Table S1. FoM values of the simulations using different sizes of the convolution kernel

Kernel size	2012	2013	2014	2015	2016	2017
3 × 3	0.1747	0.1961	0.2054	0.2120	0.2163	0.2132
5 × 5	0.1790	0.1985	0.2060	0.2110	0.2147	0.2122
7 × 7	0.1777	0.1970	0.2039	0.2077	0.2106	0.2074
9 × 9	0.1790	0.1962	0.2033	0.2085	0.2128	0.2105

Table S2. FoM values of the urban land expansion simulations for the periods of 2010-2019

Year	FLUS	LSTM-CA	CNN-LSTM-CA	ConvLSTM
2010	0.0432	0.0730	0.0630	0.1740
2011	0.0715	0.0992	0.0984	0.1921
2012	0.0958	0.1150	0.1259	0.2023
2013	0.1183	0.1250	0.1474	0.2106
2014	0.1347	0.1299	0.1613	0.2183
2015	0.1503	0.1513	0.1747	0.2252
2016	0.1623	0.1679	0.1842	0.2298
2017	0.1727	0.1821	0.1891	0.2303
2018	0.1837	0.1970	0.1992	0.2339
2019	0.1876	0.2025	0.2038	0.2375

Note: The 2010 urban land map is used as the base year data. For instance, the FoM for year 2019 is the FoM calculated based on the simulated change and the referenced change from 2011 to 2019.

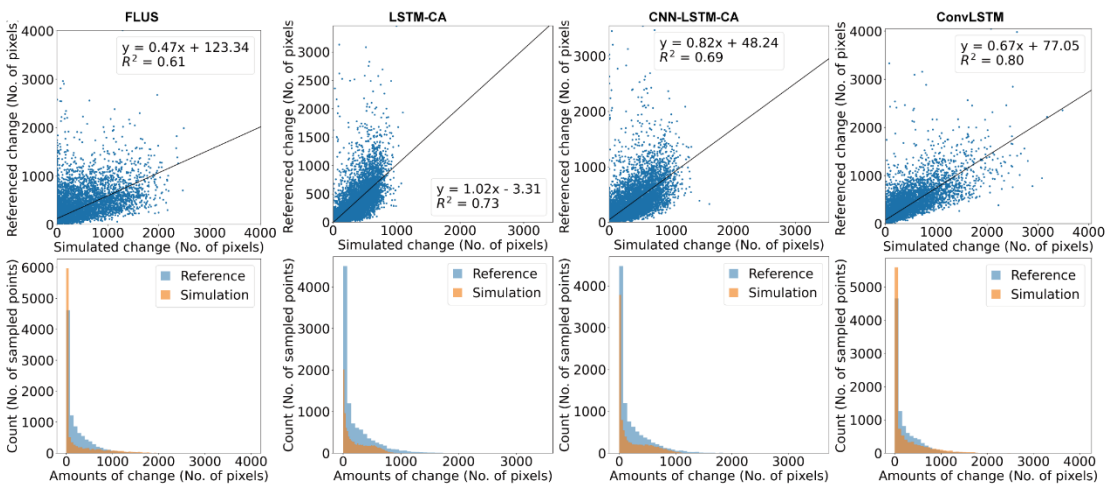


Figure S1. Comparing the simulated and referenced urban land expansion at the scale of 3 km (Sample size = 10000).

