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**Reconstructing the settled landscape of the Cyclades : the islands of Paros and Naxos during the late antique and early Byzantine centuries**  
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# Chapter 2

## Natural environment

### 2.1 INTRODUCTION

Despite the fact that its total surface area is small (131,940 km<sup>2</sup>), Greece is endowed with a particularly rich and diversified natural environment; characterised by unique geomorphology, intense contrasts and many regions with rare beauty. Greece has a very large number of islands and islets, most of them located in the Aegean Archipelago (Fig. 1.1). One of the most interesting regions of the country is the maritime area of the Cyclades (Fig. 2.1). On the Cyclades from the 15th to the early 19th centuries population and economy flourished (see more details about economy and material culture of rural households in the Aegean during the Ottoman and Early Modern times in Vionis 2012; Bintliff 2013c). Subsequently, the Cyclades until the middle 20th century remained almost invisible, maintaining a traditional economic structure mainly based on rural, pastoral and fishing activities. However, over the course of the second half of the 20th and the early 21st century the Cycladic islands enjoyed considerable prosperity (1970-2010). They gradually emerged as top international destinations for summer vacations.

The impact of mass tourism during the second half of the 20th century in many ways altered the character of the small insular communities of the Cyclades, and can mainly be classified into three categories: economic, environmental, and socio-cultural. The economic structures changed dramatically, and the Cyclades from small rural and fishing economies became one of the financial contributors to the national economy. The cultural and environmental impact as well as the intensive building activity, uncommon to the small scale of the Cyclades, transformed not only landscape patterns but also the mentality of the islanders over a very short period. This demonstrates how island communities (humans and landscapes) interact with the external world, in a complex process that rapidly changed their identity.

This chapter aims to present information about the geological and geomorphological history of the Cyclades and allows a closer look not only at the common natural features but also at the diverse geographical and environmental parameters of this maritime region. It permits an overview of the Cycladic landscape and allows a better understanding the humans-environmental interaction.

### 2.2 GEOGRAPHY AND GEOMORPHOLOGY

The Cyclades are an island group in the south-central part of the Aegean Archipelago, which look like stepping-stones between Mainland Greece (Europe) and Asia Minor (Fig. 1.1). The Cycladic cluster encloses more than a hundred small and middle-sized islands and islets, out of which 25 are inhabited (Fig. 2.1). This makes the Cyclades the most numerous and complicated island group in the Aegean Sea (Broodbank 2000, 41-43).

On the map, the Cyclades appear as a justifiable group and can be divided into sub-clusters according to their geographical formation, forming three parallel zones: a) the north-eastern which constitutes an extension of Euboea and includes the islands of Andros, Tenos, Mykonos, Delos, Rhenia, Naxos, the Mikres Kyklades (Small Cyclades: Iraklia, Schinoussa, Koufonissia, Donousa, Keros), and Amorgos, b) the south-western which is considered an extension of Attica and consists of Keos, Kythnos, Serifos, Sifnos, Melos, Antimelos, and Kimolos and c) the central which consists of Gyaros, Syros, Paros, Antiparos, Ios, Thera, Therasia, and Anafi (Vionis 2012, 27-28).

The Cycladic islands have a total surface of 2.572 km<sup>2</sup>; Naxos (430 km<sup>2</sup>), Andros (374 km<sup>2</sup>), Paros (196,3 km<sup>2</sup>), and Tenos (194,2 km<sup>2</sup>) are the largest islands and comprise about half of the total land area of the Cyclades. Some small islands like Iraklia, Schinoussa, Koufonissia, Donousa,

