Supplementary materials:

The FI-based classification used 18 features derived from RS and GBD, including 8 spectral features, 4 textural features, and 6 density features (Table S1).

**Table S1.** RS and GBD features used in FI-based classification.

| Feature Types | Indices |
|---|---|
| Spectral features | Enhanced Vegetation Index (EVI), Normal Difference Built-up Index (NDBI), Normal Difference Vegetation Index (NDVI), Normal Difference Water Index (NDWI), mean, standard deviation, kurtosis, skewness |
| Textural features | Angular second moment, contrast, dissimilarity, and entropy |
| Density features | Minimum, maximum, range, sum, mean and standard deviation |

This research randomly selected 800 samples in 2021 and 800 samples in 2017 for training and testing (Figure S1). The 2017 and 2021 urban land use were classified relatively well, with an estimated overall accuracy of 0.817±0.032 and 0.802±0.034, respectively (Table S2, Table S3).

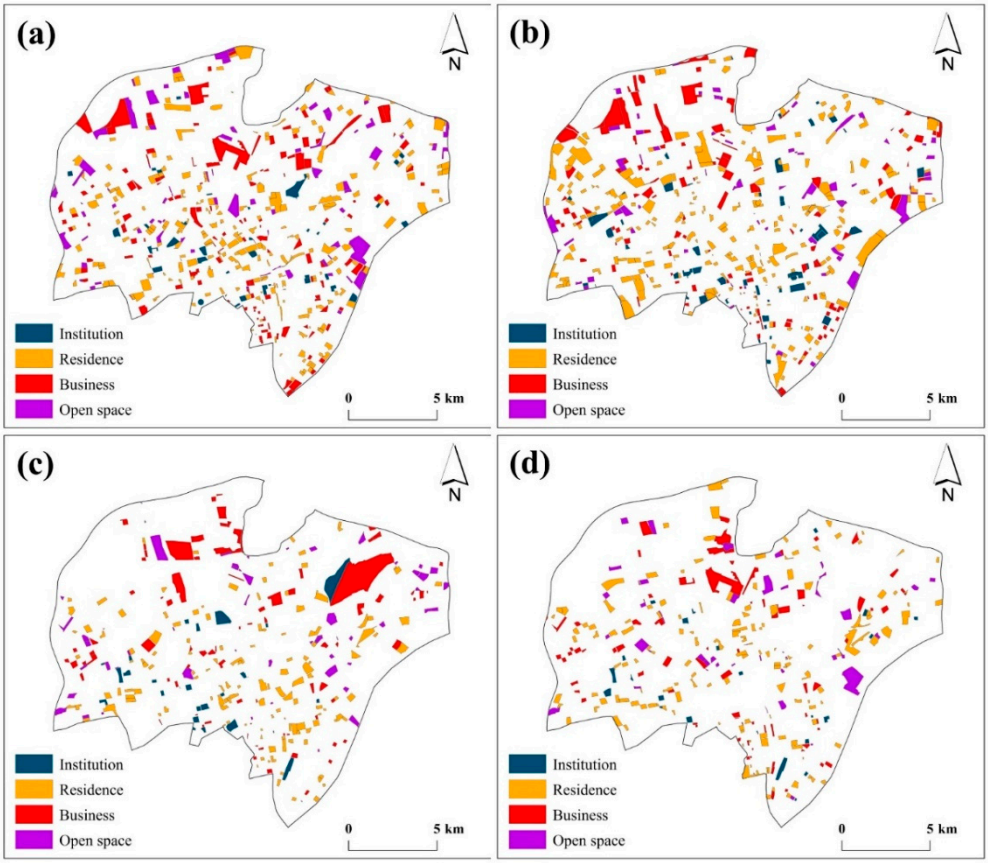


**Figure S1.** Training and testing samples of urban land use mapping: (a) Training samples in 2017; (b) Testing samples in 2017; (c) Training samples in 2021; (d) Testing samples in 2021.

**Table S2.** Confusion matrix of FI-based classification results in 2017 (I: Institution; R: Residence; B: Business; O: Open Space). UA: users accuracy; PA: producers accuracy; OA: overall accuracy; π_j is the class proportion according to the classified map.

| | **Map category** | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Class** | **I** | **R** | **B** | **O** | **Total** | **PA** | **OA** |
| **Category** | **I** | 0.062 | 0.002 | 0.016 | 0.000 | 0.080 | 0.776±0.118 | 0.817±0.032 |
| | **R** | 0.016 | 0.408 | 0.036 | 0.002 | 0.462 | 0.883±0.037 | |
| | **B** | 0.025 | 0.023 | 0.238 | 0.000 | 0.286 | 0.831±0.053 | |
| | **O** | 0.002 | 0.035 | 0.024 | 0.111 | 0.172 | 0.645±0.079 | |
| | **Total ($\pi_j$)** | 0.106 | 0.468 | 0.313 | 0.113 | 1.000 | | |
| | **UA** | 0.587±0.133 | 0.872±0.043 | 0.758±0.067 | 0.981±0.035 | | | |

