Field Trip Guide Book - D07

Florence - Italy
August 20-28, 2004

Volume n° 3 -from D01 to P13

32nd INTERNATIONAL
GEOLOGICAL CONGRESS

THE RIETI INTERMOUNTAIN BASIN AND S. FRANCESCO D'ASSISI

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C. Carrara

Associate Leaders:
L. Ferreli, L. Guerrieri, L. Serva

During-Congress **D07**

The scientific content of this guide is under the total responsibility of the Authors

Published by:
APAT – Italian Agency for the Environmental Protection and Technical Services - Via Vitaliano Brancati, 48 - 00144 Roma - Italy

APAT
Italian Agency for Environment
Protection and Technical Services

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Acknowledgments:
The 32nd IGC Organizing Committee is grateful to Roberto Pompili and Elisa Brustia (APAT, Roma) for their collaboration in editing.

Graphic project:
Full snc - Firenze

Layout and press:
Lito Terrazzi srl - Firenze

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Front Cover:
Geological landscapes and Franciscan sanctuaries in the Rieti basin

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Introduction

This field trip is aimed at showing the Quaternary evolution of the intermountain Rieti basin (Central Apennines) under extensional tectonics, climatic variations and human activities. The interaction among these factors during the Quaternary triggered continuous and fast landscape modifications, such as the Holocene filling of the Rieti basin (up to 50 meters) or the almost complete receding of the *Lacus Velinus* (a lake larger than 90 km^2) under the Roman draining work.
The singularity of the natural landscape, characterised by Le Marmore Falls and other geomorphic features (fluvial terraces) shaped by travertine deposition, attracted human settlements since at least the Bronze Age. Moreover, the presence of the places where S. Francesco d'Assisi lived and prayed enhances the magnificence (spirituality) of the area.
The itinerary will provide the basic elements for comprehending the role played by natural and human factors in the geomorphological evolution of the Rieti Basin, a special area for its spirituality as witnessed by the presence of four important Franciscan sanctuaries.

The trip will start at the base of Le Marmore Falls where the Velino river flows into the Nera river (stop 1). We will focus on the climatically-controlled growing and downcutting of the travertine dam during the Holocene and the role of reclamation work and other human activities regulating water discharge at Le Marmore in historical times.
Then the itinerary will go upstream in the Velino valley and enter the Rieti Basin. After a quick look at the geomorphological (Piediluco and Ventina ancient shorelines) and Upper Pleistocene-Holocene stratigraphic records (Lago Lungo and Ripa Sottile high-resolution record) of *Lacus Velinus,* we will visit the Franciscan Sanctuary of Poggio Bustone (stop 2).
After lunch, the trip will move SE in the middle Velino valley, between Cittaducale and Rieti (stop 3), where Middle Pleistocene travertine barriers and lacustrine and fluvial terraces are preserved.
The trip will end at Greccio, on the western slope of the Rieti basin where, during Christmas Eve of 1223, S. Francesco set up the first representation of the Holy crib.

Field map references

In this guidebook we will refer to the following geological maps:

- Carta Geologica d'Italia (scale 1:100,000) Sheet 138 "Terni" , Servizio Geologico d'Italia, 1970;
- Carta Geologica d'Italia (scale 1:100,000) Sheet 139 "L'Aquila", Servizio Geologico d'Italia, 1955;
- Cavinato G.P.: Geological map of the Southern Area of the Rieti Basin (Central Apennines), scale 1:50,000, CNR, Centro di Studio per la Geologia dell'Italia Centrale, Rome, 1991;
- Cosentino D., Parotto M., Scrocca D. & Vecchia P.: Carta geologica della media valnerina (Umbria), scale 1:25,000 Università di Roma Tre, Dipartimento di Scienze Geologiche, Rome, 2000;
- Guerrieri L., Comerci V., Ferreli L., Pompili R., Brunamonte F., Michetti A.M. & Serva L.: Geological mapping of continental deposits in the Rieti Basin and surrounding areas (Central Apennines, Italy): a tool to compare past, present and future evolution of intermountain basins, in press, Atlante di Cartografia Geologica - 32nd IGC Florence 2004.

Regional geologic setting

Regional geologic framework
(see field map references)

The Rieti basin (fig. 1) is a typical intramontane depression of the Apenninic chain (Accordi and Carbone, 1988; Cosentino et al., 1992). It is filled with continental Plio-Quaternary sediments made up of conglomerates, sands, silts and travertine deposits that reach a thickness of 400-500 m (Manfredini, 1972).
The origin and evolution of the Rieti basin is related to the post-collisional extensional tectonics that have strongly affected this sector of the Apenninic orogenic belt since the Pliocene (Patacca et al., 1990; Doglioni, 1993; D'Agostino et al., 2002).
During the Late Pliocene-Early Pleistocene period ("Villafranchian" age *Auct*., according to the historical name of the typical Upper Pliocene-Lower Pleistocene continental facies in Italy), the Rieti basin developed in the hangingwall of the SW-dipping, NW-trending, Rieti fault segment (Cavinato et al.,

