



European Science Foundation

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'On and off-site environmental impacts of runoff and erosion'

Website: <http://www.soilerosion.net/cost634/>
chair: Anne-Véronique Auzet auzet@imfs-mail.u-strasbg.fr
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Annual Report (2006) COST Action 634 On - and Off-site Environmental Impacts of Runoff and Erosion (19 April 2004 – 18 April 2008)

1 Main objectives

- Coordinate and synthesise European soil erosion research in the context of land management and policy formulation that encourage soil protection and reduction of on- and off-site impacts of runoff and erosion.
- Identify and analyse the barriers for effective soil protection at all levels, (scientific, political, administrative and management)
- develop tools and methods to support decision making in the sustainable management of erosion-sensitive areas at the farm level including the implementation of soil protection measures.
- develop an integrated understanding of on- and off-site impacts at the catchment scale.

2 Achievements so far

Add here 5 lines about what was done before, where we are in the programme ?

Mention the Soil Erosion in Europe book by John as a result

Apart from the planned activities within this COST action 634, the network has resulted in a successful spin-off: a consortium of institutes, many of whom are members of this COST action, have successfully obtained an Integrated Project under FP6-2005-Global-4, Area 6.3.IV.1.1 Combat land degradation and desertification.



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3 WG meetings in 2006

COST 634 has 3 WGs (WG1 - Policy issues in the implementation of sustainable land use, WG2 - Sustainable farm-scale management, WG3 – Catchment integration)

Each WG hold a meeting in 2006.

3.1 “Remote Sensing and Spatial analysis tools for erosion processes”, Samos (Greece), 26-28 May 2006. (WG3 meeting)

Introducing new Geoinformation technologies within the study of erosion phenomena may provide us with innovative solutions and better forecast potential. The principal objective of the workshop was to present the capabilities of modern Geoinformation technologies and Earth Observation techniques to gain a deeper understanding of the role of erosion models in pursuit of preventing disasters related to erosion and land degradation. It was anticipated that obtained results should contribute to a scientific knowledge base for identifying risk areas for soil erosion in the frame of implementing the soil protection strategy at EU Member States level.

The meeting was hosted by the National and Kapodistrian University of Athens, the Geocultural Park of Eastern Aegean (Greece) and co-organised with the Utrecht University (Netherlands). There were 76 participants, from 23 countries, 2 of which from outside the EU (Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Ethiopia, Finland, France, Germany, Greece, Hungary, Italy, Lithuania, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Switzerland, UK) attending the conference. The abstracts of the papers that were presented orally or by poster were issued in a draft volume that was handed out to every participant at the conference. The proceedings of the Conference will be disseminated through the website of the Geocultural Park of Eastern Aegean, one of the local organizers of the conference and a link will be done with the COST 634 website.

The Organisers of the meeting together with the chairs of the Action and Working Group 3, are in contact with editors of scientific journals for the release of a special issue with the papers that were presented at the conference. However special issues are currently overbooked but a concerted publication of a few articles in one issue is possible and under consideration.

The subjects of the conference were:

- Applications of Remote Sensing and GIS on the assessment of the on-site and off-site effects of soil erosion.
- Geoinformation tools for Decision Making in watershed management
- Spatial erosion modeling and quality improvement by remote sensing

A total of 33 oral presentation were held. The oral presentations were each day followed by a brief presentation for the posters of the conference and a poster session. The results and the topics that came



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out during the oral presentations were discussed in 1 hour sessions each day, according to the scheduled program.

The third day of the conference (28th May) was dedicated to field trip over the island of Samos. Several areas appearing significant erosional features and geomorphological forms were visited and experts from the University of Athens gave short lectures for each case study. The sites that were visited appeared different types of erosional processes, such as coastal erosion, hydrothermal processes and chemical erosion, and riverine erosion.

