likely due to the drainage at the bedrock depressions. The low resistivity lens that point out the perched groundwater show, in fact, remarkable bends downward in correspondence of main buried karstic landforms.

Lequile, Novoli and San Pietro area

Along this area of western Salento (fig. 3) the terrigenous marine deposits that cover the carbonatic bedrock are represented by the Sabbie a Brachiopodi formation.
and by the overlying clayey-silty units. This sequence has been referred to the Middle Pleistocene (D'Alessandro & alii, 1994) and lays on the carbonatic bedrock which is locally made by the Lower Pleistocene calcarenitic units. The contact surface among the Middle Pleistocene covers, locally marked by paleosols, is exposed along the walls of the numerous quarries occurring in the area. This surface has a very irregular shape being marked by large funnel-shaped dolinas and deep cylindrical cavities. D'Alessandro & alii (1994) described these last landforms and attribute them to cavitation process produce by waves on shore platforms shaped on weak rocks.

**Veglie-Leverano area**

These two villages of western Salento (fig. 3) are placed along the limit between a large area where Sabbie a Brachiopodi formation crops out and the Cretaceous-Lower Pleistocene carbonatic rocks. The first area corresponds to the southern part of the Middle Pleistocene sediplain which is bordered by a slope dissected by drainage network made of short streams flowing towards the area where the carbonatic bedrock crops out. In this last area dolinas and pits fossilized by the Sabbie a Brachiopodi unit are well exposed along quarry and trench walls (fig. 8).

The electric tomography has detected three levels (fig. 9). The lowermost level shows a resistivity higher than 60 Ohm*m; it is the carbonatic bedrock compound by Upper Cretaceous limestones and by thin layers of Lower Pleistocene calcarenites. Upward a level marked by a resistivity of about 60 ohm*m point out the Middle Pleistocene terrigenous cover. Also this survey reveals the articulated surface occurring between the carbonatic bedrock and the cover deposits which is marked by flat dolinas and pits more than 20 m deep. The shallower level is marked by a resistivity of about 20 Ohm*m corresponding to the perched groundwater occurring into the Middle Pleistocene deposits. The lower surface of this level is marked by evident bulging downward where the
carbonatic bedrock is affected by major depressions. This evidence suggests even in this case that the perched groundwater is drained in correspondence to the main buried cavities.

DISCUSSION

A relict karstic landscape covered by Middle Pleistocene marine terrigenous units is exposed at several localities of inner and western Salento. The Middle Pleistocene units often cover a surface shaped on the Upper Cretaceous – Lower Pleistocene carbonatic bedrock. This surface is marked by the diffuse presence of karstic landforms such as dolinas, kluftkarren, etc., and by an endokarst fossilized by a sedimentary cover. According to the chronological attribution of the bedrock and the cover reported in literature (D’Alessandro & Palmentola, 1978; Bossio & alii, 1987c; Giarani & alii, 1988; D’Alessandro & alii, 1988; D’Alessandro & alii, 1992; D’Alessandro & Massari, 1997) the morphogenetic phase responsible for the shaping of the detected landforms can be placed between the end of the Lower Pleistocene and the beginning of the Middle Pleistocene.

During this period the Salento peninsula was marked by a tectonic regime with maximum extension NE-SW oriented (Martinis, 1962; Martinis, 1967; Palmentola & Vignola, 1980; Auroux & alii, 1984) and most likely by an increase of relief energy as a consequence of the stopping of Apenninic allochtonous nappes, the beginning of Apulian foreland uplift and the sea level low stand. In fact, according to Shackleton & alii (1990) and Shackleton (1995) the limit between the Lower and the Middle Pleistocene comprises the MIS 24 and 22, all marked by a sea level low stand.