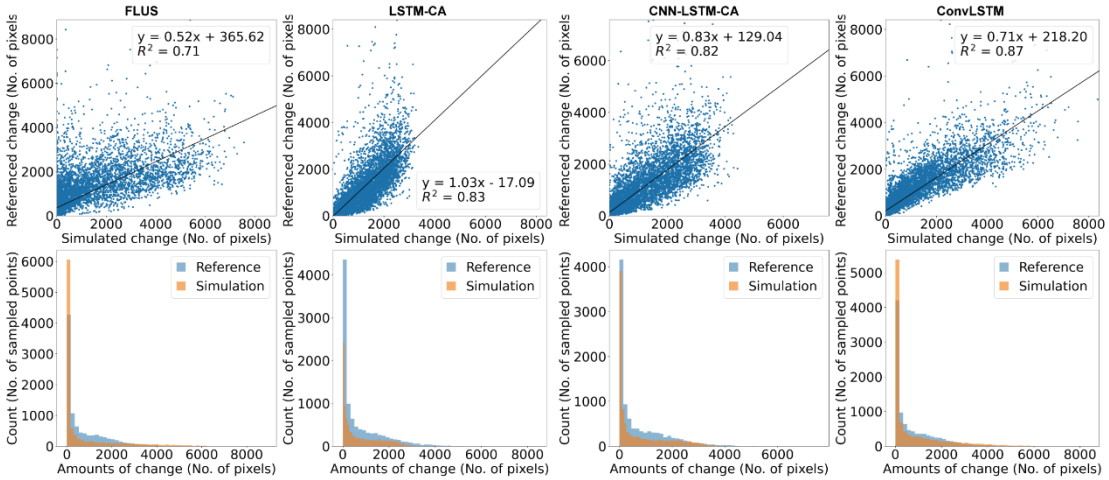


Figure S2. Comparing the simulated and referenced urban land expansion at the scale of 6 km (Sample size = 10000).

