

Ancient quarries as indicators of the palaeogeographic evolution of Western Naxos (Cyclades)

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With 9 figures

Abstract: This paper examines the remains of ancient quarries located in the western coastal zone of Naxos and presents the evidence they provide for the changing paleogeography of the area for the last 1500 years. On Manto island of Laguna, an aeolianite quarry was located on the coastal zone of the island reaching down to a depth of 2 m. In the area of Plaka, quarrying traces were found on beachrocks at 2 m depth. Based on the geoarchaeological evidence, the sea level 1500 years ago was 2 m lower than today and the shoreline of that time may be traced from the beachrocks protecting both the Laguna and Plaka. Taking into consideration the relative chronology provided by available geological evidence the exploitation of the beachrock quarries at both sites should be linked to the flourishing economy of Naxos during the late antiquity (4th–6th centuries AD) and through the Middle Byzantine period (7th–9th centuries AD).

Keywords: quarries; palaeogeography; geoarchaeology; Aegean; sea level

1 Introduction

Many studies related to sea level changes during the Holocene have taken place in the Aegean Sea, using various sea level indicators (Pavlopoulos et al. 2011, Vacchi et al. 2014), such as beachrocks (Desruelles et al. 2009, Karkani et al. 2017), tidal notches (Evelpidou et al. 2014), drillings (Evelpidou et al. 2012, Karkani et al. 2019) and archaeological remains (e.g. Baika, 2008, Kapsimalis et al. 2009, Poulos et al. 2009, Bechor et al. 2020).

A palaeoenvironmental approach may aid both our understanding of site selection for a particular use during ancient times and its further evolution. Several coastal archaeological sites are today submerged or uplifted due to relative sea-level (RSL) changes (Flemming & Webb 1986, Pirazzoli et al. 1992, Baika 2008, Morhange et al. 2012, Stiros, 2020). Their specific characteristics may be used as sea level indicators to constrain the relative sea level fluctuations since antiquity (Flemming 1969, Schmiedt 1975, Antonioli et al. 2007, Scicchitano et al. 2011, Auriemma & Solinas 2009, Anzidei et al. 2011a, Anzidei et al. 2011b, Anzidei et al. 2014, Antonioli et al. 2017, Aucelli et al. 2020).

In this work we investigate quarrying evidence from two sites, Laguna and Plaka, located at the western coasts of Naxos, in an attempt to better understand the palaeogeography of the area for the last 1500 years as well as human activity during that time.

2 Study area

Naxos is the largest island (429 km²) in the Cyclades island group, in the Aegean Sea (Fig. 1). The island belongs to the relatively aseismic Atticocycladic massif and is mainly formed by a series of metamorphic Mesozoic rocks, which surround a dome of migmatite (Bonneau et al. 1978, Keay et al. 2001, Pe-Piper & Piper 2001). The western part of Naxos Island is characterized by low land morphology with small promontories mainly consisting of granodiorite, separated by sandy pocket beaches. Moreover, a part of the coastal zone landwards to the dune field is characterized by a rectangular low-lying alluvial plain filled with lagoonal deposits. A part of this lagoonal area has been artificially drained in the 1980s, hosting nowadays the Naxos airport. Dunes in