**Table S3.** Confusion matrix of FI-based classification results in 2021 (I: Institution; R: Residence; B: Business; O: Open Space). UA: users accuracy; PA: producers accuracy; OA: overall accuracy; π_j is the class proportion according to the classified map.

| | **Map category** | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Class** | **I** | **R** | **B** | **O** | **Total** | **PA** | **OA** |
| **Category** | **I** | 0.078 | 0.029 | 0.000 | 0.005 | 0.111 | 0.697±0.102 | 0.802±0.034 |
| | **R** | 0.002 | 0.471 | 0.004 | 0.006 | 0.484 | 0.974±0.019 | |
| | **B** | 0.008 | 0.050 | 0.194 | 0.014 | 0.266 | 0.729±0.062 | |
| | **O** | 0.006 | 0.070 | 0.004 | 0.058 | 0.139 | 0.421±0.086 | |
| | **Total ($\pi_j$)** | 0.094 | 0.620 | 0.202 | 0.084 | 1.000 | | |
| | **UA** | 0.826±0.108 | 0.760±0.048 | 0.960±0.038 | 0.698±0.139 | | | |

This research randomly selected 1000 samples in 2017 and 1000 samples in 2021 for testing from the list of points (Figure S2). The 2017 and 2021 urban green spaces were classified relatively well, with an estimated overall accuracy of 0.967±0.012 and 0.977±0.010, respectively (Table S4, Table S5).

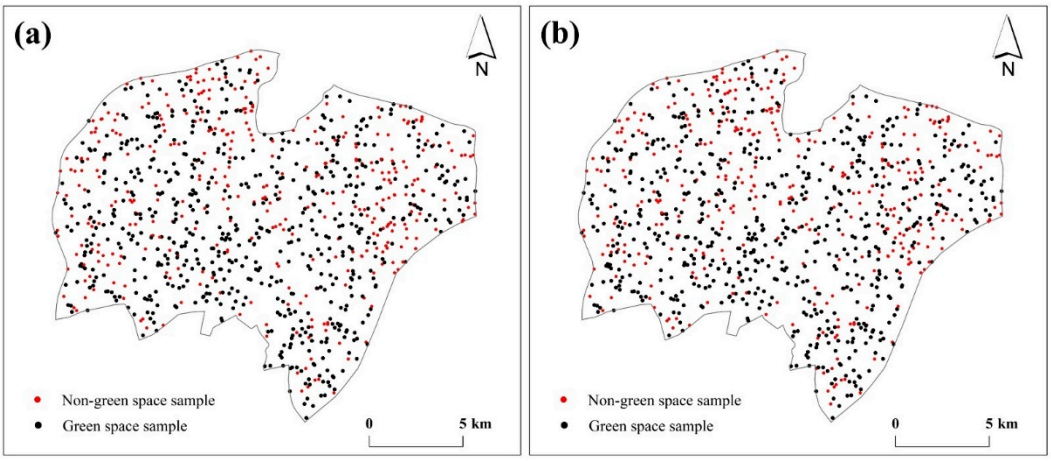


**Figure S2.** Training and testing samples of urban green space mapping: (a) urban green space samples in 2017; (b) urban green space samples in 2021.

**Table S4.** Confusion matrix of the urban green space mapping results in 2017. UA: users accuracy; PA: producers accuracy; OA: overall accuracy; π_j is the class proportion according to the classified map (N: Non-green space; G: Green space).

| | **Map category** | | | | | |
|---|---|---|---|---|---|---|
| | **Class** | **N** | **G** | **Total** | **PA** | **OA** |
| **True category** | **N** | 0.272 | 0.017 | 0.289 | 0.941±0.026 | 0.959±0.012 |
| | **G** | 0.023 | 0.688 | 0.711 | 0.967±0.012 | |
| | **Total ($\pi_j$)** | 0.295 | 0.705 | 1.000 | | |
| | **UA** | 0.921±0.031 | 0.975±0.011 | | | |

**Table S5.** Confusion matrix of the urban green space mapping results in 2021. UA: users accuracy; PA: producers accuracy; OA: overall accuracy; π_j is the class proportion according to the classified map (N: Non-green space; G: Green space).

| | **Map category** | | | | | |
|---|---|---|---|---|---|---|
| | **Class** | **N** | **G** | **Total** | **PA** | **OA** |
| **True category** | **N** | 0.226 | 0.031 | 0.257 | 0.878±0.037 | 0.952±0.013 |
| | **G** | 0.017 | 0.726 | 0.743 | 0.977±0.010 | |
| | **Total ($\pi_j$)** | 0.243 | 0.757 | 1.000 | | |
| | **UA** | 0.930±0.032 | 0.959±0.014 | | | |