



## **Spatial distribution analysis of chemical and biochemical properties across Koiliaris CZO**

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Arid and semi-arid ecosystems cover approximately 47% of the Earth's surface. Soils in these climatic zones are often severely degraded and poor in organic carbon and nutrients. Anthropogenic activities like overgrazing and intensive agricultural practices further exacerbate the quality of the soils making them more vulnerable to erosion and accelerating losses of nutrients which might end up to surface waterways degrading their quality. Data of the geospatial distribution of nutrient availability as well as on the involved processes at watershed level might help us to identify areas which will potentially act as sources of nutrients and probably will allow us to adopt appropriate management practices to mitigate environmental impacts. In the present study we have performed an extensive sampling campaign (50 points) across a typical Mediterranean watershed, the Koiliaris Critical Zone Observatory (CZO), organized in such a way to effectively capture the complex variability (climatic, soil properties, hydrology, land use) of the watershed. Analyses of soil physico-chemical properties (texture, pH, EC, TOC, TN,  $\text{NO}_3^-$ -N, and  $\text{NH}_4^+$ -N) and biochemical assays (potential nitrification rate, nitrogen mineralization rate, enzymes activities) were carried out. Geostatistical analysis and more specifically the kriging interpolation method was employed to generate distribution maps of the distribution of nitrogen forms and of the related biochemical assays. Such maps could provide an important tool for effective ecosystem management and monitoring decisions.