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MountainPlatform

Mountain Research Initiative Seeks to Break New Ground in Second Decade

The Mountain Research Initiative (MRI), an international networking project for global change research in mountain regions, funded by the Swiss National Science Foundation and founded under the auspices of the International Geosphere–Biosphere and International Human Dimensions Projects (IGBP and IHDP), has worked assiduously for more than 10 years to develop a community of researchers and to synthesize and publicize knowledge about global change in mountain regions. The Initiative is now developing campaigns by which this stronger network can produce new research infrastructure and knowledge.

Dotting all 4 I's

Rolf Weingartner, the chair of the Mountain Research Initiative (MRI), coined the term "the 4 I's"—for initiation, implementation, integration, and information—as a shorthand way of describing what MRI does (Figure 1). Historically, the MRI worked primarily on initiation—bringing researchers together to form communities and functioning networks. It has also worked, at the other end of the axis, on integration (via synthesis workshops during which researchers summarize current knowledge on a topic of interest) and information (via internal and external communication efforts). But it has been difficult in the past for MRI to implement research, as funding limited it to promoting and coordinating research. Now, after a decade, MRI is finally "dotting all the I's." Its proposal to the Swiss National Science Foundation for 2013–2016 includes a plan to fill the gap with 4 major "Concerted Efforts" while continuing work on the other 3 I's.

Building a network of mountain observers

The most visible of the 4 efforts is the preparation of the event Mountain Observatories: A Global Fair and Workshop on Social-Ecological Systems, scheduled for 16–19 July 2014 in Reno, NV, USA. Enhanced observations of mountain regions have been a central concern for MRI from the beginning, as described in the International Geosphere–Biosphere Project Report 49 (Becker and Bugmann 2001) and was the focus of the first GLOCHAMORE (Global Change in Mountain Regions) workshop (GLOCHAMORE 2004).

The premise of this event is that while a more comprehensive international system of mountain social and ecological observations is needed, there is no single entity with the authority to organize it or the budget to fund it. Thus it must be built up from existing regional networks and sites. And the best way to do that is to convene researchers from those networks and sites to exchange ideas, see what other networks offer, develop common programs, assess priority locations, and develop creative financing options.

The GLOCHAMORE project, a European Union Sixth Framework Programme support project, laid out a research strategy in 2005. At the end of that project, the MRI could have declared that it would lead a top-down effort to design and develop a mountain observing system. But that declaration is all it could have done, as it had not yet identified a sufficient number of actors in the observing domain; and it certainly would have failed to create a functioning observing network because of the limitations in authority and funding described above. It is a measure of MRI's maturity that it now can identify and convene a sufficient number of expert actors from diverse locations, not just Europe and North America, to create a more comprehensive observing system.

