

GEOARCHAEOLOGICAL STRATIGRAPHY AND RADIOCARBON DATINGS OF A DEPOSIT FROM A SITE OF THE POMPEIAN AREA (CAMPANIA, SOUTHERN ITALY)

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ABSTRACT: G. Calderoni & F. Russo, *Geoarchaeological stratigraphy and radiocarbon datings of a deposit from a site of the Pompeian area (Campania, Southern Italy)*. (IT ISSN 0394-3356, 2007).

In 1996 the archaeological excavations at St. Abbondio locality, a site ubicated on the top of a small, 15 m high a.s.l., hill made up by distinct tephra emplacements and located at the edge of the Roman town of *Pompeii*, provided new data of great geoarchaeological concern for detailing the local history of the settlement pattern and of the environmental land exploitation of the Pompeian area far before the Roman times.

From a geomorphological literature we know that the local relief is a volcanic relict that some 5.5 ± 4.5 kyr B.P. limited eastward the local reach of the coastal plain, on which the Roman town of *Pompeii* flourished. Briefly, the geoarchaeological analysis of the findings in a deposit discovered in the archaeological site, in fair agreement with the measured ¹⁴C ages, revealed that the site-area, first occupied by an Early Bronze Age settlement, was used as a necropolis in the Middle Bronze Age and then, following a long lasting abandonment, was exploited for intensive farming throughout Hellenistic and Roman times.

The stratigraphic sequence exposed by the archaeological excavations, included some distinct, rich in artefacts, anthropic levels confined between the tephra ejected by Mt. Vesuvius during the last two huge Plinian eruptions of Avellino (best ¹⁴C age: 1410 ± 40 yr B.C.) and *Pompeii* (79 A.D.).

The archaeological excavations at St. Abbondio site yielded a reference stratigraphic sequence for the area, particularly valuable because it uncovered, both prehistorical and historical artefacts which are strictly associated with a changing of land use perhaps related with palaeoenvironmental changes induced by locally recurrent natural dramatic volcanic activity.

RIASSUNTO: G. Calderoni & F. Russo, *Stratigrafia geoarcheologica e datazioni radiocarboniche di un deposito multistrato rinvenuto in un sito dell'area pompeiana (Campania, Italia meridionale)*. (IT ISSN 0394-3356, 2007).

Nel 1996 nella località Sant'Abbondio a Pompei, poco distante dall'area dei noti scavi archeologici dell'antica città di epoca romana, gli sbancamenti operati per la costruzione di un edificio consentirono la scoperta di una interessantissima situazione geoarcheologica grazie alla quale, per la prima volta nell'area pompeiana, venivano alla luce resti di insediamenti più antichi dell'età romana ed in particolare dell'Età del Bronzo.

In un'area dove la stratigrafia geoarcheologica era limitata al periodo romano e tardo antico, finalmente si poteva così documentare una storia degli insediamenti, e quindi dell'uso del territorio, più antica di quanto fino ad allora era conosciuto.

Ma, dal punto di vista geologico ambientale, la cosa più straordinaria emersa dallo scavo archeologico è stata la constatazione dell'esistenza anche nell'area pompeiana di uno strato eruttivo riferibile all'eruzione pliniana del Somma-Vesuvio nota col nome di "Eruzione di Avellino", occorsa circa 1400 anni a.C. Uno strato eruttivo fino ad allora poco conosciuto nell'area e meno ancora la sua interazione locale con i resti archeologici pre-pompeiani. Dallo stesso punto di vista, inoltre, se si considera che gli scavi archeologici pompeiani rappresentano il dramma di una antica città vesuviana distrutta e seppellita dalle vulcaniti dell'eruzione pliniana del 79 d.C., con questa scoperta non solo si documenta una analoga tragedia umana ed ambientale vissuta molto tempo prima dalle popolazioni italiche localmente residenti, ma si arricchiscono gli scenari catastrofistici che per l'area vesuviana, in generale, prospettano come difficoltosa l'interazione tra lo sviluppo dell'urbanizzazione ed i problemi di pericolosità legati al vulcanismo attivo dell'area.

