RESEARCH FIELD:
Physical geography

RESEARCH TOPIC:
From microclimate to climate change: caves as laboratories for the study of the effects of temperature on ecosystems and biodiversità

PARTICIPANTS AND COLLABORATIONS:
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RESEARCH DESCRIPTION:
Cave ecosystems offer unique opportunities for ecological studies because they are characterized by low abundance and diversity of organisms, they receive poor energy inputs and they are quite easily modelled. Furthermore, they are widely considered as stable, as they are light-deficient and have almost constant temperature. The fact that caves are stable and semi-closed systems them ideal sites where to study the influence of temperature on ecosystems processes, functions and biodiversity, which is the core issue of this interdisciplinary project. We created a multidisciplinary research team in order to provide a deep understanding and a precise characterization of the cave ecosystem, from both an abiotic and biotic point of view, also by means of innovative technology developed within the project. Once characterized, cave ecosystems will be set in a bigger frame, by considering direct and indirect factors at a local and global scale like availability of energy sources, anthropic perturbations, structure of biocoenosis, climate and past glaciations dynamics. The influence of temperature will be evaluated on each ecosystem component by means of direct observations, experiments and statistical modelling. Focusing on the results, we will address the role of the cave ecosystems in understanding and monitoring the effects induced by global warming. The present project aims at the development of a huge potential in terms of scientific production and social impact. The set up of innovative technology will open up possibility to produce patents for commercial exploitation and workplaces will be created by recruiting post-doc students and by training them in a multidisciplinary research activity. The caves involved in the project will benefit from the project, providing awareness, valorisation and guidelines for the management of the so called “show caves”. Additional social impact will come from didactic activities and dissemination in science magazines.

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- MOTTA L., M. MOTTA. (2007). Erratic blocks: from protector beings to geosites to be protected. In:PICCARDI, L. MASSE, W. B. Myth and Geology. (vol. 1, pp. 315-327). ISBN: 978-1-86239-216-8.LONDON: Geological Society of London (UNITED KINGDOM). Lavoro presentato al 32nd InternationalGeological Congress, Florence 2004.
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