

Webapp for geologic graphic log digitalization

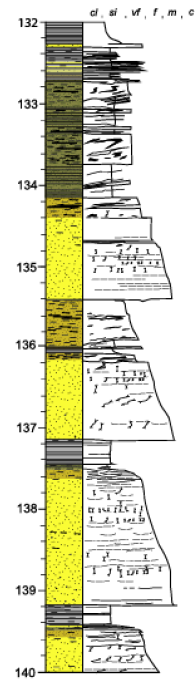
Zane Jobe (Colorado School of Mines Geology department)

zanejobe@mines.edu

Danny Coutts (University of Calgary Geology department)

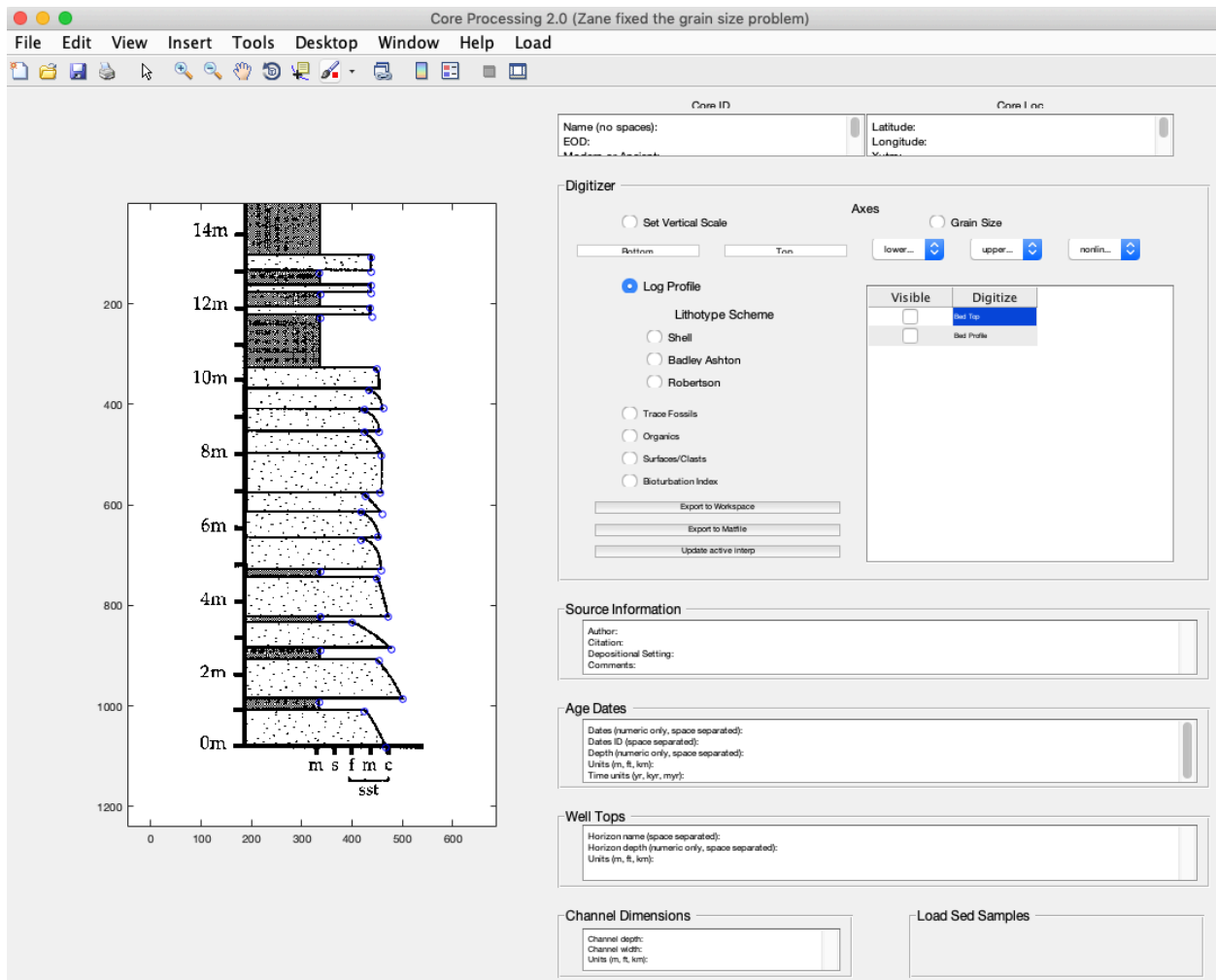
dscoutts@ucalgary.ca

Graphic logs are the most common way of characterizing sedimentary geologic rock formations in outcrop and core data (Fig. 1). The term graphic log originates from a geologist measuring and drawing graphically, or ‘logging’, a cored or outcropping stratigraphic section. Graphic logs generally have thickness/depth on the y axis, and grain size on the x axis (Fig. 1). Many geologists spend weeks in the field carefully measuring and logging rock formations at fine-scale in an analog, hand-drawn manner. The fine-scale thickness and grain-size data that may have taken days or weeks to collect is often never captured digitally in a tabular format that can be analyzed. So, while tens of thousands of meters of graphic logs measured at fine-scale exist to quantify various geological parameters, the data contained in the graphic logs is rarely digitized and available for use.



Example of an outcrop (left) and a ‘graphic log’ hand-drawn description (right)

While software solutions exist to collect graphic log data in the field (e.g., <http://lithohero.com/>), there are thousands of hand-drawn logs that need to be digitized. This project aims to create a webapp (based on an existing, but clunky Matlab GUI) where a geologist can manually (or in semi-automated fashion) digitize the rock layers from a hand-drawn graphic log. We hope that the open-source release of this webapp will spur the collection of quantified, structured, and comparable data that, with continued advances in the accessibility of machine-learning to geologists, will lead to new discoveries in sedimentary geology.



Current Matlab GUI that is messy and buggy. A webapp would be much better, with flexible digitization options and I/O functionality with existing plotting routines (e.g., <https://github.com/agile-geoscience/striplog>)