

Development of a Guided User Interface for Microseismicity Analysis

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Summary

Signal Analysis and Imaging Group (SAIG) at the University of Alberta is developing a Guided User Interface (GUI) for the analysis and processing of microseismic data. At this stage of development the GUI has been written in MATLAB, this facilitates the process of adding new tools for signal processing developed by the group and currently available via SeismicLab*. The core of the GUI will be the compressed sensing inversion method for seismic moment tensor determination (Vera Rodriguez et al., 2010a and 2010b). The compressed domain inversion provides simultaneous location and moment tensor estimation of microseismic events. Other tools are the singular spectrum analysis (SSA) (Oropeza and Sacchi, 2009) for event de-noising and options for automatic time picking of wave arrivals, ray tracing and simultaneous phase identification and de-noising via time-frequency analysis (Bonar and Sacchi, 2010). This complements current efforts in the group toward the development of modern seismic processing and inversion capability for surface seismic data. Figure 1 portrays a screenshot of the current GUI microseismic model building and data calibration. This presentation makes particular emphasis in illustrating the application of our abundant arsenal of seismic data processing methods to the field of microseismic data analysis.

* <http://www.saig.ca/Resources>

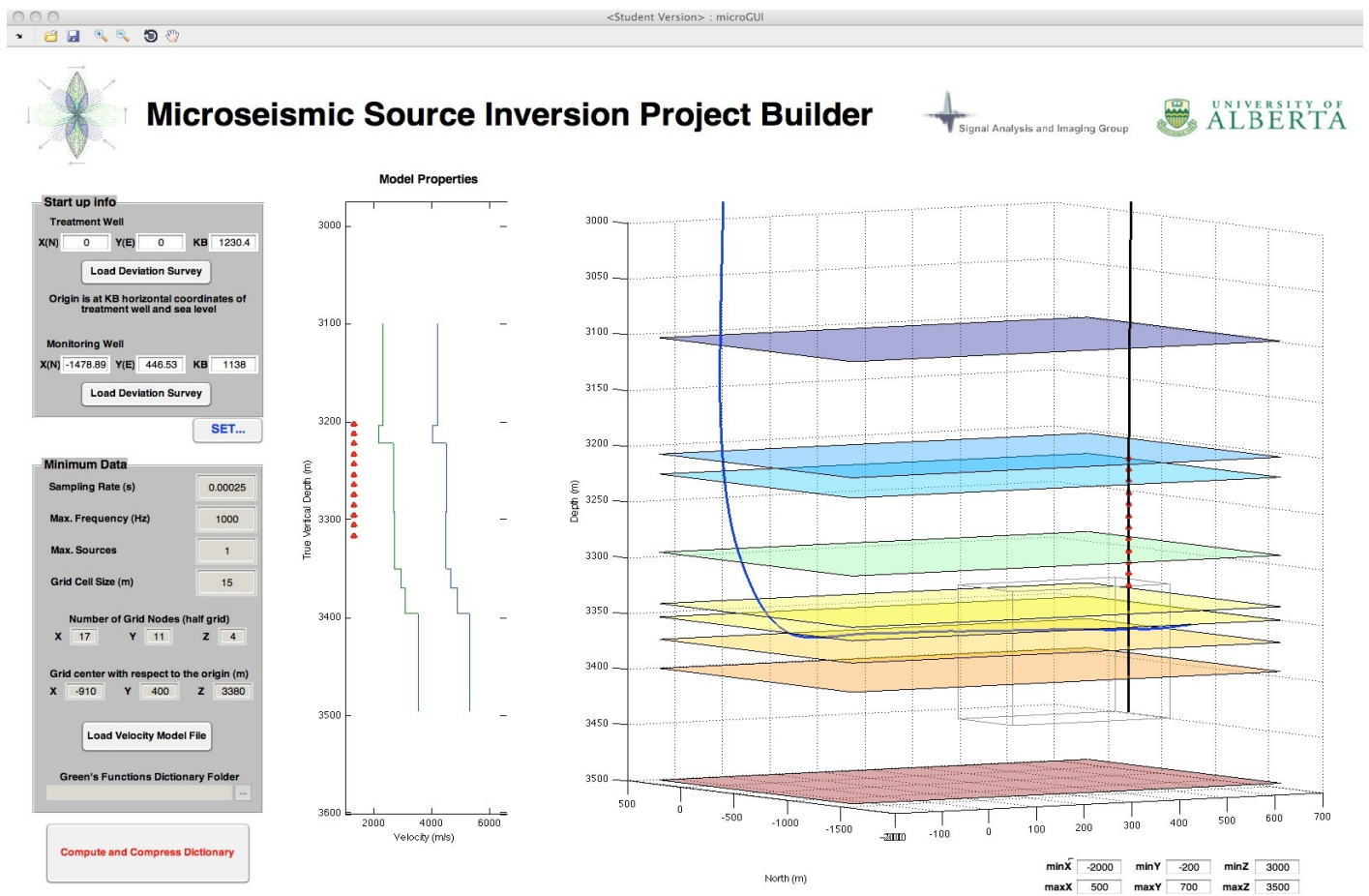


Figure 1: Project building interface.

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References

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