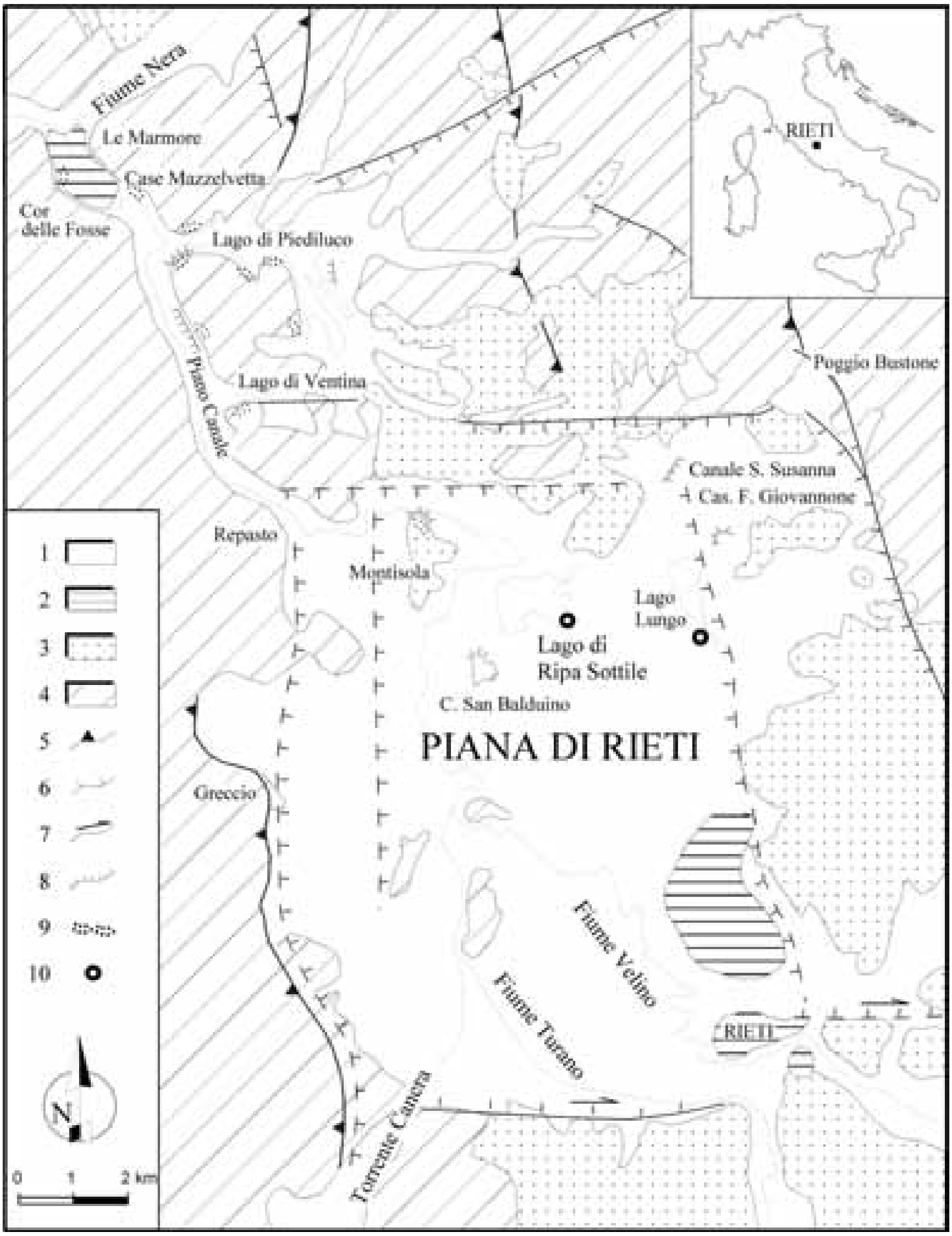

Figure 1 - Geological sketch of the Rieti Basin (from Ricci Lucchi et al., 2001). Legenda: 1. Fluvio-lacustrine and fan deposits (Upper Pleistocene-Holocene); 2. Travertines (Middle Pleistocene-Holocene); 3. Fluvio-lacustrine sediments (Late Pliocene-Middle Pleistocene). 4. Mainly carbonatic units of the "Sabina sequenze" (Meso-Cenozoic); 5. Thrust faults; 6. Normal faults; 7. Normal-oblique faults; 8. Shore-lines (first-Iron Age); 9. lacustrine beach deposits (first Iron Age); 10. Location of Ripasottile and Lago Lungo boreholes

