

# Turkish Journal of Electrical Engineering & Computer Sciences

Turkish Journal

of

Multilayer Capacitor Model of the Earth's Upper Crust

Electrical Engineering &  
Computer Sciences

Berk ÜSTÜNDAĞ<sup>1</sup>, Özcan KALENDERLİ<sup>2</sup>, Haluk EYİDOĞAN<sup>3</sup>

<sup>1</sup>Computer Engineering Department, Electrical and Electronics Faculty  
İstanbul Technical University, 34469, Maslak, İstanbul-TURKEY

<sup>2</sup>Electrical Engineering Department, Electrical and Electronics Faculty  
İstanbul Technical University, 34469, Maslak, İstanbul-TURKEY

<sup>3</sup>Department of Geophysical Engineering, Faculty of Mines

İstanbul Technical University, 34469, Maslak, İstanbul-TURKEY

e-mail: berk@cs.itu.edu.tr - ozcan@elk.itu.edu.tr - eyidogan@itu.edu.tr

 [Keywords](#)  
 [Authors](#)



[elektrik@tubitak.gov.tr](mailto:elektrik@tubitak.gov.tr)

[Scientific Journals Home Page](#)

**Abstract:** In this study, an equivalent electric circuit model of Earth's upper crust is proposed to explain the behavior of measurement patterns acquired from network of the earthquake forecast project. A multi-layer capacitor model having active components that couples with the monopolar probe close to the surface is used to determine earthquake precursory patterns due to structural changes in time. Equivalent circuit model was developed for a) dilatency process that is assumed to be a stress weakening reason and b) external force source that increases shear stress over the fault until sudden decrement before the earthquake. A data acquisition system consisting of 15 online measurement stations in Marmara region and a data processing center has been established three years ago. Many anomalies which can be distinguished from regular daily behavior of the signal patterns were observed that thought to be associated with the earthquakes with the magnitude greater than 4 and close less than 150 kilometers to the nearest station.

**Key Words:** Electric field measurement, multi-layer capacitor, earthquake forecast

Turk. J. Elec. Eng. & Comp. Sci., **13**, (2005), 163-174.

Full text: [pdf](#)

Other articles published in the same issue: [Turk. J. Elec. Eng. & Comp. Sci.,vol.13,iss.1.](#)