

21st September 2020

Dear Executive Vice Editor-in-Chief Xiaoqiao Wan

We would like to submit our manuscript entitled “***Spatial data mining with machine learning to reveal mineral exploration targets under cover in the Gawler Craton, South Australia***” with consideration for publication as a research article in **Geoscience Frontiers**. The manuscript consists of a 385 word abstract, ~ 8,000 word main text, 7 original full colour figures, and 2 tables.

Our manuscript presents an important contribution to the prominent field of machine learning applied to mineral exploration in a timely manner. As costs to exploration continue to fluctuate in accordance with an ever uncertain global demand, accessible and affordable exploration models seeking out new mineral deposits have never been more important. Our approach harnesses the previous efforts of those who continue to make public high-quality geological and geophysical datasets available by amalgamating key data into our machine learning workflow. Our results adapt novel approaches and glean new insights into the future prospectivity potential of South Australia’s Gawler Craton, and seek to contribute to understanding localised areas worthy of consideration for future research and exploration.

We strongly believe in the underlying mission statement of Geoscience Frontiers to make high-level scientific results open access and available to the global community. Appropriately, we provide all our code and exploration maps along with our submission.

We thank you in advance for your time in considering our manuscript for Geoscience Frontiers.

With regards,

Nathaniel Butterworth and Nicholas Barnett-Moore.