

Interdisciplinary research for risk identification and assessment - case study Guatemala

Outline

- Objectives
- Introduction: risk and interdisciplinary approach
- Context of Uspantán, Guatemala
- Work experience: procedure
- Results
- Overall comments

Objectives and interests

- Combination of social and geological data for both risk identification and assessment.
- Description of the methodology.
- Methodological limitations and challenges.
- Practical benefits for DRR; the role of the social sciences and the interdisciplinary research.

The need of the interdisciplinary work

Risk is a combination of two systems
« hazard » system
« vulnerability of the territory » system

Risk = hazard x crucial elements of the territory x
vulnerability

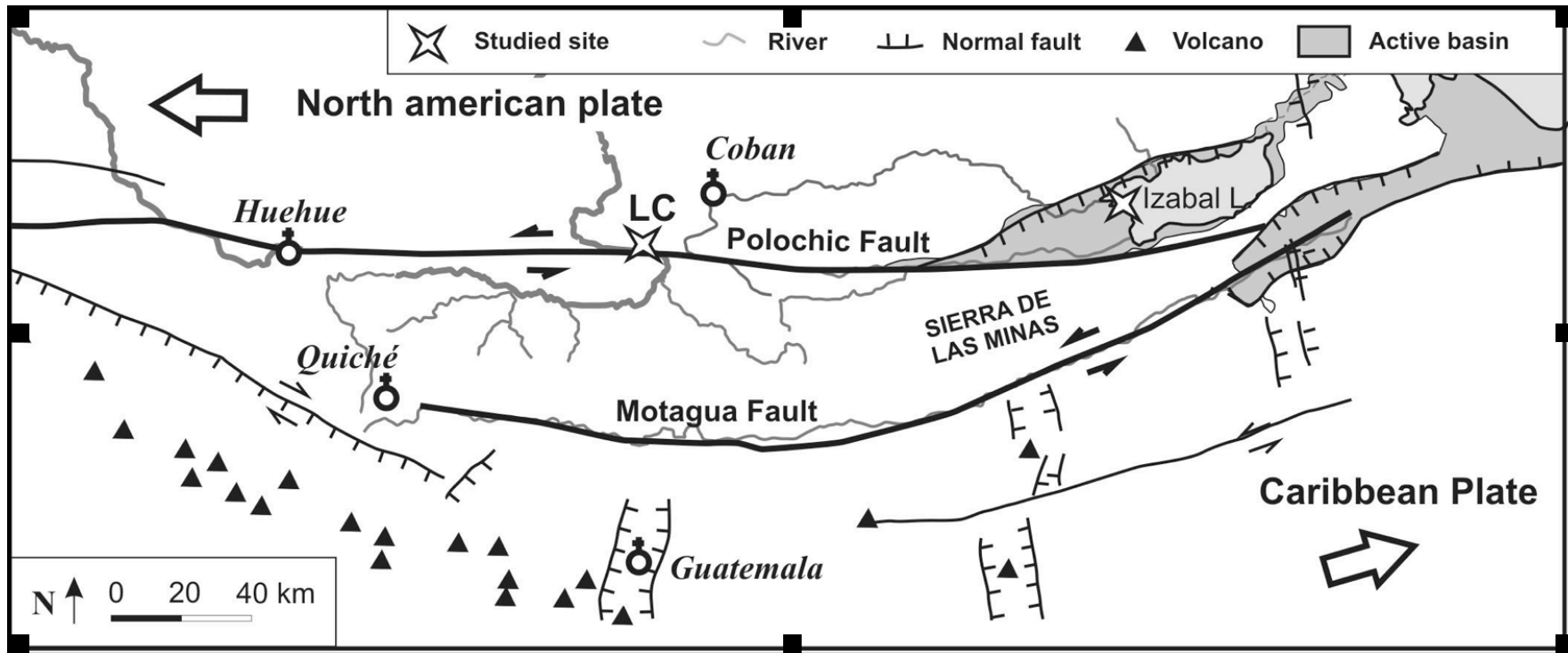
But the effective practice is a real challenges for the
interdisciplinary research

Study area

Physical Map of Guatemala and location of the study area. The study area is marked in red. Red Cross: San Cristobal Verapaz and Los Chorrros. Source: mapadeguatemala.net (accessed 9 April 2009), modified by the author.



