

Leveling data in geochemical mapping: scope of application, pros and cons of existing methods

Benoît Pereira, Aubry Vandeuren, and Philippe Sonnet

Earth and Life Institute, Université catholique de Louvain (UCL), Louvain-la-Neuve, Belgium (benoit.pereira@uclouvain.be)

Geochemical mapping successfully met a range of needs from mineral exploration to environmental management. In Europe and around the world numerous geochemical datasets already exist. These datasets may originate from geochemical mapping projects or from the collection of sample analyses requested by environmental protection regulatory bodies. Combining datasets can be highly beneficial for establishing geochemical maps with increased resolution and/or coverage area. However this practice requires assessing the equivalence between datasets and, if needed, applying data leveling to remove possible biases between datasets.

In the literature, several procedures for assessing dataset equivalence and leveling data are proposed. Daneshfar & Cameron (1998) proposed a method for the leveling of two adjacent datasets while Pereira et al. (2016) proposed two methods for the leveling of datasets that contain records located within the same geographical area. Each discussed method requires its own set of assumptions (underlying populations of data, spatial distribution of data, etc.). Here we propose to discuss the scope of application, pros, cons and practical recommendations for each method. This work is illustrated with several case studies in Wallonia (Southern Belgium) and in Europe involving trace element geochemical datasets.

References:

Daneshfar, B. & Cameron, E. (1998), Leveling geochemical data between map sheets, *Journal of Geochemical Exploration* 63(3), 189-201.

Pereira, B.; Vandeuren, A.; Govaerts, B. B. & Sonnet, P. (2016), Assessing dataset equivalence and leveling data in geochemical mapping, *Journal of Geochemical Exploration* 168, 36-48.