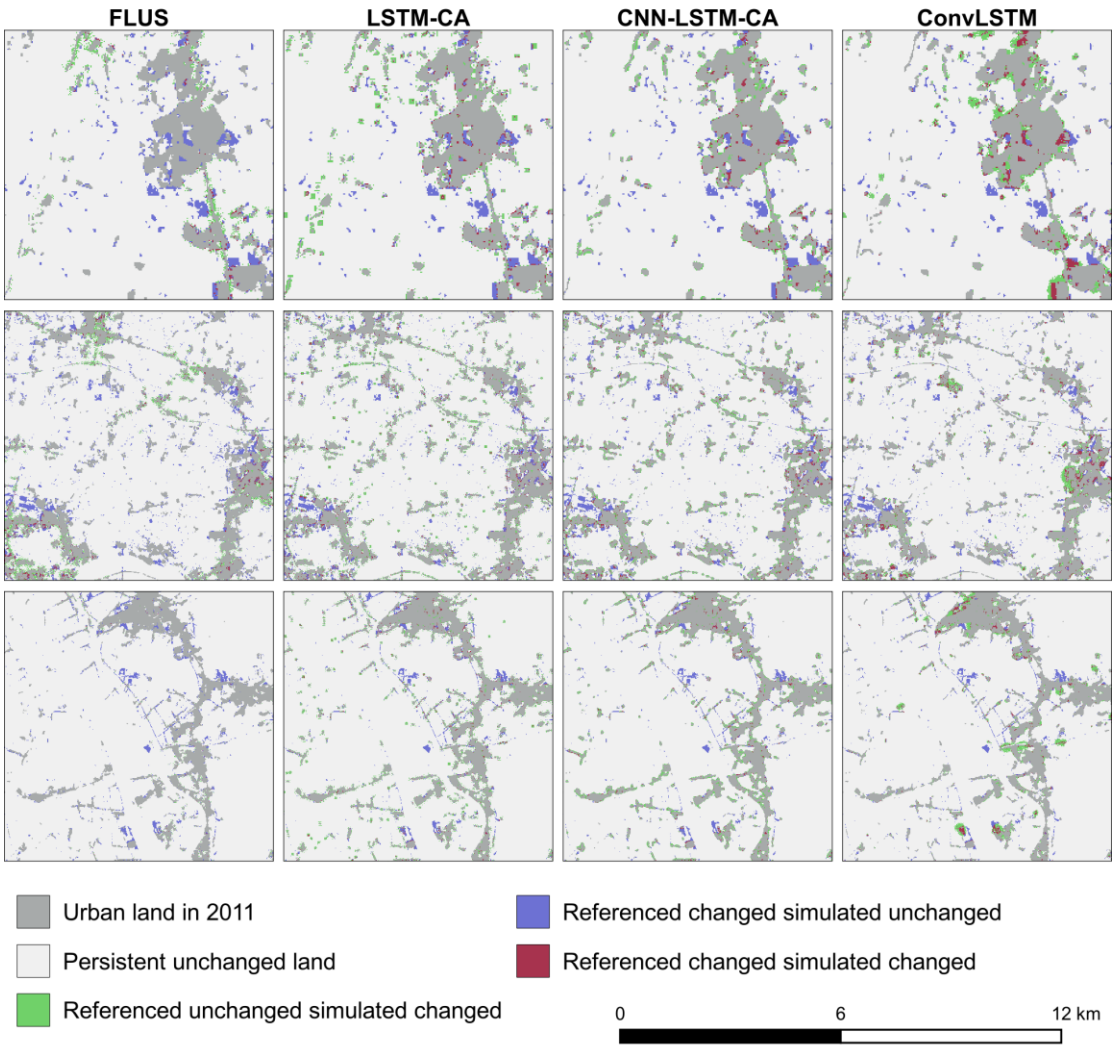
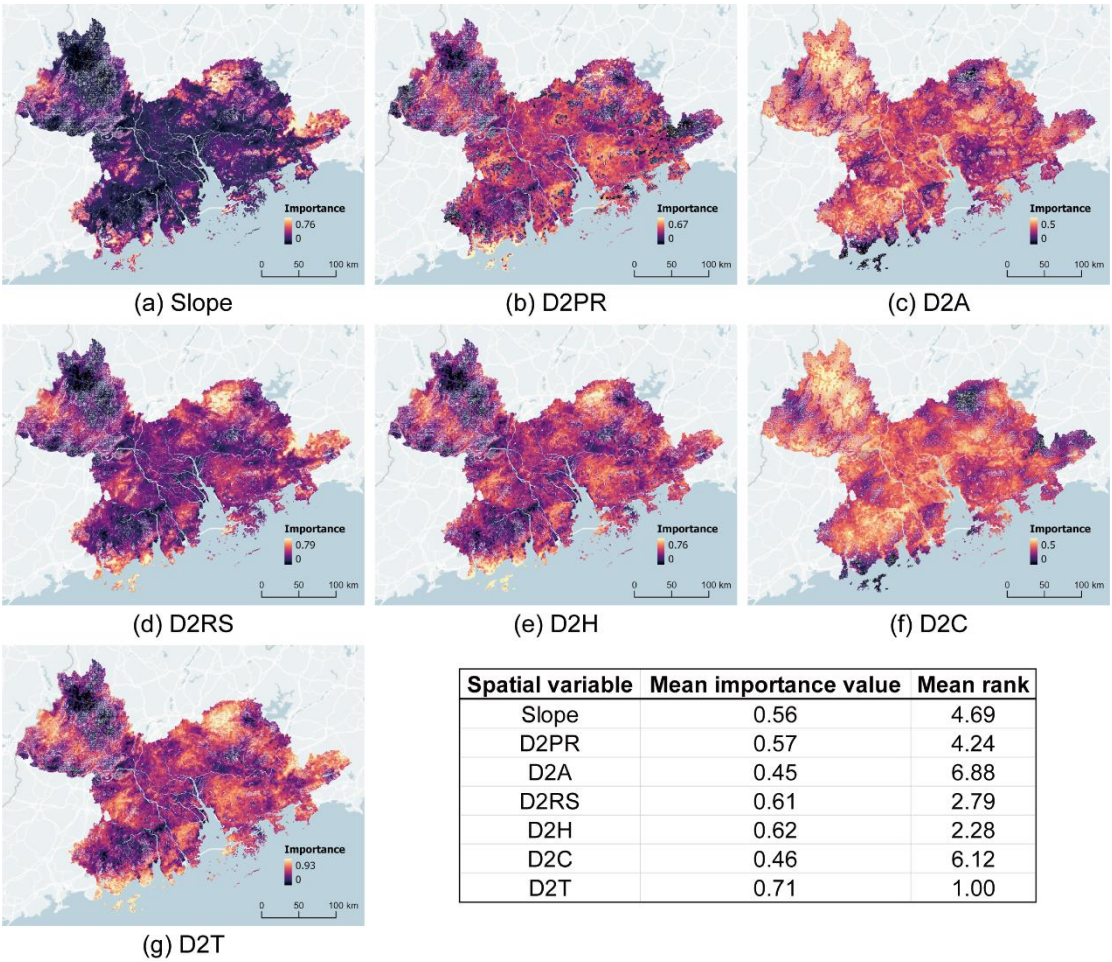


Figure S3. Errors due to the failure of enclave simulation.



(a) Slope (b) D2PR (c) D2A

(d) D2RS (e) D2H (f) D2C

(g) D2T

Spatial variable	Mean importance value	Mean rank
Slope	0.56	4.69
D2PR	0.57	4.24
D2A	0.45	6.88
D2RS	0.61	2.79
D2H	0.62	2.28
D2C	0.46	6.12
D2T	0.71	1.00

Figure S4. Importance of the spatial variables for the simulation of urban land expansion from 2011 to 2017.