Multi-hazards context



Map of faults forming the boundary of the tectonic plate in Guatemala. (Suski et al., 2010). LC: Laguna Chicoj and Los Chorros landslides.

Multi risk and multivulnerabilities context



Physiography of the study area. 1: administrative border of "municipalities", 2: paved main road, 3: active sections Polochic failure, 4: infrastructure damaged by landslides, 5: Risk of landslides life. Framed: Cotoxac slip (Authemayou et al., 2012, modified by the author).

Uspantán and Cotoxac landslide



Panoramic view of the northwestern part of the Cotoxac landslide in the city of Uspantán. Author: Matasci, B.

Uspantán and Cotoxac landslide

**Kiché local population
in the Cotoxac
landslide.**

(Author: M. Fernandez
2009)



Work experience: procedures

Landslide identification and assessment: Battista Matasci (geologist PhD candidate)

Vulnerabilities and territorial issues identification and study : Manuela (myself)

When is the moment for the interdisciplinary work?

- Problem definition?
- Methodological choice?
- On the field and in the practice work?
- Final results?

Work experience: procedures

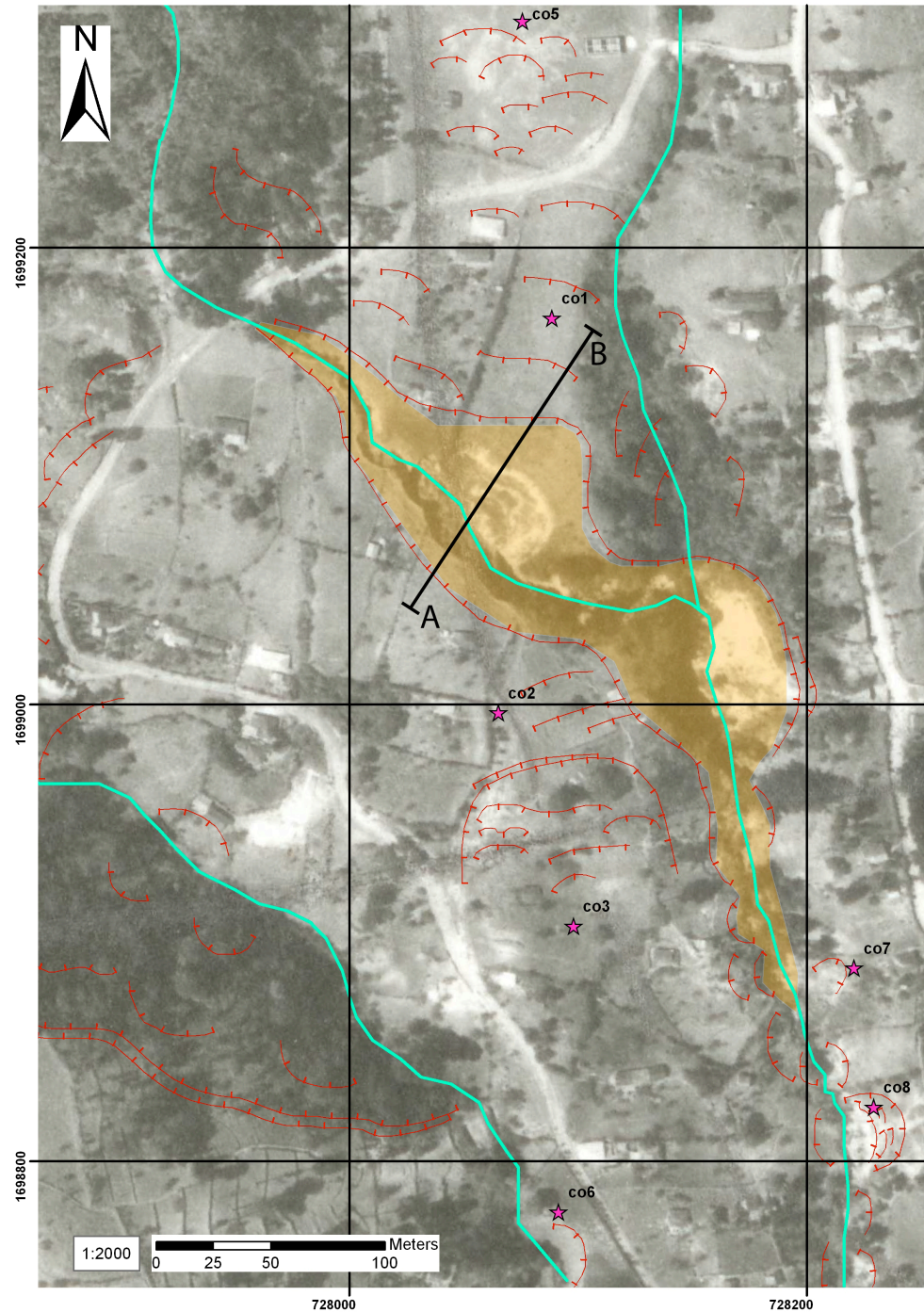
The role of the observer in the social sciences: the identification of social divisions, key players, the functioning of society