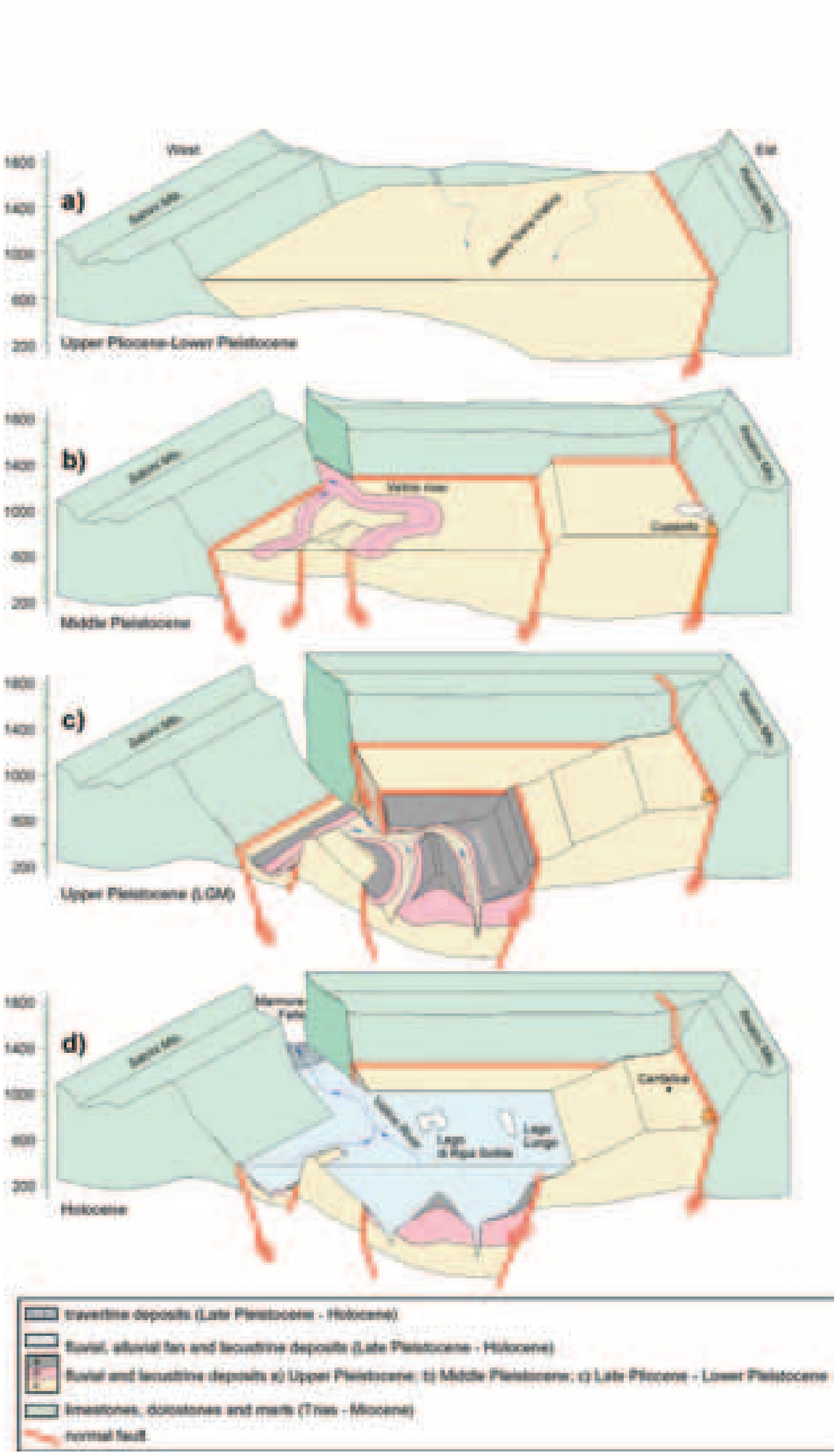

Figure 2 - Landscape evolution of the Rieti basin in four scenarios (a, b, c and d) since the Late Pliocene.

1989; Michetti et al., 1995). This segment is the north-western extension of a primary segmented normal fault system in the Central Apennines, about 100 km long. The Rieti fault has been active in Middle-Late Pleistocene to Holocene time as shown by paleoseismological analyses in three sites (Piedicolle, La Casetta and Caporio, Michetti et al., 1995). According to these studies, the last earthquake capable of producing surface faulting (magnitude > 6.5) occurred between 5000 and 6400 BP.
Some km to NW of the Rieti basin, a S-dipping, E-trending segment generated the Terni basin (Martani fault segment, Brozzetti & Lavecchia, 1995). Along the eastern slope of Mt. Terminillo, a NE-dipping, NW-trending segment caused the formation of the Leonessa basin (Leonessa fault, Michetti & Serva, 1991). These normal faults forced the sedimentation of thick basin filling successions, characterized by lacustrine and fluvial sequences in the Terni basin ("Lago Tiberino" basin, Auct., Ambrosetti et al., 1995; Basilici, 1997), and by lacustrine and marshy successions in the Leonessa basin (GEMINA, 1963).

Landscape evolution of the Rieti basin

Late Pliocene-Lower Pleistocene continental deposits crop out in the southern, eastern and northern parts of the basin and consist of conglomerates and sandstones fan-delta and fluvio-lacustrine sediments (Cavinato et al., 1989; Barberi and Cavinato, 1993).
Geomorphic and stratigraphic evidence (erosional surfaces, wind gaps) clearly supports the hypothesis of two different stages in this period. In the older one (fig. 2a) a single drainage network was directed SSE (paleo-Nera-Velino rivers). In the younger one the paleo-Nera river migrated WSW while the paleo-Velino system was still draining SSE.
At the end of the Early Pleistocene, a regional tectonic uplift affected a wide sector of Central Italy (Dramis, 1993), including the Rieti basin, and new normal faults were activated. As a consequence of this extensional environment, the "Villafranchian" drainage network in the Terni and Rieti areas rejuvenated (Raffy, 1983; Michetti et al., 1995) and the Velino river diverted north. Ultrabasic volcanic activity occurred in small local volcanic districts (Cupaello, Gragnani, 1972; Stoppa & Villa, 1991; Laurenzi et al., 1994). In the Rieti basin new normal faults trending N-S and E-W divided the ancient basin in horst and graben (fig. 2b).
Since the Middle Pleistocene to the Present along the course of the Velino river numerous travertine thresholds grew up, controlled by alternating erosional and sedimentary phases. Travertine deposited mainly during humid and temperate climates. Drier and cooler climatic phases, on the contrary, reduced the circulation of Ca-rich waters and consequently caused the erosion of travertine barriers.
The evolution of the above-mentioned travertine thresholds upstream caused the formation of fluvio-lacustrine basins along the Velino valley that at present are testified by relict terraces (Carrara et al., 1993). Detailed studies of the sediments forming these terraces and their radiometric analyses allowed the determination of their deposition environment and ages (Brunamonte et al., 1992; Ferreli et al., 1993).
Six orders of terraces have been recognized. The first three orders of terraces are older than 400 kyrs B.P.; the fourth one is about 400 kyrs old, while the fifth is 70÷30 kyrs in age. During the Last Glacial Maximum (LGM) the Marmore travertine barrier has been cut and deep valleys and canyons formed upstream in the Rieti basin (fig. 2c). The Holocene amelioration of climate caused the growing of the Le Marmore travertine barrier and upstream the present Rieti alluvial plain (sixth terrace order, fig. 2d).
Moreover, from at least the Roman age to the Present, a significant anthropic activity superimposed natural processes. The main evidence of this is the artificial cutting of Le Marmore threshold and the partial control of the main streams water regime. These works caused changes in the level and extension of the so-called *Lacus Velinus* (Verri, 1883; Segre, 1990; Ferreli et al., 1992), that occasionally covered the whole alluvial plain. Finally, in the thirties of the last century, the plain was completely drained and acquired its present-day condition (Duprè-Thesedier, 1938; Lorenzetti, 1989; Leggio and Serva, 1991).