Il sito archeologico di Sant'Abbondio è ubicato sulla sommità di una collinetta di origine vulcanica alta poco più di 15 m s.l.m. che limita verso NW la locale pianura alluvionale e costiera su cui prosperava la città romana di Pompei. In accordo con le datazioni radiocarboniche, i resti archeologici rinvenuti nelle sezioni stratigrafiche e nell'area dello scavo di Sant'Abbondio rivelano che il sito fu occupato inizialmente da un villaggio risalente al Bronzo Antico successivamente trasformato in necropoli durante il Bronzo Medio e poi, dopo un lungo periodo di abbandono, fu sfruttato, a partire dal periodo ellenistico dell'antica Pompei, per coltivazioni agricole, prima di essere definitivamente occupato, nel I sec. d.C., dai resti di una fattoria di campagna distrutta dall'eruzione del 79 d.C.

Nello scavo archeologico il livello eruttivo riferibile all'Eruzione di Avellino ricopre sicuramente, ma senza apparenti segni di distruzione, i resti archeologici del villaggio del Bronzo Antico; purtroppo, non sono chiari i rapporti tra questo livello ed i resti multistratificati della necropoli del Bronzo Medio.

Livelli vulcanoclastici alluvionali, depositi di origine antropica e suoli sepolti completano la successione stratigrafica verso l'alto, sulla quale sorgono i resti di una fattoria di epoca romana distrutta e seppellita sotto diversi metri dai lapilli e dalle ceneri vulcaniche dell'eruzione del 79 d.C. sui quali oggi si sviluppa una estesa area edificata.

Oltre all'importanza della successione sedimentaria geoarcheologica, il sito di Sant'Abbondio documenta anche un'interessante variazione temporale di uso del territorio con le connesse attività umane; un aspetto, questo, che, come ipotesi di lavoro, potrebbe benissimo essere imputato ai cambiamenti ambientali indotti localmente dall'impatto drammatico dell'attività vulcanica vesuviana.

Keywords: Gran Sasso Massif, Calderone Glacier, glacial oscillations, Holocene climate, Little Ice Age.

Parole chiave: *Stratigrafia geoarcheologica, Datazioni radiocarboniche, Eruzioni vesuviane, Età del Bronzo, Pompei.*

1. INTRODUCTION

Since long ago the archaeological community is addressing considerable efforts to gaining deeper insights into the palaeoenvironmental changes experienced by the Pompeian area through the last five *millennia*, helping to answer the still numerous open questions on the spread of intermittent settlements throughout the Pompeian area prior to the foundation of the Roman Pompeii and subsequently to its burial in 79 A.D. It is stressed that the palaeoenvironmental assessment is crucial, as the area experienced huge natural events that seriously affected the behaviour, spread and choice of settlement sites of the local ancient populations.

The geoarchaeological studies carried out in the Pompeian area till now have focussed on the relationship between Roman and post-Roman urbanization with the peculiar physical characteristics of the local volcanic and alluvial environment (Sarno River Plain), also concerning natural catastrophic events like the negative impact of 79 A.D. Plinian eruption of Vesuvius on the local Roman settlements and landscapes (SIGURDSSON *et al.*, 1985; CINQUE & RUSSO, 1986; ALBORE LIVADIE *et al.*, 1990; COMENTALE, 2005).

Whereas, nothing is known about the same relationships regarding older settlements with their land use; in fact, only a few and scattered evidences of prehistoric occupations have been reported from both the excavated areas of Pompeii (BRUNSTING, 1975; WYNIA, 1982; DE CARO, 1985) and the surrounding territory (BRUNSTING, 1975 and references therein; ALBORE LIVADIE *et al.*, 1990).

The discovery of a Bronze Age necropolis at St. Abbondio, a site adjacent to the Roman town of Pompeii (MASTROROBERTO, 1997; 1998 a, b), revealed to be of great geoarchaeologic concern for this stretch of the Campanian coast in that the systematic excavation yielded a stratigraphic sequence of occupation levels, rich in well defined artefacts, confined within volcano-sedimentary layers recording the occurrence of dramatic natural events (like the volcanic eruptions).