Author: Matasci 2009

To the hazard

Aerial photo of Cotoxac landslide with orange current slide surface main field and red niches. The main towns are marked with stars. Author: Matasci

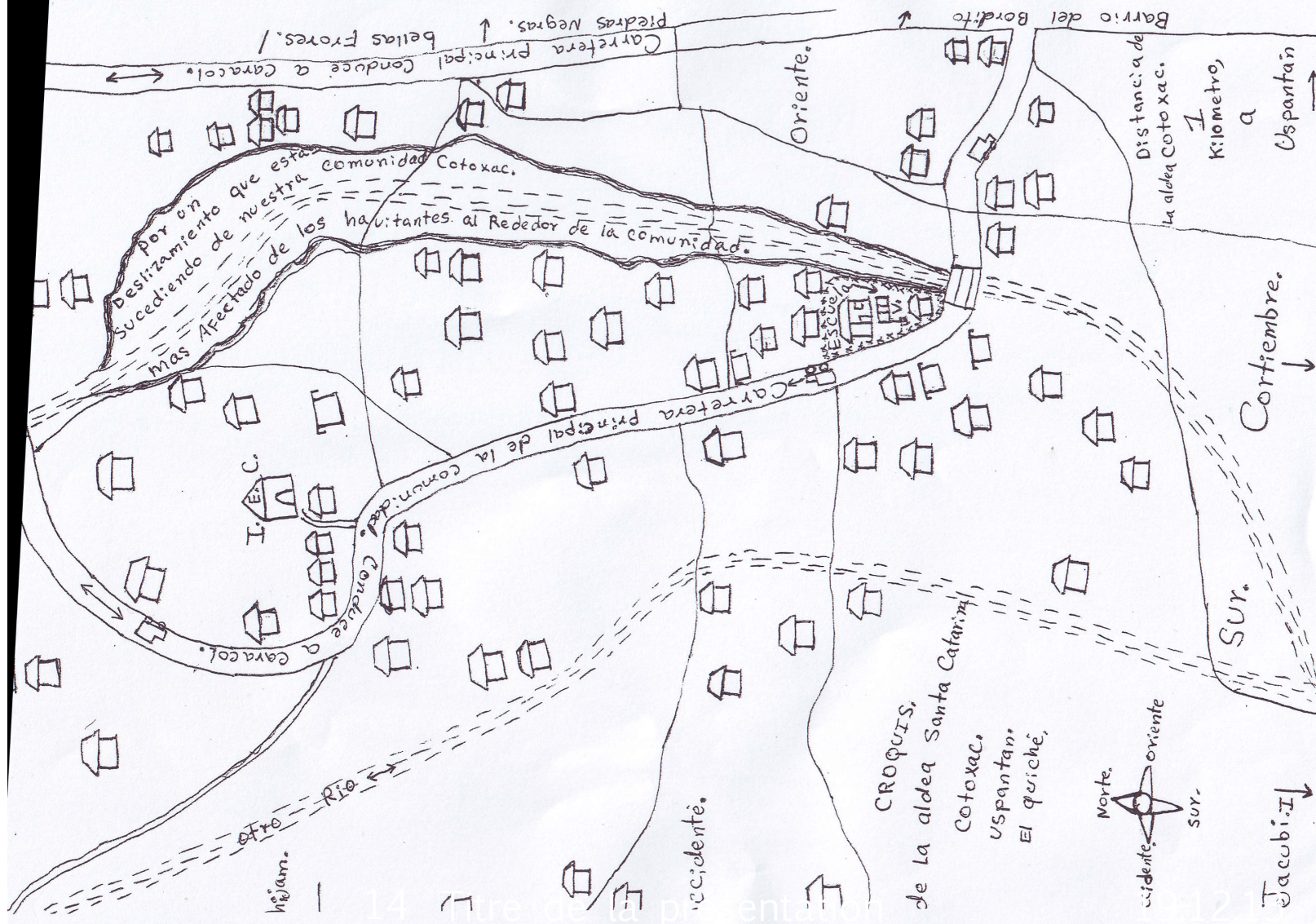


Territorial issues and vulnerability

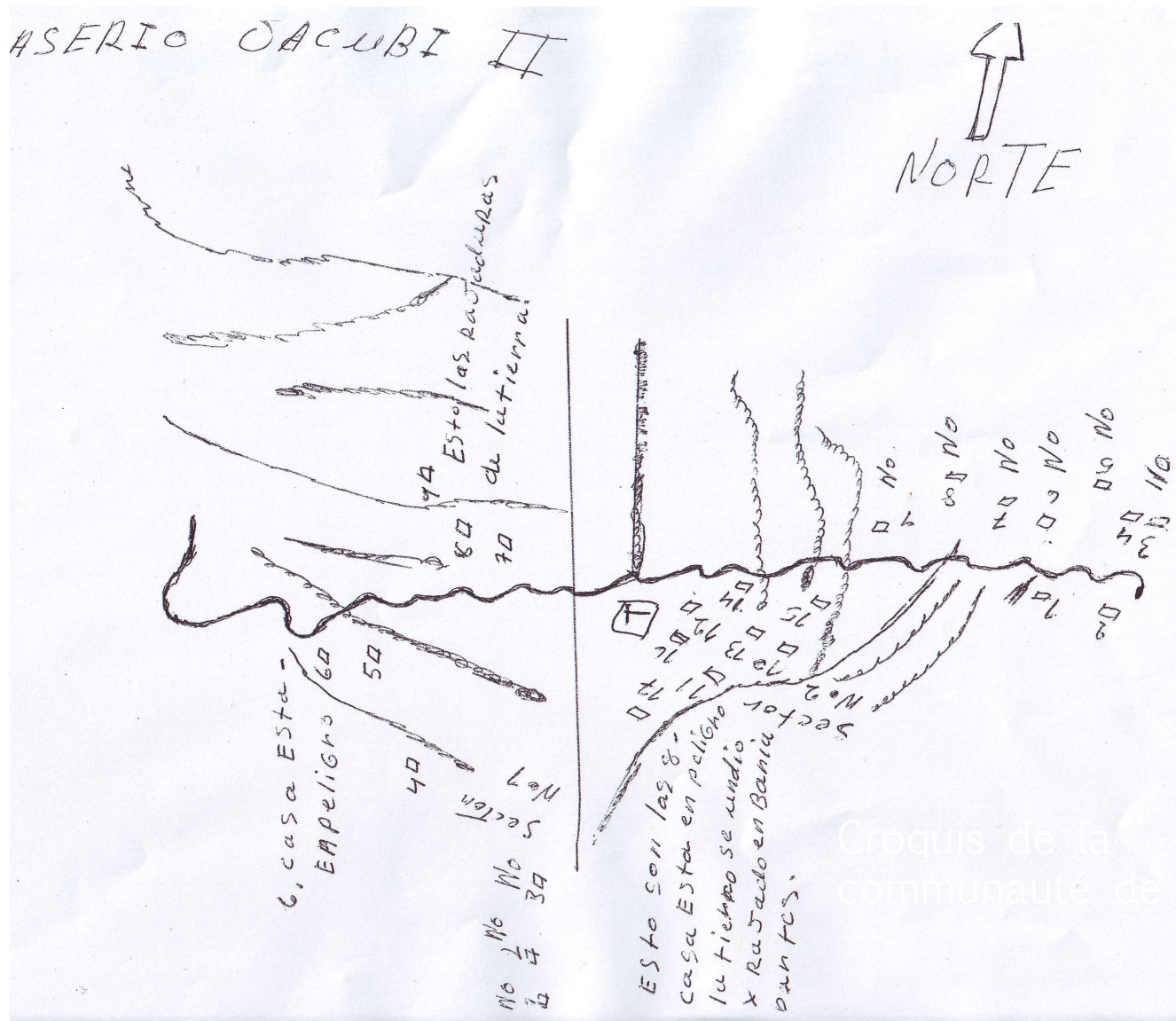
How?

