ABSTRACT

TITLE:	Investigation of Possible Periglacial Involution Structures: Mesa Verde National Park, Colorado
AUTHOR(S):	Kenny , Ray; Gillam, Mary; Kinney, Rachel
PRESENTED AT:	2016 Undergraduate Research and Creative Activities Symposium, Fort Lewis College

ABSTRACT: Possible periglacial involution structures exposed in several road cuts within Mesa Verde National Park (MVNP) were documented and analyzed to determine whether the structures originated from periglacial processes. GIS-based surface analyses including slope, aspect, and timberline approximation were performed to favor north, northeast, and northwest facing slopes, low gradient, and timberline above 2,400 meters (7,874 feet). The suitability analysis confirmed that the MVNP area could have sustained periglacial features during the last glacial maximum. The relict soil structures found in the study area were also analyzed based on size, location within the soil layers, soil composition, degree of deformation, and the interpenetration and irregularity of the structures. Based on our analyses, we conclude that the relict structures found in MVNP likely formed by freeze-thaw processes. Other geomorphological processes that could potentially produce similar soil structures, including mass wasting, differential loading, springs, drainage channels, bioturbation, glaciation, and liquefaction, were considered. Our study suggests that these processes would not have produced the relict soil structures and we conclude that the relict soil structures are involutions. Previous studies conducted in New Mexico, Arizona, and Colorado (Blagbrough, 1994; Gillam, 1998; and Marker, 1990) suggest that a periglacial environment could have existed at the lower elevations and latitudes in southwest Colorado. The results of this study indicate that a periglacial environment capable of producing involutions existed in southwest Colorado at elevations as low as 2,400 meters (7,874 feet) and as far south as about 37 N latitude.