Fig. 2. Refreshments full of informal contacts.

and Sports; Prof. Veronique Chankowski, Director of the French School in Athens; Prof. Georgia Kokkorou-Alevras, Professor Emerita of Classical Archaeology of the National and Kapodistrian University of Athens; and Dr. Frederick Whitling, Assistant Director of the Swedish Institute at Athens.

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Anthemous Valley Archaeological Project (AVAP). Settlement changes in the valley from the Neolithic to the beginning of the Iron Age

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The Anthemus Valley Archaeological Project (AVAP) is the first field project of PAIA. Approval for its implementation was issued by the Greek Ministry of Culture and Sports in 2019, and the stage reported here was implemented in from 2020 to 2022. Nevertheless, the activity of Polish archaeologists in this region dates back much longer. AVAP started in 2010 as a cooperation between the Ephorate of Antiquities of the Thessaloniki Region (EATHR) and the Aristotle University of Thessaloniki (AUTH) (Andreou et al. 2016). Adam Mickiewicz University of Poznań (AMU) participated from the start as the scientific partner of AUTH on the basis of a bilateral agreement between the two universities. On behalf of these three participants, the project was directed by Dr. Maria Pappa, Prof. Stelios Andreou and Prof. Janusz Czebreszuk, respectively. From 2019, it has been a PAIA project led by Prof. J. Czebreszuk, but in close cooperation with EATHR (Dr. Maria Pappa) and AUTH (where, in addition to archaeology – Prof. Stelios Andreou – cooperation was also extended to geomorphology – Prof. Konstantinos Vouvalidis).

The Anthemous Valley is located in the central part of Macedonia and covers an area of approximately 400 km^2. The river flows straight into the Gulf of Thessaloniki. The valley itself consists of two basins: the lower one, where the activities of the reported project were concentrated, and the upper one (Galatista basin), as well as the transition and slope zones (Fig. 1). In the northern part of the valley, on the Dropalia stream – the largest tributary of the Antemous – the Amalara settlement complex was located.

The settlement processes that took place in the analyzed valley until the beginning of the Iron Age (first half of the 1st millennium BC) were influenced by two main groups of factors: natural, especially changes in sea level, fluvial processes, tectonic movements and the activity of local inhabitants, of which the main effect was the transformation of the landscape resulting in particular in increased aggradation of the valley bottom. Various forms of settlement are observed throughout the period studied. Almost exclusively, settlements are known; there are no cemeteries, apart from one case of an Early Bronze Age burial ground at the Vasilika Agia Paraskevi site (EATHR rescue research led by Dr. M. Pappa). A special form of sediments characterizes the Bronze Age, where the tell site-type (toumbas) predominates. In addition, three types of Neolithic sites are recorded in the valley: tell sites with a very large area, those with point-like tell formations, and flat sites with shallow accumulations.

The cores and ^{14}C dating obtained as a result of the project from the settlement in Vasilika Kyparissi show that the Anthemousa Valley was inhabited by the Early Neolithic (KYP1_388 Poz-158079 7740±60 BP, KYP2_480 Poz-159338 7460±50 BP, KYP2_532 Poz-158638 7230 BP). The dates come from two cores (KYP1 and KYP2) from the lowest cultural levels in

