

Predictive mapping with Self-Organising Maps: A Synthetic Study

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Geological mapping in remote areas or in areas with limited out crop exposure can be a challenging and expensive endeavour. The development of predictive pseudo-geological maps from remote sensing data which make an educated guess at the potential lithological distribution in a region may present a potential avenue by which these challenges could be mitigated. Self-organizing map algorithms (SOMs) are a class of unsupervised neural network algorithms which use a statistical approach to cluster multivariate datasets. As such, SOMs may present a means by which to create predictive maps from geophysical data. In this project synthetic test models are used to test the capabilities of the CSIRO's SOM algorithm (SiroSOM). These tests are designed to determine how SiroSOM reacts to noisy data, non-ideal data distributions, and data with varying spatial and depth resolution. The results of these trials are used to develop a guide for further tests of SiroSOM using real geophysical data.