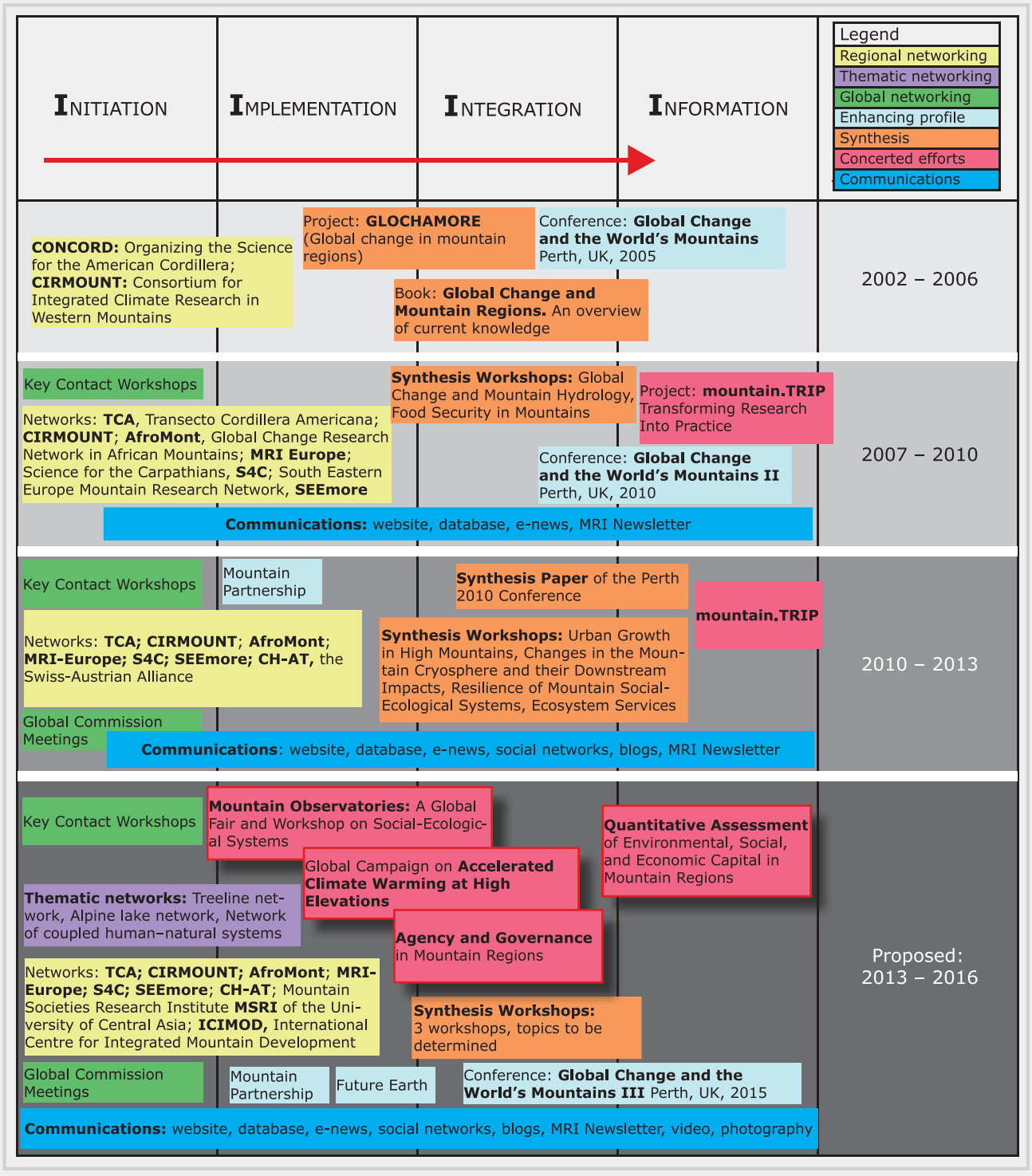
The subtitle "Fair and Workshop" signals a dual approach, with the Fair promoting open-ended interaction and the Workshop promoting more traditional focused presentations and discussion. The Fair is planned as an elaborate poster session and market in which different observing sites and networks can display their goals and methods, so that other researchers who may be interested in expanding their capabilities can learn what is available. The Fair will also facilitate side meetings where people can pursue more focused discussions or even negotiate agreements. The workshop component will provide an opportunity for participants to address themes or issues that go beyond their particular site. It will be composed of sessions, in which participants present papers to an audience much as they would at a scientific meeting, and *ateliers* (a shop or studio), in which participants engage with others to discuss a particular topic.

The Fair component underlines the importance of exchange within the community. The long lead time has allowed MRI to identify potential sponsors with a clear interest and experience in observing systems and engage them in the design of the event. The Fair and Workshop will provide an opportunity to create the network and then to reinforce and extend it. In that regard, the pre-event collaboration is every bit as important as the event itself.

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FIGURE 1 MRI activities by category and grant period. (Design by Claudia Drexler)



The long lead time has also allowed MRI to use other venues to expand participation. It has co-organized a formal session at the American Geophysical Union Fall 2013 Meeting with Franco Biondi (leader of the Dendrolab at the University of Nevada), Julia Klein (who co-organized an MRI synthesis workshop on coupled human–natural systems), and Bill McConnell (of the Coupled Human and Natural Systems Net) to address this topic. MRI has also reached out to other communities, particularly those

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focused on social systems, to find people who might not identify themselves as mountain researchers but who can contribute valuable expertise. These efforts could most accurately be described as campaigns rather than simple projects.

