A project linking the
European Union and Latin America

Evidence based Policy for Integrated Control of Forested river catchments in extreme ranfall and snowmelt (EPIC FORCE)

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Background

Deforestation and forest logging are regularly blamed for exacerbating the disastrous effects of floods generated by extreme rainfall, such as hurricanes. Consequently large sums of money are invested by governments and development agencies in foresting headwater areas of river basins and land use controls are imposed on the (typically poor) populations living in these areas. However, the impact of forest management on river basin response (in terms of water flow and soil erosion) for extreme rainfall events is an area in which there is considerable scientific uncertainty as well as poorly conceived policy. In particular, while forests may reduce floods for small storms, there is evidence that this effect is increasingly reduced as rainfall amounts increase.

Forest logging in Chile

Large woody debris, Chile

Aims and Objectives

EPIC FORCE aims to improve fundamental understanding of forest impacts on floods. Building on this knowledge it also aims to improve the integrated management of forest and water resources at the river basin scale through the development of policies based on sound science. The project achieves its aims by linking scientific, management and policy research via the following objectives:

1) development of a generic model for the impact of management practices on basin response to extreme rainfall, based on data from focus areas in Latin America;

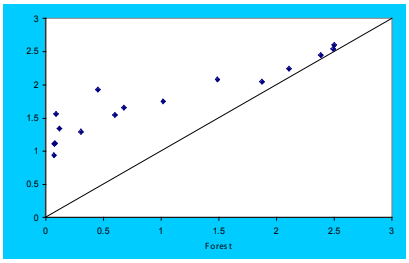
2) development of improved strategies for integrated forest and water management relevant to extreme events, including the impact of large woody debris such as logs;

3) development of evidence-based policy recommendations for national agencies in Latin America and for the EU and World Bank.

Methodology

Through combination of the model development and the analysis of data from the focus areas, the project is examining the hypothesis that, as the size of the flood peak increases, the effect of land use becomes less important. The improved forest and water management strategies are being developed from reviews of current management practice and of best international practice, from model scenario applications and from field studies. Field data are also supporting the development of a methodology for evaluating the impact of large woody debris on channel hydraulics and of guidelines on best practice for controlling large woody debris. The policy recommendations are being developed by proposing improvements to the basis of existing national policies in the focus countries in the light of the modelling and management studies. Crucial participants are the national forest and water resource agencies, which will receive the project technologies.

Pejibaye focus basin, Costa Rica



Model comparisons of flood peaks (m3 s-1) for forested and clearcut basin, showing convergence of response as antecedent soil conditions become wetter

Focus Areas

The focus areas are in Costa Rica, Ecuador, Chile and Argentina. They represent both tropical and temperate rain forests and are subjected to extremes of rainfall from hurricanes, El Niño events, mid-latitude depressions and snowmelt. In addition these countries suffer major problems of flooding and erosion, are characterised by rapid forest conversion or extensive forestry activities and suffer from a lack of integrated and consistent water and forest management policies. Data are being collected in instrumented river catchments ranging from 10 ha to 131 km2 in area.

Project Participants

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