

Home

Online Library HESS

- Recent Final Revised Papers
- Volumes and Issues**
- Special Issues
- Library Search
- Title and Author Search

Online Library HESSD

Alerts & RSS Feeds

General Information

Submission

Review

Production

Subscription

Comment on a Paper

Impact  
Factor  
2.270

ISI  
indexed



[Volumes and Issues](#) [Contents of Issue 2](#) [Special Issue](#)

Hydrol. Earth Syst. Sci., 7, 235-244, 2003  
www.hydrol-earth-syst-sci.net/7/235/2003/

© Author(s) 2003. This work is licensed  
under a Creative Commons License.

## Triple diagram model of level fluctuations in Lake Van, Turkey

A. Altunkaynak, M. Özger, and Z. Sen  
Istanbul Technical University, Faculty of Civil Engineering, Maslak 80626, Istanbul, Turkey

Email for corresponding author: altunkay@itu.edu.tr

**Abstract.** This paper presents a triple diagram method (TDM) based on the Kriging technique for predicting future lake levels from two antecedent measurements, which are considered as independent variables. The experimental semivariograms (SV) for three lags are obtained, and the most suitable theoretical SV for the three cases is the Gaussian type. Based on these theoretical SVs, the contour lines of the dependent variable are constructed by Kriging. The resulting maps are referred to as the TDM model for lake level fluctuation. It is expected that this model will be used more extensively than the Markov or ARIMA (AutoRegressive Integrated Moving Average) models commonly available for stochastic modelling and predictions. The TDM does not have restrictive assumptions such as the stationarity and ergodicity which are preliminary requirements for the stochastic modelling. The TDM is applied to monthly level fluctuations of Lake Van in eastern Turkey. In the prediction procedure lags, one, two and three are considered. Interpretations from these three basic diagrams help to identify properties of lake level fluctuations. It is observed that the TDM preserves the statistical properties. These diagrams also help to make predictions with less than 10 % relative error.

**Keywords:** fluctuation, hydrologic budget, lake level, Kriging, prediction

[Final Revised Paper](#) (PDF, 1457 KB)

Citation: Altunkaynak, A., Özger, M., and Sen, Z.: Triple diagram model of level fluctuations in Lake Van, Turkey, Hydrol. Earth Syst. Sci., 7, 235-244, 2003. [Bibtex](#) [EndNote](#) [Reference Manager](#)



Search HESS

Library Search

Author Search

News

- New Service Charges
- Financial Support for Authors
- ISI Impact Factor: 2.270

Recent Papers

01 | HESSD, 12 Mar 2009:  
Distributed modeling of land surface water and energy budgets in the inland Heihe river basin of China

02 | HESSD, 12 Mar 2009:  
Comparison of six algorithms to determine the soil thermal diffusivity at a site in the Loess Plateau of China

03 | HESS, 11 Mar 2009:  
Large-scale lysimeter site St. Arnold, Germany: analysis of 40 years of precipitation, leachate and evapotranspiration