

ArcGIS Geodatabase Data Model for Cave Science

Abstract

The purpose of this research is to determine whether a usable ArcGIS geodatabase data model could be developed for use in cave science. Traditionally, cave scientists, or speleologists, have collected various data in multiple formats. In many cases, researchers are collecting the same data using different methodologies. This is undesirable not only from the repetition of work, but perhaps more importantly because many of the more scientifically interesting caves are such fragile environments that they cannot tolerate additional and especially redundant data collection. Additionally, the geodatabase provides a common data format for researchers to exchange data when working with colleagues or personnel from agencies that manage caves.

An ArcGIS geodatabase data model was developed utilizing ArcCatalog and standard cave feature classifications. The data model was then tested against an existing traditional cave map to determine whether or not the geodatabase model was functional. The results were encouraging as the data model was able to handle the majority of data types and their accompanying representation. Problem areas discovered during development included the inability of the geodatabase to facilitate multiple types of geometry for a single feature class and cartographic map finishing.