In this paper we document for the first time a geoarchaeological stratigraphy of a Pompeian area where the relationships existing between Bronze age/Roman settlements and Plinian eruptive levels are clearly exposed having greatly modified the local landscape and the anthropic land use.

2. GEOMORPHOLOGIC AND STRATIGRAPHIC SETTING OF THE POMPEIAN AREA

The Pompeian area lies on the south-eastern edge of the

Somma-Vesuvius volcanic complex, almost at the northern part of the coastal plain that stretches southward to the Surrentine Peninsula (Fig. 1). Despite the plain undergoing an almost continuous subsidence since Pleistocene times (e.g., some 1.6 myr ago), the overall trend of coastline resulted in a significant progradation owing to the aggradation of the notable amount of tephra issued by the numerous nearby vents intermittently active during Pleistocene and Holocene times (CINQUE *et al.*, 1987).

Fig. 2 points out that the monotonous, almost flat

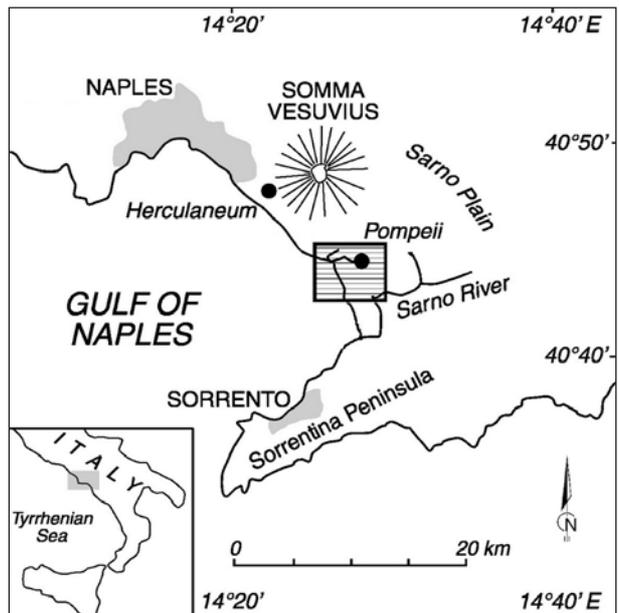


Fig. 1 - Location of the archaeological area of Pompeii. Localizzazione geografica dell'area archeologica di Pompeii.