A short biography of S. Francesco d'Assisi

S. Francesco (1182-1226) was born in Assisi (Umbria). He appears to have received little formal education, even though his father was a wealthy merchant. As a young man, S. Francesco led a worldly, carefree life. Following a battle between Assisi and Perugia, he was held captive in Perugia for over a year. While imprisoned, he suffered a severe illness during which he resolved to alter his way of life.
Back in Assisi in 1205, he performed acts of charity among the lepers and began working on the restoration of dilapidated churches. He gathered round him the 12 disciples who became the original

brothers of his order, later called the First Order; they elected Francesco superior.
In September 1224, after 40 days of fasting, Francesco was praying upon Monte Alverno when he felt pain mingled with joy, and the marks of the crucifixion of Christ, the stigmata, appeared on his body. Francesco was carried back to Assisi, where his remaining years were marked by physical pain and almost total blindness. He was canonized in 1228. In 1980, Pope John Paul II proclaimed him the patron saint of ecologists. In art, the emblems of S. Francesco are the wolf, the lamb, the fish, birds, and the stigmata. His feast day is October 4.

San Francesco spent a lot of time in the Rieti area (for this reason called "Valle Santa" – Holy Valley): he most likely arrived in Rieti in 1209 and stayed for a long period in 1223 and 1225-1226. The Rieti atmosphere suggested to San Francesco the holy crib, the definitive Rule of the Franciscan Order and probably the Canticle of the Creatures. Nowadays, four sanctuaries (Poggio Bustone, Greccio, Fonte Colombo and La Foresta) testify to his staying in the Holy Valley.

Field itinerary

Road logs from Florence to Le Marmore Falls

0 - 200 km: Highway A1 "Autostrada del Sole" from Florence to Orte.

During this two-hour trip we move from the Northern to Central Apennines, crossing three regions: in Tuscany we pass through the Arno River valley and near Mt. Amiata, which was an important Pleistocene volcanic district, then in Umbria we follow the Tiber River valley until entering Latium, in the Vulsini and Cimini Pleistocene volcanic districts within the so-called Roman Magmatic Province.

200 – 235 km: From Orte to Le Marmore Falls

This part of the transfer moves from West to East passing through the Amerini Mts (Mesozoic pelagic limestones and marls of "Umbria-Marche" facies) and the Terni basin.
In the Pliocene-Early Pleistocene, this basin was the south-western branch of the "Lago Tiberino" basin and filled with lacustrine and alluvial fan deposits (Ambrosetti et al., 1995; Basilici, 1997). The following evolution of the Terni basin was basically controlled by the Nera river fluvial activity, strictly connected to the geomorphic evolution of the Tiber river, and by the E-W trending Martani normal fault, that borders the northern slope of the Terni basin.

Stop 1:

Le Marmore Falls

Le Marmore Falls (fig. 3) are located at the point where the Velino river falls into the Nera river. The top of the scarp is at 380 m a.s.l. and its height is about 165 m.
Three paths, departing from the Information Point, allow to reach the upper view point ("Belvedere Superiore") in about 30 minutes. The spectacular waterfalls are opened only on Sundays, Saturdays and holidays. During working days the waterfall is not visible because the waters are captured in order to produce hydroelectric energy for the steel-works in Terni.

Late Quaternary evolution of Le Marmore travertine

The Nera Valley has probably a tectonic origin related to a Middle-Upper Pleistocene NE-SW trending normal fault. The Velino river, tributary of the Nera river, has been cut by the above-mentioned fault. As a consequence a deep scarp took place.
Along this escarpment, at least in Late Quaternary, the rich in Ca-salts waters of the Velino river have deposited huge amounts of travertine, which has dammed the Velino valley. The growing and downcutting of the barrier was strictly connected to climatic variations: during periods of warm and humid conditions the travertine barrier grew up, causing a rise of base level with consequent flooding of the Rieti plain and the development of lakes and swamps. On the contrary, during drier and fresher periods, the deposition of travertine diminished or ended and erosional phases occurred, which cut the barrier and left terraces and abrasion platforms.
The uppermost part of Le Marmore barrier (fig. 3b), at Cuor delle Fosse locality, consists of a 20 m thick Holocene sequence of superimposed autochthonous and clastic travertine bodies, rich in fresh-water and terrestrial molluscs (Carrara et al., 1995).
An anthropic colluvial horizon, containing archaeological remains attributed to the Late Bronze Age (about 3,000 years BP), occurs within the travertine sequence. On the basis of sedimentological and malacological features and of isotopic composition of studied sediments, together with aminostratigraphic analyses and radiometric age determination it has been possible to reconstruct the environmental and

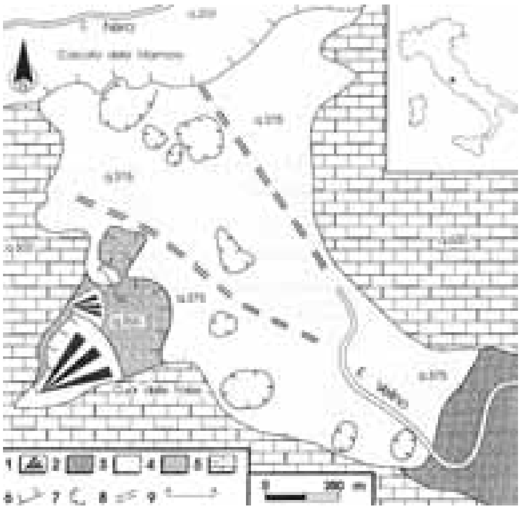

Figure 3 Left - Geomorphological sketch of Le Marmore area (from Carrara et al., 1995)

climatic evolution of this sequence.

