

# A manual of standard methods for establishing the global geochemical reference network

PAULA ADÁNEZ SANJUAN<sup>1</sup>, ALECOS DEMETRIADES<sup>2</sup>, CHRISTOPHER C. JOHNSON<sup>3</sup>, DAVID SMITH<sup>2</sup>, ANNA LADENBERGER<sup>4</sup>, CHRISTINA STOURAITI<sup>5</sup>, ARIADNE ARGYRAKI<sup>5</sup>, PATRICE DE CARITAT<sup>2</sup>, KATE KNIGHTS<sup>2</sup>, GLORIA PRIETO RINCÓN<sup>6</sup> AND GLORIA NAMWI SIMUBALI<sup>7</sup>

- <sup>1</sup>Instituto Geológico y Minero de España
  - <sup>2</sup>IUGS Commission on Global Geochemical Baselines
  - <sup>3</sup>GeoElementary
  - <sup>4</sup>Geological Survey of Sweden
  - <sup>5</sup>National and Kapodistrian University of Athens
  - <sup>6</sup>Servicio Geológico Colombiano
  - <sup>7</sup>Geological Survey of Namibia
- Presenting Author: p.adanez@igme.es

The *International Union of Geological Sciences Manual of Standard Methods for Establishing the Global Geochemical Reference Network* [1] presents, for the first time, a comprehensive overview of the geochemical methods and procedures that should be used across the Earth's land surface to map the distribution of chemical elements in various sample types. As the sampling will cover the whole globe, according to the Global Terrestrial Network (GTN) grid cells (Fig. 1), the procedure must be consistent for all sample types and, therefore, is standardised to be applicable in all morphoclimatic environments. It describes in detail all the necessary methods that should be used from planning the sampling campaign, through sampling of rock, residual soil, humus, stream water, stream sediment, overbank sediment and floodplain sediment (Fig. 2); sample preparation; development of project reference materials; analytical methods; quality control and assurance procedures for the production of harmonised data sets; data levelling of existing regional geochemical data sets with respect to the established Global Terrestrial Network datum; data conditioning for the production of seamless geochemical maps; data management and map plotting and, finally, project management. Applying these methods allows production of internally consistent quality-controlled data sets for each sampling medium for multipurpose use. Any applied geochemist carrying out a geochemical mapping project at any scale and purpose should find a wealth of useful information within the pages of this Manual.

## REFERENCE

[1] Demetriades, A., Johnson, C.C., Smith, D.B., Ladenberger, A., Adánez Sanjuan, P., Argyraki, A., Stouraiti, C., Caritat, P. de, Knights, K.V., Prieto Rincón, G., Simubali, G.N. (Editors), 2022. *International Union of Geological Sciences Manual of Standard Methods for Establishing the Global Geochemical Reference Network*. IUGS Commission on Global Geochemical Baselines, Athens,

Figure 1. Map showing the Global Terrestrial Network grid cells of 160x160 km used for planning the sampling campaign.

Figure 2. GTN grid cell N26E14 with 5 random points, and a schematic diagram showing possible sample sites of rock, residual soil, humus, stream water and sediment, overbank sediment, and floodplain sediment from the catchment basin representing random point number 3.