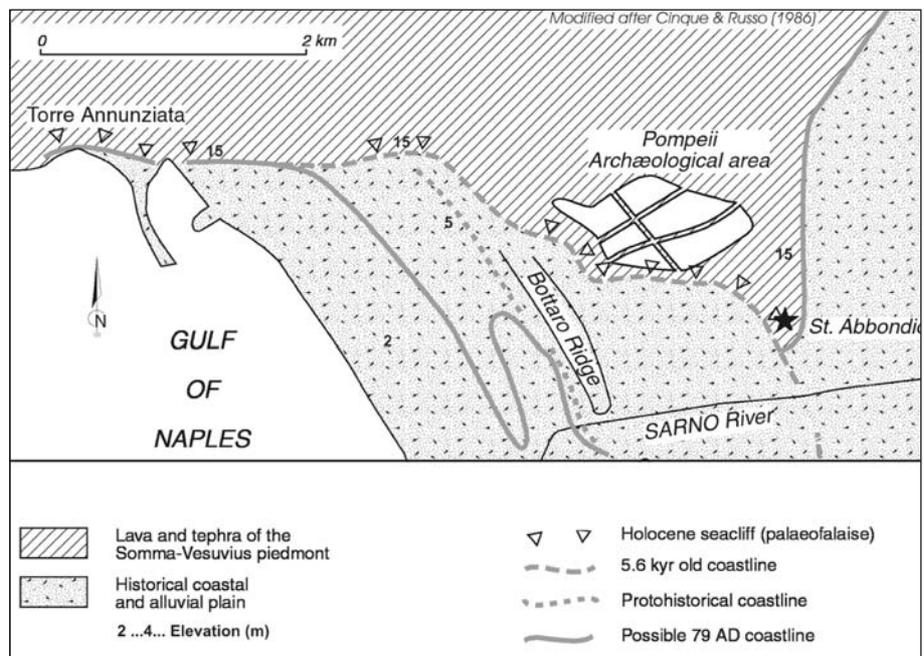


Fig. 2 - Geomorphologic sketch map of the coastal plain and volcanic piedmont where the study site is ubicated. The former stationings of the coastline during the Holocene are shown. Schema geomorfologico del contesto di pianura costiera/piedimonte vulcanico in cui l'area di studio è inserita. Si riportano alcuni stazionamenti olocenici della linea di costa nella piana.

landscape of the coastal plain is only interrupted inland by the modest volcanic relief on which lies the Roman town of Pompeii and seaward, by systems of poorly developed, (CINQUE, 1991) subarcuate ridges made up by littoral sediments. These latter are the relics of former coastal features pointing to a complex geomorphologic evolution of the area particularly enhanced during the last 6 kyr. The oldest, more inland coastline is quite well marked by the topography of the plain and likely records the peak of the Holocene marine ingression, here set at 5.6 kyr B.P. by ¹⁴C dating (CINQUE, 1991). A further, recentmost elongated coastal ridge occurs some 1 km seaward to the previous analogue feature. It accounts for a phase of sea level standing that, based on radiocarbon readings, lasted from 4.5 kyr B.P. through the 6th century B.C. (ALBORE LIVADIE *et al.*, 1990). The results of geomorphologic and geologic studies on the filling sequence of the plain (BARRA *et al.*, 1989; ALBORE LIVADIE *et al.*, 1990) established that the coastline at the times of the huge 79 A.D. Plinian eruption was almost parallel and shifted some 700 m inland relative to the present one. The sediment assemblage recording the coastline in Roman times was found from 3 to 5 m below the present s.l., thus providing evidence of the huge subsidence experienced by the plain during the past two *millennia*.

The archaeological site of St. Abbondio is located (Fig. 2) just 4 km southeastward the Roman town of Pompeii on a well defined topographic high, 15 m high, locally dominating the ca. 6 m a.s.l. alluvial coastal plain which stretches seaward from its foot. To the S the transition between the St. Abbondio high and the underlying coastal plain occurs through a sharp erosion scarp, a feature previously reported from other nearby sites of the Pompeian area and referred to as a inactive coastal cliff (CINQUE & RUSSO, 1986).

The stratigraphy of St. Abbondio high mostly consists of tephritic-leucitic lavas emplaced by a local prehistoric eruptive centre of the Somma-Vesuvius volcanic complex (CINQUE & IROLLO, 2004; DI GIROLAMO, 1968). The lava flows are discontinuously and unconformably overlain by a sequence of tephra levels, in part reworked, with interbedded buried soils frequently containing archaeological remnants. On the top of lava flow, ROLANDI *et al.* (1997) has recognized, as the oldest tephra layer in the volcanic sequence of the area of the ruins of Pompeii, a thin pumiceous-sandy level referred to the Sarno eruption (ca. 17 Kyr BP) of Mt. Somma-Vesuvius. Among the tephra layers, the thickest and mostwidespread, ashy and pumiceous in character, is that issued by the 79 A.D. Vesuvius eruption responsible for the burial of Pompeii (SIGURDSSON *et al.*, 1985).

3. CHRONOSTRATIGRAPHY OF THE DEPOSIT AT ST. ABBONDIO SITE

The archaeological site of St. Abbondio was first reported in 1943, following the discovery of an isolated sanctuary devoted to Dionysus that was dated back to the turn of the 2nd and 3rd centuries (ELIA & PUGLIESE-CARRATELLI, 1979). However, only following recent geophysical soundings (COLOMBO *et al.*, 1997) and systematic excavations (MASTROBERTO, 1997; 1998 a, b; D'AMBROSIO *et al.*, 2001) a protohistorical necropolis, pointing to the occupation of the Pompeian area during the Bronze Age, was found. The geoarchaeologic sequence investigated at St. Abbondio is of great concern in that for the first time the remnants of the most ancient occupation so far uncovered over the area were found strictly associated with the tephra ejected by the Somma-Vesuvius during the huge Plinian eruption referred to as "Avellino's Eruption" (ROLANDI *et al.*, 1993), which in nearby showings were dated (VOGEL *et al.*, 1990) at 1410 ± 40 yr B.C. (calendar age: 1730 ÷ 1605 yr B.C.).

