SUPPRESS FIRES

The biannual newsletter of the Streams-2-SUPPRESS-Fires (S2SF)
Editor George N. Zaimes

Issue # 2, March 2014

Common borders. Common solutions.

Challenges for Fire Management in the Black Sea and Eastern European Regions

Prof. Dr. Dr.hc. mult. Johann Georg Goldammer,
Global Fire Monitoring Center (GFMC)

The eastern region of temperate-boreal Eurasia (Eastern Europe, Russian Federation, Southeast Europe, South Caucasus and Central Asia) have recently experienced unprecedented large and disastrous wildfires. These extreme fires are considered consequences of socio-economic, land-use and climate changes. Some recent wildfire episodes have revealed an increasing vulnerability of society to direct and secondary effects of fire; e.g. the impacts of fire smoke pollution on human health and security. While there have been advances in fire management in some countries, there are still barriers preventing the sharing of scientific and technical knowledge and good practice between wildfire agencies in different States. These barriers have resulted in some wildfire agencies being unintentionally excluded from the technical information and advancements that they could utilize to develop greater national resilience and preparedness for large wildfire incidents. It is often the lack of resilience of a State to manage its own wildfire situation that results in the need for unplanned international emergency assistance.

The cross-boundary consequences of wildfires can be significant, e.g. through transboundary transport of wildfire smoke pollutants, border-crossing wildfires, threats to common global assets such as biodiversity, terrestrial carbon pools, atmosphere and climate. In addition, if wildfires occur in a politically sensitive area this might become additional source of contention between countries and have a negative impact on the overall security situation in the region. Fires burning on terrain contaminated by unexploded ordnance and land mines – both remnants of previous conflicts – pose an additional threat to personnel involved in firefighting and civilians.

The willingness of nations is increasing to share expertise and resources in fire management. Specialists of member countries of the United Nations Economic Commission for Europe (UNECE) and the Organization for Security and Cooperation (OSCE) have expressed the need for developing voluntary principles and procedures on cross-border cooperation in fire management and thus enhance economics, inter-operability and effectiveness in fire management between nations and regions.

In order to allow a coordinated, systematic approach for international cooperation in fire management, the Global Fire Monitoring Center (GFMC), through its coordinated international groups, prepared the convention of the "UNECE/FAO Regional Forum on Cross-boundary Fire Management". While the scope of the Forum, which was co-sponsored by the OSCE and the Council of Europe, focused on the Eurasian part of the region, the participation of member states of North America (Canada, U.S.A.) in the preparatory work and by attending the Forum ensured the consideration of expertise from countries that are comparatively advanced in fire management capacity and in the development of cross-border agreements and bilateral protocols and coordinated international operating procedures in fire management.

The main aim of the Forum was to elaborate recommendations to UNECE member states to build resilience of nations and communities within the UNECE region to wildfire emergencies and disasters by enhancing the national and collective regional fire management capability through international cooperation.

continued in page 2...

Project funded by the EUROPEAN UNION

This publication has been produced with the assistance of the European Union and can in no way reflect the views of the European Union

CROSS BORDER COOPERATION

SUPPRESS FIRES

The biannual newsletter of the Streams-2-SUPPRESS-Fires (S2SF)
Editor George N. Zaimes

Issue # 2, March 2014

Common borders. Common solutions.

The Second International Scientific Seminar "Current Status of Fire Research and Fire Management in the Black Sea and Eastern European Region" (September 2014, Ukraine) will provide an opportunity to discuss the follow-up of the UNECE / FAO Regional Forum with representatives from the Eastern European / Black Sea region. Furthermore, the experience of the OSCE in supporting countries of Eastern Europe, the West Balkans, South Caucasus and Central Asia in enhancing fire management capacities will be presented and discussed.

