Supplemental Data

How did the urban land in floodplain distribute and expand in China from 1992–2015?

Shiqiang Du¹, Chunyang He²*, Qingxu Huang², Peijun Shi²

¹ Geography Department, Shanghai Normal University, 100 Guilinlu Road, Shanghai 200234, P. R. China

² State Key Laboratory of Earth Surface Processes and Resource Ecology, Beijing Normal University, 19 Xinjiekouwai Street, Beijing 100875, P. R. China

E-mail address: hcy@bnu.edu.cn

Contents:
Text S1
Figures S1 to S2
Tables S1
The following supplementary text describes further details about ULF dynamics from 1992–2015.

**Text S1**

ULF did not expand at a constant rate from 1992–2015. The ULF in China experienced the most rapid growth during 1992–1995 with an average annual change rate (AACR) of 18.26%; thereafter, the AACR dropped to 3.7% during 2005–2010 and to 5.21% during 2010–2015 (Table S2). The decreasing AACR was mainly due to the massive increase in absolute ULF values. Despite the overall decreasing AACR, however, both the absolute growth and the AACR of ULF in China were much larger during 2010–2015 than during 2005–2010. This contrast may indicate an accelerating ULF growth in the past five years.

The accelerating ULF growth was also found at both the region and basin scales (Table S2). In all four climate regions, both the absolute increase and the AACR were much higher during 2010–2015 than during 2005–2010 (Table S2 and Figure S3). In northwest and southwest China, the period of 2010–2015 contributed disproportionally (52.42% and 42.46%, respectively) to the entire ULF growth during 1992–2015. Moreover, all 21 basins experienced more rapid ULF increases during 2010–2015 than during 2005–2010 (Figure S3). More attention should be paid to the accelerating ULF growth during recent years across China.

ULF changes were also spatially different from the coastal basins in eastern China to the basins in western China (Figure S3). For the eight coastal basins, the period of 2010–2015 contributed 13.47%–33.22% to the entire ULF changes during 1992–2015, while this number ranged from 32.82% to 80.00% for the basins in western China. Most of the ULF growth occurred during 1992–2005 in the eight coastal basins but during 2005–2015 in the basins in western China. This contrast may indicate a spatiotemporal process of ULF expansion from the coastal basins to the western inland basins.
Figure S1. A sketch of key terms of floodplain (FP), ULF, ULFR, and their counterparts outside floodplains.

Figure S2. Temporal distribution of changes in ULF over different periods at the basin scale.
Table S1. Pearson correlation matrix for ULF at different flood depths

| Depth (m)       | 0.5–1.0 | 1–1.5 | 1.5–2.0 | 2.0–3.0 | 3.0–4.0 | 4.0–5.0 | 5.0–6.0 | 6.0–7.0 | > 7.0 | >0 |
|-----------------|---------|-------|---------|---------|---------|---------|---------|---------|-------|----|
| 0–0.5           | 0.999** |       | 0.998** | 0.998** | 0.997** | 0.997** | 0.996** | 0.991** | 0.992** | 0.826** |
| 0.5–1.0         | 0.999** | 0.999** | 0.997** | 0.997** | 0.997** | 0.997** | 0.995** | 0.996** | 0.845** |
| 1.0–1.5         | 1.000** | 0.998** | 1.000** | 0.999** | 0.998** | 0.996** | 0.997** | 0.842** |
| 1.5–2.0         | 0.999** | 0.999** | 0.999** | 0.999** | 0.999** | 0.997** | 0.997** | 0.840** |
| 2.0–3.0         | 0.998** | 0.999** | 0.999** | 0.999** | 0.999** | 0.999** | 0.856** |
| 3.0–4.0         | 1.000** | 0.998** | 0.996** | 0.999** | 0.997** | 0.997** | 0.841** |
| 4.0–5.0         | 0.999** | 0.999** | 0.998** | 0.999** | 0.998** | 0.998** | 0.848** |
| 5.0–6.0         | 0.999** | 0.998** | 0.998** | 0.999** | 0.998** | 0.998** | 0.850** |
| 6.0–7.0         | 1.000** | 0.999** | 0.998** | 0.999** | 0.998** | 0.998** | 0.862** |
| > 7.0           |         |       |         |         |         |         |         |         | 1.000** | 0.863** |

Note: ** means p<= 0.01, two-tailed test.