The stratigraphy exposed on the walls of the excavated archaeological trench (Fig. 3) consists of volcano-sedimentary sequences with interbedded buried soils. These latter features contain artefacts that point to several, distinct occupational phases and therefore provide us with a reference geoarchaeologic record for the area.

At the bottom of the trench blackish tephritic-leucitic lavas (layer 1 in Fig. 3) are exposed, with the typical silty-loamy, yellow-red coloured weathered cap (layer 2) that upward shows pedogenetic signs.

Evidences of human activity are scattered on the surface of the layer 2, sometimes they are (hut pot-holes - h in Fig. 3) clearly cutting the layer itself. Inside the upper part of the layer 2 were discovered lots of

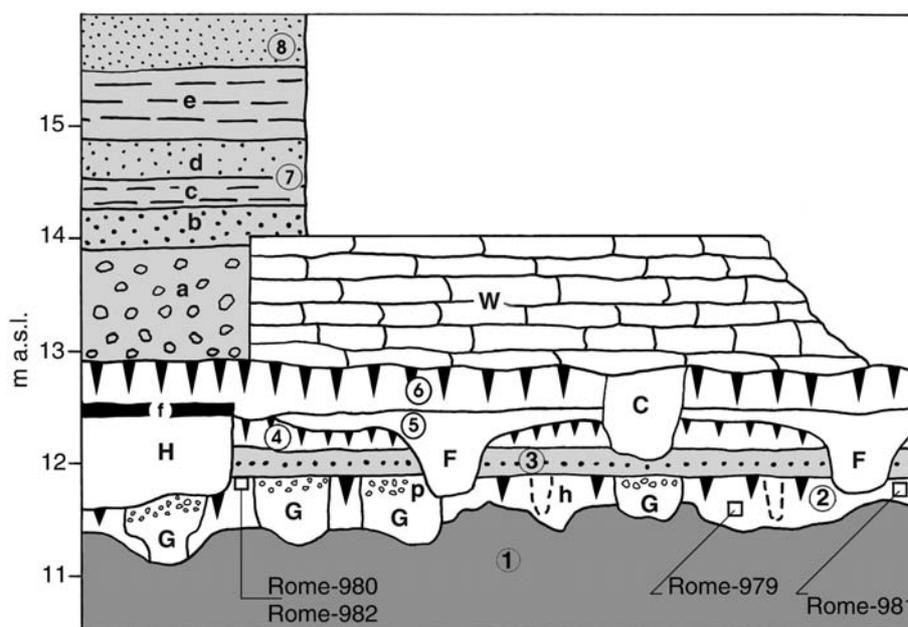


Fig. 3 - Stratigraphy exposed on the walls of the trench excavated at St. Abbondio archaeological site. Key: see text.

Sezione geoarcheologica schematica esposta nelle pareti dello scavo archeologico di Sant'Abbondio (vedere il testo per la spiegazione dei numeri e delle lettere).

potsherds typologically assigned to the facies of Palma Campania (ALBORE LIVADIE, 1981) of the Early Bronze Age. There is no sufficient data about but we think that the discovered pot-holes and potsherds are coeval and pertinent to the same, Early Bronze Aged, primitive hut villages.

The recognized graves (G) are shown in Fig. 4. Sometimes coalescent and containing personal belongings, they were covered and wall-faced with pebbles, cobbles and blocks (p) ranging in size from a few tens of cm up to 1 m wide, mainly composed of limestones, sandstones and lithified tuffs, subspherical in shape as a result of alluvial transportation. The graves cut the whole thickness of layer 2 and also the tracks of hut pot-holes; from an archaeological point of view in the outcropping area of graves there are no evidences of Early Bronze Ages remnants. Based on archaeological analysis the occurrence of graves could imply that the site was used as a necropolis, possibly at the boundary between Early and Middle Bronze Age (Protoappenninico B).

