

Bathymetric derivative	ArcGIS tool	Algorithm	Literature
Slope	Spatial analyst	$\text{slope_degree} = \text{atan}(\sqrt{(dz/dx)^2 + (dz/dy)^2}) \times 360^\circ / 2\pi$	Burrough (1986)
Aspect	BTM	$\text{aspect} = \text{atan2}(dz/dy, dz/dx) \times 360^\circ / 2\pi$	Burrough (1986)
BPI	BTM	$\text{BPI}[\text{scalefactor}] = \text{int}((\text{bathy} - \text{focalmean}(\text{bathy}, \text{annulus}, \text{irad}, \text{orad})) + 0.5)$	Weiss (2001)
BPI (AUV)	Raster calculator	$\text{BPI}[\text{scalefactor}] = \text{"grid"} - \text{focalmean}(\text{"grid"}, \text{circle}, r)$	Wilson et al. (2007)
BPI_Std	BTM	$\text{BPI}[\text{scalefactor}]_{\text{std}} = \text{int}(((\text{BPI} < \text{scalefactor} > - \text{mean} / \text{stddev}) \times 100) + 0.5)$	Weiss (2001)
VRM	BTM	$\text{VRM} = 1 - \sqrt{(\sum x)^2 + (\sum y)^2 + (\sum z)^2} / n$	Sappington et al. (2007)
Curvature	Spatial analyst	$K = ((\delta^2 Z / \delta S^2) / (1 + \delta Z / \delta S)^2)^{3/2}$	Zevenbergen and Thorne (1987)
Plan curvature	Spatial analyst	$2 \times (D \sin^2 \theta + E \cos^2 \theta - F \sin \theta \cos \theta)$	Zevenbergen and Thorne (1987)
Profile curvature	Spatial analyst	$-2 \times (D \cos^2 \theta + E \sin^2 \theta - F \sin \theta \cos \theta)$	Zevenbergen and Thorne (1987)