USER REQUIREMENTS AND REACTIONS TO FOREST AND CLIMATE CHANGE INFORMATION SYSTEMS

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For any system to be successful, it is necessary to understand what future users need and want from the system. Loughborough University is a partner in two related EC IST funded projects to develop monitoring systems to support environmental work and research across Europe. One project is FOREMMS (Forest Environmental Monitoring and Management System) and the other is EUROCLIM (European Climate Change Monitoring and Prediction System). Both systems will produce not only information for scientific users but also *information for members of the public, educationalists, journalists, etc.*

The IST-1999-11228 FOREMMS project has the goal of developing and demonstrating an advanced forest environmental and management prototype system (http://www.nr.no/foremms). The functioning of forest ecosystems is endangered, biodiversity is decreasing, and the quality of human life is reduced in many places in Europe due to the high density of human population, intensive utilisation of forests, accumulation of poisonous emissions and the increasing amount of green house gases in the atmosphere. Thus the FOREMMS project, co-ordinated by the Norwegian Computer Center in Oslo, uses remote sensing techniques including satellite monitoring, airborne measurement and automatic ground stations, to gather relevant data to support forest health and good forest management.

The IST-2000-28766 EUROCLIM project has the aim of developing an advanced climate monitoring and prediction system for Europe (http://euroclim.nr.no). One of the greatest threats to human beings is climate change and, according to the Intergovermental Panel on Climate Change (IPCC), it is not known whether northern Europe will experience regional cooling or warming in a future warmer world. However, most likely, global warming will change the living conditions in Europe significantly and the weather will show more extreme conditions, like flooding and hurricanes. The EUROCLIM project is developing an online resource of satellite and field measurement data from a network of sites across Europe. The aim is to establish a 20-year database of climatic data (starting from 1980) and to update it each week into the future. There will also be modelling and statistical facilities to estimate future climate change trends and extremes etc.

For both FOREMMS and EUROCLIM, data will be stored in digital form so that maps and charts can be produced for professional users and the public to access via the Web. One of the author's roles in both projects has been to analyse user requirements for both of these systems for both scientists and members of the public. This paper will describe the results of user requirements activities for both projects *concentrating on the requirements of members of the public in Europe.*

In summary, the main areas of information required by the public of the FOREMMS system were:

- General information – information on forests and wildlife, forest distribution, and how they are changing over time.

- Accessibility and visiting – suggestions for visits to forests, accessibility and how to travel to the forest, best places to observe nature, and accommodation facilities.
- Recreation – good places for walking and cycling, forest paths, places for children to play and where forest products can be picked safely.
- Flora and fauna – location of tree, plant and animal species, how to identify them and levels of diversity.
- Environmental aspects – information on health of forests, changes over time from natural to cultivated forests, interaction between forests and climate.
- Help with studies – locations containing interesting features for field studies, animal and plant populations in certain forests etc.
- Conservation – what is being done to rejuvenate and preserve forests, and how members of the public can help.

It can be seen that citizens have a wide range of interests related as much to leisure and tourism as to gaining knowledge about forests. However many of the people interviewed expressed concern about the forest environment and wanted the system to provide information on how healthy forests are and what they as individuals can do in a practical way to improve them. Thus FOREMMS can play a useful role in helping the public become more aware of the forest environment and helping them to take positive actions to preserve it. Several people expressed the hope that the system will be available for them to use in the future.

For the EUROCLIM system, the twenty-five public users were surveyed to help establish their needs. This group included information scientists and librarians, environmental researchers and lecturers, professional workers, office workers, teachers, environment specialists and advisors, students, and a campaigner. They also included people in organisations with particular interests in climate change as well as members of the public with varying levels of interest in the subject. The system should try to answer the following general questions: Is global warming happening?, What are the causes?, What are the effects going to be in my region?,…on peoples' living conditions?,… the climate generally, and on tourism and leisure activities? The system should provide general articles on different aspects of climate change, based on Europe data, that public can download and read. The system should also present the timescale for change, the severity of effects, possible scenarios and required actions (either by ordinary people or by governments and organisations). It should avoid too much technical jargon, be objective, explain why there are conflicts in different opinions, and provide links for regional climate change information in Europe. The system should try to include exercises that teachers could draw upon to support teaching activities with the system.

In both projects it is planned to demonstrate FOREMMS and EUROCLIM prototypes to members of the general public. It is intended that the results from this feedback will be included in the final version of this paper. This will help to show how useful such systems are for the public and how and influential they are likely to be on their views and attitudes towards environmental issues.

Keywords: forest environment, climate change, user requirements, general public, user testing.