Data Archive Contents

Multispectral discrimination of spectrally similar hydrothermal minerals in mafic crust: A 5000 km^2 ASTER alteration map of the Oman–UAE ophiolite

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All spatial data are provided in the EPSG:32649 (WGS84 / UTM zone 40N) coordinate reference system and were functional in ENVI 5.5 and QGIS 3.2 at the time of publication. Contact TMB in case of compatibility issues.

A1. Field Mapping and Descriptions

Table A1. List of alteration sites.xlsx – A list of locations and descriptions of alteration zones and sites and a record of the ASTER map's performance in classifying each zone, numbers correspond to Fig. 1b of the main text.

List of alteration sites.shp – Table A1 in Shapefile point format.

Semail Field Mapping Compilation 2022.pdf – A PDF map compilation of alteration mapping carried out by the University of Bern from 2012–2022.

A2. ASTER processing files

1. Mosaic Normalization

Overlapping Edge Normalization Shapefiles – Polygons of the overlapping outcrop areas between ASTER strips used for mosaic normalization.

Table A2. Mosaic Normalization Statistics.xlsx – Table of overlapping edge statistics and sequential gains and offsets used for normalization. See main text for equations and more details.

2. ELC

ELC Target ASD Spectra – ascii text files exported from ENVI of ASD reflectance spectra of mean ± one standard deviation of ELC target samples.

ELC Target Shapefiles – Polygons of utilized ELC target areas

3. Classification

Table A3. Reference Area Statistics.xlsx – Reference area ASTER SRM statistics for bands and band ratios used to build logical operator classifications.

Reference Area Shapefiles – Polygons of the reference pixels used to build and threshold logical operator algorithm classifications.

Rock Sample ASD Spectra – ascii text files exported from ENVI of ASD reflectance spectra of representative altered samples

Ophiolite outcrop Shapefiles – Polygons of the ophiolite crust outcrops used to clip the alteration classifications.

A3. ASTER Alteration Map Products

ASTER Alteration map Geotiffs – Georeferenced alteration map sheets 1a–b and 2a–b. Map sheets 1a–b are native 15 m resolution, 2a–b are resampled to 6 m resolution to better show underlying base map. All without decoration but a separate legend PDF is included. Best for general use in geographic information systems.

Final ASTER Alteration map JPEGs – JPEG exports of the final, decorated alteration maps including legend, scale. Some resampling during compression.

ASTER Alteration Map Shapefiles – Vector polygons of the alteration classifications. Best for vector analysis, but without intensity data.

A4. Samples and XRD mineralogy

Table A4 Sample Locations and XRD Mineralogy.xlsx