

# PBS-SEPM Technical Luncheon

**Tuesday, April 19<sup>th</sup>, 11:30 AM**

**Ranchland Hills Golf Club - Vista Room**

**\$25 Early Bird Rate, \$35 at the Door or \$10 BYOL/Student or \$5 Virtual**

RSVP by 4/15/2022 to [info@pbs-sepm.org](mailto:info@pbs-sepm.org) or online at [www.pbs-sepm.org](http://www.pbs-sepm.org)



Integrated Sequence Stratigraphy, FTIR and ED-XRF Geochemical Characterization of Wolfcamp A- and Wolfcamp B-Equivalent Outcrop Facies in the Glass Mountains (Skinner Ranch Fm, Lenox Hills Fm), West Texas, USA

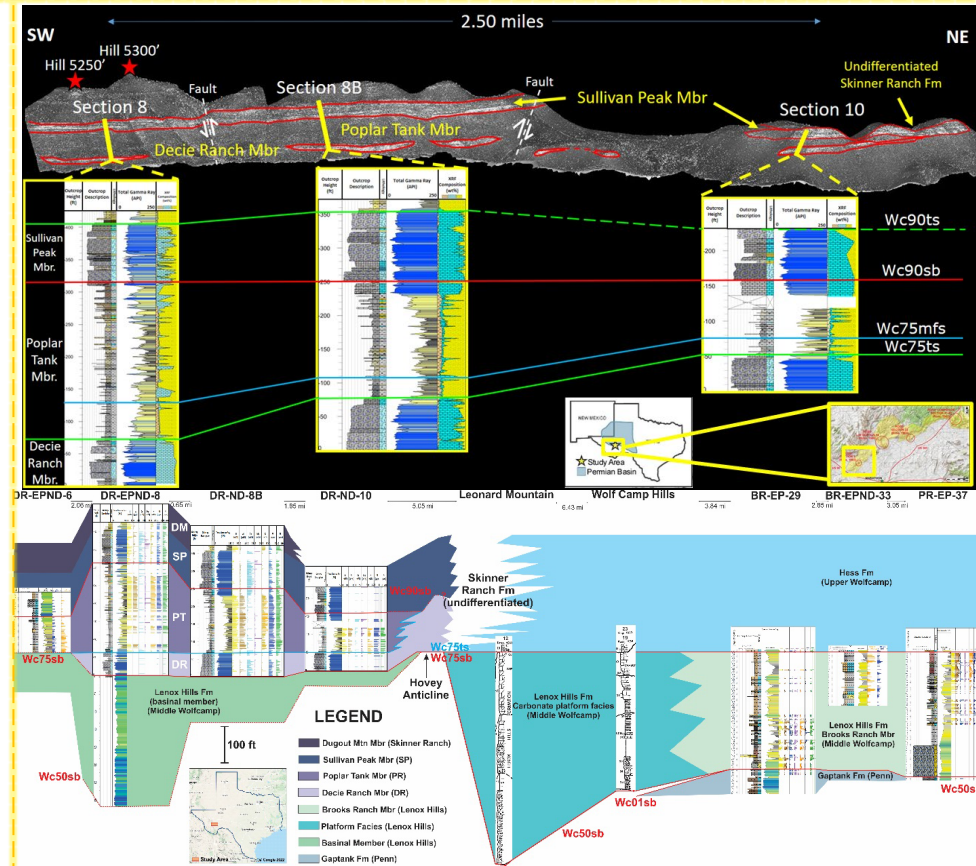
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## ABSTRACT:

The Glass Mountains comprise the southern part of the Ouachita Fold and Thrust Belt and have Early Permian outcrop exposures that have remained largely untouched by geologists for the past 60+ years. This work brings outcrops of the Lenox Hills Formation (Fm; Middle Wolfcamp, Wolfcamp B-equivalent) and basinal outcrop facies of the Skinner Ranch Fm (Upper Wolfcamp, Wolfcamp A-equivalent) into the 21st century geochemically and petrographically, by integration of Electron Dispersive – X-Ray Fluorescence (ED-XRF), Fourier Transform Infrared (FTIR) Spectroscopy, FTIR Total Organic Carbon (TOC) content,  $\delta^{13}\text{C}_{\text{org}}$  isotope geochemical data, and petrographic analysis.

The Lenox Hills Fm has laterally variable facies of primarily slope and proximal affinities, depending on location within the Glass Mountains. Fluvial clastic (high  $\text{SiO}_2$ , K2O, MgO, Zr) to polymictic carbonate conglomerate ranges 0-450' thick at its base and is 146.5' thick at the Lenox Hills Fm type section. Overlying the conglomerate are interbedded limestone, mudstone and sandstone beds of various composition and thickness. The interbedded mudstone, limestone, and sandstone facies have bulk composition ranges of the following: FTIR TOC content of 0.0 – 4.6 wt% (average 0.98 wt%), total FTIR clay content of 1.0 – 72.3 wt% (avg. 25.2 wt%), and locally moderate to severe dolomitization (avg. 17.3 wt % FTIR ankerite) in proximal depositional facies outcropping in the Brooks Ranch Mbr of the Lenox Hills Fm. The interdistributary basin facies of the Lenox Hills Fm were not analyzed geochemically, due to weathering and outcrop position (in a valley) in the Lenox Hills.

The basinal, Upper Wolfcamp (Wolfcamp A-equivalent) facies of the Skinner Ranch Fm include the Decie Ranch, Poplar Tank, Sullivan Peak, and Dugout Mountain members, respectively. At its type locality, the Decie Ranch Mbr has a laterally variable, ~45' thick carbonate (Ca, Mg-rich) conglomerate at its base, overlain by ~25' of interbedded mudstone, thin sandstone beds, and calcarenite. The overlying Poplar Tank Mbr, at its type locality, is comprised of mudstone, limestone, and calcarenite ~230' thick, with FTIR TOC content of 0-2.9 wt% (avg. 0.6 wt%), total FTIR clay content of 1.1 – 60.0 wt% (avg. 25.5 wt%) and less dolomitization than Middle Wolfcamp strata (avg. 9.7 wt% FTIR ankerite). The overlying Sullivan Peak Mbr, at its type locality, is comprised of ~85' of interbedded limestone and mudstone, with hybrid clastic/carbonate debris flow facies / conglomerate marking the base of the member and occurring throughout its deposition.



**BIOGRAPHY:** *Eric is a 4th year Geology PhD candidate at Texas A&M University, studying the outcrop to subsurface chemostratigraphy of the Wolfcamp A and Wolfcamp B in the Delaware Basin. He earned a B.S. in Earth Science from Southern Connecticut State University in 2013, and an M.S. in Geology from Texas A&M University in 2017. Eric is an active supporter of Texas A&M's Unconventional Reservoirs and Outcrop Characterization (UROC) Consortium. Eric's research interests include multi-proxy geoscience data integration, chemostratigraphy, and machine-enhanced stratigraphy.*