

## **REDUCING THE RISK IN NORTH CONTEXT THROUGH A PARTICIPATORY APPROACH OF 3D MAPPING (P3DM)**

### **CHALLENGES OF MULTI ACTORS DIALOG IN FRENCH ALPS TO FACE SNOW AVALANCHES**

**Pauline Texier<sup>1</sup>**, Vincent Boudiere<sup>2</sup>, Jake Rrom Cadag<sup>3</sup>, Jean-Christophe Gaillard<sup>4</sup>,  
Delphine Grancher<sup>5</sup>, Simon Grorod<sup>6</sup>, Franck Lavigne<sup>7</sup> and Julie Neyroud<sup>6</sup>

#### **THEORETICAL BACKGROUND OF DISASTER RISK REDUCTION**

In practitioners handbooks as in scientific papers or international directives like Hyogo Framework of Action for resilient nations and communities face to disasters until 2015, has arisen a consensus about disaster risk reduction (Abarquez and Murshed, 2004). It should firstly better integrate socio-economical factors embedded in a daily pattern to strengthen livelihoods of exposed communities. Secondly, it should adopt context-appropriate measures to develop local communities' capacities in facing risks. Thirdly, management should be based on strong collaboration between the different stakeholders at various scales of action (institutional and upper levels stakeholders, scientific organizations, local stakeholders, communities) to merge scientific, technical, political and local indigenous knowledge. Indeed, exposed communities have gathered with time and experience knowledge of disasters. They have developed coping strategies face to the threats with stronger relationship with nature, through community-based practices and intergeneration transmission (Mercer et al., 2009). Population and victims participation appears as crucial at all steps of risk management (vulnerability and capacities identification process, planning step, crisis and recovery). If things are theoretically well-established and different know-how recognized, practically speaking difficulties remain to develop collaboration between stakeholders which could combine all knowledge to find better solution in DRR and in resources management. Globally and whatever the context may be, institutional actors keep adopting top-down strategies without taking into account local knowledge and constraints, whereas bottom-up local initiatives can't be sustainable without a strong support from upper institutions (Heijmans, 2004). It's still the case in many developing countries like Philippines or Indonesia, as in more advanced countries like France with the system of "Plan de Prévention des Risques" or ORSEC plan of emergency, issued from departmental institutional level and based on scientific expertise. To take up this crucial challenge, some solutions are being developed for few years both in southern (Benson et al., 2001) and northern contexts (Kelman and Karnes, 2007).

#### **THE P3DM: A RESEARCH ACTION METHOD DEVELOPED IN SOUTHERN DEVELOPING CONTEXT**

Among these solutions, one is particularly promising because located at a crossroad position between research and practice: Participatory 3D Mapping (P3DM) has been developed in a double objective. Firstly, a practical objective since it aims at developing a dialog between stakeholders from every different environment in order to find common solution of DRR by taking into account both scientific and local knowledge AND constraints. It's all the more an interesting tool, than it gives stakeholders a

<sup>1</sup> Dr. Pauline Texier, First author and Corresponding author. University of Lyon 3 Jean Moulin, CNRS UMR 5600 CRGA, 4 rue Sébastien Gryphe, 69007 Lyon, France (e-mail: pauline.texier@univ-lyon3.fr)

<sup>2</sup> Dr. Vincent Boudière. Pôle Alpin pour la Réduction des Risques Naturels, France

<sup>3</sup> PhD candidate Jake Rom Cadag. University of Diliman, Philippines

<sup>4</sup> Prof. J-C Gaillard. University of Auckland, School of Environment, New Zealand

<sup>5</sup> Ms. Delphine Grancher. Laboratoire de Géographie Physique CNRS UMR 8591, France

<sup>6</sup> Master students Simon Grorod and Julie Neyroud, University of Lyon 3 Jean Moulin, France

<sup>7</sup> Prof. Franck Lavigne, University Paris 1 Panthéon-Sorbonne, LGP CNRS UMR 8591, France

multiscale and progressive tool helping in decision process (Fig. 1). Secondly, it brings insightful results for research about disaster Risk management, particularly about possible conflicts and challenges underlying a constructive dialog between sometimes contradictory stakes. P3DM was first developed in southern context by NGOs and more recently in a research framework: the European MIAVITA program was launched in 2008 by BRGM and some French and Italian universities, to develop participation in DRR face to volcanic risk in Philippines, Indonesia, Cameroun and Cape Verde (still in process).



**Fig. 1** P3DM a tool of action and research



**Fig. 2** P3DM realized in Bourg St Maurice, France

## FEASIBILITY OF P3DM IN NORTHERN CONTEXT: THE CHALLENGE OF DIALOG

Face to the success of such experience in southern context, a pilot research-action project has been launched in France in two exposed districts of French Alps since May 2010: Bourg St Maurice (face to flash torrential floods, Fig. 2) and Névache (face to snow avalanches). This project is led by the Pole Alpin pour la Prévention des Risques Naturels from Grenoble, and funded by DATAR, FEDER, PACA and Rhône-Alpes Region. In these contexts, methods from South have been adapted. The main challenges were (1) to create a constructive climate for discussion when political conflicts remain strong locally, especially by organizing separate discussions between inhabitants and stakeholders and enhancing an indirect dialogue as a first step ; (2) to better analyze the context, especially in Nevache, before action to optimize communication and to convince people to be involved into the 3D mapping process despite local conflicts and overbooked schedule; (3) to find a compromise to allow free dialogue and propositions from people without totally affect institutional and legislative French procedures. Dialogue experiences at this point were already successful and will be presented, even if follow-up activities are still planned for the next 6 months.

## REFERENCES

- Abarquez I., Murshed Z. (2004). Community-based disaster risk management: field practitioners' handbook. Asian Disaster Preparedness Center (ADPC), Pathumthani: 163p.
- Benson C., Twigg J., Myers M. (2001). NGO initiatives in risk reduction: an overview. *Disasters* 25(3): 199-215.
- Heijmans A. (2004). From vulnerability to empowerment. In Bankoff G., Frerks G., Hilhorst D. (eds.) *Mapping vulnerability: disasters, development and people*. Earthscan, Londres: 115-127.
- Kelman I., Karnes E. (2007). Relocalising disaster risk reduction in Boulder, Colorado. *Australian Journal of Emergency Management* 22(1): 18-25.
- Mercer J., Dominey-Howes D., Kelman I., Lloyd K. (2007). The potential for combining indigenous and western knowledge in reducing vulnerability to environmental hazards in small island developing states. *Environmental hazards* 7: 245-256.

**Keywords:** Participatory 3D Mapping, risk reduction, local knowledge, snow slide, Alps