Table A2. List of 20 environmental covariates, source and definition. the spatial resolution for all environmental covariates was 15” by 15” (430 m by 430 m in the study area). All variables derived from bathymetry or a derivative of bathymetry were computed using a 3 by 3 window of analysis.

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| --- | --- | --- |
| **Environmental covariate** | **Source** | **Definition** |
| Bathymetry | General Bathymetric Chart of the Oceans (GEBCO, 2021) | Depth of the seafloor (Lecours *et al.*, 2016) |
| Distance to coast | Derived in ArcGIS Pro from the line shapefile of the coast | Euclidean distance from the center of the pixel to the closest point on the coast, in meters (*e.g.*, Chen *et al.*, 2019) |
| Easterness | Derived from aspect (the orientation of the slope in the downslope direction), which is derived from bathymetry | The east/west component of the orientation of seafloor slope, calculated as the sine of aspect; it ranges from -1 (due West) to 1 (due East) (Wilson *et al.*, 2007; Ilich *et al.*, 2023) |
| General curvature | Derived from bathymetry | In ArcGIS Pro (“Curvature” Tool), indicates the general concavity or convexity of the seafloor |
| Local mean depth | Derived from bathymetry | Mean depth within the window of analysis (Lecours *et al.*, 2017) |
| Local median depth | Derived from bathymetry | Median depth within the window of analysis |
| Local range of depth | Derived from bathymetry | Range (the difference between the maximum and the minimum depths) within the window of analysis; it is an indication of local seafloor variability and rugosity (Lecours *et al.*, 2017) |
| Local standard deviation of depth | Derived from bathymetry | Standard deviation of depths within a 3 by 3 window of analysis; it is an indication of seafloor rugosity (Lecours *et al.*, 2017; Ilich *et al.*, 2023) |
| Mean curvature | Derived from bathymetry | In ArcGIS Pro (“Surface Parameters” Tool), the average of the minimum and maximum curvatures; it can indicate areas of maximum seafloor erosion or accumulation and can influence currents (Minár *et al.*, 2020) |
| Normal curvature | Derived from bathymetry | In ArcGIS Pro (“Surface Parameters” Tool), the geometric normal curvature along the slope line |
| Northerness | Derived from aspect (the orientation of the slope in the downslope direction), which is derived from bathymetry | The north/south component of the orientation of the slope, calculated as the cosine of aspect; it ranges from -1 (due South) to 1 (due North) (Wilson *et al.*, 2007; Ilich *et al.*, 2023) |
| Plan curvature | Derived from bathymetry | In ArcGIS Pro (“Curvature” Tool), the level of convexity or concavity perpendicular to the slope direction |
| Profile curvature | Derived from bathymetry | In ArcGIS Pro (“Curvature” Tool), the level of convexity or concavity in the direction of the slope |
| Relative deviation from mean depth | Derived from bathymetry | An indication of whether an area is a local bathymetric high (positive values) or low (negative values) (Lecours *et al.*, 2017) |
| Seafloor slope | Derived from bathymetry | The maximum rate of change in depth values (Olaya, 2009) |
| Statistical slope | Derived from seafloor slope | Second derivative of bathymetry; is a measure of seafloor complexity and curvature (*e.g.*, Young *et al.*, 2015; Wedding *et al.*, 2015) |
| Surface area | Derived from bathymetry | Total area of the eight triangles formed by connecting the center of a pixel with the center of its eight neighbors (Ilich *et al.*, 2023) |
| Surface to planar area ratio | Derived from bathymetry | The surface area divided by the planar area; is a measure of rugosity (Jenness, 2004; Du Preez, 2015) |
| Tangential curvature | Derived from bathymetry | In ArcGIS Pro (“Surface Parameters” Tool), the geometric normal curvature perpendicular to the slope line, tangent to the contour line |
| Vector ruggedness measure | Derived from bathymetry | The dispersion of unit vectors normal to the terrain surface; is a measure of rugosity (McKean & Roering, 2004; Sappington *et al.*, 2007) |