According to Quinif (1998) karst landscape development occurs during periods marked by a tectonic distensive regime and low sea level stand due to eustatic and/or tectonic causes which produce an increase of the hydraulic conductivity along joints and of the hydrodynamic potential. In the case of Salento peninsula, the occurrence of a distensive tectonic regime and of a relief between the end of the Lower Pleistocene and the beginning of the Middle Pleistocene promoted the development of a karstic landscape marked by a low local relief. This landscape is marked by the occurrence of large dolinas and depressions as well as a developed endokarst. Karst landforms mainly formed along NW-SE oriented joints in response to the NE-SW oriented extension stress.

This karstic morphogenetic phase has been interrupted by the Middle Pleistocene marine transgressions which produced the burying of the karstic landscape beneath a terrigenous, low permeable sedimentary cover. Afterward, the uplift of the Apulian foreland stopped most likely just before the MIS 9.3 (Mastronuzzi & alii, 2006) produced the emersion of wide areas. This last phase has been accomplished by the development of a drainage network and by the erosive re-exhumation of the Lower - Middle Pleistocene karstic landscape. The karstic landscape is well exposed in the southern and mid-southern sectors of Salento because of higher rate of uplift (Palmentola & Vignola, 1980). In the north-western and western sectors, marked by lower uplift rates (Palmentola & Vignola, 1980) the karstic landscape is still covered by the Middle-Upper Pleistocene marine sedimentary cover. D’Alessandro & alii (1994) estimated an uplift of about 150 m during this phase on the basis of the faunal assemblage of Sabbie a Brachiopodi unit.

According to Mastronuzzi & alii (2006) tectonic stability has been occurred at least at the southern part of Salento from MIS 9.3 up to present.

The re-exhumation of the karstic landscape has been accomplished by its local re-activation. The development of the drainage network, in fact, allowed the flow of a...
large amount of surficial waters in the karstified areas promoting the re-activation of karstic systems. Where the karstic landscape is still covered by the Middle Pleistocene marine units the re-activation is scarce and linked mostly to the dynamics of perched groundwater.

The geomorphological evolution of Salento peninsula produced a typical example of contact karst. Three units compound this landscape:

- re-exhumed karstic landscape shaped into the Upper Cretaceous and Lower Pleistocene units;
- Middle Pleistocene marine sediplain transgressive on Upper Cretaceous - Lower Pleistocene carbonatic bedrock and bordered by denudative slopes;
- Morphostructural ridges corresponding to the outcroppings of Upper Cretaceous dolomite - limestone units. These ridges formed before the Lower Pleistocene (Paleontola & Vignola, 1980) and are marked by the lack of landforms belonging to the short morphogenetic phase occurred at the limit between the Lower and the Middle Pleistocene. The landscape could be older and most likely polycyclic as the occurrence of small remains of Paleogene karstic surface would suggest.

CONCLUSIONS

At several localities of Salento peninsula a karstic landscape covered in some places by Middle Pleistocene terrigenous units has been identified. The evolution of this landscape can be subdivided in three main phases: development, burying and re-exhumation accomplished by local re-activation of the karstic system.

The development of the karstic landscape is occurred in a relatively short period at the limit between the Lower and the Middle Pleistocene. This morphogenetic phase was promoted by a low stand of sea level and a tectonic phase with NE-SW oriented extension linked to the end of Anpeninic orogeny. The karstic landscape was buried beneath the terrigenous marine sediments accumulated during some transgressive/regressive cycles occurred in the Middle Pleistocene.

Finally, the erosion of the marine cover produced the re-exhumation of the Lower-Middle Pleistocene karstic landscape and its re-activation. This last event has been controlled by the differential uplift of Salento peninsula which produced firstly the re-exhumation of the karstic landscape in the southern and innermost parts of the region during the Middle Pleistocene.

The sequence of these morphogenetic phases has been responsible for the present landscape occurring at the inner and western parts of the Salento peninsula. It is composed by three main units: the area where the Lower-Middle Pleistocene karstic landscape is exposed; the relict remnants of the Middle Pleistocene sediplain and the morphostructural ridges shaped on Cretaceous dolomite and limestone units. These last ones show an ancient polycyclic landscape with peculiar features very different from those ones of Lower-Middle Pleistocene age.

REFERENCES