Because there are no datable organic remains inside the pot-hole infillings, the approximate age of layer 2 can be deduced from the radiometric datings made on soil organic matter sampled from the layer itself. Results of radiocarbon dating, carried out at the Radiocarbon Laboratory of the Earth Science Department at Rome University (CALDERONI & PETRONE, 1992), support the archaeological inferences in that the age of layer 2 is bracketed between 4900 ± 75 (Rome-979; bottom, calibrated age: $3760 \div 3640$ yr B.C.) and 4300 ± 65 yr B.P. (Rome-981, top, calibrated age: $3000 \div 2765$ yr B.C.). This data set range archaeologically span throughout the Copper Age (from Gaudo Culture to Andria-Laterza facies), but unfortunately no archaeological data testifying the presence of Copper Age remnants in the St. Abbondio site is documented. Thus we accept as *antequam* boundary the radiometric dataset obtained, believing them reliable.

A 15 cm thick layer 3 of massive, ashy-glassy-sandy tephra, barren of any archaeological remnant, overlies conformably and continuously the previous layer. Its overall features match those of the products, emplaced by the Plinian Avellino's Eruption of Somma-Vesuvius (ROLANDI *et al.*, 1993; RANIERI & YOKOTAMA, 1997). Apart from the lithological data the chronological assignment of layer 3 is also consistent with the results of two radiocarbon measurements (Rome-980 and -982) on charcoal fragments that provided the weighted mean age of 3655 ± 40 yr B.P. (calendar age: 2110 - 1930 yr B.C.). In the archaeological site the charcoal fragments are positioned at the base of the layer 3. We suppose that the charcoal fragments could come from a very little lens, perhaps a hearth relic, hosted in an invisible erosional task on the top of layer 2. Surely, there are no visible relationships between the supposed lens and the other anthropic remnants, but we believe that this supposed new anthropogenic level should be like an independent unit interposed between the layer 2 and the layer 3.

Upward a 20 cm thick ashy-sandy deposits (layer 4) occurs. It is devoid of archaeological remnants and displays clear signs of pedogenesis, such as sub-angular, weakly developed blocky structure, very dark brown colour, no HCl effervescence and very rare coarse frag-



Fig. 4 - General view of the excavations at St. Abbondio site (as of 1996). Some of the uncovered graves (foreground) as well as features of the exposed sequence (background) are shown. Features labeling as for Fig. 3.

Veduta generale dello scavo archeologico di Sant'Abbondio nel 1996. I numeri e le lettere sono le stesse di Fig. 3.

ments, these latter consisting of pumices of few millimetres in size: such pedogenic features strongly suggest that the soil at issue could represent the relict of a Bw horizon of a soil developed from volcanic material and very probably displaying andic soil properties. Such a soil developed atop the layer 3.

The overlying layer 5, about 60 cm thick, consists of a reworked, roughly parallel stratified volcanoclastics alluvial conglomerates confined within two undulated surfaces likely affected by erosion. This is suggested by the occurrence of furrows (F), subtrapezoidally shaped and ca. 1 m wide, which record two parallel, NW-SE aligned artificial channels possibly backdating to the times of the archaic *Pompeii* (6th - 4th centuries B.C.), as testified by artefacts discovered within (Mastroberto, pers. comm.). The top of level 5 shows a hearth floor (f), assigned to the middle of the 1st century A.D., complete of its foundation (H) composed by a mixture of volcanoclastic debris and Hellenistic and Roman potsherds dated from the end of the 3rd century B.C. to the middle of the 1st century A.D.

