GRAIN SIZE ANALYSIS ON A PERMIAN BASIN RESERVOIR

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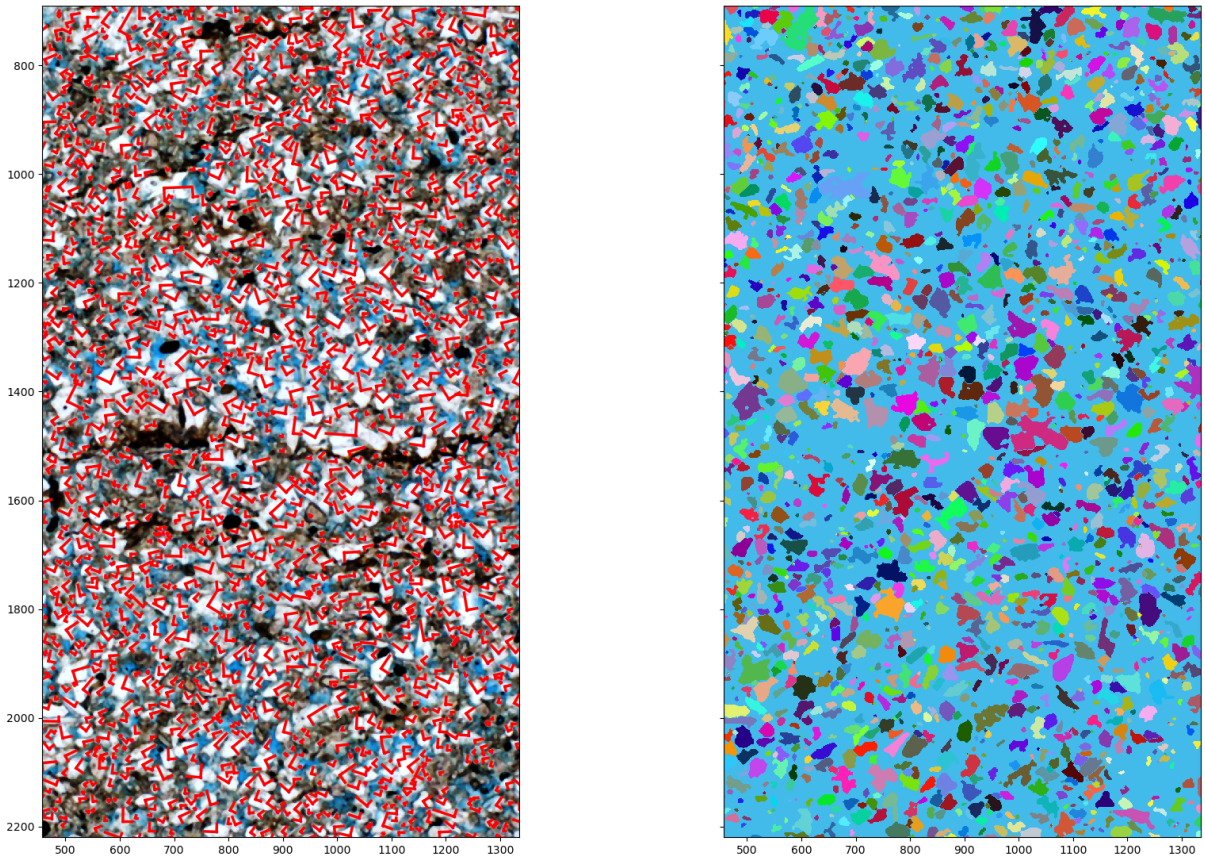
ABSTRACT

We used thin section images to analyze the grain sizes of a Permian Basin reservoir. Image processing methods were used to generate gradient and Euclidean distance maps. These maps served as inputs to an adaptive h-minima marker identification algorithm. The markers then served as flooding points in a compact watershed algorithm, which partitions touching grains into individual grains. We varied the h value to try and reduce the amount of over- and under segmentation common to single-valued watershed algorithms. An ellipse with the same second moment as the segmented grain was calculated, and the long axis was measured to determine grain size and distribution. We found that the section of reservoir analyzed was composed mainly of silt particles.



(Left) Raw thin section image with the equivalent ellipse long and short axes superimposed. (Right) Result from the compact watershed after using the markers from the adaptive *h*-minima algorithm.