عنوان مقاله:

A bi-level programing for wildfire self-evacuation network design: an Australian case study

محل انتشار:

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خلاصه مقاله:

A non-linear bi-level problem is suggested in this paper for wildfire self-evacuation planning, the upper problem of which includes binary variables and the lower problem includes continuous variables. In this model, the upper problem selects a number of roads and adds them to the available evacuation network. It, moreover, predicts the traffic balance, shelter restriction, and the time window of the roads in the lower problem. The bi-level problem is transformed into a single level one using the Karush-Kuhn-Tucher condition. A part of the objective function in the bi-level problem is non-linear which is linearized via a linear approximation method that does not require binary variables. The model is then used for the real case study of the Beechworth fire in 2009. The resulted outputs of the model are beneficial in planning design schemes for emergency evacuation to use the maximum potential of the .available road network

کلمات کلیدی:

bi-level programing, wildfire self-evacuation, linear approximation, upper problem, lower problem, Karush-Kuhn-Tucher condition