In the first Iron Age a fast growing of the travertine barrier caused a lake-level increase up to 375 m a.s.l.; as a consequence, upstream, a wide and shallow lake occupied large part of the Rieti plain, known as *Lacus Velinus*.

Human impact on natural processes at Le Marmore

In 271 B.C. the roman consul Manius Curius Dentatus funded the excavation of an artificial channel about 2200 m long, that drained the *Lacus Velinus*, allowing to cultivate large areas previously under water. The increased water discharge in the Nera river actually promoted catastrophic floods downstream, in the Terni area. For this reason, numerous legal disputes between Rieti and Terni are documented in classical sources (Cicero).

In the Middle Age, again large areas of the Rieti plain were occupied by shallow lakes and ponds, because of the continuous growth of the barrier and the progressive obstruction of the artificial channels. These conditions are also witnessed by the descriptions of S. Francesco who travelled by boat from Greccio to Poggio Bustone.

In the 13th century, moreover, Cistercian monks deviated the Velino river in order to excavate a dense channel network that allowed to recover large wet areas. This was only a temporary effect as, in the following centuries, several attempts to preserve the drained areas from new floods were promoted

Figure 3 Right - panoramic view of Le Marmore Falls from the Nera River Valley

(15th century *Cava Gregoriana*, 17th century *Cava Clementina*, 18th century *Canale Pio*). At present, two dams along the Salto and Turano rivers, tributaries of the Velino river and the artificial pumping from the groundwater preserve the Rieti plain from new inundations.

Travertine facies

The Marmore barrier is composed of different facies of travertine. The outer part is characterized by the deposition of stromatolitic and phytohermal facies that are typical of "water fall" environment. They form vertical or subvertical festoons, drapes and stripes hanging and superimposed on the previously deposited part of travertine.

The inner part of the barrier is mainly composed of lacustrine and marsh environment facies made up of calcareous tufa (sands and silts) rich in fresh-water

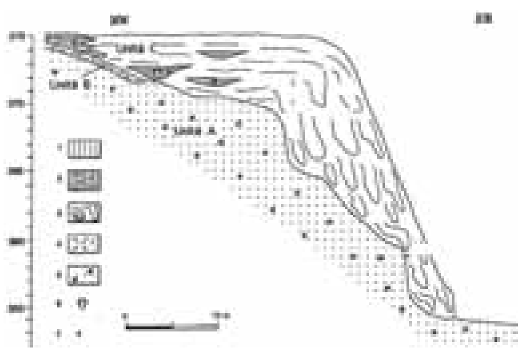

Figure 4 - "Cuor delle Fosse" section (from Carrara et al., 1995). 1. Soil; 2.terrigenous calcareous tufa of the C Unit; 3. Pool-gradine and waterfall travertine; 4. Colluvial anthropic horizon (B Unit); 5. Calcareous sand and silt (calcareous tufa) rich in fresh-water mollusks of the A Unit. 6. Archeological remains; 7 U/Th ages (ka B.P.)

and terrestrial fauna.
Similar facies are present also at Cuor delle Fosse locality, where it is possible to observe spectacular examples of perched large structures of phytohermal and stromatolithic facies that cover lacustrine facies (fig. 4).

Road log from Le Marmore to Poggio Bustone

8 km Piediluco and Ventina Lakes: Ancient shore-lines of Lacus Velinus

Strips of wave-cut terraced surfaces have been found along the coastlines of the Piediluco and Ventina lakes, at the border of the Montisola and Colle San Balduino hills and, finally, in the north-eastern part of the plain. These features, several meters wide, show a variable development in length up to a few hundreds meters. Silty limestone beach deposits, with gastropods and lamellibranches of a lacustrine environment are present above these surfaces. In some cases, charcoals and reworked archeological material were found inside these sediments. Locally (Case Mazzelvetta, Piediluco) the wave cut terrace is covered by travertine deposits in stromatolithic facies.
The elevation of these features shows a general coherence between 372 and 376 m a.s.l., higher than the present-day alluvial plain (about 369-371 m a.s.l.).
Numerous archeological sites (Carancini et al., 1985) constrained the age of this *Lacus Velinus* high level during the recent Bronze Age-beginning of the early Iron Age.

18 km Remnants of a Paleo-Velino-Nera drainage network at Colle Valentino (Morro Reatino) and Polino

Near the village of Polino, at about 950 m a.s.l. several erosional surfaces and paleo-valleys have been interpreted as the remnant of an ancient (Pliocene?) fluvial system (paleo-Nera) draining to SW in the paleo-Velino. Thus, these features are the geomorphic evidence of a single paleo-Nera-Velino fluvial landscape.
Late Pliocene fluvial deposits, located on the top of Colle Valentino (about 900 m a.s.l) and surrounding hills (Morro Reatino), on the present divide between the Velino and Nera drainage networks, are the stratigraphic record of this first stage of the drainage network evolution.

22 km Paleo-environmental studies at Lago Lungo and Lago di Ripasottile from High-resolution stratigraphies

Two high-resolution boreholes were drilled in Lago Lungo (Calderoni et al., 1995, depth 81.5 m) and Lago di Ripasottile (Ricci Lucchi et al. 2001, depth 60 m), that are the only remnants of the ancient *Lacus Velinus*.
The cores (simplified stratigraphy in fig. 5) after descriptions were sampled for various and multidisciplinary analyses: sedimentology (bedding, structures and textures), mineralogy, isotope geochemistry, magnetic properties, paleontology (molluscs, ostracods, pollen).
The results of this multidisciplinary approach have provided the Late Quaternary paleo-environmental and paleo-climatic evolution of the Rieti alluvial plain.

