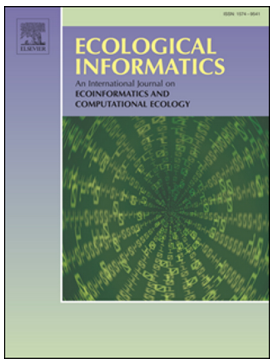

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Abolfazl Jaafari, Eric K. Zenner, Binh Thai Pham

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Wildfire spatial pattern analysis in the Zagros Mountains, Iran: A comparative study of decision tree based classifiers

Abolfazl Jaafari [1, *], Eric K. Zenner [2], Binh Thai Pham [3, 4]

1- Young Researchers and Elite Club, Karaj Branch, Islamic Azad University, Karaj, Iran
2- Department of Ecosystem Science and Management, The Pennsylvania State University, Forest Resources Building, University Park, PA 16802, USA
3- Department of Civil Engineering, Gujarat Technological University, Nr.Visat Three Roads, Visat - Gandhinagar Highway, Chandkheda, Ahmedabad - 382424, Gujarat, India
4- Department of Geotechnical Engineering, University of Transport Technology, 54 Trieu Khuc, Thanh Xuan, HaNoi, Vietnam
* Corresponding author at: Tel: +98 9124250053; E-mail address: ajaafari@gmail.com; a.jaafari@modares.ac.ir

Abstract

Knowledge of wildfire behavior is of key importance for planning and allocating resources to fire suppression efforts. In this study, we analyzed the spatial pattern of wildfires with five decision tree based classifiers, including alternating decision tree (ADT), classification and regression tree (CART), functional tree (FT), logistic model tree (LMT), and Naïve Bayes tree (NBT). The classifiers were trained using historical fire locations in the Zagros Mountains (Iran) from the years 2007–2014 and a set of fifteen explanatory variables (i.e., slope degree, aspect, altitude, plan curvature, topographic position index (TPI), topographic roughness index (TRI), topographic wetness index (TWI), mean annual temperature and rainfall, wind effect, soil type, land use, and proximity to settlements, roads, and rivers) that were first optimized with a twostep process using multicollinearity analysis and the Gain Ratio variable selection method. The