



Micrometeorology of the Colostrargiu cave (Sardinia, Italy) and its interactions with karst geomorphology

Q. A. Cossu (1), **G. Badino** (2), F. Murgia (3), L. Sanna (4)

1. Servizio Agrometeorologico Regionale per la Sardegna, Sassari, Italy,
2. Dip. Fisica Generale, Università di Torino, Torino, Italy,
3. Società Speleologica Italiana – Gruppo Grotte Nuorese, Nuoro, Italy,
4. Associazione Speleologica Progetto Supramonte, Cagliari, Italy

(cossu@sar.sardegna.it / Fax. 0039079262681 / Phone: 0039079258607)

The present work deals with the preliminary results of an environmental monitoring project in the “Su Colostrargiu Cave”, located along the Flumineddu River in Supramonte area (NE Sardinia, Italy).

Colostrargiu is a recently discovered interesting vertical cave developed in dolomite rocks of Jurassic age and having only one upper entrance. The large Mesozoic carbonate massif of Supramonte is characterized by the almost complete lack of surface water flow during most of the year and by an important well developed underground and active drainage network. Colostrargiu is characterised by a succession of some vertical shafts that allow to access a vadose meandering canyon excavated along a normal fault. The cave has a development of 1.5 km and a depth of 150 m.

The aim of the project is to define the importance of condensation processes on the hydrogeological balance of this karst system and to analyse its possible interaction with speleogenetical processes.

The meteorological station is constituted of seven PT100 temperature sensors located at different depth along the main shaft of the cave, a hydrometer and a sonic anemometer.

Aerodynamic and thermal annual cyclicality, and its correlations with external regime are analysed and condensation groundwater flow on the cave wall has been assessed.

These observations will allow to collect important information and to stimulate interesting discussions concerning the feeding of the karst aquifer not only by infiltration but also by condensation. The cave climate also has an influence on cave morphology, because the evaporation-condensation processes which can be triggered by fluctuations around the equilibrium, are able to continuously wet the walls with unsaturated water. The dissolution induced by the condensation is strongly isotropic then very different from that due to water fluxes, and then characteristic morphologies, like the extraction of less soluble rock from the matrix, can result.