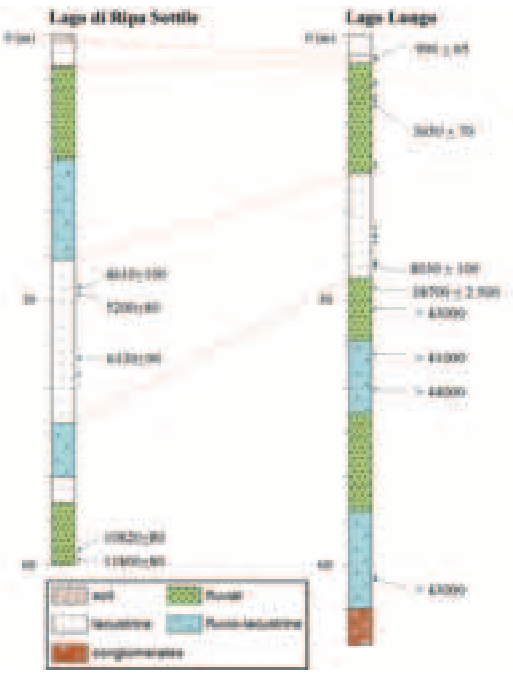

Figure 5 - Schematic stratigraphies at Lago di Ripasottile and Lago Lungo

Moreover, the variable Holocene thickness in these sites (27.5 m at Lungo Lake and >60 m at Ripasottile Lake) confirm that Holocene fluvial and lacustrine deposits filled a previous paleotopography characterized by deep valleys and canyons connected to the last low-stand of Le Marmore travertine occurring about 18,000 yrs ago (Last Glacial Maximum).

Stop 2:
Poggio Bustone
Geological overview

The village of Poggio Bustone is located on the eastern slope of the Rieti basin. On the lower part of this slope, tens to hundreds meters of "Villafranchian" conglomerates, Late Pliocene to Early Pleistocene in age, cover the carbonatic bedrock (Meso-Cenozoic). The Sanctuary of Poggio Bustone is very close to the WNW-ESE trending Rieti normal fault. Detailed geological studies of this segment (see Cavinato et al., 1989) have evidenced the fundamental role played by this tectonic element since the Late Pliocene.
Recent seismotectonic studies (Michetti et al., 1995) have documented Late Pleistocene deformations at the northern termination of this fault (La Casetta site).

The Franciscan Sanctuary of Poggio Bustone (from Leggio, 2000)

The Sanctuary of Poggio Bustone, dedicated to S. Giacono Maggiore, was founded as a cemetery church for the local inhabitants and has undergone several restorations over time. The whole structure can be reached and admired by means of a recent portal built in 1951. The single nave church has a truss roof, restored not long ago, and a fifteenth century wood painting depicting the "Holy Family". Under this a seventeenth century representation of the town's castle, sided by S. Francesco and S. Antonio, can be admired. Unfortunately the cloister (fig. 6) is only partially conserved and is characterized by elegantly finished small octagonal columns. Overlooking the cloister there are fourteen lunettes, which narrate the story of S. Francesco.
A 600 m long steep country path leads to the mountain that soars above the monastery where the saint passed his "working" days when, in 1208, he arrived for the first time in the Holy Valley. Along this natural pathway we can see several small shrines built by the local religious community and which represent supposed miraculous events in the life of S. Francesco. Amongst the miracles that local tradition attributes to him, we can include a stone which preserved S. Francesco's breviary from the

Figure 6 - The cloister of the Sanctuary of Poggio Bustone

Figure 7 - The Cantalice and Papena Canyons

pouring water, the imprint of the Saint's hood, knee, elbow and foot on the rock, together with the sign left by the supposed presence of a terrible tempter demon. At the far end of the climb the visitor finds himself in front of a small church which conceals the "Sacro Speco" (Holy Cavern), a rocky shelter that gave protection to S. Francesco during his pilgrimages.

Road log from Poggio Bustone to Cittaducale

10 km The diversion of Cantalice Canyon

The Cantalice Canyon (fig. 7) is one of the major N-S trending valleys draining the Reatini Mountains. Near the medieval village of Cantalice, it suddenly turns in an E-W direction. This diversion of the canyon, most likely occurred in the Middle Pleistocene during an important erosional phase of the Northern Rieti Basin. The Papena Valley, S of Cantalice, is now a relict valley recording the ancient N-S trending of the Cantalice Canyon.

19 Km Cupaello

In the Middle Pleistocene small volcanic districts (Cupaello and Polino) had been active along the eastern border of the Rieti basin.

Near Cupaello village, a melilite and diopside ultrabasic lava flow (Gragnani, 1972), some hectares wide, is embedded in Lower Pleistocene "Villafranchian" fluvial sediments.).

According to radiometric dating (Stoppa & Villa,

Figure 8 - Middle Pleistocene terraces along the Middle Velino Valley. In the foreground, a lacustrine terrace (Casale Giannantoni) is about 480 kyrs in age according to Ar/Ar dating on volcanoclastic materials. In the background, the terraced travertine barrier at Cittaducale.

1991) the eruption occurred 640 kyrs BP, in agreement with the extensional tectonic environment that reached its acme in this sector during the Middle Pleistocene.

Stop 3:

Cittaducale

The aim of this stop, located a few km East of Rieti at the middle course of the Velino River, is to observe Middle-Upper Pleistocene travertine deposits and connected upstream lacustrine and fluvial sediments. At present, these deposits are terraced, distributed in at least three different orders.

The first order, outcropping at 480÷500 m a.s.l. (Canetra, San Rocco and Cittaducale), is made up of colluvial and alluvial sediments rich in reworked tephra material, likely connected to the Tyrrhenian Volcanic Districts. Travertine horizons intercalate these deposits and are present on the top surface, where facies of cascade are well preserved.

