



## **Paleoclimatic Modeling of Borehole Temperature-Depth Data and Applications for the Recent Climatic Changes in Western Anatolia**

Mustafa Orkun İnal (1), Kamil Erkan (2), Mete Tayanç (2), Bülent Akkoyunlu (3), Elif Balkan (4), Esra Sema Eren (2), and Yeşim Aydın (2)

(1) Institute of Pure and Applied Sciences, Marmara University, Istanbul, Turkey (m.orkun.inal@gmail.com), (2) Faculty of Engineering, Marmara University, Istanbul, Turkey, (3) Faculty of Arts and Sciences, Marmara University, Istanbul, Turkey, (4) Faculty of Engineering, Dokuz Eylul University, Izmir, Turkey

Many different methods with different resolutions are employed in paleoclimatic studies. Although borehole paleoclimatology method has a lower time resolution, it is unique in the sense that it shows temperature changes directly. Temperatures were measured from many boreholes in 1995-1999 in Western Anatolia, which can be used for paleoclimatic changes. Boreholes are spread uniformly in the region and their depths vary between 100 m and 200 m. In this study, the ones that are still accessible were selected and measured again to produce comparative climate models. In addition, new boreholes that are appropriate for climate modeling in suitable locations were measured and analyzed.

The data were analyzed using parameter space inversion technique. In order to use in our climate models, some sensitivity analyses were initially performed. The effects of parameter changes on the models were tested. The reliability of a model was checked by comparing the model with data from meteorological stations that are the closest to the corresponding borehole. These meteorological stations generally have records of the annual average temperature values between 1965 and 2014.

The climate change in Western Anatolia for the last 200 years was determined. The results show that in Western Anatolia climate changes and climate behavior show significant differences with the location.