For more information see the following websites:
Global Fire Monitoring Center: http://www.fire.uni-freiburg.de/
Regional Eastern European Fire Monitoring Center: http://nubip.edu.ua/en/reefmc
The UNECE/FAO Regional Forum on Cross-boundary Fire Management:
http://www.fire.uni-freiburg.de/intro/team.html
Achievements of the OSCE in wildfire disaster risk reduction:
http://www.fire.uni-freiburg.de/GlobalNetworks/SEEurope/SEEurope_8.html
EuroFire Competency Standards and training materials (10

Forest Fuel Models

Dr. Ioannis Mitsopoulos,
National Observatory of Athens / GFMC

A forest fire fuel is a set of parameters that define fuel input to fire spread and risk models. It describes fuel elements with physical and chemical parameter values representative of the typical fuel conditions (combustible materials) of a certain vegetation type. The fuel models are characterized by fuel physical and chemical properties and vegetation types (characterized by vegetation species). It is very important to understand the: a) Fuel hazard, b) Fire behavior and c) Fire effects.

In the framework of Streams-2-SUPPRESS-Fires, we developed forest fuel models for the Menoikion case study by conducting certain fuel sampling. Forty (40) representative locations with typical ('average') fuel conditions for each area were selected. In every representative location, fuel structural parameters were measured in 1 m2 sampling plots (see figure 1). The clip-and-weigh method was used for the determination of all fuel loads by size category. In every plot, 9 fuel parameters were measured: a) Average vegetation height (cm), b) 1-hr fuel load (kg) (0.0 – 0.6 cm), c) 10-hr fuel load (kg) (0.61 – 2.5 cm), d) 100-hr fuel load (kg) (2.51 – 7.0 cm), e) 1000-hr fuel load (kg) (> 7.0 cm), f) Foliage (kg), g) Total fuel load (kg), h) Litter load (kg), i) Litter depth (cm). All fuel loads (fuel weight per unit surface area) were expressed on a dry- weight basis (samples were dried for 24 hours at 105 degrees Celsius).

The resulted fuel models were based on these measurements and by applying a K-Means clustering procedure.

Figure 1. Fuel sampling in a shrubland ecosystem

Project funded by the EUROPEAN UNION

This publication has been produced with the assistance of the European Union and can in no way reflect the views of the European Union

SUPPRESS FIRES

The biannual newsletter of the Streams-2-SUPPRESS-Fires (S2SF)
Editor George N. Zaimes

Issue # 2, March 2014

Common borders. Common solutions.

Forest Fuel Mapping

Dr. Georgios Mallinis,
Demokritus University of Thrace

For forest fire management, an accurate knowledge of the fuel conditions has been shown to be critical, since they constitute a primary component of fire risk. Knowledge of the spatial distribution of fuel types is essential to develop pre- and post- fire management strategies, prescribed burning, simulate fire behavior, design the use and distribution of available firefighting resources etc.

Fuel maps can be developed and used at a variety of spatial and temporal scales (figure 2). Fuel maps for strategic planning at regional scales require fuel type maps of large areas, while for local fire management more detailed procedures are needed. Forest fuel mapping has traditionally been performed by means of field work, the use of aerial photography and ecological modeling. Remote sensing data can provide valuable information for the characterization and mapping of fuel types and vegetation properties at different temporal and spatial scales including global, regional and landscape levels.

Several remote sensing techniques have been developed towards the accurate fuel type mapping from 1960 till now. Modern sensors provide an even broader range of remote sensed imagery and additional parameters to analyze. Passive sensors, recovering the electromagnetic energy originating from an external source such as the sun and active sensors such as the Radio Detection And Ranging (RADAR) and Light Detection and Ranging (LiDAR) systems, emitting their own energy to register a result, have been used for fuel type mapping either alone or in conjunction with each other.