Layer 5 is capped by a 30 cm thick ashy-sandy deposit (layer 6) in which is founded a wall structure (W) relative to the late development of *Pompeii* (62-79 A.D.). This layer displays clear signs of pedogenesis and consists of two soil horizons: the upper horizon, approximately 5 cm thick, is characterized by a very-coarse crumbly structure, very dark grey colour and no HCl effervescence and could be reasonably interpreted as the remnant of an A horizon; the lower horizon, approximately 30 cm thick, displays a moderately developed coarse sub-angular blocky structure, a dark greyish colour and no HCl effervescence: thus, it probably represents the remnant of a Bw horizon. The overall soil developed from a volcanic parent material and probably displays andic soil properties. The soil is interested by subparallel ploughing furrows and further evidence of agricultural practices, is cut by an artificial, subtrapezoidally shaped channel (C) containing potsherds from the first half of the 1st century A.D.

Akin in the nearby archaeological area of *Pompeii*, the studied geoarchaeological sequence is sealed by

the tephra (7), here only 2.5 m thick, issued by the 79 A.D. Plinian eruption of Vesuvius (YOKOYAMA & MARTURANO, 1997), with the present soil (8) at the top. From down to top, the layer 7 consists of white pumices (a) and two levels of grey pumices (b and d) alternating with two massive, pisolitic, ashy-sandy levels laid down by pyroclastic surges (c and e).

3.1. The new 14 C readings from the site of St. Abbondio

Besides geomorphological and lithological considerations, valuable data for establishing the chronostratigraphy of the geoarchaeological deposit at St. Abbondio were the ¹⁴C dates measured on materials in reliable association with the identified occupation phases of the site. In particular the dated materials were the topmost (Rome-981) and lowermost (Rome-979) portions of the buried soil referred as layer 2 and the charcoal from the fill of a lens, possibly a fire place remnant, underneath layer 3 (sample locations are given in Fig. 3). The former sample pair was first pre-treated for isolating the humic matter fractions of proved validity in ¹⁴C dating of paleosols (CALDERONI & TURI, 1998), whereas the collected charcoal was split into subsamples Rome-980 (smaller bits) and Rome-982 (larger fragments) and routinely processed. Following conversion into the benzene to be used as a counting medium, the ¹⁴C decay rate was measured by β^- spectrometry: details on sample processing, counting protocol, equipment and calculation of the conventional ¹⁴C ages were previously reported (CALDERONI & PETRONE, 1992). The results, both as conventional (yr B.P.) and calendar ages (yr B.C.) are shown in Table 1. The sample pair from the fireplace (Rome-980 and -982) yielded statistically indistinguishable ages (3690 \pm 60 and 3620 \pm 60 yr B.P., respectively) resulting in the 3655 \pm 40 yr B.P. weighted mean.

As suggested by the results of previous radiocarbon dating (CALDERONI & PETRONE, 1989) of nearby buried soils of comparable origin and development, the ca. 600 yr age difference between the base (Rome-979, 4900 \pm 75 yr B.P.) and the top (Rome-981, 4300 \pm 65 yr B.P.) of the dated buried soil from layer 2 is reasonably accounted for by the dynamics of the soil forming processes. The data pinpoints a significantly long time span of stable environmental conditions suitable for soil development, this being a notable event for the study area.

Finally, it is observed that the used tract of the

calibration curve is quite favourable, in that it displays a smooth fluctuation pattern. As a result, according to the distribution (at $\pm 1 \sigma$ confidence level) of the relative area under the calibration curve the calendar intervals for samples Rome-979 and -981 and the pair Rome-980/-982 narrow to 3770-3635, 3035-2870 and 2035-1925 yr B.C. with a 96, 87 and 86% of probability, respectively.

4. FINAL REMARKS

Although so far only the southernmost part of the study site has been systematically excavated, the obtained data proved quite adequate for assessing in fair detail the geoarchaeologic framework. Furthermore, interbedded with and strictly associated to the layers several levels rich in prehistorical/historical evidences were found, effective for the archaeological setting, of human occupations.

