

Table S1. Spectral bands of the Landsat 8 satellite [1,2].

Bands	Wavelengths (μm)	Spatial resolution (m)
Band 1- Coastal aerosol	0.43 to 0.45	30
Band 2- Blue	0.45 to 0.51	30
Band 3- Green	0.53 to 0.59	30
Band 4- Red	0.64 to 0.67	30
Band 5- NIR	0.85 to 0.88	30
Band 6- SWIR 1	1.57 to 1.65	30
Band 7- SWIR2	2.11 to 2.29	30
Band 8- Panchromatic	0.50 to 0.68	15
Band 9- Cirrus	1.36 to 1.38	30
Band 10- TIRS 1	10.60 to 11.19	100
Band 11- TIRS 2	11.50 to 12.51	100

Table S2. The values used for the parameters of the LINE module.

Threshold Parameters and Units	Values	
	Default	Defined
RADI (In pixels)	10	10
GTHR (In range, 0–255)	100	50
LTHR (In pixels)	30	50
FTHR (In pixels)	3	3
ATHR (In degrees)	30	15
DTHR (In pixels)	20	5

Table S3. Eigenvectors and eigenvalues for iron-oxides mapping.

Eigenvectors	Band 2	Band 4	Band 5	Band 6
PC1	0.106663	0.463013	0.586883	0.655599
PC2	0.845513	0.332605	0.047518	−0.414999
PC3	0.460375	−0.306577	−0.545351	0.629808
PC4	−0.248568	0.762236	−0.596576	0.036163

Table S4. Eigenvectors and eigenvalues for hydroxyl minerals mapping.

Eigenvectors	Band 2	Band 5	Band 6	Band 7
PC1	0.087700	0.537024	0.612440	0.573438
PC2	0.894895	0.319724	−0.156452	−0.269190
PC3	0.422528	−0.690668	−0.004392	0.586880
PC4	−0.113765	0.363813	−0.774868	0.504258

References:

1. Irons, J.R.; Dwyer, J.L.; Barsi, J.A. The next Landsat satellite: The Landsat data continuity mission. *Remote Sens. Environ.* **2012**, *122*, 11–21
2. Roy, D.P.; Wulder, M.A.; Loveland, T.R.; Woodcock, C.E.; Allen, R.G.; Anderson, M.C.; Helder, D.; Irons, J.R.; Johnson, D.M.; Kennedy, R. *et al.* Landsat-8: Science and product vision for terrestrial global change research. *Remote sensing of Environment*, vol. 145, pp. 154–172, 2014.