

DAMOCLES PROJECT

IGME FIRST ANNUAL REPORT

The persons who has participated in the works corresponding to the first year of the Project has been: Santiago Ríos, Enrique Acosta y Antonio Barnolas

SECTION 3: DETAILED REPORT OF ASSISTANT CONTRACTOR FOR FIRST ANNUAL REPORT

Contractor: Instituto Geológico y Minero de España
Responsible Scientist: Santiago Ríos
Address: IGME, c/ Fernando El Católico, 59, 4ºC; 50006 ZARAGOZA; SPAIN
Telephone: 976555153
Fax: 976553358
Email: itgez@arrakis.es

Section 3.1: Objectives of the Reporting Period

As Assistant Contractor of the INSTITUTO PIRENÁICO DE ECOLOGÍA we tried to recognise in the field (WP1), in the Benasque valley, a main mountain area of the central Spanish Pyrenées, events in relationship with rapid slope failures. To do that a geomorphologic cartography at 1/25.000 scale was necessary to achieve thinking in doing so that the symbols and the rest of information has to be implemented in a Geographical Information System.

As end-user (WP5) of the model or models of rapid slope failures that the Project will develop, our contact with the others project' s workpackages (WP2, WP3,WP4) is necessary. Also the contacts with other Spanish end-users.

Section 3.2: Methodology and Scientific Achievements Related to Work Packages

3.2.1 WP1 Development of functional relationships for rapid slope failures behaviour derived from field data and existing databases

In the first year of our contribution to the Project we have done a geomorphologic cartography of mainly Palaeozoic 300 square kilometres of Benasque valley in Spanish central Pyrenées. It has been done in accordance with our principal contractor, CR5, Instituto Pirenáico de Ecología, for which its field area is mainly of tertiary flysch. We have contracted a geologist that has been dedicated to do this work.

For doing this work, we have followed some steps:

- Compilation of historical and technical information. Study of geologic and geomorphologic works done on the Central Pyrenees.
- Detail examination and comparison between aerial photographs from scale 1:30.000 (1981) and scale 1:20.000 (1997) flights.
- Field work during May-September: Recognition of the most important slope instabilities phenomena (debris-flows, landslides and rockfalls) in the area as well as the different glacial deposits and morphologies.

- Digitising part of the geomorphologic cartography. We are waiting for some topographic maps.
- Learning and management of computer tools (Microstation SE, Arcview and Avenue) for digitising, showing and treating the cartographic information that is being obtained as well as attendance to courses related with slope instabilities and geomorphology in mountain areas.

Mainly through some important project meetings (Milán and Zaragoza), we have known some characteristics of the methodologies followed by other principals contractor (University or Newcastle (CO1), University of Milan-Bicocca (CR2), University of Padova (CR4) and their necessities to develop the models that will applied the end-users.

As potential end-user we are interested in contributing to try to apply some regional model to our study area for predicting debris flows and also rock falls and some local models for applying the University of Padova's one.

3.2.2 WP5 Dissemination of the project deliverables, mainly the project models to be applied for end-users

We have contributing with the description of our study area to the Web site (<http://damocles.irpi.pg.cnr.it/>).

We have had some important meeting with the Spanish Aragón administration potential end-users to know their necessities in applying the models to be developed by the Project.

Section 3.3: Socio-economic Relevance and Policy Implication

The potential end-users are very interested in predicting the occurrence and characteristic of rapid slope failures in mountain areas. In doing so, the risk associated with these kind of phenomena, will be mitigated. .

Section 3.4: Discussion and Conclusion

Some particular areas of rock falls and debris-flow events has been located into the area that has been cartographed. We would like to applied some regional models to estimate the occurrence of debris flows in paleozoic shales and rock falls in granitic and Palaeozoic limestone to try to validate this kind of models to the referred lithologies in our Pyreennes conditions. In doing so our role of end-user will be optimized.

Section 3.5: Plan and Objectives for the Next Period

Both of the study areas of IPE-CSIC and IGME are located in the Spanish Central Pyrennes. The IPE's one is located mainly on Cenozoic materials and IGME's one on Palaeozoic.

The works that we are going to carry out during the next year are:

1. Finishing the Memory and the Benasque Valley 1:25.000 Geomorphologic Cartography. Selecting several catchments with active alluvial fans for further studies and to apply, if possible, the University of Padova model.
2. Trying to apply some regional analysis:
 - 2.1 Statistical analysis of debris flows following the methodology used by Milan and IPE partners in order to obtain Debris Flow Probabilistic Maps.
 - 2.2 Statistical analysis of rock falls following the methodology used by Milan partners in

order to obtain Rock Fall Probabilistic Maps.

3. Field work: in some selected areas
 - 3.1 Compilation of the necessary data to feed the University of Padova Model.
 - 3.2 Geomorphological and Geological studies
 - 3.3 Dating events by means of geological and/or biological studies.
4. Historical analysis and survey to area population about Avalanches, Debris Flows and Rock Falls
5. Study of the applicability of the Shetran Model on the Remáscaro Catchment (Benasque Valley)

	march 01	april	may	june	july	august	sept	october	nov	dec	jan 02	feb-02
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Zaragoza, 14 de marzo de 2001

IGME FIRST YEAR DEDICATION FOR THE DAMOCLES MANAGEMENT REPORT

MEMBER OF IGME TEAM	PLANNED DEDICATION	REAL DEDICATION
Santiago Ríos	1,35 months	3,05 months
Antonio Barnolas	0,8 months	0,30 months
Enrique Acosta	Not considered in the Project	8 months

IGME FIRST EXECUTIVE SUMMARY DAMOCLES REPORT

Contract nº EVG1 – CT-1999-00007

Project Duration: 3 years

Title: DAMOCLES (Debrisfall assessment in mountain catchments for local end-users)

Objectives: As Assistant Contractor of the INSTITUTO PIRENÁICO DE ECOLOGÍA we tried to recognise in the field (WP1), in the Bidasoa valley, a main mountain area of the central Spanish Pyrenees, events in relationship with rapid slope failures, to try to apply some models that the Project will develop or apply.

As end-user (WP5) of the model or models of rapid slope failures that the Project will develop, our contact with the others project's workpackages (WP2, WP3, WP4) is necessary in order to know the data we would need to feed the models.

Scientific achievements: We have cartographed some debris flows and rock falls areas in Paleozoic materials that will need more detailed studies.

Main deliverables: A geomorphologic map at 1/25.000 scale that will be completed in the next months.

Socio-economic relevance and policy implications: The goal is to reduce the natural risk linked with these natural events. Local end-users are very interested in this matter.

Conclusions: We will try to apply some model to the rapid slope failures that will be selected in order to validate them in our lithological and geographic conditions.

Dissemination of results: See the Project web page: <http://damocles.irpi.pg.cnr.it/>

Keywords: Debris-flows, rockfalls, Central Spanish Pyrenees, Bidasoa, Esera

Zaragoza, 14 de marzo de 2001