

Accepted Manuscript



Exploring uni-element geochemical data under a compositional perspective

Daniela Zuzolo, Domenico Cicchella, Stefano Albanese, Annamaria Lima, Renguang Zuo, Benedetto De Vivo

PII: S0883-2927(17)30074-4

DOI: [10.1016/j.apgeochem.2017.10.003](https://doi.org/10.1016/j.apgeochem.2017.10.003)

Reference: AG 3960

To appear in: *Applied Geochemistry*

Received Date: 24 January 2017

Revised Date: 28 September 2017

Accepted Date: 6 October 2017

Please cite this article as: Zuzolo, D., Cicchella, D., Albanese, S., Lima, A., Zuo, R., De Vivo, B., Exploring uni-element geochemical data under a compositional perspective, *Applied Geochemistry* (2017), doi: 10.1016/j.apgeochem.2017.10.003.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

1 Exploring uni-element geochemical data under a compositional perspective

2 Daniela Zuzolo^{a*}, Domenico Cicchella^a, Stefano Albanese^b, Annamaria Lima^b, Renguang Zuo^c,
3 Benedetto De Vivo^b

4
5 a - Department of Science and Technology, University of Sannio, via Port' Arsa 11, 82100 Benevento, Italy

6 b - Department of Earth, Environment and Resources Sciences, University of Napoli "Federico II", 80138 Napoli, Italy

7 c - State Key Laboratory of Geological Processes and Mineral Resources, China University of Geosciences, Wuhan
8 430074, China

9
10 * Corresponding author. Tel.: +39 0824 305197; fax: +39 0824 323623; E-mail address: dzuzolo@unisannio.it (D.
11 Zuzolo).

13 Abstract

14 Different features of geochemical information were studied by comparing spatial distribution of
15 concentration values and compositional data values. Geochemical data are compositional and
16 should be treated as such to avoid spurious correlations and misleading interpretations. However,
17 geochemists are also interested to discuss in terms of elemental concentrations. In this work the
18 spatial distribution of Fe, Mn, Ti, Co, Cr, Ni and V based on 3,535 topsoil samples collected in
19 Campania region (Southern Italy) and analysed by ICP-MS after aqua regia digestion, is studied.
20 Unielement maps and CoDA based maps, namely of ilr-transformed data and of two
21 subcompositions of 3 components have been produced and interpreted. Results show that the ilr
22 maps often show different geochemical patterns from those provided by the maps based on raw
23 concentrations, namely for V, Fe and Co. This is not surprising as each studied ilr is a (log)ratio of
24 an element against the others and account for the compositional variability. Nevertheless, the
25 geochemical patterns of both raw and ilr based maps relate mostly with the geolithological features
26 of the region: (1) (Ti, Ni, Cr)log-ratio variables are the best pathfinder in differentiating between

Download English Version:

<https://daneshyari.com/en/article/8863163>

Download Persian Version:

<https://daneshyari.com/article/8863163>

[Daneshyari.com](https://daneshyari.com)