

**GEOCHEMICAL SURVEY FOR TRACE ELEMENTS IDENTIFICATION  
IN BAUCAU PLATEAU.**

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**INTRODUCTION**

Geochemically, trace elements are the useful parameter that geologist used to aid in discriminating the tectonic setting of any research area, moreover in evaluating the petrogenetic models which very important for the both minerals and oil exploration. Generally, trace elements are composed by Ni, Co, Cr, V, Ti, Zr, Hf, Ba, Rb, Sr, REE, Y, Nb, U, Th, Be, Cu, Zn, Ge, Ga, As, Mo, Ag, In, Sn, Sb, Cs, K, Gd, Ta, W, Pb, Bi, and Mn (Green (1980, *op cit* Wilson, 1989)(Rindjani Volcano; Foden 1983). Additionally, trace elements of each rock are different depend on the type of rock unit that we found in any research area and its relations with other lithological unit or formation.



Fig 1. The area of Study (Source; Google Earth Pro 7.3 version)

**OBJECTIVE**

Generally, the main objective of this study is to investigate the occurrences of trace elements geochemistry in Baucau Plateau, and specifically using these trace elements data as fundamental information for the further mineral exploration activities.

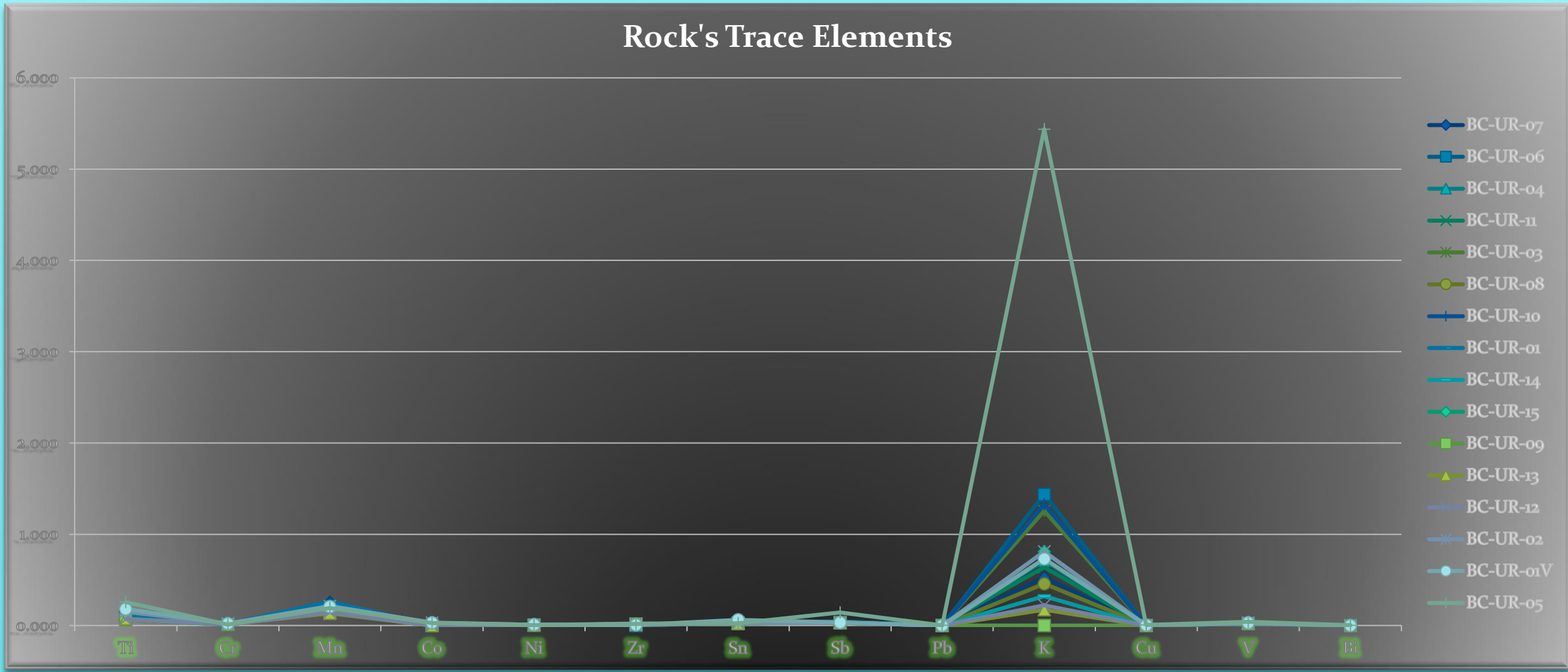
**METHODOLOGY**

The In situ geochemical survey methodology used Olympus Innov-X Delta Premium Handheld X-Ray Fluorescence equipment has conducted at 17 sites, and the geological material that indentified to analyze its chemical trace elements has divided into three types such as Rock, Soil and Sand ((16 Samples), (4 samples), (3 samples) respectively). Additionally, 23 samples have collected from the Baucau plateau, and these samples will be sending to laboratory for ICP-MS analysis.

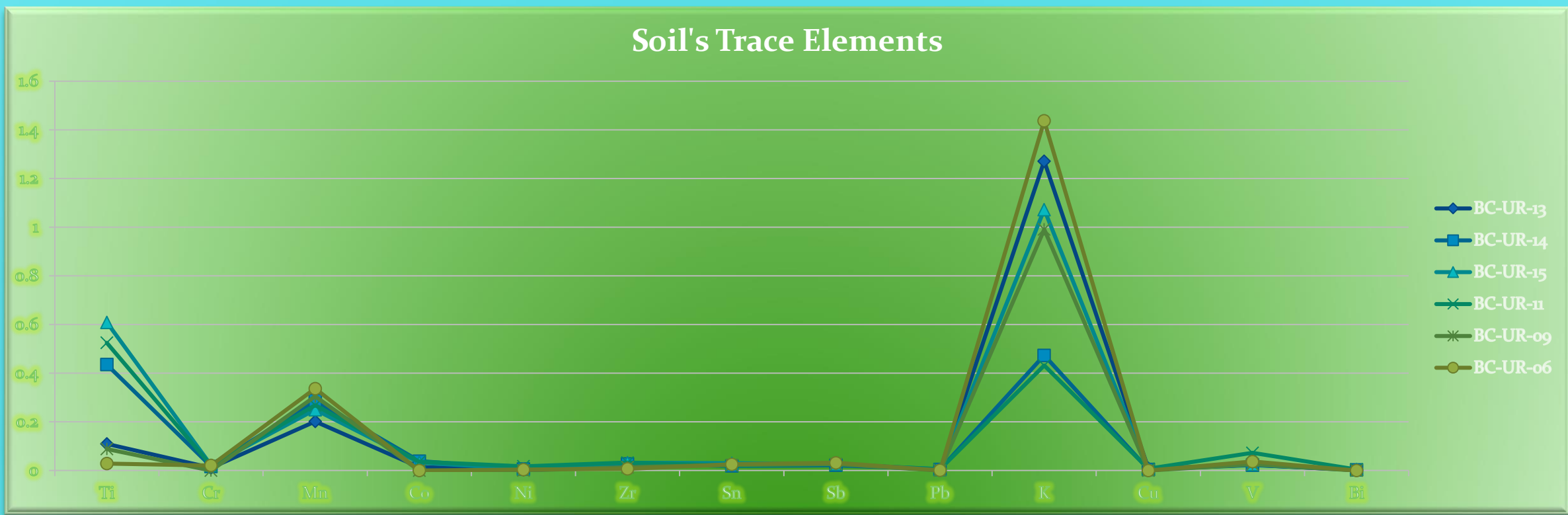
**RESULT**

The chemical elements analysis used Portable X-Ray Fluorescence (PXRF) has shown there are some trace elements that have detected from that chemical equipment: Ti, Cr, Mn, Co, Ni, Zr, Sn, Sb, Pb, K, Cu, V, and Bi. The graphic bellow showed the various statistical data of trace element concentrations that detected by PXRF in 17 sites in Baucau Plateau.

