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La montagne, laboratoire du changement climatique

Preface

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Preface

Mountains, the climate change laboratory

Hugues François, Émeline Hatt and Gwladys Mathieu

- 1 Even as we venture into this new millennium, climate change has become emblematic of the “mal du siècle” foreboding a veritable cataclysm for human societies and their organisation by the year 2100. However, beyond the overtones of catastrophism, the upheavals that climate change can bring about in our land management practices are a reality. Rather than giving in to the allures of an alarmist discourse, it becomes imperative to better understand the mechanisms of these changes and to assess their magnitude. At present, however probable the prospective models created by experts might be, their translation into reality is fraught with uncertainty. This uncertainty stems from the adaptation capacity of living beings and societies, and more generally, the effects of retroaction, which are difficult to envisage in an exhaustive manner.
- 2 Uncertainty is a central question that dominates all others: how can we today make decisions and engage in the necessary political arbitrations in a constantly changing world, where the benchmarks of the past will no longer be valid in the future? We should therefore focus our full attention on the means that can help us in decision-making rather than on the nature of adaptive actions. In this respect, local manifestations of global change provide a rich source of investigation, all the more as regional projections, the most important for human adaptation, are often very sketchy. The case of mountain areas, with their natural specificities and their diversity, presents a particularly complex situation. A patchwork of ecosystems and often extreme climate conditions, mountains become in this respect an exceptional territory, potentially pregnant with lessons on the effects of climate change. Looking beyond the question of attenuation, this issue of the RGA deals more specifically with the issues related to the impact of climate change and the adaptive responses that are emerging.
- 3 The mountain claims its role as the Land Development laboratory, and its elected representatives, organised within the Association Nationale des Elus de la Montagne (French national association of elected representatives from mountain regions), have embarked on an original reflection on this issue (ANEM, 2007). More specifically, in the wake of a difficult season for winter sports, the elected mayors of mountain resorts

(with their national association, ANMSM) have also unveiled to the general public their initiative to adapt the Bilan Carbone™ (Carbon Balance) method to winter sport resorts. It is in this tourism sector that the impacts of climate change are the most visible and the most discussed (Bürki *et al.*, 2003; Agrawala, 2007; Luthe *et al.*, 2008). The most visible, because the causal relationship is immediate, but also because this issue has been brought into the public spotlight following extensive media coverage of snowless winters since 1989-90 and the risk they represent for winter sport resorts (Marcelpoil et François, 2010). In this respect, climate change constitutes a major driver of a radial transformation in the winter tourism economy (Bourdeau, 2007).

- 4 The most discussed as well, because winter sport resorts were imagined and designed as a means of land management sustained by public authorities and therefore with inherent political implications. In this context, climate change is exploited as a political instrument in debates often caricatural in nature: it is a new argument for the detractors of this mode of local development and a pipe dream for economic players dependent on the attractiveness of the resorts. For these reasons, the question of tourism faced with climate change does not seem very relevant in a cross-disciplinary issue dealing with the effects of climate change in mountains. It calls for a reflection in its own right that does not crystallise any one stand at the risk of disregarding the diversity of the forms of tourist development that coexist in mountain territories.
- 5 Focussing once again on tourist issues would also be simplistic as regards the diversity of the impacts on mountain environments and the activities they are home to. The ANEM (2007) believes that climate change is an invitation to rethink mountain land management on the whole in order to shed light on adaptation strategies, including vis-à-vis other less characteristic areas. In this perspective, mountains are in fact on the frontline when it comes to climate change. The A2 scenario mapping drawn up by the GIEC at the European level (Commission of the European Communities, 2007) highlights the exceptional impact of the overall change on massifs, particularly the Alps and Pyrenees. If this mapping shows a contrast in the representation of mean precipitation (increase in the Alps and drop in the Pyrenees), the variations are more noticeable than in adjacent areas, and the increase in temperature appears more significant for the massifs than the rest of the European territory.
- 6 This prospective exercise concurs with the conclusions of Mr. Beniston (2006) who observes that the fluctuation in alpine temperatures follows the overall mean with however a more distinct amplitude. He puts forward the figure of +1.5°C, that is, nearly the triple of global warming since the dawn of the century (+0.6°C). This intensification of warming is corroborated by other research studies at the Swiss level (Rebetez and Reinhard, 2008). Beyond the arithmetic conclusion, these changes make mountains a control area for the manifestation of climate change. This reality is all the stronger that climate represents a determinant variable for alpine ecosystems and the human activities taking place therein. The organisation of the mountain area in successive levels and the articulation of economic practices among these different strata testify to the resonance of climate issues for all the components of the mountain.
- 7 Adaptation to extreme and fragmented living conditions contributes to the emergence of very distinct features and highly specialised functions. In these natural conditions hardly conducive to the sustenance of life, the existing balance is precarious in the face of the rapidity of the estimated global change. The dynamics of the ecosystems, highly sensitive to climate changes, calls for special attention as confirmed by the article by N.