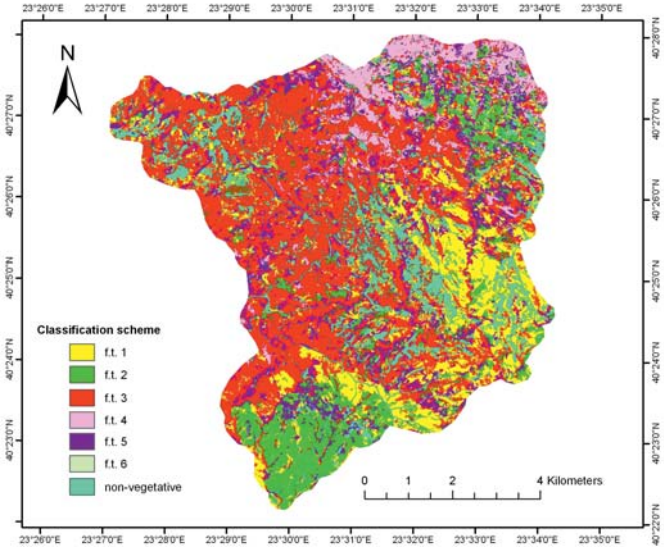

Figure 2 Fuel type mapping over Taxiarchis University Forest, using a Quickbird VHR satellite imagery (modified after *Mallinis, G., Galidaki, G., & Gitas, I. (2014). A Comparative Analysis of EO-1 Hyperion, Quickbird and Landsat TM Imagery for Fuel Type Mapping of a Typical Mediterranean Landscape. Remote Sensing, 6, 1684-1704*

Project funded by the EUROPEAN UNION

This publication has been produced with the assistance of the European Union and can in no way reflect the views of the European Union

CROSS BORDER COOPERATION

SUPPRESS FIRES

The biannual newsletter of the Streams-2-SUPPRESS-Fires (S2SF)
Editor George N. Zaimes

Issue # 2, March 2014

Common borders. Common solutions.

Second Neighbourhood Network Meeting

Dr. Valasia Iakovoglou
DEMETER - FRI

The second Neighbourhood Network meeting for the "Streams-2-SUPRESS-Fires" program took place on December 11th 2013. Through the use of the "ACROBAT CONNECT" program it was possible for representatives of the six countries, to meet and discuss about the aim and the progress of the program. Specifically 13 people from Greece, 22 from Romania, 6 from Ukrainian, 11 from Armenia, 10 from Moldova and 20 from Turkey participated. The participants were from different organizations that deal with fires and ranged from Universities (*Eastern Macedonia and Thrace Institute of Technology, National University of Landscape and Environmental Sciences of Ukraine Artvin Coruh University and the Kostomanu University*) to Fire Management Departments and Brigades (*Yalta, Drama and Kavala*), Forest Services (*Kostamonu, Yalta*), Prefect's Institution and Municipalites (*Braila, Brasov, Cluj, Olt Drama, Xanthi*) Inspectorate for Emergency Situations (*Alba, Argeș, Botosani, Dâmbovița, Bihor, Mures* etc), Institution (*Environmental Centers Zikatar, Institute of Ecology and Geography*), NGOs (*Eco-Tiras, Millenium III, Ecological Movement*) and Ministries (Ministry for Nature Protection of Armenia; Ministry of Forestry and Water Affairs of Turkey) and many more. The third meeting with be held on March 19th 2014.

First Workshop

Dr. D. Emmanouloudis., Dr. D. Kaziolas, and Dr. K. Ioannou
Eastern Macedonia and Thrace Institute of Technology

The first Workshop of the Black Sea Programme "Utilizing Stream Waters in the Suppression of Forest Fires with the help of New Technologies", project acronym "Streams-2-Suppress-Fires" took place in Drama, Greece, at the Department of Forestry and Natural Environment Management on October, 17-18, 2013. During the first day all project partners presented their institutions and the selected pilot areas for the implementation of the project (figure 3). Additionally scientific presentations were made regarding the following subjects:

1. Hydrologic Model SWAT by Mr. P. Koutalakis, Dr. G. Zaimes, and Dr. D. Emmanouloudis
2. The Optimal Reservoir Location and Vehicle Routing by Dr. K. Ioannou, and Dr. D. Kaziolas
3. Forest Fuel Sampling by Dr. I. Mitsopoulos
4. Forest Fuel Mapping by Dr. G.Mallinis

A technical session was held by Mr. P. Koutalakis, Dr. G. Zaimes, and Dr. K. Ioannou, regarding the implementation of the Hydrologic Model SWAT in the pilot areas. Finally, at the end of the first day there were held the meetings of the Steering Committee, the Financial Committee and Administrative Committee, and the Scientific Committee.

On the second day of the workshop a trip to the Greek pilot area was made with the project coordinator, the other members of the Greek scientific team and the project partners (figure 4)

Figure 3 Workshop (left)
Figure 4 Fieldtrip (right)

Project funded by the EUROPEAN UNION

This publication has been produced with the assistance of the European Union and can in no way reflect the views of the European Union

CROSS BORDER COOPERATION