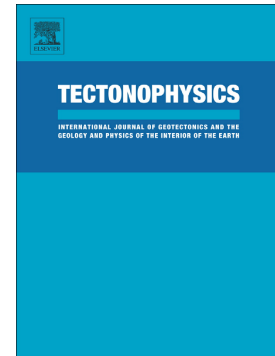


Accepted Manuscript

Eocene high-pressure metamorphism and Oligocene retrogression on Naxos, Cyclades, Greece: Significance for Aegean tectonics and $^{40}\text{Ar}/^{39}\text{Ar}$ dating in polyphase metamorphic rocks

Shuyun Cao, Franz Neubauer, Manfred Bernroider, Johann Genser



PII: S0040-1951(18)30287-7
DOI: doi:[10.1016/j.tecto.2018.08.009](https://doi.org/10.1016/j.tecto.2018.08.009)
Reference: TECTO 127912
To appear in: *Tectonophysics*
Received date: 22 April 2017
Revised date: 9 August 2018
Accepted date: 12 August 2018

Please cite this article as: Shuyun Cao, Franz Neubauer, Manfred Bernroider, Johann Genser , Eocene high-pressure metamorphism and Oligocene retrogression on Naxos, Cyclades, Greece: Significance for Aegean tectonics and $^{40}\text{Ar}/^{39}\text{Ar}$ dating in polyphase metamorphic rocks. Tecto (2018), doi:[10.1016/j.tecto.2018.08.009](https://doi.org/10.1016/j.tecto.2018.08.009)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Eocene high-pressure metamorphism and Oligocene retrogression on Naxos, Cyclades, Greece: Significance for Aegean tectonics and $^{40}\text{Ar}/^{39}\text{Ar}$ dating in polyphase metamorphic rocks

Shuyun Cao^{1,2*}, Franz Neubauer², Manfred Bernroider², Johann Genser²

¹State Key Laboratory of Geological Processes and Mineral Resources, Center for Global Tectonics, School of Earth Sciences, China University of Geosciences, Wuhan 430074, China

²Dept. Geography and Geology, University of Salzburg, Hellbrunnerstr. 34, A-5020 Salzburg, Austria

Abstract

In this study, we report new microfabrics, pressure–temperature estimates and $^{40}\text{Ar}/^{39}\text{Ar}$ ages from high-pressure (HP) rocks of southeastern Naxos in Cyclades, Aegean Sea. Most metapelitic rocks contain two generations of white mica, high-Si phengites crystallized during HP metamorphism and low-Si white mica formed during subsequent retrogressive overprint. $^{40}\text{Ar}/^{39}\text{Ar}$ white mica dating of five white mica samples yielded ages of ca. 51–40 Ma, with a mean at 45 Ma for the peak pressure conditions and ca. 35–29 Ma for the retrogressive greenschist-facies overprint, as well as ca. 16 Ma for the strongly sheared rocks. Even though the overprint at the greenschist-facies conditions is at ca. 350°C and 5 kbar, the phengite ages show that the white mica still records the age of the HP metamorphism. This implies that further factors such as deformed microstructure processes and fluid flow along with temperature-controlled diffusion contributed to Ar loss. The age and conditions of this first stage of greenschist-facies overprint at 35–29 Ma are similar over a large area of the southern Aegean Sea. This event represents an exhumation event, when the continental Adriatic microplate entered the subduction zone. The greenschist-facies marked a thermal pulse during exhumation. Stacking of passive margin cover successions of the subducted continental crust in a caterpillar-like mode would have triggered this, as previously suggested by modelling work.

Keywords: microfabrics, subduction, exhumation, Aegean Sea, $^{40}\text{Ar}/^{39}\text{Ar}$ geochronology, retrogression

Download English Version:

<https://daneshyari.com/en/article/8908591>

Download Persian Version:

<https://daneshyari.com/article/8908591>

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