Remote sensing characterization of transitional to alkaline igneous rocks and their potential mineralizations using ASTER data: the Moroccan Central High Atlas case study

Youssef Ahechach[1,2] *, Muhammad Ouabid[1], Otmane Raji[1], Jean-Louis Bodinier[1,3], Khalid Amrouch[4], Houssa Ouali[2], Abderrahmane Soulaimani[5]
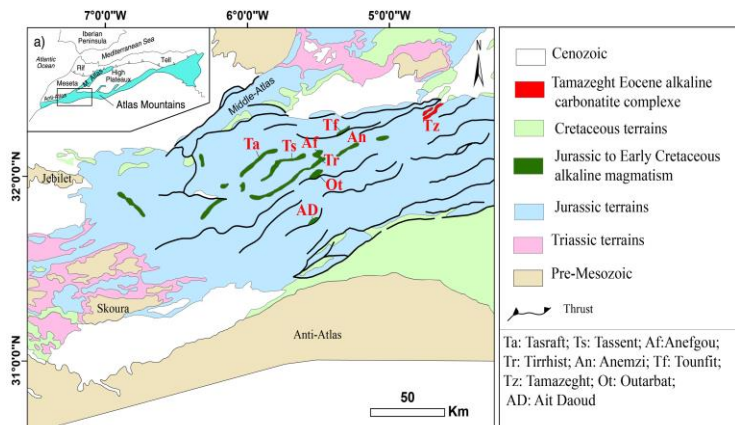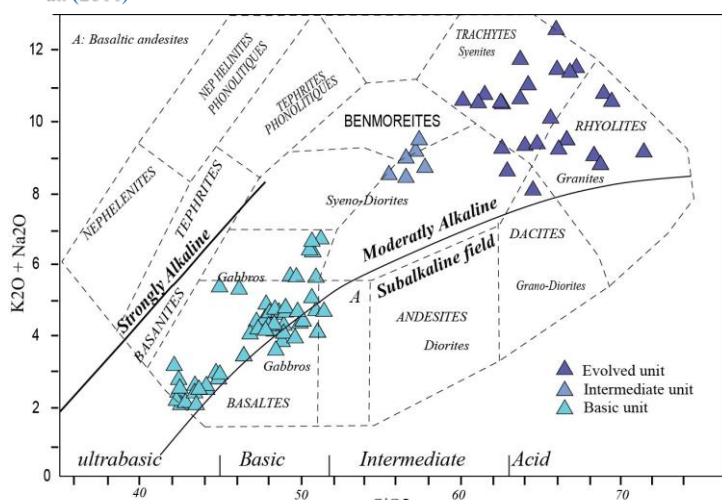
1. Geology & Sustainable Mining, Mohammed VI Polytechnic University, Benguerir, Morocco; 2. Geoscience: Géodynamique et Géoressources, Faculty of Sciences, Moulay Ismail University, Meknès, Morocco; 3. Géosciences Montpellier, Montpellier University & CNRS, Montpellier, France; 4. Australian School of Petroleum and Energy Resources, The University of Adelaide, Adelaide, South Australia 5005, Australia; 5. Dynamique de la Lithosphère et Genèse des Ressources Minérales et Energétiques, Université Cadi Ayyad, B.P. 2390, Marrakech, Morocco

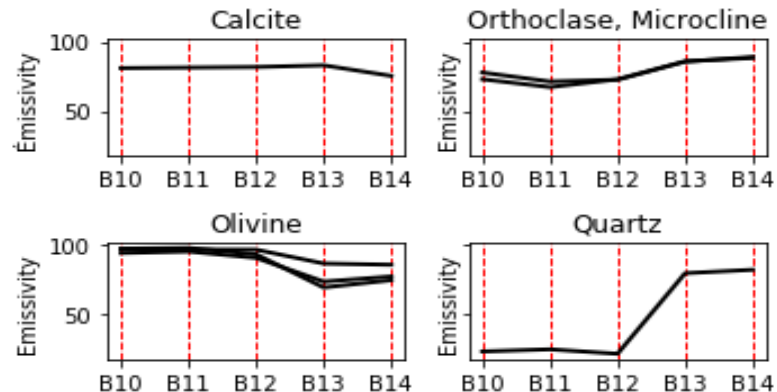* Youssef.ahechach@um6p.ma

INTRODUCTION AND GEOLOGICAL SETTING

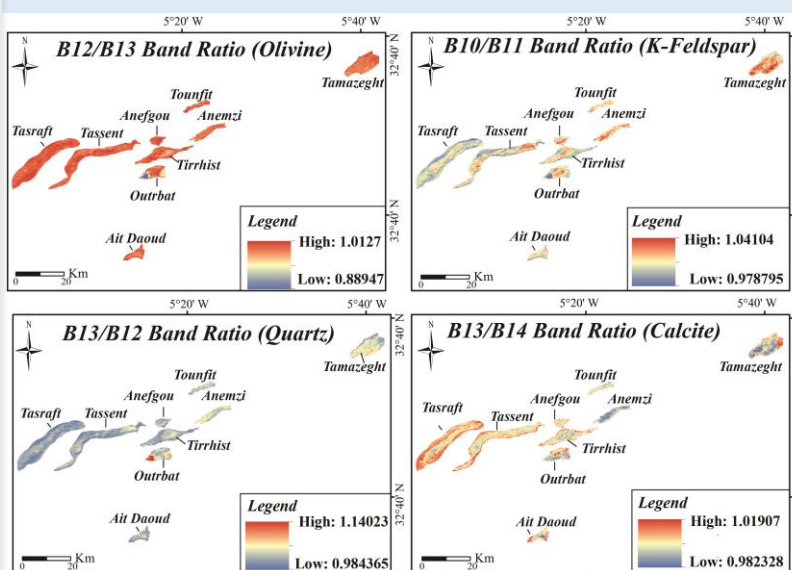Geological map of the Central High Atlas (Teixell et al. (2003) and Michard et al. (2011)

Ta: Tasraft; Ts: Tassent; Af:Anefgou; Tr: Tirrhist; An: Anemzi; Tf: Tounfit; Tz: Tamazeght; Ot: Outarbat; AD: Ait Daoud

TAS classification diagram (Middlemost, 1994)

SPECTRAL MINERAL CHARACTERESTICS

BAND RATIOS RESULTS

B12/B13 Band Ratio (Olivine) — Legend High: 1.0127 Low: 0.88947

B10/B11 Band Ratio (K-Feldspar) — Legend High: 1.04104 Low: 0.978795

B13/B12 Band Ratio (Quartz) — Legend High: 1.14023 Low: 0.984365

B13/B14 Band Ratio (Calcite) — Legend High: 1.01907 Low: 0.982328

COMPOSITE   Red (K-Feldspar); Green(Calcite), Blue (Quartz)

★ Samples

FIELD OBSERVATIONS

Field photograph — Limestone — Syenite — Feldspar