Yoccoz, A. Delestrade and A. Loison. Through the various levels of interpretation: phenology of individuals, demographic distribution and the interaction of the various species within an ecosystem, the authors underscore both the importance of the overall impact on mountain environments and the limits of current knowledge in terms of understanding their specificities. The article thus recommends a reconsideration of the current modelling initiatives and opens up new avenues for specifying their application to the mountain environment.

- 8 Secondly, we will examine agro-pastoral practices, which contribute to the development of environments with which they are closely related. Thus, the contribution of J.-B. Nottier, L. Dobremez, J.-L. Coussy and T. Romagny regarding the strategies implemented by livestock farmers in mountain areas, relies on the observation of the responses to recent episodes of drought. Thus, we are already in a grey area between man and nature and current practices and future practices, i.e. an adaptive response in the making. The authors put forward an approach depending on two factors, combining the attitudes of livestock farmers and the sensitivity of farming systems to climate change.
- 9 The viewpoint of silviculturists is however radically different: in the past, even the recent past, they had to make do with crisis episodes not directly caused by climate change. Thus, B. Courbaud, G. Kunstler, X. Morin and T. Cordonnier propose a prospective approach to mountain forest management. In fact, forests are specific insofar as the actions undertaken today are decisive for their future farming capacities. In order to factor in this perception of time caught between the present and the future, the authors build their thesis by first considering the risks and uncertainties that climate change brings to bear on silviculture, and then proposing a complete examination of the different probable attitudes. Thus they focus their attention on constructing an adaptive management in a context of uncertainty.
- 10 Lastly, in conclusion to this issue of the RGA devoted to climate change, the question of risks sheds a comprehensive light on the mountain environment and the uncertainties that persist as far as the impacts of climate change are concerned. The combination of factors leading to a “risky” situation, threshold effects, show that the consequences of climate change on mountain territories are particularly complex to understand and strongly subject to uncertainties, which arise mainly from the difficulty in correlating the evolution of risk with respect to climate change variables. Further, risk analysis should consider two factors of different natures: natural hazard covered in the first part of the contribution of D. Richard, E. Marcelpoil and V. Boudières, but also vulnerable objects exposed to this hazard. Thus, the authors propose to expand the horizon of their reflection to economic risk, particularly in the case of winter sport resorts. If this introduction of tourism into our reflection completes our approach to the various economic sectors, it has more importantly the interest of opening up the debate to a comprehensive understanding of mountains from the viewpoint of vulnerability.

BIBLIOGRAPHY

AGRAWALA S. (éd), 2007. – Changements climatiques dans les Alpes européennes. Adapter le tourisme d'hiver et la gestion des risques naturels. Editions de l'OCDE, Paris, 140 p.

ANEM, 2007. – Au-delà du changement climatique, les défis de l'avenir de la montagne. Rapport pour le 23ème Congrès de l'ANEM, Paris, 108 p.

BENISTON M., 2006. – “Mountain weather and climate: a general overview and a focus on climatic change in the Alps”. *Hydrobiologia*, n° 562, pp. 3-16.

BOURDEAU P. (dir.), 2007. – Les sports d'hiver en mutation : crise ou révolution géoculturelle ? Lavoisier, Paris, 250 p.

BÜRKI R., ELSASSER H., ABEGG B., 2003. – “Climate change - Impacts on the tourism industry in Mountain areas”. 1st International Conference on Climate Change and Tourism, 9-11 avril, Djerba, <http://www.world-tourism.org/sustainable/climate/pres/rolf-buerki.pdf>, 9 p.

COMMISSION DES COMMUNAUTÉS EUROPÉENNES, 2007. – Livre Vert, Adaptation au changement climatique en Europe : les possibilités d'action de l'Union européenne. Bruxelles, 32 p.

LUTHE T., ROTH R., ELSASSER H., 2008. – “SkiSustain - sustainable management of ski destinations in the contexte of tourism demand, ski area stratégies and global change”. In, *Managing Alpine future. Strategies in global change*. Innsbruck, 15-17 octobre 2007, Innsbruck University Press.

MARCELPOIL E., FRANÇOIS H., 2010. « Territoires de montagne et développement durable ». In Zuindeau B. (éd), *Développement durable et territoire*. Presses universitaires du Septentrion, Lille, pp. 253-264.

REBETEZ M., REINHARD M., 2008. – “Monthly air temperature trends in Switzerland 1901-2000 and 1975-2004”. *Theoretical and applied climatology*, n° 91, pp. 27-34.

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