Understanding warming at high elevations

The notion of campaign has always been part of the second effort, the Global Campaign on Accelerated Climate Warming at High Elevations. The goal of that multiyear campaign is to assess whether—and if so, where, to what extent, and why—mountains and other high-elevation regions are warming more rapidly than other parts of the planet. Public opinion to the contrary, this phenomenon has not been scientifically proven (Rangwala and Miller 2012), and it matters a great deal to downstream communities whether it is real. This campaign will involve a review of existing science but will certainly also require the collection of new data, as the paucity of high-elevation station data precludes definitive answers. It is the demand-side counterpart to the supply-side Mountain Observatories. While the Mountain Observatories effort will determine what we can get (and what questions we can answer) by coordinating existing efforts, this campaign will specify the kind of observation network we need to have if we wish to answer to important questions on accelerated warming.

Generating a successful campaign will require not just a program proposal and a funding plan but also a committed network of champions willing to help develop them. While Mountain Observatories has a long list of sponsors, MRI has enlisted 6 researchers for the accelerated warming campaign, working under co-chairs Ray Bradley of the University of Massachusetts and Tandong Yao of the Institute for Tibetan Plateau Research, to hold a workshop that will develop the proposal and funding plan. The workshop will be by invitation only and is planned for April 2014 just before the European Geophysical Union meeting in Vienna.

Understanding agency and governance in mountain regions

The third effort focuses on a global study of agency and governance in mountain regions. As much as the community of mountain researchers agrees that human dimensions are important, a rigorous scientific approach to studying not just human ecology (as if our species were just another species of wildlife) but also the cognitive and political dimensions of human behavior in mountains has been conspicuous in its absence (Björnsen Gurung et al. 2012). Such research does exist, but it is seldom flagged as mountain research because it focuses on social rather than geographic constructs. Human behavior and institutions in mountains may not differ fundamentally from those in other environments, but that in no way reduces the importance of understanding social systems if we are to understand the entire coupled human-natural system, in mountains or elsewhere. This effort will search out researchers in other academic traditions who can help us understand the social aspects of mountains, whether they wish to be labeled as mountain researchers or not.

While the ultimate goal of this effort might be a book on agency and governance, its initial steps will be sessions at 2 events, the Global Land Project's Open Science Meeting in Berlin on 19–21 March 2014 and the MtnClim Conference in Midway, UT, USA, on 15–18 September 2014. As with the Observatory Fair and Workshop, preparations—finding and engaging researchers in a discussion of agency and governance—is at least as important as (and in any event a necessary precursor to) a well-structured state-of-the-science book on these topics.

Addressing the gap in quantitative data on mountain regions

The fourth effort is a comprehensive quantitative global assessment of environmental, social, and economic capital (the 3 pillars of sustainable development) in mountain regions. Such an assessment goes well beyond what MRI itself can do. Instead, MRI will act as a convener of scientific expertise focused on defining what can and should be done with respect to data on sustainable development in mountains.

Because of the unfortunate lack of effort expended between the First Earth Summit in 1992 and the Rio+20 Earth Summit in 2012 on quantifying this information for mountain regions, statements with respect to mountains in 2012 often reiterated claims made in 1992. In any event, without such data it is impossible to develop focused and effective policies and programs.

To MRI's knowledge there have been only 2 attempts to generate quantitative statements with respect to mountain regions globally, 1 by the Food and Agriculture Organization (Huddleston et al. 2003) and 1 by the United Nations Environment Programme (UNEP-WCMC 2002). Both reports cobbled together statements that could be supported with data available at the time but stopped well short of a comprehensive assessment of the state of sustainable development. If for no other reason than the age of these reports, it would be useful to update them. The Food and Agriculture Organization appears poised to do so for its report with the technical support of the Centre for Development and Environment at the University of Bern.

More importantly, it is necessary to reassess mountain regions with a concern for what we need to know with respect to sustainable development, rather than simply on the basis of whatever data might be available. There are certainly

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important dimensions of environmental, economic, and social capital for which we do not yet have data, but specifying those gaps is a first step toward filling them.

These "Concerted Efforts," with their focus on implementation, complement the other 3 I's of MRI's mission (initiation, integration, and information) and will provide an important focus for MRI activity in the coming years.

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