In-situ observation
Interviews with local institutions
Dialogue with NGOs
Field visit
SWOT analysis
Interviews with affected communities.
Typology of buildings and inventory
GIS / mapping
Demographic survey

Examples of sketches made by the inhabitants (i)



Examples of sketches made by the inhabitants (ii)



Initial findings: the case of Jacubi



First findings

Identification of local issues that may hinder the scientific work

Using local knowledge to increase the overall knowledge of the hazard

To the territorial issues and vulnerabilities

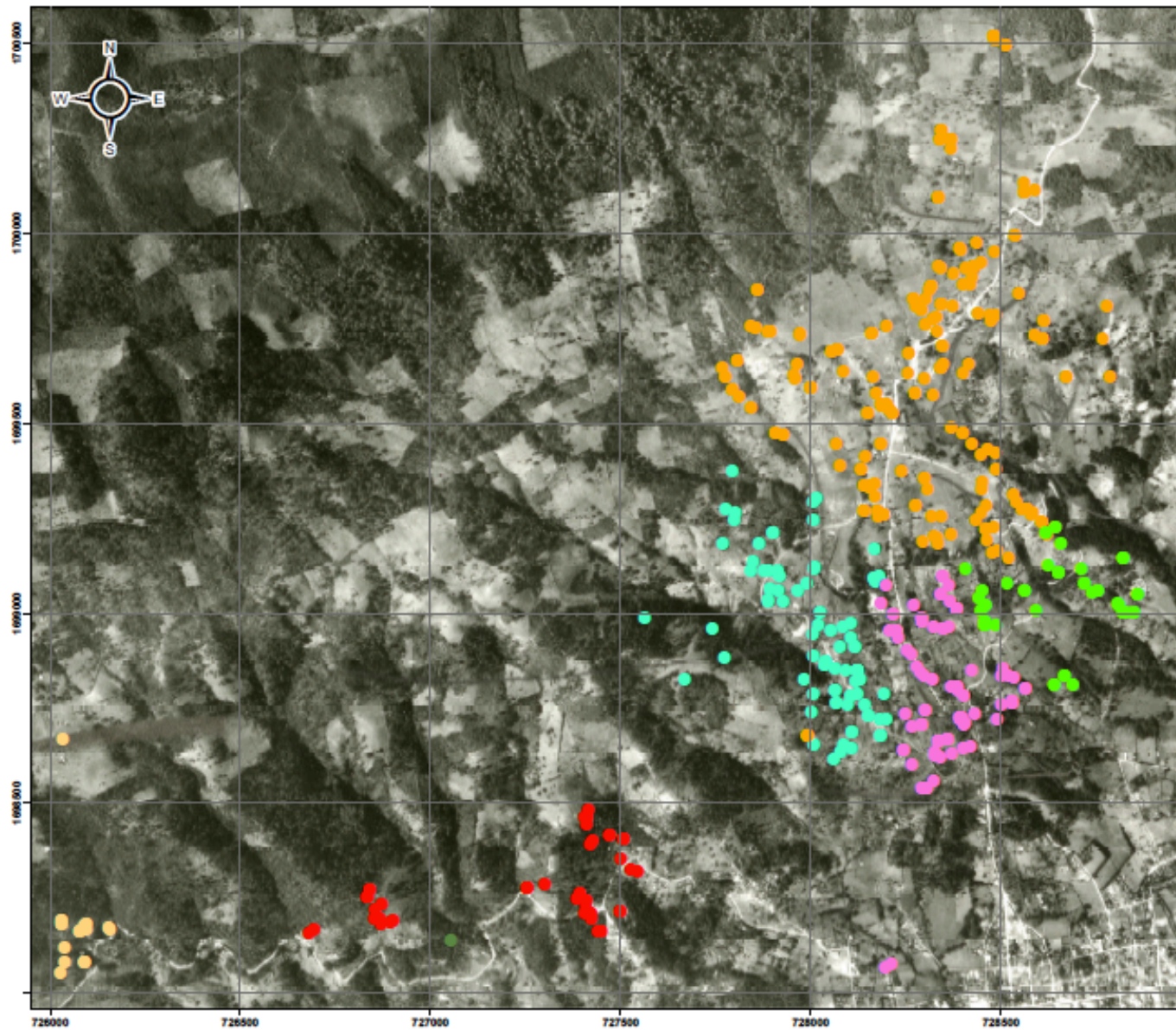
Mapping and inventory: 363 buildings.
Interviews: 234 people.
Demographic survey: 258 homes
using the GPS.



