



ELSEVIER

Contents lists available at ScienceDirect

Quaternary International

journal homepage: www.elsevier.com/locate/quaint

Mid-to late-Holocene paleovegetation change in vicinity of Lake Tuzla (Kayseri), Central Anatolia, Turkey

Çetin Şenkul^{a,*}, Türkan Memiş^a, Warren J. Eastwood^b, Uğur Doğan^c

^a Süleyman Demirel University, Faculty of Arts and Sciences, Department of Geography, 32260, Çünür-Isparta, Turkey

^b School of Geography, Earth and Environmental Sciences, University of Birmingham, Birmingham B15 2TT, United Kingdom

^c Ankara University, Faculty of Languages, History and Geography, 06100, Sıhhiye-Ankara, Turkey

ARTICLE INFO

Keywords:

Lake Tuzla
Cappadocia
Kültepe
Fossil pollen
Vegetation and climate change

ABSTRACT

This study carried out in Lake Tuzla in northeast Cappadocia (Central Anatolia- Kayseri-Palas Plain) aimed primarily to determine changes in paleovegetation of mid-to late-Holocene in the vicinity of Lake Tuzla and factors affecting these changes. A secondary objective was to determine paleoenvironmental conditions during the settlement period of Kültepe (Karum-Kanis), an important archaeological site in the region. Fossil pollen analysis was carried out on a sediment core 337 cm long representing the period from the present day extending back to 5080 ± 30 years. Changes in paleoclimatic conditions and paleovegetation were identified. From changes in the vegetation, the climatic changes determined were dry in the periods 3200–3000 BP, 2050–1450 BP, and 1120–850 BP; and humidity in the periods 1400–1115 BP and 1400–1700 BP. Alterations to the vegetation structure between 3230 and 1155 BP reveal the effects of the Beyşehir Occupation Phase (BOP). According to Lake Tuzla data, the effect of BOP was relatively less than that of Lake Nar. After the end of BOP, pine forests grew in the area around Lake Tuzla. The vegetation consisted of *Pinus* and *Quercus* in AP (arboreal pollen) and *Artemisia*, *Amaranthaceae* and *Poaceae* in NAP (non-arboreal pollen). The density of *Artemisia*, *Amaranthaceae* and *Poaceae* taxa suggests that steppe vegetation was dominant in the surroundings of Lake Tuzla.

1. Introduction

Anatolia is characterized by human-induced vegetation change and a complex climatic history (Bottema and Woldring, 1990; Kaniewski et al., 2007; Riehl and Marinova, 2008; Bakker et al., 2013). Pollen analysis is the most useful method for evaluating human-induced vegetation change and the climatic history of Anatolia from the temporal perspective and on a spatial scale (Behre, 1990; Eastwood, 1997; Vermoere, 2004; England, 2006; Şenkul, 2014). The formation of vegetation in Anatolia revealed by pollen analysis, and factors such as human impact and climate affecting these changes, enable the re-interpretation of environmental conditions (Bakker et al., 2011). Furthermore, the climatic and human impacts effective on vegetation also help us to understand changes occurring in the socio-cultural structure (Allcock, 2017).

The extent, nature and duration of climatic changes affecting natural environmental conditions vary from region to region (Miebach et al., 2016). Notably, the 4200, 2800, 1400 BP Cold Climate periods and the Little Ice Age (Bond et al., 1997) occurring in Holocene, together with the climatic cycles termed the Roman and Medieval Warm

periods (Free and Robock, 1999; Crowley and Lowery, 2000; Luterbacher et al., 2001; Mann, 2002; Bradley et al., 2003; Cronin et al., 2003; Bakker et al., 2011; Wang et al., 2012), were all effective on the natural environment, inhabitants and human activity.

Kültepe (Kaniş Karum), the most important ancient settlement in Cappadocia, is the largest Early Bronze Age settlement in Anatolia (Kulakoğlu et al., 2013). This settlement became an important trade and cultural center in the period of the Assyrian Trade Colonies (1950–1700 BCE), during which commercial and cultural relations with Mesopotamia developed (Uğuryol and Kulakoğlu, 2013). Kültepe, important historically and for its strategic location in Cappadocia, is of particular significance since it is situated close to the Lake Tuzla (23 km to the northeast).

Regarding Cappadocia as a whole, several fossil pollen studies have included Lake Tuzla (Bottema et al., 1993–1994; Woldring, 2001; Roberts et al., 2001, 2016; England, 2006; Doğan, 2017). However, the exact age-based chronology of fossil pollen data from Lake Tuzla, representing the northeast of the region, has not yet been revealed in detail (Bottema et al., 1993–1994). In order to gain a holistic view of the fossil pollen record of Cappadocia region, it is difficult to use data

* Corresponding author.

