Geophysical Research Abstracts,
Vol. 11, EGU2009-1472, 2009
EGU General Assembly 2009

Valuation of beachrock formation through ultrasonic pulse technique. A method to compare porosities in horizontal and vertical aspects

D. Psomiadis (1,3), D. Vogiatzis (2), K. Albanakis (3), V. Christaras (2), E. Dotsika (1), and N. Zisi (1)

(1) NCSR Demokritos, Institute of Materials Science, Aghia Paraskevi, Attiki, Greece (david.psomiadis@gmail.com), (2) Aristotle University of Thessaloniki, School of Geology, Department of Geology, Laboratory of Engineering Geology and Hydrogeology, Thessaloniki, Greece, (3) Aristotle University of Thessaloniki, School of Geology, Department of Physical and Environmental Geography, Thessaloniki, Greece

The physical properties of carbonate sedimentary rocks provide important information about the precipitation conditions of cement material and furthermore contribute to studies that try to place the basic context of the phyisico-chemical and micro-environmental conditions of the time and location of rock formation. Porosity is an important factor of the evolution of precipitation, related to its rate, its origin - marine, meteoric, vadose etc -, the participation of the biological activity as well as the particular environmental and climatic conditions during precipitation. In this study, a fast, non-destructive method of ultrasonic pulse traveltimes determination has been applied to beachrock samples. The use of ultrasonic pulse transmission technique is widely used in order to estimate traveltimes of pulses through mainly structural materials. The aim of this study is to evaluate the results of velocity measurements both in vertical and horizontal directions on beachrock samples from Thassos Island, N. Greece. The relationship of ultrasonic pulses transmission velocities with the porosity of the formation has been widely developed in literature regarding sandstones as the most relative formation to beachrocks. The final results are also interpreted taking into account the physico-chemical properties of beachrocks, the topographic position of the formation and its sedimentary characteristics.