European Forest Fire Research Workshop

“The burning issue of forest fires: how can research make the difference?”

Research Directorate General, European Commission
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Draft Outcome

Forest fires have been for long a severe environmental and civil protection issue in the countries of the European Union (EU). The European Commission’s Research Directorate General (DG) has been supporting forest fire research since the late 1980’s, with the aim of strengthening research activities and initiatives in the various fields related to forest fires. As a result, European research in forest fires has grown up to a considerable level being able to cooperate and compete with countries such as USA, Canada and Australia, which have a much longer history in research activity in this specific scientific topic. However, there is a long way ahead before the findings of European forest fire research will find their place in operational forest fire management. This objective needs to be addressed in future fire research via a combination of well documented stakeholder and user requirements, the implicit knowledge of the research community coupled with the development and market potential of the European industry.

European forest fire research must therefore involve operational users; mobilize experienced researchers across Europe and elsewhere, and associate industrial partners, which will ensure the promotion and exploitation of the research achievements. Coordination of DG Research activities with the relative activities of other European Commission services, and in particular DG Information Society and DG Environment, is necessary for maximizing the performance of the planned fire research tasks and the take up of research results thereby increasing the value for money rate for European citizens.

Based on the presentations and discussions held in context of the Workshop on future forest fire research requirements, organized in Brussels the 16th of April 2004 by DG Research, the following topics have been considered of major importance for future research activities:

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a) Forest fire hazard assessment and monitoring:

- Models assessing fire behaviour with emphasis on extreme conditions, physical modeling, smoke dispersion and spotting from forest fires. Validation of existing models to assess fire behaviour. In particular models that were developed or adapted in frame of past EU research projects have to be validated by operational users in order to strengthen their potential of practical use and eventual take up.

- Assessment of the fuel moisture status as the most important feature via which to characterize the potential behaviour of the fuel bed.

- Adaptation of fire danger rating and fire behaviour assessment to the current improvements in weather monitoring and forecasting techniques.

- New technologies and methods to ameliorate fire detection efficiency and to improve early warning systems. Use of High Altitude Platforms (HAP) and satellite remote sensing for fire detection and monitoring. Possible re-use and adaptation of military components and concepts.

b) Forest fire risk assessment and mitigation:

- Forest fuel management techniques as a major tool to mitigate the fire behavior. Harmonization of the characterization and classification of forest fuels at the European scale.

- Contribution of the abandonment of rural land to fuel accumulation and to the fuel build-up rate.

- Socio-economic issues such as societal changes (rural abandonment, wildland-urban interface, intensive tourism, sylviculture and commercial forest management, etc), economic development and regional policies. Raising and impact of increased public awareness through training and sensitization of local communities.
- The problem of fires at the Wildland Urban Interface, which are becoming of increasing socio-economic concern. This topic refers to many aspects including land use planning and development, fire behaviour assessment, fire suppression limitations, fire performing design of structures, socio-economic analysis and development of relevant regulations.

- Improved methods for harmonizing the spatio-temporal potential of fire hazard (assessment), the probability of fire occurrence and the estimation of potential damages (risk).

- Self-protective design of structures based on the use of fire performing materials, fire-smart landscaping, passive fire protection systems (water mist) ...

c) Forest fire suppression and intervention:
- Improvement of chemical products used in fire fighting such as fire retardants and explosives and further investigation on their impact on the environment. New techniques for the application of fire suppressants for enhancing their performance and to improve the cost/benefit ratio.

- Safety of fire fighters and protection of the population during large forest fires. Design, development and testing of safety components including Personal Protective Equipments (PPE), fire shelters, fire track safety systems etc. Fire investigation methods.

d) Forest fire risk management:
- Fire economics with emphasis to cost/benefit analysis of using modern decision support systems and fire fighting resources.

- Modern fire management systems using new technology and in particular ICT and EO. Decision Support Systems and relative services in support of coordination of multiple or large fires. It is important that these systems take into account the real conditions of use and the existing limitations (e.g. firefighter capacities, convenience, budget constraints, etc...).
- Use of Internet and Web services as a fire management communication and coordination platform

**e) Forest fire data requirements and occurrence of past events:**
- Availability of a European Spatial Digital Infrastructure with high quality data, required for fire hazard assessment, vulnerability analysis and risk mapping. High-resolution data derived by Earth Observation products can also be used for this purpose.
- Development of databases of fire-related data (fire causes, meteorological data, incidents etc) at the local, national, regional and European level. Documentation of the evolution and the conditions during large forest fires.
- Analysis of past accident records and identification of lessons learnt.

**f) Forest fire damage assessment and recovery:**
- Human-fire interaction with emphasis on the fire implications to the resilience of the forest, vegetation recovery patterns and post-fire management practices.
- Estimation of the social, economic and environmental impacts of fire events.

**g) Forest fires in a multi-risk setting:**
- Forest fire as part of multi-risk scenarios including floods, landslides etc.

**h) Horizontal aspects - training, international cooperation, and dissemination:**
- Use and maintenance of organized metadata structures such as EU-MEDIN for strengthening the dissemination of fire research results.
- Need to develop improved training methods to stimulate interest in forest fire research and to raise public awareness (i.e.: schools, public), and also to improve operational training (i.e.: fire fighters, land use planners, etc.) via the use of new methods and technologies.
- Promote international cooperation with Third countries and in particular with developing countries sharing similar problems and or environments.