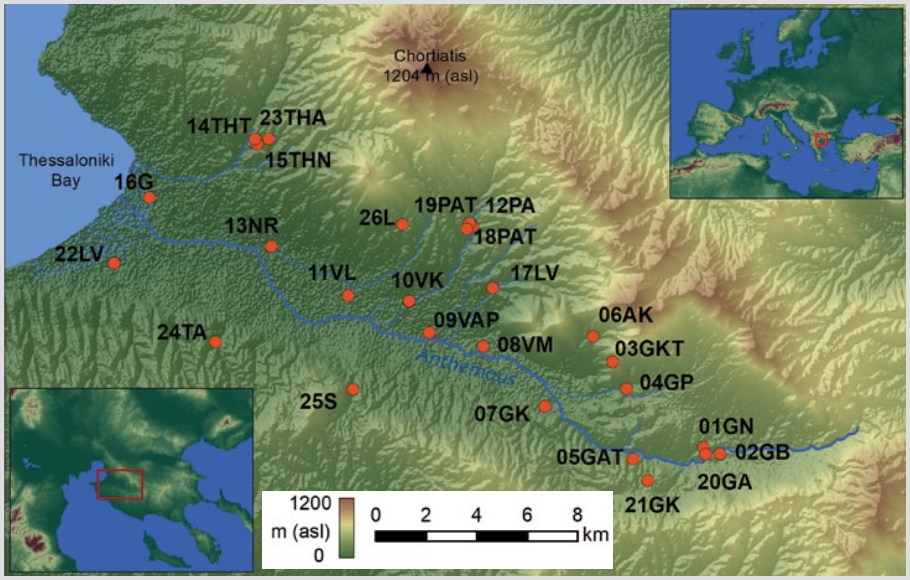

Fig. 1. Anthemous Valley in Northern Greece (Central Macedonia). Distribution of archaeological sites and main morphoforming elements: the extent of the delta and alluvial zones of the lower basin and the course of the active Anthemous fault. Explanation of site abbreviations: 01GN - Galatista Agia Paraskevi, 02GB - Galatista Agia Paraskevi Toumba, 03GKT - Galatista Karakoli, 04GP - Galatista Panikova Toumba, 05GAT - Galatista Agia Tetradi Toumba, 06AK - Agios Kyrikos Toumba, 07GK - Galarinos Kasteli, 08VM - Vasilika Metamorfosi Toumba, 09VAP - Vasilika Agia Paraskevi Toumba, 10VK - Vasilika Kyparissi, 11VL - Loutra Thermis, 12PA - Peristera Amalara Toumba, 13NR - Nea Raedestos Toumba, 14THT - Thermi Toumba, 15THN - Thermi Neolithic, 16G - Gona Toumba, 17LV - Vasilika, 18PAT - Peristera Amalara Trapeza, 19PAT - Peristera Amalara Table, 20GA - Galatista Trapeza, 21GK - Galatista Kasteli, 22L - Leivadi Toumba, 23THA - Thermi Trapeza, 24TA - Agia Paraskevi Toumba Aggelaki, 25S - Sourotim and 26L - Lakkia Trapeza.

the settlement, which proves that the settlement was founded in the second half of the 7th millennium BC. Such dating is also confirmed by small fragments of pottery obtained from both cores at the sampling levels. In the Early Neolithic, this settlement was probably the only settled point in the valley.

By the Middle Neolithic, a multi-point settlement network was established. In addition to the settlement in Vasilika Kyparissi, evidence confirming this stage of prehistory was also obtained from Nea Raedestos, which dates to the middle of the 6th millennium BC. Such dating is also confirmed by ceramic materials collected from both sites. In addition, unequivocally Middle Neolithic pottery was recorded in the Neolithic settlement at Galatista (upper basin) and Thermi (valley slope zone). In the Late Neolithic (last half of the 6th and the first half of the 5th millennia BC) the settlement network continued unchanged.

Neolithic settlements took various forms. The settlement in Vasilika Kyparissi stands out in the Aegean zone; it has a large area (18 ha) and cultural layers reaching 6-7 m in depth, corresponding to tell standards. The settlement in Nea Raedestos (Niebieszczański et al. 2019) also probably had a classical tell character (deep cultural stratification on a small area). On the other hand, the remaining settlements did not create their own geomorphological form that would stand out in the landscape. Moreover, they were situated close to flowing water sources, on the slopes of terraces located directly above the floodplain, where the economic activity of the inhabitants was concentrated.

Data from the vicinity of the Gona site indicate that the beginning of alluvial processes in the valley dates to the Early Bronze Age, around 3000-2500 BC (Niebieszczański et al. 2023). In Nea Raedestos, this process began at a similar time and is seen in the RDST1 section III level that dates to the Early Bronze Age (Niebieszczański et al. 2019a). These data correctly reflect the process by which the lower (coastal) part of the lower basin of the Anthemous Valley was slowly filled with alluvia.

In this context, there is no doubt that the long-term Neolithic settlement did not leave any stable traces in the landscape, especially in the morphology of the valley. In their activity, the oldest farmers used pre-Holocene soils or soils located in the floodplain of the valley (at its bottom). Moreover, most of the Early Bronze Age (second half of the 3rd and early 2nd millennium BC) toumbas (in the lower Anthemous Basin these were: Gona, Nea Raedestos, Loutra Thermis, Vasilika Kyparissi, Vasilika Agia Paraskevi and Vasilika Metamorfosi) also formed in the landscape without fertile alluvial covers. Alluvia were recorded only at Gona and Nea Raedestos (Niebieszczański et al. 2019a; 2019b; 2023). These covers thus ended between Nea Raedestos and Loutra Thermis.

