Developing multiscale terrain signatures for seabed classification

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It is increasingly recognized that environmental variables must be considered at multiple spatial scales to produce maps of the seabed that better capture and represent geomorphic features and marine habitats. In this paper, the ability of new multiscale geomorphometric variables to classify different types of seabed habitats is tested. A digital terrain model of an area of coastal Florida with different types of intertidal habitats was used in the geospatial data analysis platform Whitebox Tools to generate multiscale measures of roughness, maximum deviation from mean elevation, maximum anisotropy in elevation deviation, maximum difference from mean elevation, and maximum spherical standard deviation. Results show that oyster reefs, muddy areas, and areas with aquatic vegetation have different multiscale terrain signatures, highlighting the potential of multiscale terrain attributes to inform seabed classification.