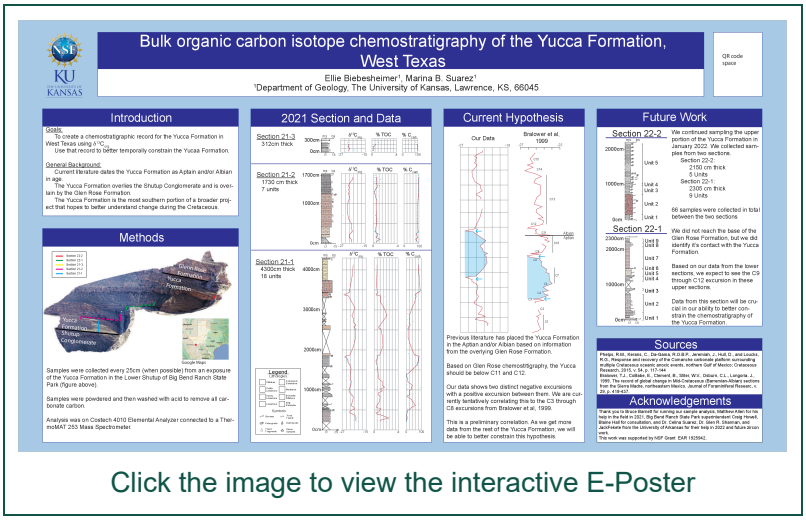
5-4 - BULK ORGANIC CARBON ISOTOPE CHEMOSTRATIGRAPHY OF THE YUCCA FORMATION, WEST TEXAS

Monday, 14 March 2022

3:30 PM - 5:30 PM

Embassy Suites by Hilton McAllen Conv. Ctr. - Online

Booth No. 4



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Abstract

The Cretaceous Period is known for large climatic changes and fluctuations in the organic and inorganic C-isotope records. These C-isotope records can be used for correlation, especially when biostratigraphy is unavailable. We will utilize these records in order to improve the age constraint of the Cretaceous Yucca Formation by comparing data from the Yucca Formation with global c-isotope records that are time constrained. The Yucca Formation is currently assumed to be Aptian and/or Albian in age, but due to a lack of geochemical data and biostratigraphy, this age is not strongly supported. We collected samples every 25cm from the bottom 64 meters of the Yucca Formation exposed in Big Bend Ranch State Park in Southwest Texas. The Yucca Formation at this location consists of siliciclastic to carbonate beds and exposure of a nearly complete section. While we did not finish sampling the entirety of the Yucca Formation, we gathered enough samples to form preliminary ideas of what excursions to look for, and we plan to finish sampling the upper portion at a later date.

We collected 94 samples and analyzed each for percent total organic carbon, percent carbonate carbon, and $\delta^{13}C$ values. The $\delta^{13}C$ values range from -19‰ to -26.12‰, with an average value of -22.48‰. Starting at the base of the section, there is a general

decreasing trend in $\delta^{13}C$ values until 1850cm. There is then an increase in values until approximately 3050m where values begin to fall again. We will use these trends of increasing and decreasing values and compare them to other $\delta^{13}C$ data during the Aptian and Albian. Based on the assumed age, we expect to see $\delta^{13}C$ signatures of either OAE 1a and/or OAE 1b. This data provides us with enough data to form preliminary hypotheses regarding which excursions are present in this part of the Yucca Formation and guide interpretations of the remaining section of the Yucca Formation.

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What is the difference between Aptian and Albian?

By Matthew Henson at 6:17 PM, Tuesday, March 8, 2022 (CDT)

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