

RMAG June Luncheon

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*The Massive Structural Deformation Produced by the Longmont Fault East of Boulder,
Colorado*

Speaker: Kendall Kittleson

Strike-slip movement along the northeast-southwest oriented Longmont Fault on the northwest limb of the Denver Basin triggered a 281 square mile detachment of the Upper Cretaceous Pierre Shale bedrock from the surface to a depth of almost 550' above a singular stratigraphic horizon, termed Kp2. This structural event occurred in two stages- first movement along northeast portion of the Longmont Fault detached the bedrock above the unfaulted, two degree-dipping Kp2 horizon. The result was a relatively slow, two mile movement of detached bedrock, with its eventual termination as a series of subparallel ramp anticlines, offset up to 470'.

Later, strike-slip movement on the southwest portion of the Longmont Fault, caused the upper Cretaceous bedrock, dipping nearly 20 degrees, from its proximity to the Front Range Mountain uplift, to detach and move with great speed above Kp2 nearly eight miles, until its termination as series of structurally complex, often chaotic features.

We will examine the abundant data supporting this structural presentation utilizing historical maps and talk about the area topographic features created, including the alteration of the original east-west orientation of Boulder Creek, as it leaves the city of Boulder, to a point eight miles to the east where its direction has been altered to a northeast orientation.

Biography

Mr. Kittleson has been an RMAG member for almost 25 years. He received B.S. and M.S. degrees in 1971 and 1973, respectively, from the University of Iowa and a M.S. degree from Colorado State in 1989. He currently works for Structural Solutions, LLC. He has been the recipient of the 2013 RMAG Distinguished Public Service to Earth Science Award and the 2025 RMAG Outstanding Scientist Award.