Three-Dimensional Characterization of Cave Networks Using Photogrammetry: Example from Longhorn Cavern, Central Texas

Josh Lambert, Robert G. Loucks, and Guinevere McDaid

Bureau of Economic Geology, Jackson School of Geosciences, University of Texas at Austin,
University Station, Box X, Austin, Texas 78713–8924, U.S.A.

ABSTRACT

Digital outcrop models are invaluable tools for quantitative analysis of geologic data
that allow us to digitally inspect outcrops in three dimensions. This investigation focuses
on reconstructing a modern cave system based on Longhorn Cavern in Burnet County,
Texas, using photogrammetric methods to construct a digital outcrop model by captur-
ing 6000 overlapping images of the cavern interior. Global positioning and survey data
are integrated into the model to locate the subsurface cave geometry in geographical
space. Using this data, we are able to inspect and analyze the cave system in a virtual
environment.

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