According to COLOMBO *et al.* (1997) and MASTROROBERTO (1997; 1998 a and b) the pot holes with associated potsherds and the graves (G) containing personal belongings 1 m deep, entrenched into the weathered part (layer 2) of the basal lavas flow, are related to two distinct human occupations, referred to the Old Bronze Age and the transition to the Middle Bronze Age, respectively. The age of the layer 2 is bracketed within the 3760 - 2990 yr B.C. calibrated time-span by two ¹⁴C readings and charcoal from upward the sequence yielded the 2100 - 1930 yr B.C. calendar interval. Therefore the results of isotope dating suggest that during the Bronze Age the site witnessed two separate occupations over some less than two *millennia*, the last one lasting up to ca. 200 yrs prior to the 1730 - 1600 yr B.C. Avellino's eruption.

The transition from prehistorical to historical times is marked by a 60 cm thick sandy matrix-supported conglomeratic deposit (layer 5) devoid of archaeological findings, points to an abandonment of the site. Such a phase, lasted some 1000 yrs, spanning subsequently from the Avellino's eruption possibly up to the times of the archaic *Pompeii* (6th through 4th century B.C.). We note that none of the features of the layer is suggestive of natural events of such a dramatic character to account for the absence of any hint of human presence over the area.

The geoarchaeological deposit shows the most

ancient and reliable traces of human activity in protohistorical/historical times at ca. 3.5 m deep, these being represented by the infilled trenches of two parallel ditches likely referred to the archaic *Pompeii* (6th-4th century). Just upward the re-settlement is strongly suggested by an almost complete hearth structure associated with Hellenistic/Roman potsherds referred to from the 3rd century B.C. to the 1st century A.D. Subsequently several

Table 1 - ¹⁴C readings for St. Abbondio archaeological site.
Datazioni ¹⁴C effettuate nel sito archeologico di Sant'Abbondio.

Laborator identifier (Rome) sample number	Material	Stratigraphic location	Conventional age (yr B.P.)	Calibrated age(1) (yr B.C.)
979	humic matter	layer 2	4900 \pm 75	3760 - 3640
981	humic matter	layer 2	4300 \pm 65	3000 - 2765
980	charcoal	layer 3	3690 \pm 60	2190 - 1945
982	charcoal	layer 3	3620 \pm 60	2030 - 1830
980/982 weighted mean			3655 \pm 40	2110 - 1930
(1) Calibration data set after Stuiver & Reimer (1993).				

aspects of the anthropic activity during the last development phase of Pompeii are clearly well noticeable, e.g., a wall structure, potsherds, evidence of farming and water drainage. After which the archaeological sequence appears to have been suddenly sealed by the tephra of the 79 A.D. eruption.

Switching to the palaeoenvironmental changes of the area during the time span we are dealing with and taking into account the geomorphological evolution of the Sarno Plain resulting from the studies of ALBORE LIVADIE *et al.* (1990), we can conclude that at the times of the Old Bronze Age occupation the topographic high of the study site ended with a sharp cliff directly on the coastline or on an alluvial coastal plain that, although subjected to fast progradation, was by far narrower than nowadays. Subsequently, from 4.5 Kyr B.P. the coastline migrated 1 km seaward where it stationed up to the 6th century B.C. Given the above features it is conceivable that the area could have been attractive for the settlers because of its dominating location, availability of fertile soils as well as proximity to the exploitable resources of the sea and the coastal plain. So that the high of St. Abbondio was abandoned after Avellino's Eruption. With the soil formation on the top of layer 5, the anthropization of the St. Abbondio area comes back and manufactured-structures serving the reclaiming and farming are made up, probably related to the expansion of the archaic Pompeii. Since then and up to the first half of the 1st century only subordinate agricultural landscape changes and a discrete urbanization of the area had occurred; with the 79 A.D. Plinian eruption the overall Pompeian area was destroyed, completely buried, and for a long time forgotten till nowadays, thus also our site of St. Abbondio was definitively abandoned.

As a final remark we can conclude that the paper evidences the relationships striking the development of man and its activity in an area characterized by a strong volcanic hazard (Somma-Vesuvius active volcanic complex) and consequentially with high geomorphological dynamics (COMENTALE, 2005): in fact, we document a changing of anthropic land use with several functions of the site during the epochs examined. Furthermore, we also document a changing of topography with several elevations of the ground after every main sedimentary and catastrophic event. This prefigures a real risk situation still dominant unfortunately.

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