Geophysical Research Abstracts
Vol. 13, EGU2011-9936, 2011
EGU General Assembly 2011

Mapping areas susceptible to forest fire along the wildland urban interface in selected regions of the mountain forests in Austria

Natalie Arndt (1,1,1), Harald Vacik (1), Alexander Arpaci (1,1,1), Hartmut Gossow (2,2,2)

(1) University of Applied Life Sciences Vienna, Institute of Silviculture, Department of Forest and Soil Sciences, Vienna, Austria (e-mails: natalie.arndt@boku.ac.at, harald.vacik@boku.ac.at, alexander.arpaci@boku.ac.at; fax: +43-1-47654-4092), (2) Institute of Wildlife Biology and Game Management, Department of Integrative Biology and Biodiversity Research, University of Natural Resources and Applied Life Sciences Vienna, Vienna, Austria (email: hartmut.gossow@boku.ac.at, fax: +43-1-47654-4459

While significant progress has been made in assessing forest fire risks at fine spatial scales, most risk assessments have paid low attention to socioeconomic factors influencing fire risk.
Due to the fact that Austria is a densely populated country with a distinct topography because of its mostly alpine characteristics, the presence of settlements, the presence of touristic facilities as well as the distribution of transportation infrastructure is crucial for fire ignition. A socioeconomic risk model (SERM) based on a logistic regression has been developed for Austria in order to identify regions with a high fire hazard according to the number of overnight stays per inhabitant, the hiking trails, forest roads and railroads per total area of municipality, the number of agricultural operations with grassland and the number of forest operations. So far forest fires have neither caused harm to human life nor damage to property or infrastructure as it happens in the wildland urban interface of other regions in the world. However it is assumed that due to the increasing number of forest fire events human life, property and infrastructure are going to be increasingly susceptible in the future especially in the context of mountain forest ecosystems in the Alpine Space.

In this study we propose a forest fire hazard mapping approach for three selected municipalities in Austria (Arnoldstein, Treffen/Ossiacher See and Villach) in order to support the fire management planning in these regions. Based on the experiences of the SERM approach settlements, touristic facilities such as huts and cable cars, forest roads, hiking trails as well as the road and rail network are mapped and used as input layer in a Euclidean distance analysis in ArcGIS. The buffers have been intersected with the buffers around ignition points of forest fires recorded for the years 1993 to 2009 in order to identify the size of areas potentially susceptible to forest fire. Due to the uncertainty about the location of the ignition point of the forest fires a buffer indicating an area where the start of the fire is located will be used in this study. A comparative analysis between the study regions will be done in order to identify areas of high susceptibility to forest fire ignition around settlements, touristic facilities, forest roads, hiking trails and the road and rail network.

Based on the results of the analysis a zoning plan will be developed in order to allocate zones around settlements, touristic facilities, road and rail network as well as agricultural and forest areas. Management measures will be proposed for these zones in the wildland urban interface in order to reduce the risk of damage and destruction especially in high risk areas.

Keywords: Austria, forest fires, fire hazard mapping, wildland urban interface