**Particle swarm optimization for Geological feature Detection from PALSAR DATA**

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**Abstract:**

Synthetic aperture radar (SAR) has been recognized as a powerful tool for geological feature detection. This work introduces a new approach using Particle Swarm Optimization automatically detected geological features from PALSAR SAR data. The result shows that the new formula based on Particle Swarm Optimization can be delineated lineament features in PALSAR data. The new approach using Particle Swarm Optimization has small standard deviation of 3.54. The result shows a clear appearance of morpholineament, urban, and infrastructure features due to speckle reduction. This confirms a low error standard deviation value of 3.54. In conclusion, Particle Swarm Optimization has improved distinction of morpholineaments, urban features, infrastructure features such as roads and bridges from the surrounding environment features. This new approach can be used as an automatic tool to extract linear features from SAR data.