E-mail address: cetinsenkul@gmail.com (Ç. Şenkul).

<https://doi.org/10.1016/j.quaint.2018.05.026>

Received 21 December 2017; Received in revised form 14 May 2018; Accepted 19 May 2018
1040-6182/ © 2018 Elsevier Ltd and INQUA. All rights reserved.

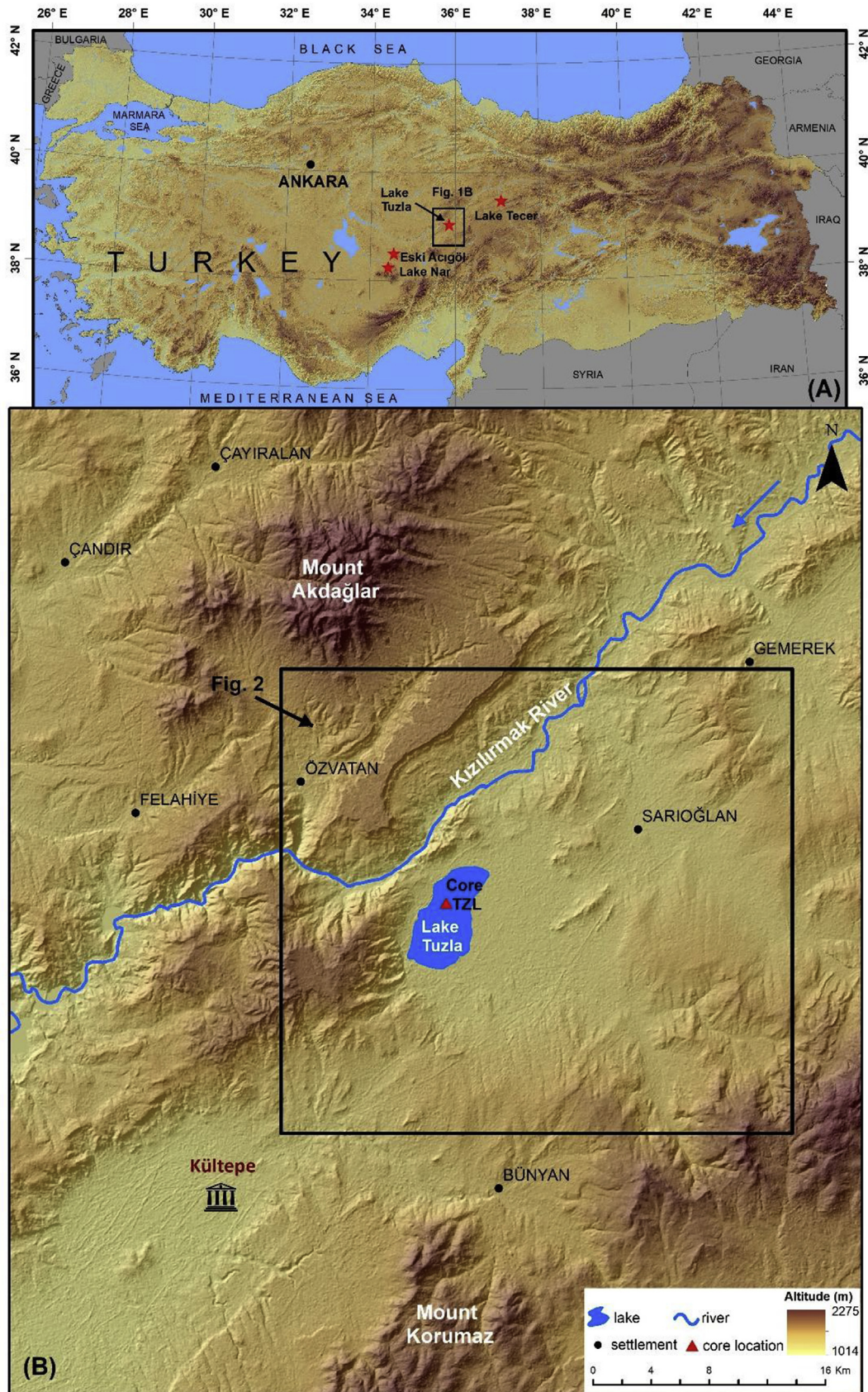


Fig. 1. Location map of study area.

Download English Version:

<https://daneshyari.com/en/article/7448988>

Download Persian Version:

<https://daneshyari.com/article/7448988>

[Daneshyari.com](https://daneshyari.com)