The second order, outcropping at about 440 m a.s.l., is represented by fluvial and lacustrine sediments (Casale Giannantoni) covered by travertines (slope and cascade facies, Villa Roselli). Downstream from this stop (Colarieti, Granaro, Campo Moro and Rieti), partially reshaped travertines are probably related to this order. Ar/Ar dating of tephra material within lacustrine deposits (480 kyrs, Capaldi et al., 1985) constrains this order to the Middle Pleistocene.

The third order, outcropping at 390÷430 m a.s.l., is encased in the previous orders at San Rocco, Cittaducale and Villa Roselli. Remnants of the same order are still preserved also at Caporio and Tre Strade. A 62 m stratigraphy from continuous borehole, at Tre Strade, revealed travertines intercalated with colluvial and alluvial horizons. U/Th dating of travertines refer this order to the Upper Pleistocene.

Road log from Cittaducale to Greccio

10 km Rieti:
Urban Geology and Seismic Response

The Rieti urban area lies at the south-eastern border of the Rieti basin.

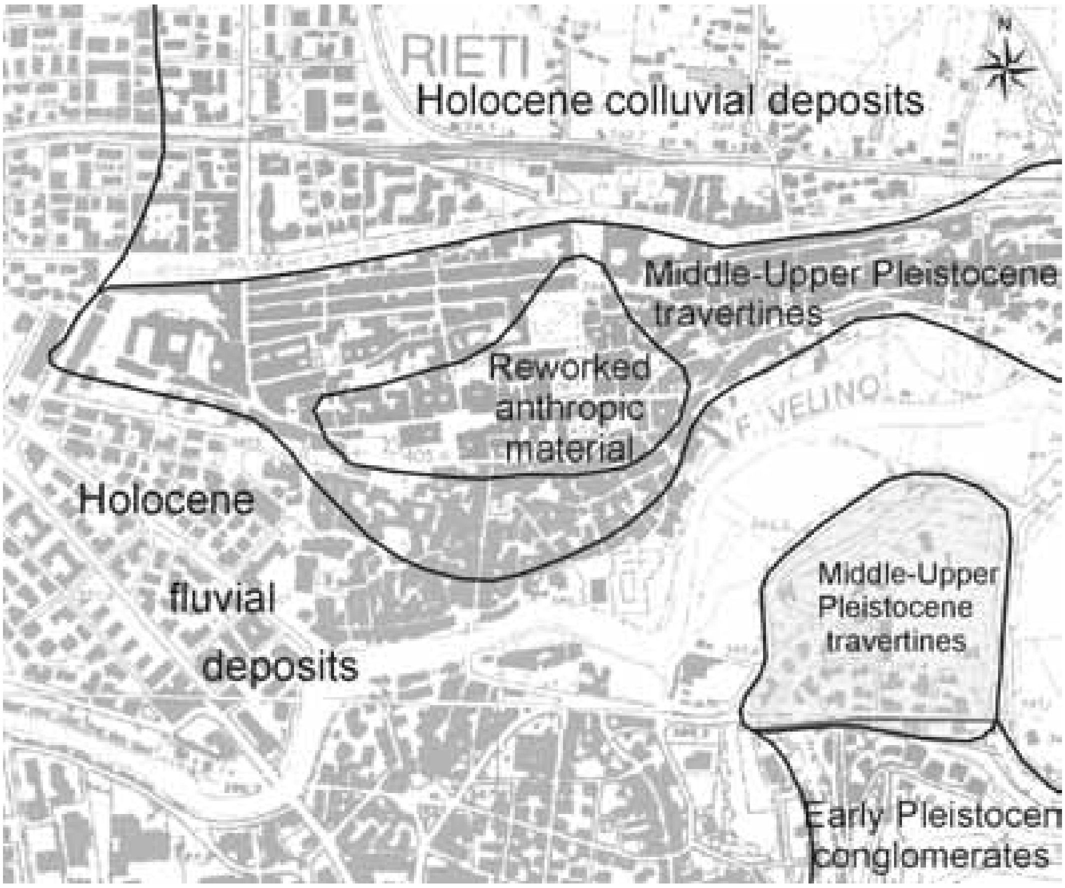

Figure 9 - Simplified geological map of historical downtown Rieti

Geological surveys distinguish three main sectors (fig. 9): the southern sector is founded on Holocene alluvial deposits of the Velino river; the central one lies on travertines which are often covered in the most elevated portion of the town by thick mounds of rubble; the northern sector is built on alluvial fans from the eastern margin of the Rieti basin (Reatini mountains).

By comparing the distribution of damage induced by the June 27, 1898 earthquake (Me=5.3, I_0=VII-VIII MCS) and the different outcropping lithologies (Comerci et al., 2003) it has been possible to point out that the mostly damaged areas are founded on post-glacial alluvial deposits and on anthropic fill deposits. In contrast, the least damaged areas are distributed around the most elevated portion of the central sector of the town, where houses were built on solid travertine deposits.

Stop 4:

Greccio

Geological overview

The village of Greccio is located on the western slope of the Rieti basin, characterized by at least three main NNE-SSW trending Neogene thrust units made up of Meso-Cenozoic pelagic limestones and marls (Umbria-Marche facies). During the Quaternary, a N-S trending normal fault system, partially buried beneath the recent alluvial deposits of the Rieti plain, cut the Neogene thrusts. This normal fault system represents the western border of the Rieti basin graben.

It is important to outline that the Greccio slope is affected by important gravitational phenomena (rock-falls in the calcareous upper sector and rotational landslides in the marly and clayey lower sector).

