

DARK NATURE – Message from the Como meeting

The influence of natural catastrophic events, as tragically testified by the 2004 Sumatran earthquake and tsunami, and by the recent flooding in New Orleans, has the potential capability to destabilize the socio-economic conditions of the people directly affected and, due to the present globalization scenario, of the whole world.

The seismic, hydrologic and geologic hazards, the changes in global climate, with their possible implications in terms of desertification and drought processes, are among the topics dealt with during the Final Meeting of the Project “Dark Nature - Rapid Natural Change and Human Responses”, held in Como from September 6 to September 10, 2005, and locally organised by the University of Insubria in collaboration with IMONT, Lombardy Region, APAT – Geological Survey of Italy, PAGES and the Como Municipality.

The Como 2005 Congress represents the conclusive event of the ICSU-funded Project “Dark Nature - Rapid Natural Change and Human Responses”, awarded to a consortium of organizations headed by IUGS (International Union of Geological Sciences through its Geoinicator Initiative), and including IGU, IUGG, INQUA, and IGBP.

This is a multi-year project articulated into several meetings and researches aimed at fostering multidisciplinary discussion on the meaning of sustainability, by keeping into consideration the role played by natural processes and human actions in changing the environment.

The main purpose of the project stems from the need to separate nature-induced catastrophes from man-induced ones, and elaborate new cultural concepts that should keep into consideration the impact of sudden natural changes on society, and integrate such changes into a general strategy for the development and adaptation of the human communities, both at the global and the local level.

In 2003 and 2004, several meetings were held in areas (Mauritania, Argentina, Mozambique, Caspian Sea, Yukon), which are critical in terms of rapid geological changes and their potentially “catastrophic” effects.

During the Como meeting, the results of the above mentioned workshops were illustrated, the social and philosophical foundations of the DN project were discussed, and the possible implications in terms of political decisions were investigated.

The Como event gathered researches whose background encompasses a wide array of disciplines such as geology, anthropology, geography, botany, history, philosophy, urban planning, environmental sciences and communication sciences. This multidisciplinary approach was aimed at enabling to gain insight into major issues such as environmental sustainability, natural hazards, the ability, by different societies, to cope with rapid environmental changes that occurred during the Holocene, both in Italy and at the global level.

One of the meeting’s main purposes was to foster dialogue among researchers, so as to overcome the traditional cultural barriers that jeopardise an efficient communication among scientists, experts, the lay public, politicians and decision makers.

Such lack of communication was tragically evidenced by the December 2004 Sumatran tsunami and the Katrina hurricane, extreme events whose triggering mechanisms had been monitored and predicted at the scientific level, but whose effects were made worse by the inability of the “global society” to take actions aimed at reducing the vulnerability of the potentially affected areas.

The main subjects discussed during the meeting were subdivided into several sessions, focusing on topics with international relevance: “Rapid Climatic Change, Palaeoenvironmental

Studies and Cultural Response”; “Environmental Hazards and Societal Vulnerability”, “Earthquake Ground Effects, Seismic Hazard, and the INQUA Scale Project”; “Sustainability, territorial planning and rapid natural changes”. Full Program and Abstracts of the meetings are posted at the meeting web site <http://scienze-como.uninsubria.it/ambientale/sitodn/>

More than 70 participants attended the meeting, including several internationally renowned Invited Speakers, among whom John J. Clague, Simon Fraser University, Leonello Serva, APAT – Geological Survey of Italy, John Ridgway, British Geological Survey, Suzanne Leroy, Brunel University, Glen MacDonald, UCLA, Steve Wells, Desert Research Institute, David Ludlow, University of the West of England, Mauro Cremaschi, University of Milan, Sylvi Haldorsen, Agricultural University of Norway.

The 41 oral and 15 poster presentation given during the meeting were all aimed at shedding light on the rapid natural changes which are impacting man and the environment, on the connection between natural events and the socio-economic setting, on natural hazards, on the meaning of sustainability in areas potentially affected by catastrophic natural events.