The data at our disposal indicate that this situation continued throughout the successive stages of prehistory: the Late Bronze Age, Early Iron Age, Archaic, Classical, Hellenistic and Roman periods. It is not until about the year AD 1000 (i.e., in the Byzantine period), that the range of alluvia extends, after which it significantly covers the bottom of the entire lower part of the Anthemousa Valley. This is indicated by the data obtained from the cores around the tomb of Loutra Thermis, Vassilika Agia Paraskevi and Vassilika Metamorfosi.

Compared to the Neolithic stages, the settlement network of the Early Bronze Age was clearly denser because, in addition to the six sites mentioned above, there was also a tomb at Peristera Amalara (by the Dropalia stream), Galatista Agia Tetradi and Galatista Agia Paraskevi (both in the upper basin). In the Late Bronze Age (generally during the 2nd millennium BC),

the settlement network also consisted of nine, but not quite the same, toumbas, namely: Gona, Thermi, Nea Raedestos, Loutra Thermis, Peristera Amalara, Agios Kirikos, Galatista Panikova, Galatista Agia Tetradi and Galatista Agia Paraskevi. They also had a different arrangement in the landscape. A clearly smaller number of settlements is observed in the lower basin during the Late Bronze Age (only three compared to six in the Early Bronze Age). Although the Early Iron Age is the shortest of the studied stages (i.e., the first three centuries first millennium BC), it is represented by 10 sites, namely: Gona, Thermi Trapeza, Thermi Toumba, Nea Raedestos, Lutra Thermis, Vasilika Agia Paraskevi, Peristera Amalara Plateau, Peristera Amalara Trapeza, Galatista Panikova and Galatista Kasteli. This proves unequivocally that of the entire period under study, Early Iron Age settlement in the Anthemous Valley was the most intensive.

A very important factor shaping the settlement of the valley, especially in the long term, was tectonic activity. The authors have adopted two premises when reasoning on this question. The first: modern tectonic processes in this area were in progress by the 7th millennium BC (i.e., the beginning of permanent settlement in the valley). Second: the settlement of Vasilika Kyparissi was founded at the mouth of the Dropalia stream into the Anthemous River. The Anthemous is currently about 800 m to the south of the site. This observation reveals the southward migration of the riverbed following the direction of the Anthemous Fault. This means that over the last 8.1 thousand years, the riverbed has moved about 800 m to the south.

Our research shows that the settlement at Vasilika Kyparissi lasted continuously until the Early Bronze Age (ca. 2500 BC), when the process of forming a toumba-type settlement that had begun at the site was interrupted and the inhabitants moved to another place, probably Vasilik Agia Paraskevi's toumba. The reason may have been the fact that at that time (in the middle of the 3rd millennium BC) the bed of the Anthemous River was directly adjacent to this toumba (now it is about 200 m away). Thus, the speed of the southward migration of the river can be determined. Between 6100 and 2500 BC (3600 years), the Anthemous moved about 600 m due to tectonic activity. Therefore, on average, the river would migrate about 17 m over every 100 years in this place. From 2500 BC until today (about 4500 years), the river migrated only 200 m, which means that the average movement over 100 years was slightly more than 4 m. These calculations show tectonic processes were clearly more dynamic in the earlier stages of the Holocene than in its more recent stage.

As a result of this project, it was also possible to determine the impact of the Holocene marine transgression on settlement in an example from the Gona site (Doani et al. 2021), located in the estuary zone of the river. The obtained cores and the dating of individual stratigraphic levels indicated the interruption of the settlement process as a result of the intrusion of the sea towards the land in the Early Bronze Age. Then, the processes of delta progradation re-stabilized the shoreline, allowing the return to settlement in the area. The time of maximum transgression and the beginning of increased deltaic activity of the rivers coincide with the research results on the Thessaloniki Plain on the other side of the Thessaloniki Gulf.

This project resulted in a comprehensive and detailed reconstruction of prehistoric settlement in the Anthemus Valley over a long period of time from the beginning of the Neolithic to the Early Iron Age. It was also possible to show the influence of various natural (sea level changes, tectonic activity) and cultural factors on changes in these processes. The authors are now at the stage of preparing further publications because the data acquired during this project continue to offer great cognitive potential.

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