

Geological mapping of carbonatites and related ores from the Oulad Dlim massif (Dakhla Province, Morocco) using remote sensing, portable X-ray fluorescence, and mineralogical data

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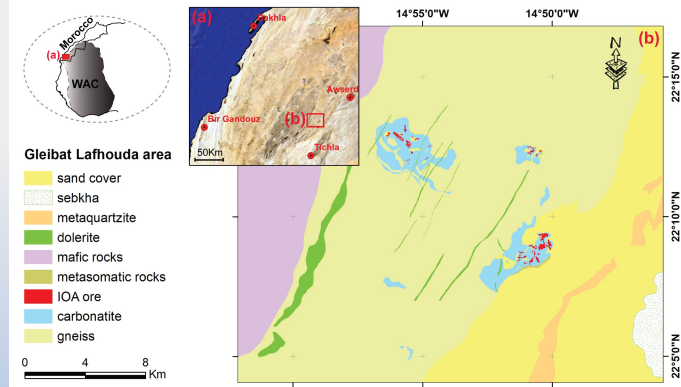
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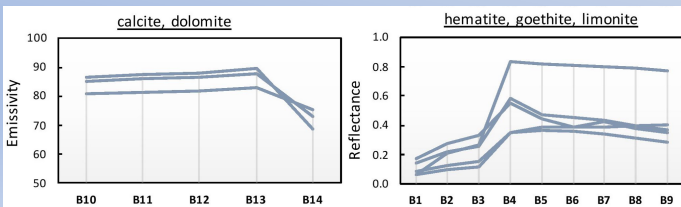
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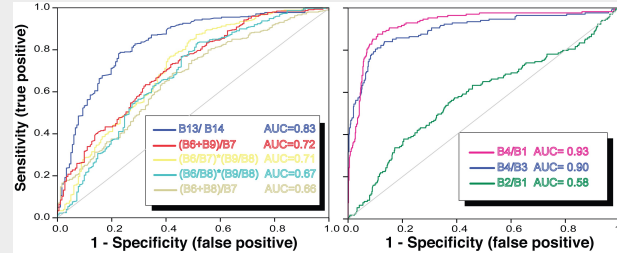
1. Context & study area



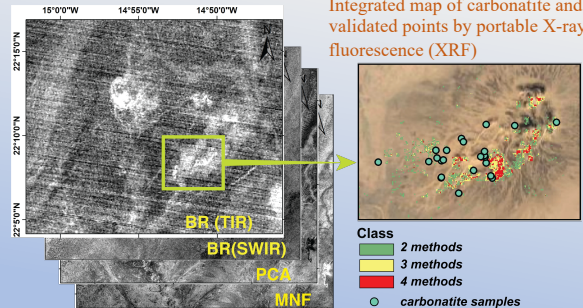
2. Spectral characteristics of carbonatite- and iron oxides-forming minerals



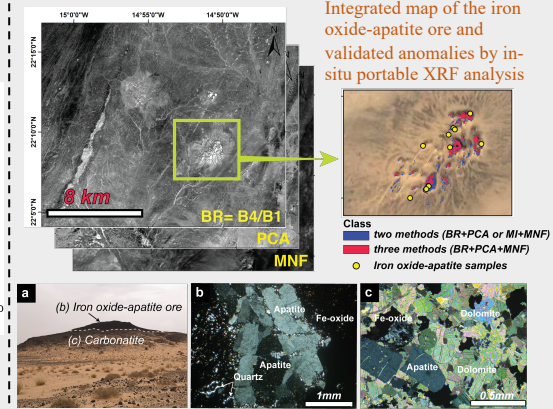
3. Selecting the optimum index using receiver operator characteristic (ROC) curve



4. Methods integration & field validation



BR: band ratio; TIR: thermal infrared; SWIR: short-wave infrared; PCA: principal component analysis; MNF: minimum noise fraction



Field photograph (a) and petrographic observations (b, c)

5. ML-based lithological classification