The Italian case studies encompassed the tsunami hazard in Lake Como, the prediction and mitigation of seismic and volcanic hazard, the archaeological evidence of human responses to natural events in the Italian peninsula and the project of the new INQUA scale of macroseismic intensity, based on a new approach to the earthquakes’ environmental effects aimed at bridging the gap between instrumental, historical records of seismicity, and the paleo-record illustrated by the geological observations. International contributions reviewed the results of previous DN meetings, selected case histories at a global level (including N America, S America, Africa, former Soviet Union, E Asia, and Europe), and a wide range of methodologies.

Is a traditional approach to the management of the environment and the territory able to properly understand rapid natural change and take actions to mitigate its effects? Is there a new formulation of sustainable development that might be applied to areas where the environment tends to change rapidly? Should guidelines be elaborated in order to decide where it is necessary to let nature take its course, and where it is necessary to intervene in nature’s processes, i.e. in the case of river channeling, slope stability or fire control? To what extent ecosystems can and have to be restored to their original conditions? These are some of the questions raised during the Conference.

It is clear that the conventional formulation of the term “sustainable development” has never taken into account the possible occurrence of catastrophes like the Sumatran tsunami or hurricane Katrina, which have indeed to be considered natural and somehow “normal” events. Also, the presented contributions emphasized that societies tend to react to natural hazards by defending their territorial setting and infrastructures, even rebuilding them in the same location where an eruption or an earthquake caused massive destruction. The cultural and religious roots of a society are much more important than any “external” forcing. The scientific research on natural hazards should keep these obvious constraints carefully into account, and provide new languages and new solutions allowing the general public to be aware of the changing nature of our Planet, and to cope with “Dark Nature” events without being “hypnotized” by irrational fears.

Several speakers at the meeting made the point that Nature works by means of successive catastrophes and not only through slow and gradual changes. Inadequate terminology should be abandoned and new languages and policies should be defined, that might enable scientific knowledge to be passed on to local communities in a “laic way” and without any sensationalistic approach, so as to enable decision makers and local administrators to adopt policies that keep into account the natural characteristics of the territory.

The emblematic case of Istanbul has to be considered: After the seismic sequence of 1999, although it is likely that a similar event will happen in the near future, the city is growing larger by the day (its population is around 12 million people), without the necessary adoption of antiseismic measures. What are the mechanisms by which a society learns from past catastrophic events and succeeds in surviving?

Today, our society needs to find modern solutions to tackle such huge issues and therefore, a tighter cooperation between scientists and politicians/administrators is required. A new and more rational approach has to be individuated, that should be able to integrate issues such as the careful use of resources, the occurrence of natural hazards, the promotion of identity based on historic continuity.

It is also crucial to keep in mind that the instrumental record (available for the last 100-200 years) is not able to fully describe the changes taking place on the Planet, and that a longer time span should be considered when investigating processes that are mainly geological.

In conclusion, natural events such as earthquakes, volcanic eruptions, tsunamis and floods are nowadays still underestimated by politicians and administrators all over the world; as a consequence, actions are seldom being taken to reduce the vulnerability of the populations subject to risk.

Also, causes of the ongoing climate change should be carefully evaluated. Historical and pre-historical records presented in Como clearly shows that in many cases a global warming similar to the one we are experiencing in the past 100 years is by no means new. Recurrence and magnitude of several natural disasters such as mega-floods does not show any clear relation with global warming, as fully discussed by the Dark Nature Workshop held in Bobole, Mozambique. Again, in order to understand this question it is important to look at palaeorecords: have mega-floods been more frequent during warm than cool climate episodes, and if so, in what part of the world are such events to be expected during a possible future global warming?

In any case, it is quite evident that the global warming scenario has put the focus on artificial computer worries instead of real natural disasters. The recent M 9.3 earthquake of Sumatra and its disastrous tsunami event, and the effects on New Orleans of the Hurricane Katrina, brutally took us back to reality. Today it is clearly necessary to redefine the priorities for research efforts and risk mitigation strategies at a global level.

By investigating the effects that rapid natural changes had on societies and civilisations that preceded us, we might be able to contribute to a new perspective, based on a more careful recognition of the role played by nature in bringing rapid and radical changes to the Earth's surface.

Our global society is more and more vulnerable, and a cultural revolution has to be initiated with the purpose of increasing awareness of the relationship between man and nature and pursuing a more effective prediction and mitigation of extreme natural events and their consequences.