

EGU22-10268

<https://doi.org/10.5194/egusphere-egu22-10268>

EGU General Assembly 2022

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A New Toolset for Multiscale Seabed Characterization

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Terrain attributes are increasingly used in seabed mapping to describe the shape of the seabed. In recent years, many calls have been made to move seabed mapping practices towards multiscale characterization to better capture the natural geomorphic patterns found at different spatial scales. However, the community of practice lacks computationally efficient, user-friendly, and open-source tools to implement multiscale analyses, preventing multiscale analyses from gaining traction for seabed mapping and characterization. Here we present a new R package that enables the calculation of multiple terrain attributes like slope, curvature, and rugosity from bathymetric data. The user-friendly package allows for a repeatable and well-documented workflow that can be run using open-source tools. We also introduce a new measure of rugosity that ensures decoupling from slope. Examples of the performance of the package, including the new rugosity metric, will be presented using bathymetric datasets presenting different characteristics.