

EGU21-696

<https://doi.org/10.5194/egusphere-egu21-696>

EGU General Assembly 2021

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



A quantitative assessment of geodiversity in UNESCO Global Geoparks

Emma Polman, W. Daniel Kissling, and Harry Seijmonsbergen

University of Amsterdam, Institute for Biodiversity and Ecosystem Dynamics, Biogeography and Macroecology, Amsterdam, Netherlands (a.c.seijmonsbergen@uva.nl)

UNESCO Global Geoparks aim to protect globally significant geoheritage and geodiversity. However, the representativeness of geodiversity in these geoparks has never been quantified in a global context. Here, we quantify geodiversity in 147 UNESCO Global Geoparks and compare the outcome to global, Asian and European geodiversity using a geodiversity index with a global coverage, based on openly available geological, soil, hydrological and topographical input data. The global geodiversity index has five categories (from very low to very high) based on the total scores of the individual geodiversity components per 10 x 10 km grid cell. In addition, we assessed the occurrence of soil types and lithology types in geoparks using global lithology and soil datasets. Our results show that total geodiversity, lithological diversity and topographical diversity were significantly higher in UNESCO Global Geoparks compared to random locations of parks, reflecting that many geoparks are located in mountainous areas where lithological and topographic diversity is high. Soil diversity and hydrological diversity were not significantly higher in geoparks compared to random areas, and 22% and 65% of all globally occurring soil types and lithology types were not represented in any geopark. This indicates that soil and hydrology features are not sufficiently represented in the criteria used to establish geoparks (which emphasize geological and geomorphological features), and that current geoparks are unevenly distributed across the world, with most of them being located in Asia and in Europe. Our results highlight important gaps in geodiversity conservation and can help to identify which areas of high soil and hydrological diversity are currently underrepresented and which soil and lithology types should be included in future efforts to improve the representativeness of UNESCO Global Geoparks.