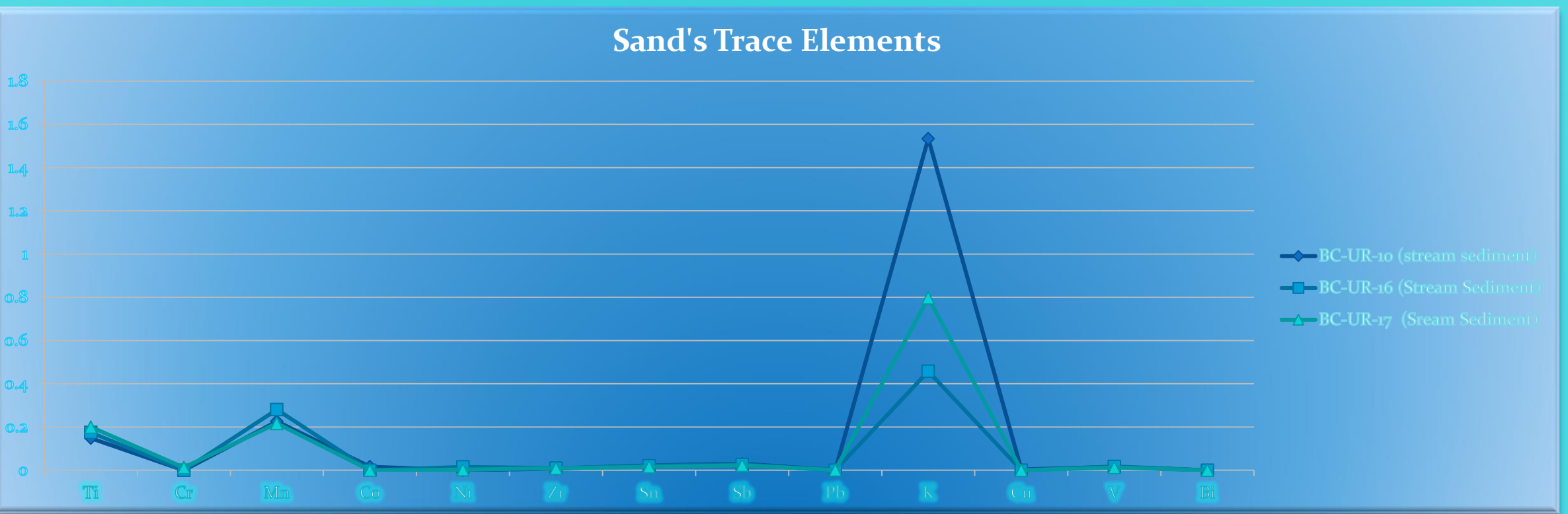
**1. Rock's Trace elements**



**2. Soil's Trace elements**



**3. Sand's Trace elements**



**DISCUSSION**

From the summarized statistical data on the graphics above shown the various trace elements values that measured in wt % unit:

- Potassium (K) is one of trace element that enriched for all three materials such as rock, soil and sand ((0,175-5,438 wt %), (0,563-1,17wt %), (0, 45-1, 53 wt %), respectively). It has described that, even though Baucau plateau was dominated by calcium (Ca) element, but the rock unit or formation that older than Baucau formation like Viqueque group or Bobonaro complex are composed by the siliciclastic materials with high potassium (K).
- Manganese (Mn) was being the second trace element that also disseminated in all three materials with 0, 24–0,65 wt% in the rock, 0,20-0,39 wt% in the soil and 0,22 – 0,28 wt% in the sand. Actually, it was normal due to the limestone has its own common chemical element like (Mn) which acted as Cation in Rhodocrosite (MnCO3) mineral.
- Pb, Cu, V and Bi are the useful pathfinder elements that could be use for radioactive mineral exploration.
- Ti, Ni, Cr, Zr, Co, Sn, and Sb are trace elements that usually associated with magmatic rocks both mafic and felsic.

**CONCLUSION**

Based on geochemical data that detected by the Olympus Innov-X Delta Premium Handheld XRF equipment, it could be assume that, there are some trace elements were indicated as good pathfinder elements for radioactive mineral existence, furthermore the both siliciclastic and calc alkaline materials are possible to exist as well whether they were from either older or younger formations.

**REFERENCES**

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