During the conference it was shown that although new high resolution sensors are promising, it is still quite difficult to detect erosion features on images. In fact an interpretation of patterns in vegetation has to be made to for instance detect gullies directly. However, some progress is being made as well in the detection of variables that are very important to soil erosion such as spatial patterns of soil moisture, changing protecting of plant cover and land use, etc. In line with the “off-site effects” objective of this COST action, a presentation showed the detection of sediment plumes in fresh water bodies of high natural value, that result from erosion on adjacent agricultural lands. Also shown were rates of headcut retreat derived from air photo interpretation. An interesting presentation from Spain showed very clearly that a change in agricultural policy has influenced land use, with adverse affects the extent of bare areas. Field inspections showed that these were now subject to gully erosion, where no erosion seen was before.

Many examples of erosion modelling were shown, whereby the tendency seems to be to not to use a single existing model but to design a model/method that fits the circumstances best, to ensure the best possible predictions for a given dataset. This can range from large sediment delivery ratios to small scale distributed modelling. In discussions we agreed that there is not one best method to model erosion, a concept of the functioning of the system is needed, before you build (or apply) any model and is depends on the objectives. Most people are very flexible in this. Temporal and spatial variation of runoff and erosion are still major issues in obtaining good predictions, advance is slow. In spite of this discussions also look to the future and the general consensus was that a logical next step would be to focus on risk analysis and damage assessment at various scales. Much has been done in this area by exchange networks of river flood specialists and decision makers (such as EXCIMAP) in line with the EU Flood directive.



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3.2 “Farm level adoption of soil and water conservation measures and policy implications in Europe”, Wageningen (Netherlands), 1-3 Oct 2006, WG1 & WG2 joint meeting

As in other parts of the world, many regions in Europe are affected by soil erosion and other forms of land degradation. Various programmes and policies have been designed in order to promote a variety of soil and water conservation (SWC) measures and “best practices” to prevent further land degradation. However these measures have often not been adopted on a large scale, because of a multitude of physical and socio-economic factors. In the adoption process several steps can be distinguished, each of which can form a constraint to adoption. In their decisions farmers will only consider the on-site effects of land degradation and in order to deal with the off-site effects additional physical and policy measures are required by other stakeholders, usually in the public sector. At present there are no direct policy measures at European level to control soil erosion, but there are incentives for environmental measures, and production aid is now subject to cross-compliance aimed at proper land management. Besides, the EU proposes a strategy to protect Europe’s soils and ideas are developed for a code for good agricultural practices.

The aim of the proposed meeting is to discuss research (methodologies and results) on farm level adoption of SWC measures and “best practices”, and on the policy measures required for such adoption processes. The workshop will build upon the outcome of earlier COST634 conferences, and in particular the one in Mont Saint Aignan on “Soil conservation management, perception and policy”. Around 50 participants from 17 countries intend to participate (30 supported by COST). After the excursion on the first day, devoted to field visit of SWC measures in South Limburg, the next two days, 19 oral presentations will be given in four different sessions:

Under WG2 :

- Farmer’s perception and adoption behaviour with regard to SWC
- Socio-economic (and physical) factors, affecting adoption of SWC measures

Under WG1 :

- On- and offsite impact of soil erosion and SWC measures
- Effects of policy measures (CAP, etc.) on adoption of SWC measures.

In the late afternoon of the first day a poster session will be held, which is more oriented towards the physical aspects of erosion and soil and water conservation.

In the late afternoon of the second day a final group discussion session will be held to work on future research and project collaboration.



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4 Small Group Meeting : Workshop on socio-economic aspect of the management of soil erosion, Strasbourg (France), 7-8 April 2006.

Following the first meeting of COST Action 634 in Bratislava (October 2004) and thanks to debates that took place in Rouen (June 2005), it has appeared to be efficient to accompany the soil erosion research by analysing the socio-economic aspects of this issue. Indeed, sociologists and economists need to be integrated in the research process in order to be able to capture the evolution of the physical-technical knowledge when they are, themselves, thinking about the evolution of tools needed to reduce erosion risks. Besides, Bratislava and Rouen permitted the researchers in sociology and in economics not only to meet their colleagues in agronomy, hydro-morphology, geography, and other branches of research, but also to get in touch with researchers from their own community that are working on run-off erosion issues but evolving in other countries.

