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[Joint 55th Annual North-Central / 55th Annual South-Central Section Meeting - 2021](#)

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PALEOENVIRONMENTAL RECONSTRUCTION OF LOWER CRETACEOUS DINOSAUR TRACKWAYS IN SAN GABRIEL CREEK, CENTRAL TEXAS

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Sauropod and theropod trackways are common occurrences in the marginal marine deposits of the Albian (Early Cretaceous) Glen Rose Formation. Although Pittman (1989) documented and described dinosaur tracks and trackways throughout Texas in great detail, little is known about the environment in which these tracks were made and preserved.

One exceptional track site, located in the South Fork San Gabriel River, Travis County, contains one theropod and nine sauropod trackways spread over several hundred meters. The sauropod trackways consist of manus and pes impressions extending southward. These imprints correspond to undertracks preserved in a dolostone bed which contains raised-relief mudcracks. The studied section measures seven and a half meters, with the trackways located at two meters above datum. Field observations and petrography are used to determine how the depositional environment and diagenetic processes influenced track preservation. The lower four meters of the section has a crystalline dolomite lithology, with mudcracks which suggests a very shallow to subaerially exposed marine depositional setting. The upper two and a half meters are composed of wackestone with abundant marine fossils, borings, and bioturbation, which implies a more open marine environment.

To support the interpretation of depositional environments from petrography, whole-rock samples are analyzed for elemental geochemical composition using x-ray diffraction spectrometry. The stratigraphic evolution of a selection of geochemical proxies for detrital (e.g., Ti, Zr) and nutrient (e.g., P, Cu) inputs below and above the track layer provide specific information about the paleoclimate and paleoenvironment before and after the impression was created. Of interest is a slight increase of detrital input above the track layer that may have facilitated its burial and preservation. Future work includes comparison with other sites from central Texas (e.g., Davenport Ranch, the Mayan Ranch, the Heritage Museum of Texas Hill Country, the VFW site in Comal County, and the Blanco River) using benthic foraminifera biostratigraphy and spectral gamma-ray curves to place the San Gabriel tracks into a refined stratigraphic framework.

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