



Cave Meteorology in CUPN Parks

Importance / Issues

1. Air temperature, relative humidity, and airflow all comprise important environmental properties affecting both key species and biological communities in cave ecosystems.
2. Also dependent upon “favorable” air temperature and relative humidity values are cultural artifacts that may be found in caves.
3. Cave airflow is a driver for:
 - Replacement of cave air with surface air that is relatively free of trace gases that might otherwise build up in the cave system.
 - Speleothem development
 - Exchange of thermal energy between the cave system and the surface.
 - Changes in the amount of heat energy contained within cave surfaces.



Cave Passageway at MACA

Preliminary Monitoring Objectives

The protocol provides sampling designs and methodologies for assessing cave environmental parameters in the contexts of supporting long-term cave system monitoring, providing management-directed assessment of local and site-specific conditions.

The methodological SOP's provide instructions on how to:

- Measure air temperature and relative humidity spatially (spatial at/rh) within a cave space along a cave surface (ceiling, floor, or wall).
- Measure air temperature and relative humidity temporally (temporal at/rh) using datalogging systems at one point within a cave space.
- Simultaneously measure airflow spatially and temporally (spatial/temporal airflow) using datalogging systems within a cave cross-section.

Management Applications

Air temperature, relative humidity, and airflow are influential atmospheric parameters in cave systems and are relatively easy to impact through management actions (such as changes to cave gates, blockhouses, and heat from lighting fixtures). The protocol generates data that may be used to evaluate the impacts of management actions upon air temperature, relative humidity, and cross-sectional air velocity.

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