In this context, two COST members (S. Spaeter and J. Schuler) organised a workshop dedicated to the socio-economic aspect of soil conservation. The aim of this workshop was more than simply permitting people to get in touch with others in their disciplinary. It was really to make them interact on their respective work thanks to sufficiently long oral presentations and to comments on them made by researchers that were acting as discussants. After the individual presentations (one day and a half), time was devoted to free discussion. This round table took place the second day and the guidelines of it were established at the end of the oral presentations, with respect to the different points that have been enhanced and that needed to be discussed further.

The main points that were enhanced during these two days are the following :

- To be able to implement adequate solutions for soil erosion reduction, it is essential to learn about the relevant societal processes related to land use and environmental protection. One must clearly identify all the stakeholders and the social networks.
- Economic tools, such as taxes or subsidies, should not be thought in a static system, with a given technology and given economic conditions. They should rather be considered in dynamic settings. Precisely, if monetary incentives must be implemented at the beginning of the regulatory period in order to induce some change in the practices and behaviours of the agents, they should not be considered as being needed *at vita eternam*. They should progressively evaluate, with the practices.
- Besides, an adequate risk mitigating policy should rely on ex ante prevention measures but also on ex post compensation aspects. Indeed the behaviours of individuals are not disconnected from what they will have to pay or what they will obtain in the case if a damage.

Lastly, it is also important to know how the information is circulating through the group of agents (scientists, local deciders, farmers, ...) and to understand how the social networks are built.

Finally, such a workshop aims at gathering competences in socio-economics from different teams and different countries in order to create a sustainable socio-economic workgroup. It should lead to the organization of a second workshop, in Muencheberg in one or two years. This second workshop would



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be the occasion to introduce new people in the field including other stakeholders (decision-makers for instance). To be really productive, the first one needed to be rather small and concentrated on people that have already met in Rouen and/or in Bratislava, but without having had the opportunity to go further in a fruitful collaboration.

5 SC Meetings: Brussels 3rd February 2006 and Samos, 26th May 2006

In addition to the exchange of information (report of the TCE meeting, restructuring of the COST bureau, new rules: implications to COST634), the SC meetings are mainly dedicated to the discussion of the strategy of working groups and their interactions, the achievements and the main objectives for the next year. The minutes are sent to the MC members in order to foster the debate during the MC meeting, which are now limited to one each year, during one of the meeting. In the meantime, an internet consultation is organised if necessary, like in December 2005 to face to the new rules concerning the budget.

6 MC meeting, Samos, May 2006

The agenda of the MC meeting was mainly devoted to information, discussion and approval of meetings in 2007 and strategy until the end of the action. *Perhaps include number of participants and countries represented.*

6.1 Future conferences planning

Topic	Organisers	Date	Location
Short term responses to changes in land use, critical assessment based on modeling	Dino Torri	May 2007	Firenze
Offsite effects of sediment transport (muddy floods, chemicals/pollution, siltation etc).	Tomas Dostal	October 2007	Prague

The Firenze Meeting is expected to include all three Working groups as well as a Management Committee meeting. The preferred topic of the organiser, Dino Torri, was reported to be on short term responses to changes in land use, for example in changing from arable crops to vineyards, with the accompanying increases in erosion until the new systems are fully established.

In discussion, it was felt that a wider topic was needed, to better fulfil the outstanding objectives of the Action, although probably within the broader theme of land use impacts. It may be possible to



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focus better on a suitable topic or topics after analysing achievements of the Action that are currently being collated for the mid-term report.

The Prague Meeting. A provisional topic of offsite effects of sediment transport (muddy floods, chemicals/pollution, siltation etc) was discussed, but again deferring a final decision until the mid-term report had been completed.

MC approved the 2 conferences proposed for May and October respectively 2007. Organisers are asked to interact with WG chairs for the preparation..

6.2 SGM

SGM on muddy floods in 2007 or end of 2006 is planned, in order to collaborate and compare situations in the different countries concerned by this risk, the hazard assessment, and the mitigation and prevention questions.

MC approved the project and suggest, if there is money at the end of the year for whatever reason, MC approved to held an SGM and the next SC meeting at the end of the year in spite of beginning 2007.



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