To the territorial issues and vulnerabilities



To the territorial issues and vulnerabilities



Légende

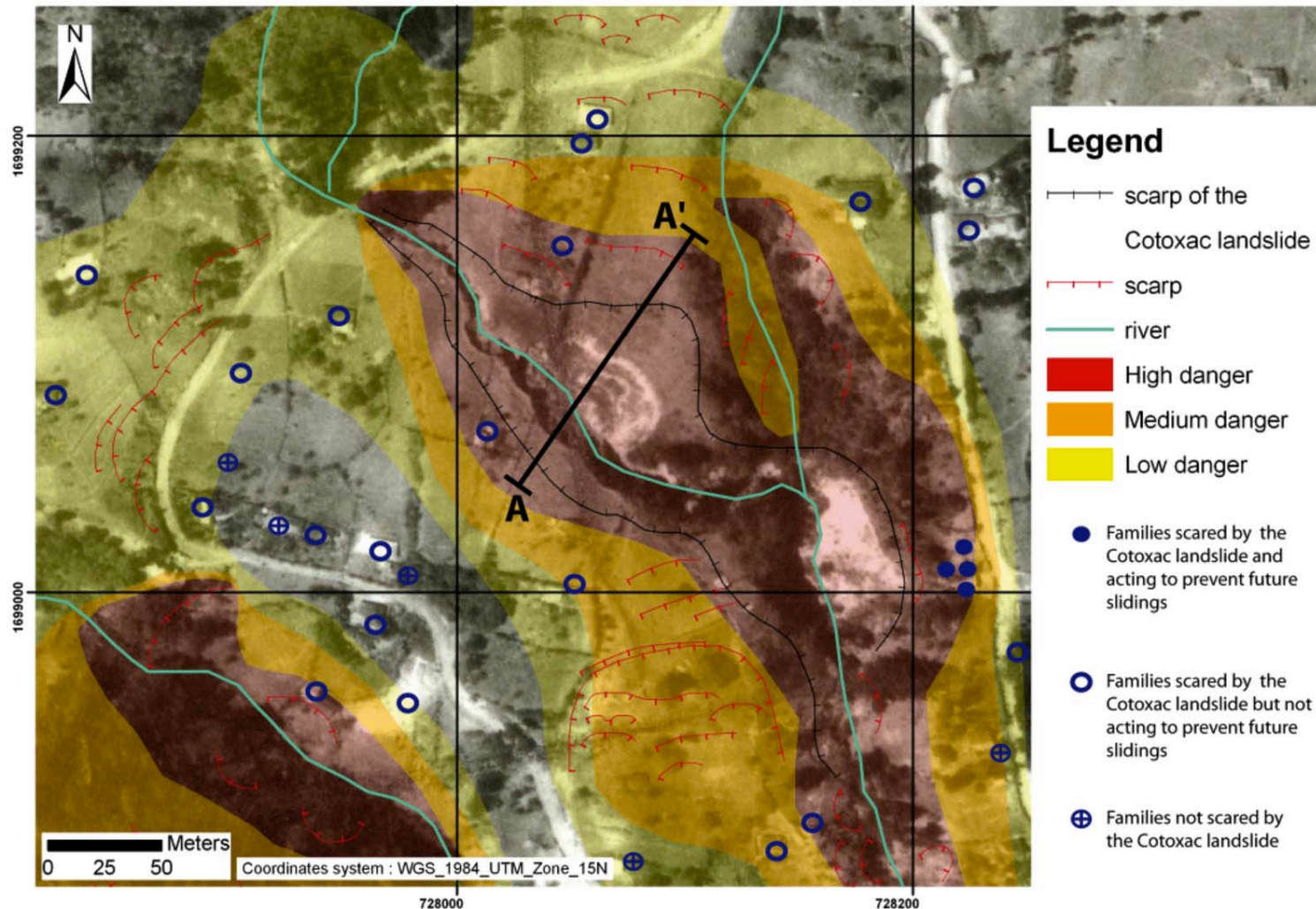
Localisation de Bâti par Hameau

- Bellas Flores
- El Duraznal
- Jacubi 2
- Piedras Negras
- Chamac
- Cotoxac
- Sochojil

0 250 500 mètres

Fond de carte: photographie aérienne prise en 2005
Projection: WGS1984 - UTM Zone 15N

Results



Information and danger map relating the prevention measures adopted by the families in Cotoxac's Community in which physical and social data are combined and articulated

Recommendations

- ✓ Grants to people from the state to purchase new land, state land use for agriculture.
- ✓ Community agreements: land exchanges considering zoning.
- ✓ Strengthen local institutional entity risk reduction and promote communication and awareness among people.
- ✓ Extrapolate the warning system used by the family group.

Second findings

Combination of qualitative and quantitative data in a GIS
and the emergence of the usefulness of
interdisciplinary work

Overall comments

Advantages: identification of new phenomena and more comprehensive risk assessment

Output: extrapolation methods to other contexts; benefits for policymakers

Challenges: Interdisciplinary work from the upright, since the conception of the problem could be even most beneficial; separate missions, joint mission.

Conclusion

To achieve effective risk management, it is necessary to consider the risk from a holistic view.

An integral and interdisciplinary perspective needs to be developed in which the geological and physical variables must be integrated with social structures such as human, economic, social, political and cultural variables.

At the same time, in the studies of cities, it is necessary to distinguish and integrate of the *territorial dimension* (experience, risk culture) *and the “objective” dimension* of the risk (hazard potential statistical risk)

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Intioch
Maltioch' xela
Thanks

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