Figure 10 - The Franciscan Sanctuary of Greccio

The Franciscan Sanctuary of Greccio (Leggio, 2000)

According to the legend, S. Francesco had chosen Mt. Lacerone, overlooking Greccio, as his dwelling place since 1217, when he started his evangelical work throughout the surrounding area. The relationship between S. Francesco and the inhabitants of Greccio was immediately good and proof of this "feeling" was soon to come. In fact complying to the requests of the local people, he picked out a small boy from the town and told him to throw a fire-brand towards the hill, promising that wherever the burning stick landed, there he would build his dwelling place. The young boy threw the fire-brand on the opposite side of the valley, touching the rock-wall situated over two kilometres away.

Fame reached the walls of Greccio in 1223 when on Christmas Eve, the first representation of the Holy crib was set up and admired by the pilgrims. Since then Greccio intimately tied its destiny to the cloak of S. Francesco to the extent of building a sanctuary in the second half of the thirteenth century on grounds near the Holy cave.

A visit to the monastery departs from the Holy cave where tourists can admire two frescoes painted between the end of the fourteenth and the beginning of the fifteenth centuries by the skilled hands of an unknown Umbrian artist. The figures on the walls of the cave represent two very important cribs; the crib of Greccio and that of Bethlehem. The itinerary proceeds to show the exact places where S. Francesco ate and slept, resting places which were obviously carved out from the rock. In the upper part of the monastery we are able to see the small thirteenth century wooden dormitory known as the dormitory of S. Bonaventura. The structure is subdivided into tiny independent cells separated by means of reeds and wooden barriers. Close by there is a small chapel which presents a double structure and whose interior reveals a series of tied chair stalls on which the small community of friars once celebrated the sacred functions.

Aknowledgments

This field trip guidebook is the result of a long-term study conducted in the Rieti basin area funded by ANPA and Italian Geological Survey (now APAT),

and CNR-GNDT.
The Authors are very grateful to all the people involved in this research and in particular to A.M. Blumetti, V. Comerci, T. Leggio, P. Lorenzoni, A. M. Michetti, M. Raglione and E. Vittori.

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Field Trip Itinerary

FIELD TRIP MAP

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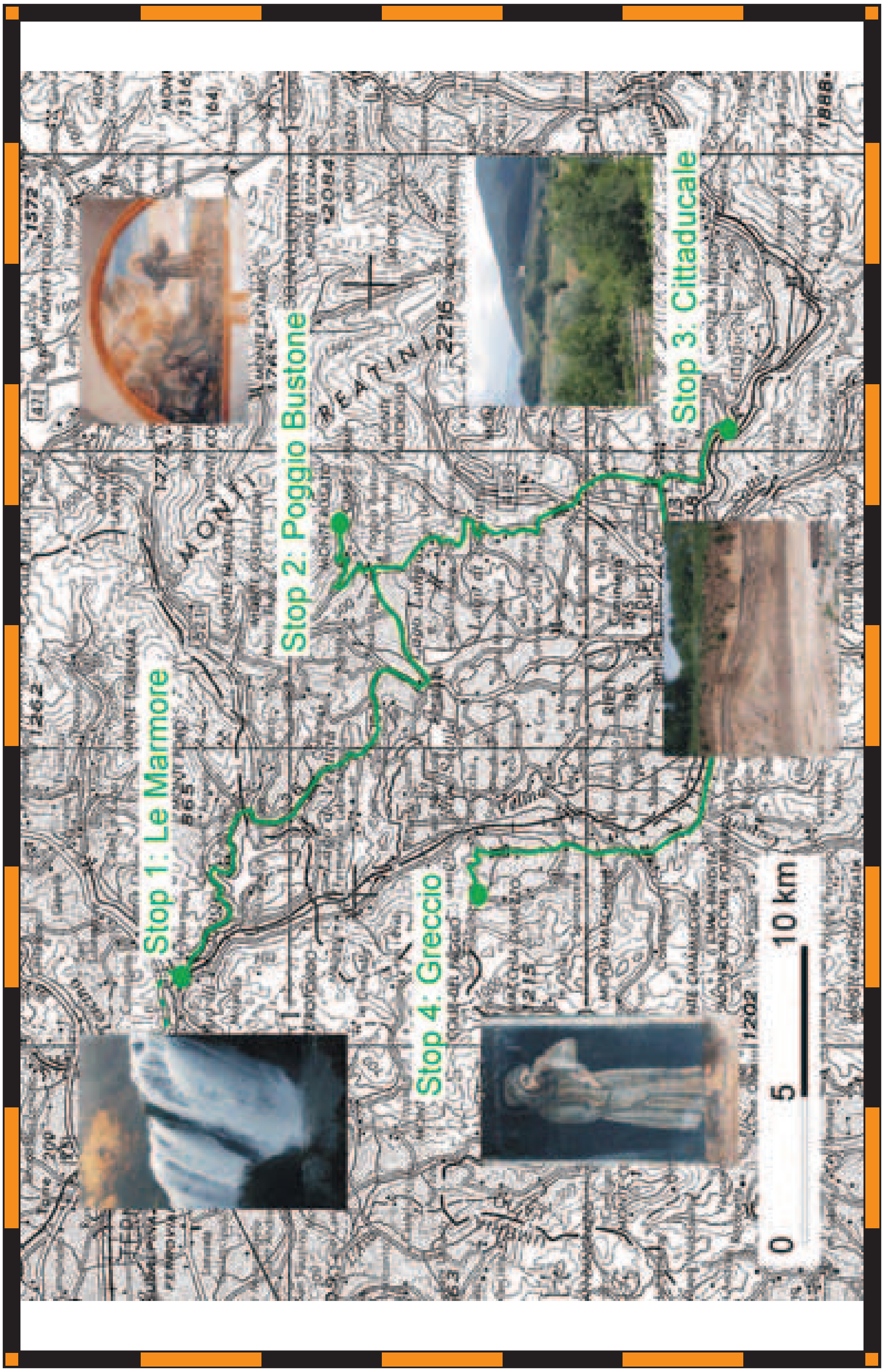

Edited by APAT