

Automated Hurricane Damage Classification Using 3D Point Cloud Analysis and Machine Learning: Post-Hurricane Michael Case Study

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Table S1. Detailed definitions of 3DMASC features used in Table 2.

Abbreviation	Full Feature Name	Meaning / Mathematical Definition	Scale (SC)	Statistic
Z_SC2_STD	Elevation variability at scale 2	Standard deviation of Z values within a spherical neighborhood	2 m diameter	STD
Z_SC4_STD	Elevation variability at scale 4	Standard deviation of Z values within a spherical neighborhood	4 m diameter	STD
Z_SC2_MEAN	Mean elevation at scale 2	Average Z value within neighborhood	2 m	MEAN
PCA1_SC2	First principal component	Captures linearity of local point arrangement	2 m	—
PCA2_SC2	Second principal component	Captures planarity of local surface	2 m	—
PCA3_SC2	Third principal component	Captures verticality/roughness	2 m	—
ROUGH_SC2	Local roughness	Mean absolute deviation from best-fit plane	2 m	—
ROUGH_SC4	Local roughness	Same as above at a larger scale	4 m	—
CURV_SC2	Local curvature	Surface curvature computed from PCA eigenvalues	2 m	—
CURV_SC4	Local curvature	Same as above at scale 4	4 m	—
INT_SC0	Raw intensity	Unnormalized LiDAR return intensity for each point	Point-scale	—
INT_SC2_MEAN	Mean intensity	Mean of intensity values within neighborhood	2 m	MEAN
INT_SC2_STD	Intensity variability	Standard deviation of intensity	2 m	STD
INT_SC4_MEAN	Mean intensity at scale 4	Average point intensity	4 m	MEAN