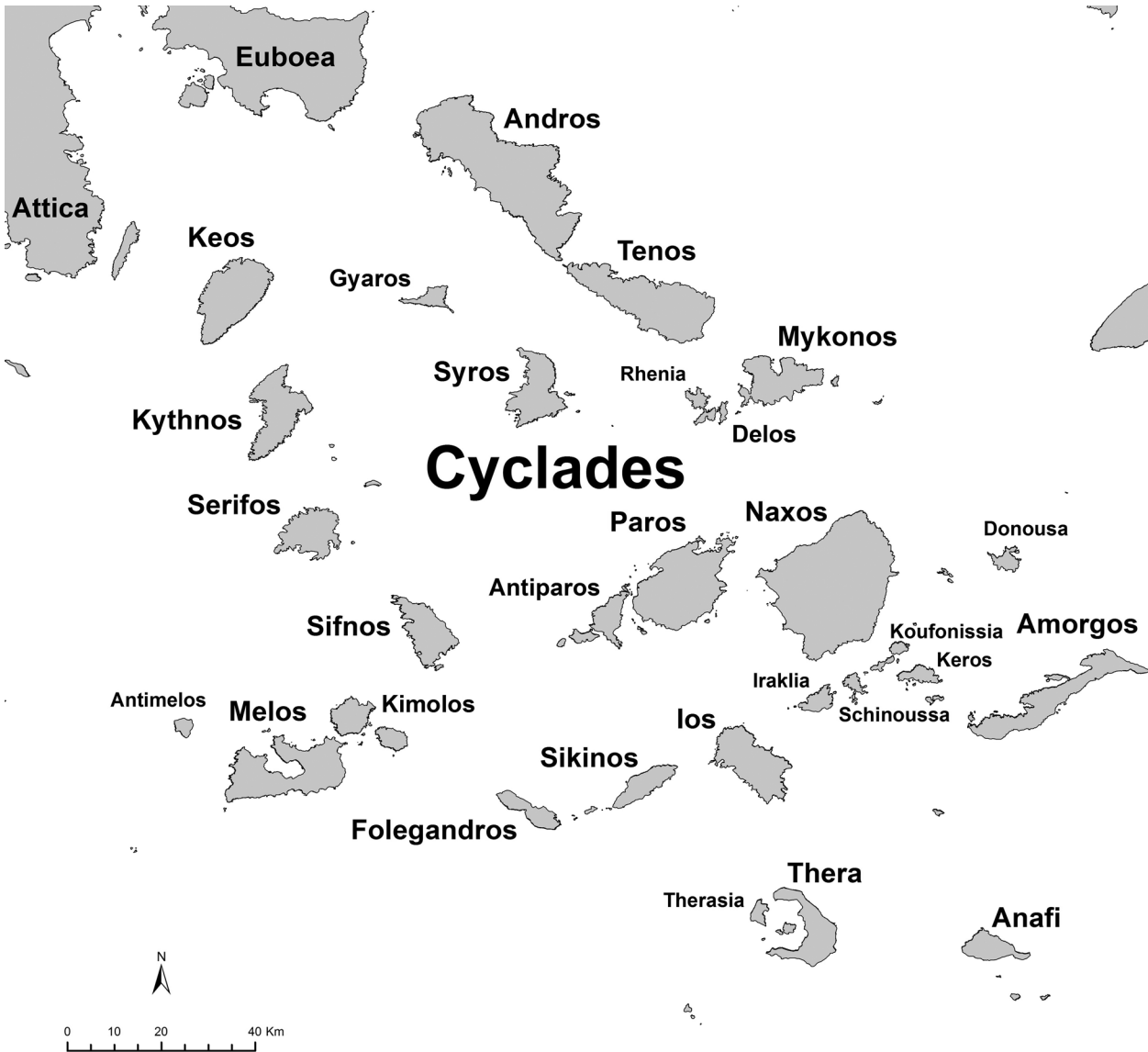


Fig. 2.1: Map of the Cyclades islands.

