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### **Statistical Analysis of Channel Belt Clustering in the Low Net-Sand Content Lower Wasatch Formation, Uinta Basin, Utah**

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#### **Purpose:**

The primary goal of this research is to quantify the stratigraphic architecture and statistical distribution of channelbelts and crevasse splay deposits in the low netsand content portion of the Wasatch Formation.

#### **Regional Context:**

The Eocene Wasatch Formation along the southern margin of the Uinta Basin in eastern Utah is a world class outcrop of fluvial deposits that can be used as a hydrocarbon reservoir analog for both high and low netsand content fluvial systems around the globe (Figure 1). The Wasatch Formation in the Uinta Basin is broken into three informal members the lower, middle, and upper. The divisions are based on netsand content and compound paleosols between the three units. This study focuses on the **low net sand content floodplain dominated lower Wasatch Formation.**

#### **Methods:**

This is a field based study and will require that quantitative measurements of channel belt locations and geometries within a 7 kilometer long by 300 meter high outcrop will be used to statistically describe how channel belts cluster relative to one another. Laser range finding, paleocurrent measurements, and measured sections will be used to document the field area. Once data collection is complete this research will develop a new method for describing spatial locations and clustering of channel belts (Figure 2). The newly developed clustering method will be applied to the data generated in this study and select published data sets.

### **Scientific Importance:**

A quantitative understanding of channelbelt clustering and sand body connectivity can be used to optimize well placement when reservoir bodies are below seismic resolution in sparse well settings. Quantitative statistical data from this study will provide information that guides fluvial reservoir modeling parameters for the oil and gas industry. Additionally this research will develop a method to statistically describe sand body locations that can be applied to a wide range of depositional environments.

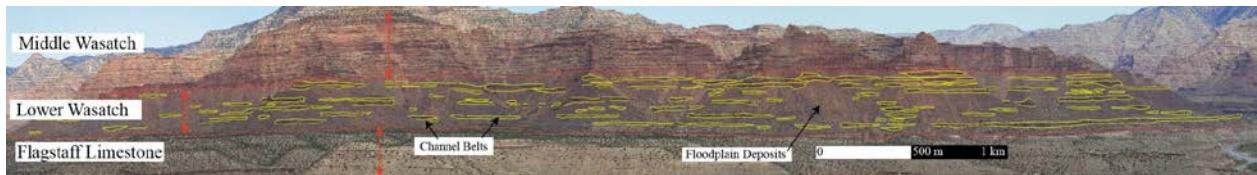


Figure 1. Photograph of the lower and middle Wasatch Formation along the southern margin of the Uinta Basin. Photograph is oriented parallel to depositional strike (channel belt paleocurrents into the photograph).

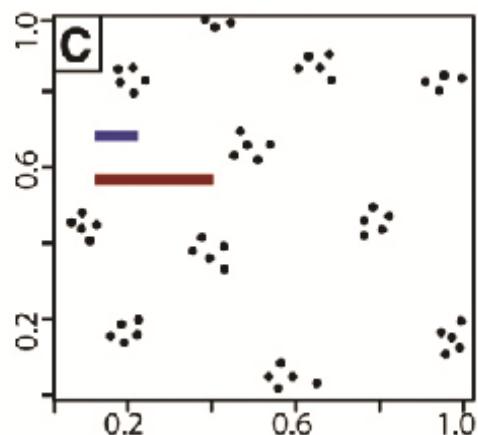


Figure 2A. Diagram showing theoretical clustering of channel belt center points.

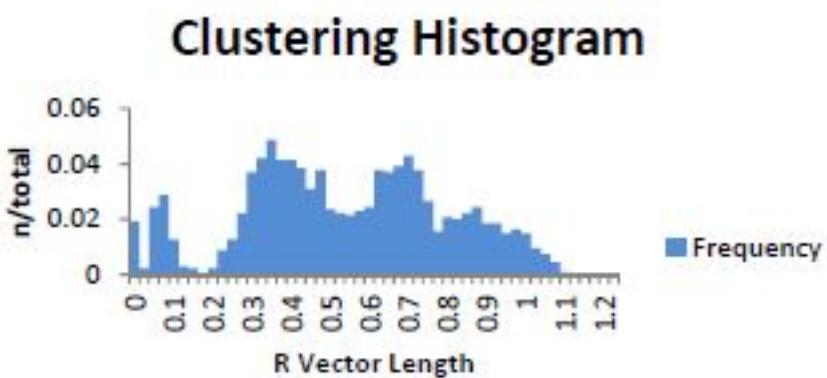


Figure 2B. Resulting histogram showing the proposed method for documenting clusters from field data.