Antiparos, Antimelos, and Therasia, tend to become the satellites of larger ones. From a geomorphological point of view, the Cyclades in fact constitute the extension of Mainland Greece's mountains and are actually the peaks of the mountains that have been submerged, about 5 million years ago. The seabed is a broad underwater plateau, corrugated by numerous trenches, some points of which are very deep (generally less than 200 m deep). The Cycladic landscape is characterised by rugged and semi-mountainous topography with sparse, mainly low, vegetation, and precious few arable areas (Higgins &

Higgins 1996, 170; Sanders 1996, 147; Broodbank 2000, 75-76). This forced the islanders to organise the land in terraces, to hold the soil and create tiny cultivated areas. It is likely that the Cyclades were never fully forested, but rather high maquis.

However, except for the common features there are substantial variations in the landscape with several contrasts among the islands (Broodbank 2000, 70-76). The Cycladic landscape is very diverse and forms small environments (plains, coastal plains, off shore islets, harbours, mountains, plateaux, hill slopes, defensible peaks, large or small bays, river

valleys) not only between different islands but also between different regions in the same island. The Cycladic complex is characterised by fragmentation in several smaller units with differing climatological, hydrological and geomorphological parameters. Naxos is the greenest and most mountainous island (see more details in Chapter 5.1). Paros, Naxos and Melos are more fertile in comparison to other Cycladic islands. The island of Thera offers one of the most impressive volcanic landscapes in the world.

The Cyclades are part of a band of dominantly metamorphic rocks, the Attic-Cycladic metamorphic belt (Higgins & Higgins 1996, 170). The geological substrate of the Cyclades can be divided into marble-dominant, schist-dominant and volcanic geologies, although most islands in fact have a range of rock types (see more details about the geology of each island see in Papanikolaou 1986; Higgins & Higgins 1996, 170-195). Islands located close to the shores of Attica and Euboea, are rich in crystalline rocks such as granite, gneiss, amphibolite and schist (Keos, Andros, Tenos, Kythnos, Syros, Mykonos, Delos). On the other hand, Melos, Kimolos, and Thera, as largely volcanic islands located along the arc of south Aegean volcanoes, are rich in volcanic rocks, such as andesite and obsidian (Renfrew & Wagstaff 1982, 2; Higgins & Higgins 1996, 182-195; Sanders 1996, 147-148; Pavlides 2001, 25-29). The south Aegean is one of the most geotectonically active areas in the Mediterranean Sea (Pavlides 2001). Other sources of mineral wealth include deposits of copper on Kythnos, emery on Naxos and both lead and silver, extensively used and exhausted in antiquity, on Sifnos, Keos and Serifos (Papanikolaou 1986; Higgins & Higgins 1996, 179-180; Cherry *et al.* 1991, 57; Sifnos 2013). Paros, Naxos, Sifnos, and Ios have marble deposits. The fine white marble of Paros was very famous in the ancient world (Schilardi & Katsonopoulou 2010).

In general, the Cyclades have a typically Mediterranean climate, with hot dry summers and milder winters, and prolonged periods of sunshine. However, the climate varies slightly on each island according to its size, geographical position and distance from the mainland. Due to the small size of the islands and their semi-mountainous character with the small plains, there are no important rivers

or lakes, surface water is very limited and springs are accordingly small. In addition, it is a region with little rainfall and strong winds that prevail for most of the year, especially in the summer. Fresh-water sources vary greatly. In the larger and more mountainous islands like Andros, Tenos, Keos and Naxos there is higher rainfall and accordingly they are richer in natural water resources. In contrast, on many other islands, such as Melos, Paros, Syros, Delos, Ios, Sikinos, Thera, Mykonos etc, water sources are scarcer. The period between April and September is the driest of the year.

Finally, the abundance of archaeological remains below sea-level along the coastline of the Cycladic islands indicate sea-level changes in the aseismic Attico-Cycladic geotectonic zone not only within the Prehistoric period but also within historical times (Baika 2008; Poulos *et al.* 2009). It is worth mentioning that, due to the diversity of the Cycladic landscape every site or every island must be studied independently, since there can be small variations between sites or islands (Baika 2008, 40).

